PROFESSIONAL DESIGN SERVICES AGREEMENT

This PROFESSIONAL DESIGN SERVICES AGREEMENT, (hereinafter referred to as "Agreement"), is made and entered into to be effective the 26th day of October, 2022 by and between the ORANGE COUNTY SANITATION DISTRICT, (hereinafter referred to as "OC SAN"), and Arcadis U.S., Inc., (hereinafter referred to as "CONSULTANT").

WITNESSETH:

WHEREAS, OC SAN desires to engage CONSULTANT for **Edinger Pump Station Replacement**, **Project No. 11-33**; and to provide professional design services for replacing the existing Edinger Pump Station with a new facility, (Services) and

WHEREAS, CONSULTANT is qualified to provide the necessary services in connection with these requirements and has agreed to provide the necessary professional services; and

WHEREAS, OC SAN has adopted procedures for the selection of professional design services and has proceeded in accordance with said procedures to select CONSULTANT to perform the Services; and

WHEREAS, at its regular meeting on October 26, 2022 the Board of Directors, by Minute Order, accepted the recommendation of the Operations Committee pursuant to OC SAN's Ordinance No. OC SAN-56 to approve this Agreement.

NOW, THEREFORE, in consideration of the promises and mutual benefits, which will result to the parties in carrying out the terms of this Agreement, it is mutually agreed as follows:

1. SCOPE OF WORK

The CONSULTANT agrees to furnish necessary professional and technical services to accomplish those project elements outlined in the Scope of Work attached hereto as Attachment "A", and by this reference made a part of this Agreement.

A. The CONSULTANT shall be responsible for the professional quality, technical accuracy, completeness, and coordination of all design, drawings, specifications, and other services furnished by the CONSULTANT under this Agreement, including the work performed by its subconsultants (Subconsultants). Where approval by OC SAN is indicated, it is understood to be conceptual approval only and does not relieve the CONSULTANT of responsibility for complying with all laws, codes, industry standards, and liability for damages caused by errors, omissions, noncompliance with industry standards, and/or negligence on the part of the CONSULTANT or Subconsultants.

B. The CONSULTANT is responsible for the quality of work prepared under this Agreement and shall ensure that all work is performed to the standards of best engineering practice for clarity, uniformity, and completeness. The CONSULTANT shall respond to all of OC SAN's questions, comments, suggestions, corrections, and recommendations (i.e., DS1, DS2, DS3, and FDS). All comments shall be incorporated into the design prior to the next submittal deadline or addressed, in writing, as to why the comment has not been

incorporated. The CONSULTANT shall ensure that each submittal is 100% accurate for the level of work submitted (i.e., correct references, terms, capitalization, or equal status, spelling, punctuation, etc.)

C. In the event that work is not performed to the satisfaction of OC SAN and does not conform to the requirements of this Agreement or any applicable industry standards, the CONSULTANT shall, without additional compensation, promptly correct or revise any errors or deficiencies in its designs, drawings, specifications, or other services within the timeframe specified by the Project Engineer/Project Manager. OC SAN may charge to the CONSULTANT all costs, expenses and damages associated with any such corrections or revisions.

D. All CAD drawings, figures, and other work shall be produced by the CONSULTANT and Subconsultants using the OC SAN CAD Manual. Conversion of CAD work from any other non-standard CAD format to OC SAN format shall not be acceptable in lieu of this requirement.

Electronic files shall conform to OC SAN specifications. Any changes to these specifications by the CONSULTANT are subject to review and approval of OC SAN.

Electronic files shall be subject to an acceptance period of 30 calendar days during which OC SAN shall perform appropriate reviews and including CAD Manual compliance. The CONSULTANT shall correct any discrepancies or errors detected and reported within the acceptance period at no additional cost to OC SAN.

E. The CONSULTANT shall ensure that all plans and specifications prepared or recommended under this Agreement allow for competitive bidding. The CONSULTANT shall design such plans or specifications so that procurement of services, labor or materials are not available from only one source, and shall not design plans and specifications around a single or specific product, piece of major equipment or machinery, a specific patented design or a proprietary process, unless required by principles of sound engineering practice and supported by a written justification that has been approved in writing by OC SAN. The CONSULTANT shall submit this written justification to OC SAN prior to beginning work on such plans and specifications. Whenever the CONSULTANT recommends a specific product or equipment for competitive procurement, such recommendation shall include at least two brand names of products that are capable of meeting the functional requirements applicable to the project.

F. All professional services performed by the CONSULTANT, including but not limited to all drafts, data, correspondence, proposals, reports, and estimates compiled or composed by the CONSULTANT, pursuant to this Agreement, are for the sole use of OC SAN, its agents and employees. Neither the documents nor their contents shall be released to any third party without the prior written consent of OC SAN. This provision does not apply to information that (a) was publicly known, or otherwise known to the CONSULTANT, at the time that it was disclosed to the CONSULTANT by OC SAN, (b) subsequently becomes publicly known to the CONSULTANT other than through disclosure by OC SAN.

2. COMPENSATION

Total compensation shall be paid to the CONSULTANT for the Services in accordance with the following provisions:

A. Total Compensation

Total compensation shall be in an amount not to exceed Three Million One Hundred Twenty-Five Thousand Five Hundred Ninety Dollars ($3,125,590). Total compensation to the CONSULTANT including burdened labor (salaries plus benefits), overhead, profit, direct costs, and Subconsultant(s) fees and costs shall not exceed the sum set forth in Attachment “E” - Fee Proposal.

B. Labor

As a portion of the total compensation to be paid to the CONSULTANT, OC SAN shall pay to the CONSULTANT a sum equal to the burdened salaries (salaries plus benefits) actually paid by the CONSULTANT charged on an hourly-rate basis to this project and paid to the personnel of the CONSULTANT. Upon request of OC SAN, the CONSULTANT shall provide OC SAN with certified payroll records of all employees’ work that is charged to this project.

C. Overhead

As a portion of the total compensation to be paid to the CONSULTANT, OC SAN shall compensate the CONSULTANT and Subconsultants for overhead at the rate equal to the percentage of burdened labor as specified in Attachment “E” - Fee Proposal.

D. Profit

Profit for the CONSULTANT and Subconsultants shall be a percentage of consulting services fees (Burdened Labor and Overhead). When the consulting or subconsulting services amount is $250,000 or less, the maximum Profit shall be 10%. Between $250,000 and $2,500,000, the maximum Profit shall be limited by a straight declining percentage between 10% and 5%. For consulting or subconsulting services fees with a value greater than $2,500,000, the maximum Profit shall be 5%. Addenda shall be governed by the same maximum Profit percentage after adding consulting services fees.

As a portion of the total compensation to be paid to the CONSULTANT and Subconsultants, OC SAN shall pay profit for all services rendered by the CONSULTANT and Subconsultants for this project according to Attachment “E” - Fee Proposal.

E. Subconsultants

For any Subconsultant whose fees for services are greater than or equal to $100,000 (excluding out-of-pocket costs), the CONSULTANT shall pay to

Subconsultant total compensation in accordance with the Subconsultant amount specified in Attachment “E” - Fee Proposal.

For any Subconsultant whose fees for services are less than $100,000, the CONSULTANT may pay to Subconsultant total compensation on an hourly-rate basis per the attached Minor Subconsultant Hourly Rate Schedule and as specified in the Scope of Work. OC SAN shall pay to the CONSULTANT the actual costs of Subconsultant fees and charges in an amount not to exceed the sum set forth in Attachment “E” - Fee Proposal.

F. Direct Costs

OC SAN shall pay to the CONSULTANT and Subconsultants the actual costs of permits and associated fees, travel and licenses for an amount not to exceed the sum set forth in Attachment “E” - Fee Proposal. OC SAN shall also pay to the CONSULTANT actual costs for equipment rentals, leases or purchases with prior approval of OC SAN. Upon request, the CONSULTANT shall provide to OC SAN receipts and other documentary records to support the CONSULTANT’s request for reimbursement of these amounts, refer to Attachment “D” - Allowable Direct Costs. All incidental expenses shall be included in overhead pursuant to Section 2 - COMPENSATION above.

G. Other Direct Costs

Other Direct Costs incurred by the CONSULTANT and its contractor due to modifications to the Scope of Work resulting from field investigations and field work required by the Agreement. These items may include special equipment, test equipment and tooling and other materials and services not previously identified. Refer to Attachment “D” - Allowable Direct Costs for payment information.

H. Reimbursable Direct Costs

OC SAN will reimburse the CONSULTANT for reasonable travel and business expenses as described in this section and further described in Attachment “D” - Allowable Direct Costs to this Agreement. The reimbursement of the above-mentioned expenses will be based on an “accountable plan” as considered by the Internal Revenue Service (IRS). The plan includes a combination of reimbursements based upon receipts and a “per diem” component approved by the IRS. The most recent schedule of the per diem rates utilized by OC SAN can be found on the U.S. General Services Administration (GSA) website at http://www.gsa.gov/portal/category/104711#.

The CONSULTANT shall be responsible for the most economical and practical means of management of reimbursable costs inclusive but not limited to travel, lodging and meals arrangements. OC SAN shall apply the most economic and practical method of reimbursement which may include reimbursements based upon receipts and/or “per diem” as deemed the most practical.

The CONSULTANT shall be responsible for returning to OC SAN any excess reimbursements after the reimbursement has been paid by OC SAN.
Travel and travel arrangements – Any travel involving airfare, overnight stays or multiple day attendance must be approved by OC SAN in advance.

Local Travel is considered travel by the CONSULTANT within OC SAN general geographical area which includes Orange, Los Angeles, Ventura, San Bernardino, Riverside, San Diego, Imperial, and Kern Counties. Automobile mileage is reimbursable if the CONSULTANT is required to utilize personal vehicle for local travel.

Lodging – Overnight stays will not be approved by OC SAN for local travel. However, under certain circumstances overnight stay may be allowed at the discretion of OC SAN based on reasonableness of meeting schedules and the amount of time required for travel by the CONSULTANT. Such determination will be made on a case-by-case basis and at the discretion of OC SAN.

Travel Meals – Per-diem rates as approved by the IRS shall be utilized for travel meals reimbursements. Per diem rates shall be applied to meals that are appropriate for travel times. Receipts are not required for the approved meals.

Additional details related to the reimbursement of the allowable direct costs are provided in the Attachment “D” - Allowable Direct Costs of this Agreement.

I. Limitation of Costs

If, at any time, the CONSULTANT estimates the cost of performing the services described in the CONSULTANT’s Proposal will exceed 75% of the not-to-exceed amount of the Agreement, including approved additional compensation, the CONSULTANT shall notify OC SAN immediately, and in writing. This written notice shall indicate the additional amount necessary to complete the services. Any cost incurred in excess of the approved not-to-exceed amount, without the express written consent of OC SAN’s authorized representative shall be at the CONSULTANT’s own risk. This written notice shall be provided separately from, and in addition to any notification requirements contained in the CONSULTANT’s invoice and monthly progress report. Failure to notify OC SAN that the services cannot be completed within the authorized not-to-exceed amount is a material breach of this Agreement.

3. REALLOCATION OF TOTAL COMPENSATION

OC SAN, by its Director of Engineering, shall have the right to approve a reallocation of the incremental amounts constituting the total compensation, provided that the total compensation is not increased.

4. PAYMENT

A. Monthly Invoice: The CONSULTANT shall include in its monthly invoice, a detailed breakdown of costs associated with the performance of any corrections or revisions of the work for that invoicing period. The CONSULTANT shall

allocate costs in the same manner as it would for payment requests as described in this Section of the Agreement. The CONSULTANT shall warrant and certify the accuracy of these costs and understand that submitted costs are subject to Section 11 - AUDIT PROVISIONS.

B. The CONSULTANT may submit monthly or periodic statements requesting payment for those items included in Section 2 - COMPENSATION hereof in the format as required by OC SAN. Such requests shall be based upon the amount and value of the work and services performed by the CONSULTANT under this Agreement and shall be prepared by the CONSULTANT and accompanied by such supporting data, including a detailed breakdown of all costs incurred and project work performed during the period covered by the statement, as may be required by OC SAN.

Upon approval of such payment request by OC SAN, payment shall be made to the CONSULTANT as soon as practicable of 100% of the invoiced amount on a per task basis.

If OC SAN determines that the work under this Agreement or any specified task hereunder, is incomplete and that the amount of payment is in excess of:

i. The amount considered by OC SAN's Director of Engineering (DOE) to be adequate for the protection of OC SAN; or

ii. The percentage of the work accomplished for each task.

OC SAN may, at the discretion of the DOE, retain an amount equal to that which ensures that the total amount paid to that date does not exceed the percentage of the completed work for each task or the project in its entirety.

C. The CONSULTANT may submit periodic payment requests for each 30-day period of this Agreement for the profit as set forth in Section 2 - COMPENSATION above. Said profit payment request shall be proportionate to the work actually accomplished to date on a per task basis. In the event the DOE determines that no satisfactory progress has been made since the prior payment, or in the event of a delay in the work progress for any reason, OC SAN shall have the right to withhold any scheduled proportionate profit payment.

D. Upon satisfactory completion by the CONSULTANT of the work called for under the terms of this Agreement, and upon acceptance of such work by OC SAN, the CONSULTANT will be paid the unpaid balance of any money due for such work, including any retained percentages relating to this portion of the work.

E. Upon satisfactory completion of the work performed hereunder and prior to final payment under this Agreement for such work, or prior settlement upon termination of this Agreement, and as a condition precedent thereto, the CONSULTANT shall execute and deliver to OC SAN a release of all claims against OC SAN arising under or by virtue of this Agreement other than such claims, if any, as may be specifically exempted by the CONSULTANT from the operation of the release in stated amounts to be set forth therein.

F. Pursuant to the California False Claims Act (Government Code Sections 12650-12655), any CONSULTANT that knowingly submits a false claim to OC SAN for compensation under the terms of this Agreement may be held liable for treble damages and up to a Ten Thousand Dollars ($10,000) civil penalty for each false claim submitted. This Section shall also be binding on all Subconsultants.

A CONSULTANT or Subconsultant shall be deemed to have submitted a false claim when the CONSULTANT or Subconsultant: a) knowingly presents or causes to be presented to an officer or employee of OC SAN a false claim or request for payment or approval; b) knowingly makes, uses, or causes to be made or used a false record or statement to get a false claim paid or approved by OC SAN; c) conspires to defraud OC SAN by getting a false claim allowed or paid by OC SAN; d) knowingly makes, uses, or causes to be made or used a false record or statement to conceal, avoid, or decrease an obligation to OC SAN; or e) is a beneficiary of an inadvertent submission of a false claim to OC SAN, and fails to disclose the false claim to OC SAN within a reasonable time after discovery of the false claim.

5. CALIFORNIA DEPARTMENT OF INDUSTRIAL RELATIONS (DIR) REGISTRATION AND RECORD OF WAGES

A. To the extent the CONSULTANT's employees and/or Subconsultants who will perform work during the design and preconstruction phases of a construction contract for which Prevailing Wage Determinations have been issued by the DIR and as more specifically defined under Labor Code Section 1720 et seq, the CONSULTANT and Subconsultants shall comply with the registration requirements of Labor Code Section 1725.5. Pursuant to Labor Code Section 1771.4, the work is subject to compliance monitoring and enforcement by the DIR.

B. The CONSULTANT and Subconsultants shall maintain accurate payroll records and shall comply with all the provisions of Labor Code Section 1776, and shall submit payroll records to the Labor Commissioner pursuant to Labor Code Section 1771.4(a)(3). Penalties for non-compliance with the requirements of Section 1776 may be deducted from progress payments per Section 1776.

C. Pursuant to Labor Code Section 1776, the CONSULTANT and Subconsultants shall furnish a copy of all certified payroll records to OC SAN and/or general public upon request, provided the public request is made through OC SAN, the Division of Apprenticeship Standards or the Division of Labor Standards Enforcement of the DIR.

D. The CONSULTANT and Subconsultants shall comply with the job site notices posting requirements established by the Labor Commissioner per Title 8, California Code of Regulation Section 16461(e).

6. DOCUMENT OWNERSHIP – SUBSEQUENT CHANGES TO PLANS AND SPECIFICATIONS

A. Ownership of Documents for the Services performed.
All documents, including but not limited to, original plans, studies, sketches, drawings, computer printouts and disk files, and specifications prepared in connection with or related to the Scope of Work or Services, shall be the property of OC SAN. OC SAN's ownership of these documents includes use of, reproduction or reuse of and all incidental rights, whether or not the work for which they were prepared has been performed. OC SAN ownership entitlement arises upon payment or any partial payment for work performed and includes ownership of any and all work product completed prior to that payment. This Section shall apply whether the CONSULTANT's Services are terminated: a) by the completion of the Agreement, or b) in accordance with other provisions of this Agreement. Notwithstanding any other provision of this paragraph or Agreement, the CONSULTANT shall have the right to make copies of all such plans, studies, sketches, drawings, computer printouts and disk files, and specifications.

B. The CONSULTANT shall not be responsible for damage caused by subsequent changes to or uses of the plans or specifications, where the subsequent changes or uses are not authorized or approved by the CONSULTANT, provided that the service rendered by the CONSULTANT was not a proximate cause of the damage.

7. INSURANCE

A. General

i. Insurance shall be issued and underwritten by insurance companies acceptable to OC SAN.

ii. Insurers must have an "A-" Policyholder's Rating, or better, and Financial Rating of at least Class VIII, or better, in accordance with the most current A.M. Best's Guide Rating. However, OC SAN will accept State Compensation Insurance Fund, for the required policy of Workers' Compensation Insurance subject to OC SAN's option to require a change in insurer in the event the State Fund financial rating is decreased below "B". Further, OC SAN will require the CONSULTANT to substitute any insurer whose rating drops below the levels herein specified. Said substitution shall occur within 20 days of written notice to the CONSULTANT, by OC SAN or its agent.

iii. Coverage shall be in effect prior to the commencement of any work under this Agreement.

B. General Liability

The CONSULTANT shall maintain during the life of this Agreement, including the period of warranty, commercial general liability insurance written on an occurrence basis providing the following minimum limits of liability coverage: Two Million Dollars ($2,000,000) per occurrence with Four Million Dollars

($4,000,000) aggregate. If aggregate limits apply separately to this contract (as evidenced by submission of ISO form CG 25 03 or 25 04), then the aggregate limit may be equivalent to the per occurrence limit. Said insurance shall include coverage for the following hazards: premises-operations, blanket contractual liability (for this Agreement), products liability/completed operations (including any product manufactured or assembled), broad form property damage, blanket contractual liability, independent contractors liability, personal and advertising injury, mobile equipment, owners and contractors protective liability, and cross liability and severability of interest clauses. A statement on an insurance certificate will not be accepted in lieu of the actual additional insured endorsement(s). If requested by OC SAN and applicable, XCU coverage (Explosion, Collapse and Underground) and Riggers/On Hook Liability must be included in the general liability policy and coverage must be reflected on the submitted certificate of insurance. Where permitted by law, the CONSULTANT hereby waives all rights of recovery by subrogation because of deductible clauses, inadequacy of limits of any insurance policy, limitations or exclusions of coverage, or any other reason against OC SAN, its or their officers, agents, or employees, and any other consultant, contractor, or subcontractor performing work or rendering services on behalf of OC SAN in connection with the planning, development, and construction of the project. In all its insurance coverages related to the work, the CONSULTANT shall include clauses providing that each insurer shall waive all of its rights of recovery by subrogation against OC SAN, its or their officers, agents, or employees, or any other consultant, contractor, or subcontractor performing work or rendering services at the project. Where permitted by law, the CONSULTANT shall require similar written express waivers and insurance clauses from each of its Subconsultants of every tier. A waiver of subrogation shall be effective as to any individual or entity, even if such individual or entity (a) would otherwise have a duty of indemnification, contractual or otherwise, (b) did not pay the insurance premium, directly or indirectly, and (c) whether or not such individual or entity has an insurable interest in the property damaged.

C. Umbrella Excess Liability

The minimum limits of general liability and automobile liability insurance required, as set forth herein, shall be provided for through either a single policy of primary insurance or a combination of policies of primary and umbrella excess coverage. Umbrella excess liability coverage shall be issued with limits of liability which, when combined with the primary insurance, will equal the minimum limits for general liability and automobile liability.

D. Automobile/Vehicle Liability Insurance

The CONSULTANT shall maintain a policy of automobile liability insurance on a comprehensive form covering all owned, non-owned, and hired automobiles, trucks, and other vehicles providing the following minimum limit of liability coverage: combined single limit of One Million Dollars ($1,000,000). A statement on an insurance certificate will not be accepted in lieu of the actual additional insured endorsement.

E. Drone Liability Insurance

If a drone will be used, drone liability insurance must be maintained by the CONSULTANT in the amount of One Million Dollars ($1,000,000) in a form acceptable to OC SAN.

F. Workers' Compensation Insurance

The CONSULTANT shall provide such workers' compensation insurance as required by the Labor Code of the State of California in the amount of the statutory limit, including employer's liability insurance with a minimum limit of One Million Dollars ($1,000,000) per occurrence. Such workers' compensation insurance shall be endorsed to provide for a waiver of subrogation in favor of OC SAN. A statement on an insurance certificate will not be accepted in lieu of the actual endorsements unless the insurance carrier is State of California Insurance Fund and the identifier "SCIF" and endorsement numbers 2570 and 2065 are referenced on the certificate of insurance. If an exposure to Jones Act liability may exist, the insurance required herein shall include coverage for Jones Act claims.

G. Errors and Omissions/Professional Liability

The CONSULTANT shall maintain in full force and effect, throughout the term of this Agreement, standard industry form professional negligence errors and omissions insurance coverage in an amount of not less than Five Million Dollars ($5,000,000) with limits in accordance with the provisions of this paragraph. If the policy of insurance is written on a "claims made" basis, said policy shall be continued in full force and effect at all times during the term of this Agreement, and for a period of five years from the date of the completion of the Services hereunder.

In the event of termination of said policy during this period, the CONSULTANT shall obtain continuing insurance coverage for the prior acts or omissions of the CONSULTANT during the course of performing the Services under the term of this Agreement. Said coverage shall be evidenced by either a new policy evidencing no gap in coverage or by separate extended "tail" coverage with the present or new carrier.

In the event the present policy of insurance is written on an "occurrence" basis, said policy shall be continued in full force and effect during the term of this Agreement or until completion of the Services provided for in this Agreement, whichever is later. In the event of termination of said policy during this period, new coverage shall be obtained for the required period to insure for the prior acts of the CONSULTANT during the course of performing the Services under the term of this Agreement.

The CONSULTANT shall provide to OC SAN a certificate of insurance in a form acceptable to OC SAN indicating the deductible or self-retention amounts and the expiration date of said policy and shall provide renewal certificates not less than 10 days prior to the expiration of each policy term.

H. Proof of Coverage

The CONSULTANT shall furnish OC SAN with original certificates and amendatory endorsements effecting coverage. Said policies and endorsements shall conform to the requirements herein stated. All certificates and endorsements are to be received and approved by OC SAN before work commences. OC SAN reserves the right to require, at any time, complete, certified copies of all required insurance policies, including endorsements, effecting the coverage required. The following are approved forms that must be submitted as proof of coverage:

• Certificate of Insurance	ACORD Form 25 or other equivalent certificate of insurance form
• Additional Insurance (General Liability)	The combination of (ISO Forms) CG 20 10 and CG 20 37 All other additional insured endorsements must be submitted for approval by OC SAN, and OC SAN may reject alternatives that provide different or less coverage to OC SAN.
• Additional Insured (Automobile Liability)	Submit endorsement provided by carrier for OC SAN approval.
• Waiver of Subrogation	Submit workers' compensation waiver of subrogation endorsement provided by carrier for OC SAN approval.
• Cancellation Notice	No endorsement is required. However, the CONSULTANT is responsible for notifying OC SAN of any pending or actual insurance policy cancellation, as described in Article I. Cancellation and Policy Change Notice, below.

I. Cancellation and Policy Change Notice

The CONSULTANT is required to notify OC SAN in writing of any insurance cancellation notice it receives or other knowledge of pending or actual insurance policy cancellation within two working days of receipt of such notice or acquisition of such knowledge. Additionally, the CONSULTANT is required to notify OC SAN in writing of any change in the terms of insurance, including reduction in coverage or increase in deductible/SIR, within two working days of receipt of such notice or knowledge of same.

Said notices shall be mailed to OC SAN at:

ORANGE COUNTY SANITATION DISTRICT
10844 Ellis Avenue, Fountain Valley, CA 92708
Attention: Contracts, Purchasing & Materials Management Division

J. Primary Insurance

The general and automobile liability policies shall contain a Primary and "Non Contributory" clause. Any other insurance maintained by OC SAN shall be excess and not contributing with the insurance provided by the CONSULTANT.

K. Separation of Insured

The general and automobile liability policies shall contain a "Separation of Insureds" clause.

L. Non-Limiting (if applicable)

Nothing in this document shall be construed as limiting in any way, nor shall it limit the indemnification provision contained in this Agreement, or the extent to which the CONSULTANT may be held responsible for payment of damages to persons or property.

M. Deductibles and Self-Insured Retentions

Any deductible and/or self-insured retention must be declared to OC SAN on the certificate of insurance. All deductibles and/or self-insured retentions require approval by OC SAN. At the option of OC SAN, either: the insurer shall reduce or eliminate such deductible or self-insured retention as respects OC SAN; or the CONSULTANT shall provide a financial guarantee satisfactory to OC SAN guaranteeing payment of losses and related investigations, claim administration and defense expenses.

N. Defense Costs

The general and automobile liability policies shall have a provision that defense costs for all insureds and additional insureds are paid in addition to and do not deplete any policy limits.

O. Subconsultants

The CONSULTANT shall be responsible to establish insurance requirements for any Subconsultant hired by the CONSULTANT. The insurance shall be in amounts and types reasonably sufficient to deal with the risk of loss involving the Subconsultant's operations and work.

P. Limits Are Minimums

If the CONSULTANT maintains higher limits than any minimums shown above, then OC SAN requires and shall be entitled to coverage for the higher limits maintained by the CONSULTANT.

8. SCOPE CHANGES

In the event of a change in the Scope of Work or other terms in the Agreement, as requested by OC SAN, the parties hereto shall execute an amendment to this Agreement setting forth with particularity all terms of the new Agreement, including but not limited to, any additional CONSULTANT's fees. CONULTANT hereby agrees to use any and all procedures, programs, and systems required by OC SAN to process and execute such Amendment(s), including, but not limited to, computer programs and systems.

9. PROJECT TEAM AND SUBCONSULTANTS

The CONSULTANT shall provide to OC SAN, prior to execution of this Agreement, the names and full description of all Subconsultants and the CONSULTANT's project team members anticipated to be used on this project by the CONSULTANT. The CONSULTANT shall include a description of the scope of work to be done by each Subconsultant and each of the CONSULTANT's project team members. The CONSULTANT shall include the respective compensation amounts for the CONSULTANT and each Subconsultant on a per task basis, broken down as indicated in Section 2 - COMPENSATION.

The CONSULTANT may perform the Services through a combination of its own employees and employees of Arcadis U.S., Inc. affiliates and that the use of such affiliates labor shall not be deemed a subcontract for purposes of this Agreement.

There shall be no substitution of the listed Subconsultants and the CONSULTANT's project team members without prior written approval by OC SAN.

10. ENGINEERING REGISTRATION

The CONSULTANT's personnel are comprised of registered engineers and a staff of specialists and draftsmen in each department. The firm itself is not a registered engineer but represents and agrees that wherever in the performance of this Agreement requires the services of a registered engineer, such services hereunder will be performed under the direct supervision of registered engineers.

11. AUDIT PROVISIONS

A. OC SAN retains the reasonable right to access, review, examine, and audit, any and all books, records, documents, and any other evidence of procedures and practices that OC SAN determines are necessary to discover and verify that the CONSULTANT is in compliance with all requirements under this Agreement. The CONSULTANT shall include OC SAN's right as described above, in any and all of their subcontracts, and shall ensure that these rights are binding upon all Subconsultants.

B. OC SAN retains the right to examine the CONSULTANT's books, records, documents and any other evidence of procedures and practices that OC SAN determines are necessary to discover and verify all direct and indirect costs, of whatever nature, which are claimed to have been incurred, or

anticipated to be incurred or to ensure the CONSULTANT's compliance with all requirements under this Agreement during the term of this Agreement and for a period of three years after its termination.

C. The CONSULTANT shall maintain complete and accurate records in accordance with generally accepted industry standard practices and OC SAN's policy. The CONSULTANT shall make available to OC SAN for review and audit, all project related accounting records and documents, and any other financial data within 15 days after receipt of notice from OC SAN. Upon OC SAN's request, the CONSULTANT shall submit exact duplicates of originals of all requested records to OC SAN. If an audit is performed, the CONSULTANT shall ensure that a qualified employee of the CONSULTANT will be available to assist OC SAN's auditor in obtaining all project related accounting records and documents, and any other financial data.

12. LEGAL RELATIONSHIP BETWEEN PARTIES

The legal relationship between the parties hereto is that of an independent contractor and nothing herein shall be deemed to make the CONSULTANT an employee of OC SAN.

13. NOTICES

All notices hereunder and communications regarding the interpretation of the terms of this Agreement, or changes thereto, shall be effected by delivery of said notices in person or by depositing said notices in the U.S. mail, registered or certified mail, return receipt requested, postage prepaid.

Notices shall be mailed to OC SAN at:

ORANGE COUNTY SANITATION DISTRICT
10844 Ellis Avenue, Fountain Valley, CA 92708
Attention: Larry Roberson, Senior Contracts Administrator
Copy: Hardat Khublall, Project Manager

Notices shall be mailed to CONSULTANT at:

ARCADIS U.S., INC.
320 Commerce, Suite 200, Irvine, CA 92602
Attention: Harmik Aghanian, Associate Vice President/Project Manger
Copy: Christine A. Cotton, Senior Vice President/Principal-in-Charge

All communication regarding the Scope of Work, will be addressed to the Project Manager. Direction from other OC SAN's staff must be approved in writing by OC SAN's Project Manager prior to action from the CONSULTANT.

14. TERMINATION

OC SAN may terminate this Agreement at any time, without cause, upon giving 30 days written notice to the CONSULTANT. In the event of such termination, the CONSULTANT shall be entitled to compensation for work performed on a prorated basis through and including the effective date of termination.

The CONSULTANT shall be permitted to terminate this Agreement upon 30 days written notice only if the CONSULTANT is not compensated for billed amounts in accordance with the provisions of this Agreement, when the same are due.

Notice of termination shall be mailed to OC SAN and/or the CONSULTANT in accordance with Section 13 - NOTICES.

15. DOCUMENTS AND STUDY MATERIALS

The documents and study materials for this project shall become the property of OC SAN upon the termination or completion of the work. The CONSULTANT agrees to furnish to OC SAN copies of all memoranda, correspondence, computation and study materials in its files pertaining to the work described in this Agreement, which is requested in writing by OC SAN.

16. COMPLIANCE

A. Labor

The CONSULTANT certifies by the execution of this Agreement that it pays employees not less than the minimum wage as defined by law, and that it does not discriminate in its employment with regard to race, color, religion, sex or national origin; that it is in compliance with all federal, state and local directives and executive orders regarding non-discrimination in employment; and that it agrees to demonstrate positively and aggressively the principle of equal opportunity in employment.

B. Air Pollution

The CONSULTANT and Subconsultants and contractors shall comply with all applicable federal, state and local air pollution control laws and regulations.

C. Iran Contracting Act

The CONSULTANT and Subconsultants and contractors shall comply with the Iran Contracting Act of 2010 (Public Contract Code sections 2200-2208).

17. AGREEMENT EXECUTION AUTHORIZATION

Both OC SAN and the CONSULTANT do covenant that each individual executing this document by and on behalf of each party is a person duly authorized to execute agreements for that party.

18. DISPUTE RESOLUTION

In the event of a dispute arising between the parties regarding performance or interpretation of this Agreement, the dispute shall be resolved by binding arbitration under the auspices of the Judicial Arbitration and Mediation Service (“JAMS”), or similar organization or entity conducting alternate dispute resolution services.

19. ATTORNEY'S FEES, COSTS AND NECESSARY DISBURSEMENTS

If any action at law or in equity or if any proceeding in the form of an Alternative Dispute Resolution (ADR) is necessary to enforce or interpret the terms of this Agreement, the prevailing party shall be entitled to reasonable attorney's fees, costs and necessary disbursements in addition to any other relief to which it may be entitled.

20. PROGRESS REPORTS

Monthly progress reports shall be submitted for review by the 10th day of the following month and must include as a minimum: 1) current activities, 2) future activities, 3) potential items that are not included in the Scope of Work, 4) concerns and possible delays, 5) percentage of completion, and 6) budget status.

21. WARRANTY

The CONSULTANT shall perform its services in accordance with generally accepted industry and professional standards. If, within the 12-month period following completion of its services, OC SAN informs the CONSULTANT that any part of the services fails to meet those standards, the CONSULTANT shall, within the time prescribed by OC SAN, take all such actions as are necessary to correct or complete the noted deficiency(ies).

22. INDEMNIFICATION

To the fullest extent permitted by law, the CONSULTANT shall indemnify, defend (at the CONSULTANT's sole cost and expense and with legal counsel approved by OC SAN, which approval shall not be unreasonably withheld), protect and hold harmless OC SAN and all of OC SAN's officers, directors, employees, consultants, and agents (collectively the "Indemnified Parties"), from and against any and all claims, damages, liabilities, causes of action, suits, arbitration awards, losses, judgments, fines, penalties, costs and expenses (including, without limitation, attorneys' fees, disbursements and court costs, and all other professional, expert or the CONSULTANT's fees and costs and OC SAN's general and administrative expenses; individually, a "Claim"; collectively, "Claims") which may arise from or are in any manner related, directly or indirectly, to any work performed, or any operations, activities, or services provided by the CONSULTANT in carrying out its obligations under this Agreement to the extent of the negligent, recklessness and/or willful misconduct of the CONSULTANT, its principals, officers, agents, employees, the CONSULTANT's suppliers, the CONSULTANT, Subconsultants, contractors, and/or anyone employed directly or indirectly by any of them, regardless of any contributing negligence or strict liability of an Indemnified Party. Notwithstanding the foregoing, nothing herein shall be construed to require the CONSULTANT to indemnify the Indemnified Parties from any Claim arising solely from:

(A) the active negligence or willful misconduct of the Indemnified Parties; or

(B) a natural disaster or other act of God, such as an earthquake; or

(C) the independent action of a third party who is neither one of the Indemnified Parties nor the CONSULTANT, nor its principal, officer, agent, employee, nor the CONSULTANT's supplier, the CONSULTANT, Subconsultant, contractor, nor anyone employed directly or indirectly by any of them.

Exceptions (A) through (B) above shall not apply, and the CONSULTANT shall, to the fullest extent permitted by law, indemnify the Indemnified Parties, from Claims arising from more than one cause if any such cause taken alone would otherwise result in the obligation to indemnify hereunder.

The CONSULTANT's liability for indemnification hereunder is in addition to any liability the CONSULTANT may have to OC SAN for a breach by the CONSULTANT of any of the provisions of this Agreement. Under no circumstances shall the insurance requirements and limits set forth in this Agreement be construed to limit the CONSULTANT's indemnification obligation or other liability hereunder. The terms of this Agreement are contractual and the result of negotiation between the parties hereto. Accordingly, any rule of construction of contracts (including, without limitation, California Civil Code Section 1654) that ambiguities are to be construed against the drafting party, shall not be employed in the interpretation of this Agreement.

23. DUTY TO DEFEND

The duty to defend hereunder is wholly independent of and separate from the duty to indemnify and such duty to defend shall exist regardless of any ultimate liability of the CONSULTANT and shall be consistent with Civil Code Section 2782.8. Such defense obligation shall arise immediately upon presentation of a Claim by any person if, without regard to the merit of the Claim, such Claim could potentially result in an obligation to indemnify one or more Indemnified Parties, and upon written notice of such Claim being provided to the CONSULTANT. Payment to the CONSULTANT by any Indemnified Party or the payment or advance of defense costs by any Indemnified Party shall not be a condition precedent to enforcing such Indemnified Party's rights to indemnification hereunder. In the event a final judgment, arbitration, award, order, settlement, or other final resolution expressly determines that the claim did not arise out of, pertain to, or relate to the negligence, recklessness, or willful misconduct of the CONSULTANT, to any extent, then OC SAN will reimburse the CONSULTANT for the reasonable costs of defending the Indemnified Parties against such claims.

The CONSULTANT's indemnification obligation hereunder shall survive the expiration or earlier termination of this Agreement until such time as action against the Indemnified Parties for such matter indemnified hereunder is fully and finally barred by the applicable statute of limitations.

24. CONSULTANT PERFORMANCE

The CONSULTANT's performance shall be evaluated by OC SAN. A copy of the evaluation shall be sent to the CONSULTANT for comment. The evaluation, together with the comments, shall be retained by OC SAN and may be considered in future CONSULTANT selection processes.

25. COMPLIANCE WITH OC SAN POLICIES AND PROCEDURES

The CONSULTANT shall comply with all OC SAN policies and procedures including Attachment "L" - Contractor Safety Standards to this Agreement, as applicable, all of which may be amended from time to time.

26. CLOSEOUT

When OC SAN determines that all work authorized under the Agreement is fully complete and that OC SAN requires no further work from the CONSULTANT, or the Agreement is otherwise terminated or expires in accordance with the terms of the Agreement, OC SAN shall give the CONSULTANT written notice that the Agreement will be closed out. The CONSULTANT shall submit all outstanding billings, work submittals, deliverables, reports or similarly related documents as required under this Agreement within 30 days of receipt of notice of Agreement closeout.

Upon receipt of the CONSULTANT's submittals, OC SAN shall commence a closeout audit of the Agreement and will either:

i. Give the CONSULTANT a final Agreement Acceptance: or

ii. Advise the CONSULTANT in writing of any outstanding item or items which must be furnished, completed, or corrected at the CONSULTANT's cost.

The CONSULTANT shall be required to provide adequate resources to fully support any administrative closeout efforts identified in this Agreement. Such support must be provided within the timeframe requested by OC SAN.

Notwithstanding the final Agreement Acceptance the CONSULTANT will not be relieved of its obligations hereunder, nor will the CONSULTANT be relieved of its obligations to complete any portions of the work, the non-completion of which were not disclosed to OC SAN (regardless of whether such nondisclosures were fraudulent, negligent, or otherwise); and the CONSULTANT shall remain obligated under all those provisions of the Agreement which expressly or by their nature extend beyond and survive final Agreement Acceptance.

Any failure by OC SAN to reject the work or to reject the CONSULTANT's request for final Agreement Acceptance as set forth above shall not be deemed to be acceptance of the work by OC SAN for any purpose nor imply acceptance of, or agreement with, the CONSULTANT's request for final Agreement Acceptance.

27. ENTIRE AGREEMENT

This Agreement constitutes the entire understanding and agreement between the parties and supersedes all previous negotiations between them pertaining to the subject matter thereof.

IN WITNESS WHEREOF, this Agreement has been executed in the name of OC SAN and the CONSULTANT by their respective duly authorized officers as of the day and year first written above.

ARCADIS U.S., INC.

By _____ _____
Date

_____
Printed Name & Title

ORANGE COUNTY SANITATION DISTRICT

By _____ _____
Chad P. Wanke Date
Board Chairman

By _____ _____
Kelly A. Lore Date
Clerk of the Board

By _____ _____
Ruth Zintzun Date
Purchasing & Contracts Manager

Attachments: Attachment "A" – Scope of Work
Attachment "B" – Labor Hour Matrix
Attachment "C" – Not Attached
Attachment "D" – Allowable Direct Costs
Attachment "E" – Fee Proposal
Attachment "F" – Not Used
Attachment "G" – Not Attached
Attachment "H" – Not Used
Attachment "I" – Cost Matrix and Summary
Attachment "J" – Not Attached
Attachment "K" – Minor Subconsultant Hourly Rate Schedule
Attachment "L" – Contractor Safety Standards
Attachment "M" – Iran Contracting Act Verification

LDR

Edinger Pump Station Replacement, Project No. 11-33

Professional Design Services Agreement

Attachment A – Scope of Work

TABLE OF CONTENTS

1. PROJECT REQUIREMENTS

1.0 SUMMARY

1.0.1 PROFESSIONAL DESIGN ENGINEERING SERVICES

A. Provide professional design engineering services for the project described herein including the following:

1. Preliminary Design Report
2. Permitting assistance
3. Preparation of bid documents

1.1 BACKGROUND

The existing Edinger Pump Station (**Exhibit 19A – Existing Edinger Pump Station Record Drawings**) is an underground pump station that was built in 1965 and is located in the City of Huntington Beach. The majority of the existing pump station is in the public right of way immediately south of the Westminster Channel, approximately 150 feet east of the intersection of Edinger Avenue and Graham Street. A small portion is in an easement granted by Orange County Flood Control District (OCFCD) in 1965. Existing gravity facilities in the area include a 36-inch influent pipe that conveys flow into the wet well, one diversion manhole located immediately downstream of the pump station and two vitrified clay pipes (15 and 24 inches in diameter) that flow east along Edinger Avenue downstream of the pump station.

Although reliable, the pump station is nearing the end of its useful life. For instance, the electrical and control equipment do not meet current safety standards, the existing pump capacity is not able to meet anticipated future peak wet weather flows (see **Exhibit 19B – Project FR12-035 Record Drawings** for information on relatively recent pump replacement work), condition assessment of the wet well indicated a remaining useful life of approximately 10-15 years, and a condition assessment of the dry well structure revealed a high likelihood of active corrosion of the rebar. See **Exhibit 19C – Edinger Pump Station Rehabilitation Study Final Report (Appendix A.2)** for a comprehensive evaluation of the existing pump station.

For these reasons and safety concerns inherent to working within the public street, OC SAN has decided to construct a new pump station outside the public right of way (for reference - see Figure 1).

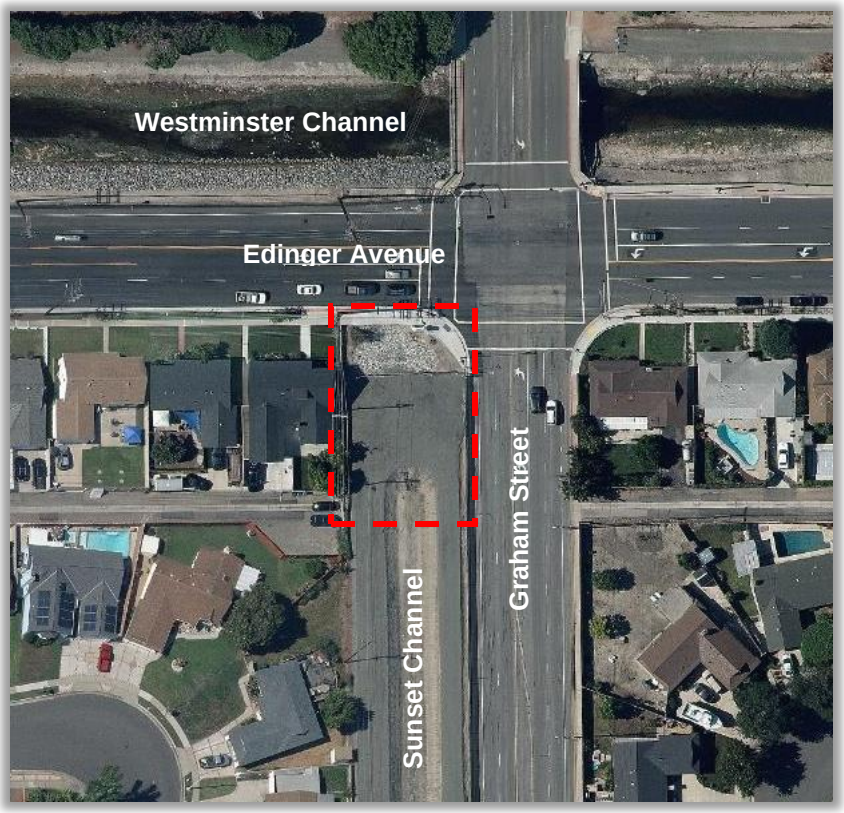

Figure 1 – Future Edinger Pump Station Location

1.2 GENERAL PROJECT DESCRIPTION

The project consists of replacing the existing Edinger Pump Station with a new pump station located on the southwest corner of the intersection of Edinger Avenue and Graham Street, adjacent to the Sunset Channel, an active flood control facility which is also owned and operated by OCFCD. As you can see in Figure 1, the future pump station site is immediately adjacent to residential homes in the area. Currently, the site is predominantly used by OCFCD to access the Sunset Channel for emergency operations as well as regular maintenance activities. Once the pump station is constructed, it is the intent of OCFCD to continue this practice. The new pump station will consist of an underground dry well/wet well and an above grade electrical building. Reconfiguration of the upstream gravity sewers will be necessary to convey flow to the newly constructed pump station. Dual force mains will be constructed and will connect to a new discharge structure downstream. Additional facilities include civil, mechanical, electrical, instrumentation, and control systems necessary for a fully functioning pump station. Except for constructing flood control channel slope stability improvements, on-site improvements are minimal and are expected to match the functionality of the existing site components (fencing, gates, softscape, etc.). Once the new pump station is built the existing pump station will be demolished and removed in its entirety.

All OC SAN projects are divided into six phases. The CONSULTANT shall provide engineering services for all Project Elements listed in this Scope of Work for the following Phases:

Phase 1 – Project Development (Not included in this Scope of Work)

Phase 2 – Preliminary Design

Phase 3 – Design

Phase 4 – Construction (Not included in this Scope of Work)

Phase 5 – Commissioning (Not included in this Scope of Work)

Phase 6 – Close Out (Not included in this Scope of Work)

1.3 DESCRIPTION OF PROJECT ELEMENTS

Detailed descriptions of the Project Elements are presented below.

1.3.1 PROJECT ELEMENT 1 – UNDERGROUND PUMP STATION

A. The underground pump station element includes a reinforced concrete structure that consist of a dry well and a wet well. **See Exhibit 19D – Edinger Pump Station Conceptual Design Drawings** showing the proposed pump station layout, prepared as part of the Edinger Pump Station Rehabilitation Study (PS15-02). The structure must be able to withstand AASHTO H-20 loading profile that includes static and dynamic loading from large maintenance and construction vehicles. Flowrates (MGD) are shown in the table below:

2017 MDWF	2040 ADWF	2040 PDWF	2040 PWWF
0.3	1.0	1.6	4.0

The following list of components provided for both the dry well and the wet well is not meant to be all inclusive; simply to provide the CONSULTANT with an overview of the equipment necessary to design a fully functioning pump station.

B. Dry well

1. The dry well will be sized to house the following components and provide the necessary access required for operations and maintenance:

a) Mechanical:
- Main sewage pumps
  - Pump configuration: two duty pumps and one standby pump; all the same size
- Sump pumps
  - Submersible, non-clog sewage pumps with chopper blades
- Suction, discharge, header piping, and associated valves
- Bridge crane
- Ventilation equipment
- Potable water service
- Shower and eye wash station
- Drainage piping
- Supporting infrastructure such as stairs, guard rails, and tie-off points
- Access hatch for entry and exit
- Grade level access to the dry well for equipment removal

b) Electrical
- Pump Motors
  - Pump motors will be controlled by VFDs with constant speed bypass
- Lighting
- Wires, switches, panels, and all other electrical components needed to power and support mechanical and control equipment

c) Instrumentation:

- Sump pump control panel
- Flow meter
- Gas monitoring equipment
- Fire alarm system
- Cleaning cycle recycle line flow meter

C. Wet Well

1. Self-cleaning trench type wet well

2. The wet well will house the following equipment and provide the necessary access requirements for operations and maintenance:

a) Mechanical:

- Pump suction intakes
- Suction piping
- Pipe penetrations include drain lines from the force mains to the wet well and bleeder lines from the pumps
- Manhole covers

b) Instrumentation:

- Level sensors
- Gas monitoring equipment
- Control panel for a manually initiated cleaning cycle

D. Assumptions for Level of Effort

1. For estimating the predesign and design phase levels of effort, the CONSULTANT shall make the following assumptions regarding this project element:

a. The underground pump station structure shall be designed to have a design life of 75 years.

b. Groundwater depth is 20 feet below grade (**Exhibit 19E – Edinger Pump Station Geotechnical Evaluation**) The on-site controls will be designed so the pumps can be operated from the electrical room; access to the electrical room shall be located at least 1-foot above the 100-year flood plain limits (8.0 ft) and shall be at a minimum elevation of 13 ft. North American Vertical Datum of 1988 (NAVD88)

1.3.2 PROJECT ELEMENT 2– ELECTRICAL BUILDING, ON-SITE TRANSFORMER, AND STANDBY POWER

A. Construct an at-grade electrical building to house the pump station electrical and control equipment and a restroom that is accessible through an exterior entrance (unlike the one shown on the conceptual drawing). The proposed location of the electrical building and transformer are shown in **Exhibit 19D – Edinger Pump Station Conceptual Design Drawings**; however, the final location will be determined during preliminary design. A preliminary list of the electrical and control equipment that will be included is shown below and preliminary sizing of the equipment is shown on the single line diagram in **Exhibit 19F – Edinger Pump Station Conceptual Electrical Drawings**:

1. Electrical

a. Motor control center (MCC)

(1) MCCs will be double-ended and arc-resistant with a key-interlocked, main-tie-tie-main breaker configuration

b. Uninterruptible power supply (UPS)

(1) UPS panel will feed loads such as the PLCs, RIOs, HMI, network communication equipment, CCTV, fire alarm system, and security systems. The UPS will have an external bypass switch

c. Variable frequency drives (VFDs)

(1) The VFDs will be fitted with anti-ragging technology

d. Portable generator connection

e. Lighting

f. Convenience receptacles

2. Instrumentation:

a. ABB distributed control system (DCS)

b. Local human machine interface (HMI)

c. Communications

(1) Communications shall have a dedicated service from the pump station to the OC SAN ICS network through a dedicated connection from the local telecom provider and cellular communications.

(2) Second cellular communication connection for closed circuit television (CCTV)

(3) Telephone line

d. CCTV

e. Fire alarm and security systems

(1) The fire protection system shall have the ability to remotely notify OC SAN

3. Mechanical:

a. Air conditioning and ventilation system

(1) Weatherproof convenience receptacle will be provided near HVAC equipment and associated controls

b. Restroom fixtures

(1) Restroom fixtures will include a toilet and a sink

(2) The drainpipes will be connected to an off-site gravity sewer isolated from wet well pressures and/or surcharged gravity sewers

B. On-site transformer

1. Southern California Edison (SCE) will supply incoming power to the pump station via its own transformer.

C. On-site Standby Power

D. Assumptions for Level of Effort

1. For the purpose of estimating the predesign and design phase levels of effort, the CONSULTANT shall make the following assumptions regarding this project element:

a. The electrical building structure shall have a design life of 75 years

b. The electrical building shall be a masonry block building

c. On-site power generation solution will consist of a diesel standby generator housed in a sound attenuated weatherproof enclosure with a base fuel tank.

1.3.3 PROJECT ELEMENT 3 – DUAL FORCE MAINS, DISCHARGE STRUCTURE, AND GRAVITY SEWERS

A. The preliminary alignment and location of the upstream conveyance pipelines and manholes and the downstream force mains and discharge structure is shown in **Exhibit 19D – Edinger Pump Station Conceptual Design Drawings**.

1. 260 feet of dual 16-inch HDPE force mains. The preliminary profile of the force mains is shown in **Exhibit 19G – Force Main Profile**.

2. Reinforced concrete discharge structure that accommodates the discharge of both force mains and an air jumper

a. Discharge structure shall be able to convey flow to one or both downstream gravity sewers.

3. 250 feet of 30-inch VCP. Preliminary profile of the gravity main is shown in **Exhibit 19H – Gravity Sewer Profile**.

4. Four 72-inch manholes

a. One manhole shall be located on-site, out of the flow of traffic. The manhole will serve as an upstream intercept point for bypassing the wet well as well as a discharge point for recycle line during the wet well cleaning cycle.

1.3.4 PROJECT ELEMENT 4 – FLOOD CONTROL CHANNEL MODIFICATIONS

A. Fill approximately 40 feet (estimated to be 800 cubic yards) of the Sunset Channel and install an engineered slope stability solution. The location and approximate amount of fill is shown on **Exhibit 19D – Edinger Pump Station Conceptual Design Drawings**. The flood control channel slopes will need to withstand repeated heavy loading (AASHTO H-20) from large maintenance vehicles within approximately two feet of the top of slope.

B. Assumptions for Level of Effort

1. For the purpose of estimating the predesign and design phase levels of effort, the CONSULTANT shall make the following assumptions regarding this project element:

a. Soil from the pump station excavation site may be used as fill

1.3.5 PROJECT ELEMENT 5 – ODOR CONTROL FACILITIES

A. Passive on-site odor control facility to mitigate fugitive odors from pump station wet well.

B. Assumptions for Level of Effort

1. For the purpose of estimating the predesign and design phase levels of effort, the CONSULTANT shall make the following assumptions regarding this project element:

a. An HDPE air jumper shall be installed in the same trench as the force main and be connected to the downstream discharge structure.

1.3.6 PROJECT ELEMENT 6 – DEMOLISH AND REMOVE EXISTING PUMP STATION AND GRAVITY SYSTEM

A. Demolish and remove all existing pump station structures, equipment and supporting facilities. The record drawings for the existing pump station can be found in **Exhibit 19A – Existing Edinger Pump Station Record Drawings**.

B. Abandon in place the existing upstream gravity facilities from the pump station to the tie-in point with the new pipe connections

C. Assumptions for Level of Effort

1. For the purpose of estimating the predesign and design phase levels of effort, the CONSULTANT shall make the following assumptions regarding this project element:

a. The demolition and removal of the existing pump station will occur following complete commissioning and testing of the new pump station

b. All existing pump station facilities and supporting infrastructure will be removed in their entirety and disposed of off-site per applicable regulatory requirements

c. Excavation area will be backfilled per the more stringent of either the OCFCD or City of Huntington Beach requirements

1.3.7 PROJECT ELEMENT 7 – PUMP STATION SITE AND SECURITY IMPROVEMENTS

A. Pump Station Site and Security Improvements

1. Perimeter fence and gates
2. Civil
    a. Improvements to adjacent hardscape (curb, gutter, driveway access, etc.)
3. Lighting
4. Security Equipment

B. Assumptions for Level of Effort

1. For the purpose of estimating the predesign and design phase levels of effort, the CONSULTANT shall make the following assumptions regarding this project element:

    a. Perimeter fencing, gates, and landscaping (gravel overlay) shall match existing

1.3.8 PROJECT ELEMENT 8 – SUNSET CHANNEL ACCESS GATE

A. Gate, concrete driveway, and turn around area, allowing access to the Sunset Channel north of the intersection of Meadowlark Street and Graham Street (see Figure 2, below).

Figure 2 – Access Gate North of Meadowlark Drive and Graham Street Intersection

B. Assumptions for Level of Effort

1. For the purpose of estimating the predesign and design phase levels of effort, the CONSULTANT shall make the following assumptions regarding this project element:

a. The gravel, gate, and fencing should match existing site materials

b. Mimic the operation and size of the gate at the new pump station site

c. Grading of the site adjacent to the newly constructed gate will be necessary to design a gradual transition from the street elevation to the maintenance road elevation

1.3.9 COORDINATION WITH OTHER PROJECTS

A. The following projects may impact or require coordination with this project:

1. J-120 Process Control Systems Upgrades

2. PS18-06 Go/No-Go Lights and Signage

1.4 DESIGN CONSIDERATIONS

The following design considerations shall be carried from Preliminary Design through Final Design.

1.4.1 TECHNOLOGY AND CONFIGURATION CHOICES

The project elements in this facility shall be achieved using proven technologies. Alternative means of accomplishing the project elements must be reviewed and accepted by OC SAN prior to detailed evaluation. All alternative technologies proposed should be currently operating in other wastewater treatment facilities of similar capacity.

1.4.2 DESIGN DECISIONS

Design decisions shall be agreed upon by OC SAN prior to any work being performed by the CONSULTANT in preliminary and detailed design. All design decisions shall be documented.

1.4.3 DESIGN SELECTION CRITERIA

A. Design selection shall consider construction, lifecycle, operation, and maintenance costs as well as process benefits and overall quality. When design recommendations are presented to OC SAN, the design selection criteria shall be clearly identified with the recommendation.

B. The cost estimate shall consist of a life cycle cost analysis for the options proposed, including costs for engineering, construction, start-up, and operational and maintenance, and future rehabilitation and replacement.

1.4.4 PROJECT ELEMENT DESCRIPTION REVISIONS

The CONSULTANT shall review and revise the Project Element Descriptions using track changes at the end of Preliminary Design and at each design submittal. Changes shall be submitted to OC SAN for review.

1.4.5 COST ESTIMATES

A. The construction cost estimate shall be as described in Engineering Design Guidelines Section 01.4.6 included as **Exhibit 17 - OC SAN Engineering Design Guidelines and Standards** – Available online at https://www.ocsd.com/about-us/transparency/document-central/-folder-917.]

1.5 PROJECT SCHEDULE

1.5.1 GENERAL

A. OC SAN will issue a general Notice to Proceed (NTP) for the sole purpose of authorizing commencement of the Agreement. The CONSULTANT shall execute the Scope of Work in Attachment “A” to the Agreement as described in the table below that lists the time frames associated with each major project deliverable and with OC SAN’s review and approval of those deliverables. The CONSULTANT shall comply with the deadlines indicated in that table.

B. OC SAN's Project Manager will issue a Preliminary Design NTP. OC SAN's Project Manager will also issue a Final Design NTP upon OC SAN's acceptance of the final Preliminary Design Report.

C. The time frames specified below are used to estimate the actual milestone dates based on the assumed NTP date, as shown in **Exhibit 8 - Project Schedule Calculation**.

D. OC SAN will consider an alternative CONSULTANT-proposed schedule provided it is consistent with OC SAN resources and schedule constraints and adds value to OC SAN.

PROJECT MILESTONE AND DEADLINES	
MILESTONE	**DEADLINE**
Notice to Proceed (Kickoff Meeting)	The kickoff meeting will be scheduled to coincide with the Preliminary Design NTP.
Preliminary Design NTP	
Submit draft Preliminary Design Report (PDR)	**180** workdays from the Preliminary Design NTP. The CONSULTANT shall establish a schedule with the OC SAN's Project Manager for separately submitting working drafts of each Design Memo for OC SAN review prior to completing the draft PDR. This schedule shall factor in the logical sequence for completing the memos as well as both CONSULTANT and OC SAN's resources.
OC SAN Review of draft PDR	**20** workdays from receipt of Draft PDR
Submit Final Preliminary Design Report	**30** workdays from receipt of OC SAN comments on Draft PDR.
OC SAN Review of Final PDR	**20** workdays from receipt of Final PDR
Final Design NTP	The CONSULTANT's schedule shall allow **one** working day from completion of OC SAN's review of final PDR to receipt of the Final Design Phase NTP.
Progress Workshop Substitution for DS1	**60** workdays from Design Phase NTP.
OC SAN Review of Progress Workshop Substitution for DS1	**20** workdays from receipt of DS1
Submit Design Submittal 2 (DS2)	**80** workdays from receipt of OC SAN comments on Progress Workshop Substitution for DS1.
OC SAN Review of DS2	**20** workdays from receipt of DS2
Submit Design Submittal 3 (DS3)	**70** workdays from receipt of OC SAN comments on DS2.
OC SAN Review of DS3	**20** workdays from receipt of DS3
Submit Final Design Submittal (FDS)	**60** workdays from receipt of OC SAN comments on DS3. The CONSULTANT shall stop work upon submission of DS3, except as required to participate in OC SAN meetings, until receipt of OC SAN comments on DS3.
OC SAN Review of FDS	**20** workdays from receipt of FDS
Final Technical Specifications and Plans	**20** workdays from receipt of OC SAN comments on FDS.

2. PHASE 2 – PRELIMINARY DESIGN

The preliminary design phase will define the project. The final deliverable of this phase will be a Preliminary Design Report (PDR) with the basis of design for all elements of the project.

2.0 PRELIMINARY DESIGN EXECUTION

2.0.1 MAJOR DECISIONS

A. The CONSULTANT shall plan the resolution of major decisions through the following process:

1. Identify major decisions early and the timing required to prevent impacts to the project schedule.

2. Identity the decision-making method that will be used to gain OC San concurrence and provide appropriate opportunities for OC San provide input.

3. Identify and schedule at the start of the project the workshops, technical design meetings and focused meetings where major decisions will be made and include a list of required attendees.

B. These decisions should be tracked on the Decision Log and flagged as a major decision.

2.1 PREDESIGN EVAULATION STUDIES (NOT USED)

2.2 PRELIMINARY DESIGN PRODUCTION

2.2.1 GENERAL

A. Preliminary Design Report (PDR) production involves the preparation of design memos, drawings, calculations, and other supporting material resulting in the PDR.

2.2.2 DESIGN MEMOS

A. The CONSULTANT shall produce Design Memos as indicated below in accordance with **Exhibit 1 - Preliminary Design Report Requirements**. The CONSULTANT shall discuss the combining of design memos with OC SAN and develop a design memo submittal list.

☒**Pump Station Basis of Design**
Design Configuration
☒Redundancy
☒Monitoring and Sampling
☒Process Flow Diagrams
☒Operating Philosophies
☒Site and Facility Layouts
☒Preliminary Load Criticality Ranking Table

☒**Hydraulic Modeling**
Note: Build a hydraulic model in InfoWorks ICM that includes the upstream gravity system, pumps, force mains, discharge structure, and connection to downstream facilities.
☒Hydraulic Analysis
☒Hydraulic Profile

☒**Demolition**
☒Describe Demolition Requirements
☒Demolition List
☒Demolition Plans
☒Demo EID

☐**Rehabilitation Requirements**

☒**Geotechnical Data Report**
☒Review of Existing Data - Preliminary Geotechnical Report
☒Geotechnical Data Report and Recommendations

☒**Civil Design Parameters**

☒General Civil
☒Drainage Requirements
☒Corrosion Protection Requirements
☒**Utility Requirements**
☒**Structural Design Parameters**
☒**Architectural Design Parameters**
Note: Develop one alternative concepts for review and acceptance
☒**Process Mechanical Design Parameters**
☒Process Mechanical Design Parameters
☒Odor Control Facilities
☒**Building Mechanical Design Parameters**

☒**Electrical**
☒Codes/standards. Brief description of electrical system. Electrical drawings.
☐Identify Electrical System Impacts
☐Report – Data Collection and Verification
☒Preliminary Load List
☒Preliminary Standby Power Requirements
☐ETAP – Preliminary Short Circuit Analysis and Load Flow/Voltage Drop Studies
☒ETAP – Provide Data. OC SAN will perform ETAP studies
☐Preliminary Analysis for cable pull calcs, ductbank cable derating, cable tray fill calcs.
☒Hazardous Area Classification Requirements
☒**Instrumentation and Control**
☒Instrumentation and Control System
☐Specialty Safety Systems
☒Preliminary SAT
☐PLC and RIO Panel Location Map
☒CCTV Coverage Map

☐**Plant Utility Investigation Findings**
☐**Vibration Analysis**
☒**Collections Basis of Design**
☒Codes and Standards
☒Pipeline Basis of Design
☒Manhole Basis of Design
☒Force main Basis of Design
☐**Collections Rehabilitation Alternatives**
☐Pipeline Rehabilitation
☐Manhole Rehabilitation
☒**Collections Pipeline Design**
Note: Assume 2 viable alignment options
☒Design Memo Items 1- 12
☐Open-cut vs. Trenchless Technologies
☐Trenchless Technologies at Major Closings
☒**Collections Utility Investigation Findings**
☒**Collections Conceptual Traffic Control**
☒AHJ and Traffic Control Identification
☒Basis for Traffic Control Strategy
☐Traffic Analysis

☒Traffic Control Plans

☒**Design Safety Requirements**

☒Design Safety Requirements

☒Identify all potential project specific safety issues

☒Identify all potential Cal OSHA and OC SAN safety issues

☒Identify construction safety hazards

☒Use Sample Full Project Safety Review Plan to verify safety elements

☒Risk Management Check List to verify safety elements

☐HAZOP

☒**Public Impacts**

☒**Environmental and Regulatory Requirements**

☒CEQA Part of Programmatic EIR

☐CEQA work consists of**…**

☐Determine project environmental and regulatory requirements

☐Matrix of CEQA and Permit Requirements

☒Mitigation, Monitoring and Reporting List

☒**Permit Requirements**

☒List of Permits Required

☐Oil Well Abandonment

☒**Stormwater Requirements**

☒**Hazardous Material Survey, Mitigation and Control**

☒**Maintainability**

☒Define Maintainability Requirements

☒Maintainability Requirements Plan Drawings

☒Define Maintainability Rules

☐Define Maintainability Information for Project Specific Equipment

☒**Facility Operation and Maintenance**

☒Facility O&M Requirements

☒Operating Philosophies

☐Preliminary Assessment of O&M Staffing Requirements

☒**Implementation Plan**

☒Identification of Adjacent Projects

☒Preliminary Commissioning Checklist

☒Preliminary Construction Sequencing Plan

☒Review of Constructability Issues

☒Temporary Handling of Flow

☒**Construction Odor Monitoring and Mitigation**

☒**Preliminary Technical Specification List**

2.2.3 PRELIMINARY DESIGN DRAWINGS

A. The CONSULTANT shall produce the following Preliminary Design Report drawings in accordance with **Exhibit 1 - Preliminary Design Report Requirements.**

☒General

☒Demolition

☒Civil

☒Structural

☒Architectural

☒Mechanical

☒Electrical

☒Instrumentation and Control

2.2.4 PRELIMINARY DESIGN REPORT (PDR) PRODUCTION, CONTENTS AND ORGANIZATION

A. Preliminary Design Report (PDR) Production involves the preparation of design memos, drawings, calculations, and other supporting material resulting in the PDR.

B. The CONSULTANT shall combine the materials described below into a draft PDR. The PDR shall be structured as outlined below, with the contents corresponding to the tasks listed in this Scope of Work.

Volume 1 – Preliminary Design Report Technical Memos
- **Executive Summary**
- **Design Memos**
  - Design Memo 1, 2, 3, etc.
  - List of Proposed Specification Sections

Volume 2 – Drawings (see Preliminary Design Drawings listed above)

Volume 3 – Submittal Documentation
- Calculations
- Equipment Data & Catalog Cuts
- Decision Log
- Meeting Minutes

C. The Executive Summary shall summarize the conclusions of the Memos included in the report, and specifically include a summary construction schedule and construction cost estimate, and life cycle cost.

D. The draft PDR and final PDR shall be submitted in searchable PDF format legible on-screen and as a hard copy. The number of hard copies is indicated in **Exhibit 9 - Deliverables Quantities**. The labeling and organization of the PDF submittal shall be in accordance with **Exhibit 14 - Bluebeam Designer Training for Submission**.

E. Each design memo shall be a separate file.

F. The OC SAN Project Manager may request that the CONSULTANT submit an electronic proof set of the Draft PDR and Final PDR prior to hard copy production to initially confirm that the submittal is ready for printing.

2.2.5 PRELIMINARY DESIGN COST ESTIMATE

A. The CONSULTANT shall provide a cost estimate for the associated PDR submittal indicated below in accordance with **Exhibit 1 - Preliminary Design Report Requirements**.

2.3 PRELIMINARY DESIGN ACTIVITIES

The following services shall be provided by the CONSULTANT or an appropriately qualified subconsultant. In any case, the CONSULTANT shall be responsible for managing all subconsultants, including reviewing their work products prior to submission to OC SAN.

2.3.1 HYDRAULIC MODELING

A. Using InfoWorks ICM, build a hydraulic model that, in conjunction with static hydraulic analysis, will determine the design of the pump station process components and depict performance of the pump station during dry and wet weather flow conditions. The model shall include the proposed upstream influent structures, wet well, pumps, force mains, and existing downstream gravity facilities. The CONSULTANT shall utilize the model to accurately determine the performance (i.e., calculate all design parameters necessary to determine if the system meets OC SAN and Hydraulic Institute Design Standards) of the system for up to three pump station alternative networks. The performance of the system shall consider multiple operating scenarios (example: two pumps running with one force main in service). OC SAN will provide a calibrated model of the existing infrastructure. Existing and future flow regimes for dry and wet weather flow will also be provided.

1. Model updates will include sewer-shed boundary revisions, local sewer connection point verification, physical attribute verification, etc. prior to using the model for design purposes.

2. Detailed calculations and graphic representation of the results of hydraulic runs for the complete range of flow conditions (including fill draw operation during low flow conditions) shall be submitted to facilitate review of the design by OC SAN personnel.

3. Description of hydraulic model updates, assumptions, discussion of results, and recommendations shall be included in the Hydraulic Modeling Design Memo.

B. Perform Computational Fluid Dynamic (CFD) Modeling to assess flow patterns within the Edinger Pump Station wet well. Results of the analysis will be used to 1) optimize the design of the upstream conveyance structures (manhole and influent pipe), wet well, and pump intakes during average and peak wet weather flow periods and 2) characterize flow patterns for multiple operating scenarios. The results will be evaluated based on compliance with Hydraulic Institute (HI) standards and recommendation provided. The analysis shall include the following scenarios:

1. Physical Design Analysis: two physical configurations x two flow scenarios

   a. Physical configurations include: preliminary and optimized design

   b. Flow scenarios include: average flow and peak wet weather flow

   CFD preliminary design is defined as the pump station wet well suction pipes, pumps, approach pipe, and upstream manhole configuration included in the draft Preliminary Design Drawings. Optimized design is defined as modification to the pump station model determined beneficial and practical following preliminary design CFD modeling results.

2. Pump Station Operation Analysis: two physical configuration and up to eight operating scenarios for each physical configuration

   a. Physical configuration: preliminary and optimized designs

   b. Operating scenarios (to be determined by the CONSULTANT) shall include: one pump, two pumps, cleaning cycle, low flow scenarios, various wet well level set points, etc.

A Pump Station CFD Modeling memorandum summarizing results of the preliminary and optimized designs under various flow conditions will be developed and included in the Final PDR. Results of the CFD model shall also be presented to OC SAN prior to finalizing the memorandum.

2.3.2 ON-SITE ODOR CONTROL EVALUATION

A. Evaluate the installation of an air jumper versus the installation an on-site passive vapor phase treatment system. The former shall take into consideration the available space for air movement in the downstream gravity system and prevent air from flowing back into the wet well. The latter alternative shall mimic the functionality (ease of installation, maintenance, etc.) of odor control systems designed for OC SAN Project 5-68 Newport Beach Pump Station Pressurization Improvements (**Exhibit 19I – Example Passive Odor Control System**) while taking into consideration the site spacing constraints. Perform a life cycle cost analysis and provide advantages and disadvantage of each alternative. Advantages and disadvantages include but are not limited to maintenance of the facilities, implications for downstream odor control efforts, and amount of treatment provided due to site constraints. Recommendations for the on-site odor control system shall be provided in the Odor Control Memo.

B. Provide H2S monitoring of the wet well or up to two upstream manholes for a period of two consecutive weeks.

2.3.3 ON-SITE STANDBY POWER ANALYSIS

A. Briefly review the use of an on-site diesel standby generator with sound-attenuated enclosure and a base fuel tank versus a lithium-ion battery storage system solution that, in conjunction with the storage available in the wet well, provides four hours of response time during dry weather conditions. The alternatives shall consider the unique pump station site constraints. The analysis methodology, assumptions, results, costs, and recommendations shall be included in the Electrical Design Memo.

2.3.4 WATERPROOFING APPROACH

A. Determine a waterproofing system based on the groundwater site characteristics, structure design life, constructability, and cost benefit. Review previous waterproofing systems used by OC SAN at other pump stations that have not been successful. Include recommendations in the Structural Design Memo.

2.3.5 SHORING AND DEWATERING METHODS

A. Evaluate whether increased amount of effort will be necessary during design to identify shoring and dewatering methods that will reduce the risk of settlement experienced by adjacent structures due to the deep excavation for the underground pump station structures. The evaluation will include a focus meeting with pertinent OC SAN construction personnel to ensure that all concerns and 'lessons learned' from previous pump station construction efforts are taken into consideration. The evaluation methodology, assumptions, results, and recommendations shall be provided in the Implementation Plan Design Memo.

2.3.6 TEMPORARY FACILITIES DURING CONSTRUCTION

A. In certain cases, construction sequencing constraints may require the contractor to construct a temporary facility to be used during a certain portion of the construction period. The CONSULTANT shall identify in what instances such facilities are required or reasonably warranted and present those instances with implementation plans and construction sequencing constraints to OC SAN for consideration. When such facilities are found to be either required or reasonably warranted, the CONSULTANT shall provide sufficiently detailed drawings and specifications to be included in the bid documents that bidders understand what is required to provide and potentially operate the temporary facilities and that the reliability and performance of the facilities will meet OC SAN's needs and reasonably mitigate construction risks. Examples of potential facilities include:

1. Bypass pumping and temporary bypass piping
2. Temporary odor control facilities.
    a. Monitoring of gravity system potentially impacted by construction
    b. Coordinate construction phase odor mitigation measures with OC SAN staff
    c. Design construction phase odor mitigation measures
3. Temporary noise abatement
4. Temporary connections to facilitate start up and testing
5. Temporary piping to phase the replacement of the utilities
6. Temporary standby power or electrical equipment to accommodate installation of SCE incoming power feed

B. The CONSULTANT shall design measures for the temporary handling of flows to be implemented by the contractor during construction considering OC SAN's goal of zero sewage spills.

C. If existing facilities such as valves, gates, stop logs, etc. are being used for diversions, include a plan for testing those facilities during Phase 3 – Design, to verify that they will function adequately for the purpose. If testing cannot be performed, the CONSULTANT shall identify the

risks associated with using the facility for bypassing, along with contingency plans and mitigation measures to be implemented if they are found not to function adequately during construction.

2.3.7 EASEMENTS, PROPERTY BOUNDARIES AND WORK AREA LIMITS

A. Unless otherwise directed, the CONSULTANT shall identify, survey, and show all property boundaries, and all existing and proposed easements, within and/or adjacent to the project boundaries.

B. The CONSULTANT shall show and explicitly identify the limits of work for all portions of the project, including any restrictions to the work allowed in any area, e.g., whether the area can be used for parking or laydown.

C. All survey research and survey field work shall be performed by a Professional Land Surveyor licensed by the State of California.

2.3.8 TOPOGRAPHIC SURVEY

A. The CONSULTANT shall conduct field and aerial surveys as required. Topographic information used on the construction plans shall be generated from a field survey and an aerial mapping process. OC SAN will not provide the aerial survey information to the CONSULTANT for use on the project.

B. Prior to beginning design, the CONSULTANT shall prepare the scope of work for field and aerial surveys required for all applicable project elements. OC SAN will establish both vertical and horizontal control for the project. The field survey shall be used to establish both horizontal and vertical alignment of the facilities and shall note all survey monuments, topographic features, property lines, and elevations. The basis of bearings and benchmarks shall be indicated on the drawings. Control shall meet or exceed NGVD 88 requirements and shall be based on the Plant Local Coordinate System and datum. The CONSULTANT's project schedule shall account for the above.

C. The aerial topography shall be required to meet the following criteria:

1. The final product shall be delivered in AutoCAD.

2. The aerial shall be based on the coordinate system.

3. The CAD file shall adhere to the CAD Manual. OC SAN shall be given the opportunity to review and comment on the compliance to the CAD Manual.

4. Site contours shall be in 1.0-foot intervals.

5. Contour and spot elevations shall be 3D; all other features shall be 2D.

6. The CONSULTANT shall include the survey-related documents with the Design Support Documentation portion of the Design Submittals as specified in the Engineering Design Guidelines, Appendix A, Section A.3.19 "Project Support Documentation (PDS)".

D. Control Surveys for Collection Systems

1. General: Topographical information used on the construction plans shall be generated from an aerial mapping process. The CONSULTANT shall provide for the aerial and field surveys necessary for the mapping process for all applicable Project Elements of the project Scope of Work and shall provide for the aerial mapping. Providing for the process includes paying for, coordinating, and designing the aerial and horizontal/vertical control surveying for the preliminary and final design. The CONSULTANT's responsibilities for the surveys include generating any subconsultant scopes of work, data interpretation and preliminary design. All survey work is to be done under the direction and control of a Professional Land Surveyor, licensed by the State of California.

2. Aerial Survey: he aerial photography shall have sufficient coverage for the digital topographic mapping. The photo scale of the aerial photography shall not be more than 100

feet per inch for pipeline work or 20-feet per inch for pump stations. Stereo pairs of photographs shall be furnished to OC SAN.

3. Phasing of Work: Other than the aerial and topographic survey work, the balance of the survey work shall not commence until the design phase of the project has been authorized or concurred to by OC SAN.

4. Field Survey Aerial: A field survey shall be used to establish both horizontal and vertical control for the project. Control shall meet or exceed NGVD 88 requirements and shall be based on California State Plan Coordinates (NAD 83) including the 1995 O.C. surveyor's adjustments. A sufficient number of points shall be used to accurately complete the digital topographic modeling. No less than five control points per stereo model shall be used.

5. Aerial Field Survey Inclusions: The field survey shall include all survey monuments, topographic features, easements, property lines, culture, and elevations on the plan and profile sheets. All covers, including the existing sewer manholes, storm drain manholes, and utility and valve vaults shall be identified and marked in the field.

6. OC SAN Review Aerial Survey Line: The general location and alignment of the survey line shall be submitted to OC SAN prior to performing the field survey. Survey work shall not commence until authorized or concurred to by OC SAN. The CONSULTANT shall be responsible for obtaining and paying for the field survey services.

7. Field Survey Base Line: The field survey shall establish a base line for construction purposes for pipeline work equal to or greater than 500-feet in length. The line will be used to define the proposed design, in terms of station and offset, and to establish the bearings for right-of-way. The survey line shall be set on 100-foot stations and shall be tied to the established aerial control. The field survey shall tie in all controlling monuments within the map limits and all street centerline intersections. The ties shall be express in both State Plane Coordinates and as station and offset.

8. Manhole Information: The field survey shall also include the measurement of the invert and manhole rim elevations of all existing sewers within the project reach. The size, orientation and invert of any pipe connections shall also be recorded.

9. Base Map: The base map index contours shall be spaced at 5 feet vertically and the immediate contours shall be spaced at 1 foot contour intervals. The mapping shall include digital topographic mapping. The digital format shall be compatible with OC SAN Graphic Information System. All surface features, including those hidden from aerial view shall be incorporated into the digital mapping.

10. Plan and Profile Sheets: The CONSULTANT shall prepare plan and profile sheets based upon the aerial mapping. The scale for plan and profile sheets shall be 1-inch equals 40 feet (1" = 40') horizontal and 1-inch equals 4 feet (1" = 4') vertical. An aerial photographic (photo strip) with the alignment shall be included. The plan view shall be separate from the photo strip. Intersections shall be adequately detailed at a scale of 1-inch equals 10 feet (1" = 10') or 1-inch equals 20 feet (1" = 20'). Manholes and other details shall be drawn at a scale that is adequate to provide clarity and sufficient detail for construction. The pump station construction drawings shall be drafted at scales of 1/8" = 1' to 1" = 20', as adequate, to allow for sufficient detail to be shown. The basis of bearings and benchmarks shall be indicated on the drawings,

11. Survey Note Submittal: The CONSULTANT shall submit two bound copies of all survey notes and data used to establish vertical and horizontal control. The information submitted shall be suitable for use to establish construction controls. If additional property and/or right-of-way are required, the CONSULTANT shall identify property and/or rights-of-way to be acquired.

2.3.9 GEOTECHNICAL INVESTIGATION

A. The CONSULTANT shall secure the services of a qualified Geotechnical Engineering firm to prepare a Geotechnical Data Report that addresses geotechnical concerns for all applicable Project Elements of the Scope of Work

B. Soil Explorations

1. The geotechnical services shall include exploratory work such as soil borings necessary to observe, test, classify soils, and monitor groundwater levels and potential groundwater pollutants of concern.

2. The number and spacing of borings shall be based on the geotechnical professional's interpretation of needs and recommendation.

a. If unexpected or unique soils are encountered, an adequate number of borings shall be taken to try and define the limits of the anomaly.

3. The depth of the borings shall be adequate to characterize the soils to a depth of at least 10 feet below the bottom of an excavation or any proposed sewer invert elevation.

4. Two soil borings shall be located on the future pump station site and shall have a minimum depth of 80 feet.

C. Soil Sampling

1. Soil samples for testing shall be collected as needed based upon the CONSULTANT's professional judgment. However, samples intervals shall not exceed 2-foot depth intervals alternating SPT and RING samples in each boring. If borings are taken near existing sewers, samples shall be taken and delivered to OC SAN for testing for coliforms to determine if sewers are leaking.

D. Ground Water Pump Testing

1. Conduct ground water pump testing to determine dewatering parameters for inclusion of the specifications.

2. Provide a complete specification for the abandonment of wells for areas where aquifers could be compromised. Potential abandonment methods for deep penetrations might consist of over drilling and fill with cement-bentonite grout slurry, or deep pressure grouting to create a concrete seal.

E. Groundwater Contamination Testing

1. Perform complete lab analysis for all pollutants regulated under OC SAN Local Discharge Limits (see page 33 of OC SAN's Wastewater Discharge Regulations Ordinance No. 53).

F. Soil Exploration Locations

1. The location of all soil explorations shall be plotted on a map and attached to the Geotechnical Report. Preferably, the explorations shall include survey coordinates consistent with the project survey. Complete logs of the soil profiles shall be included in the report.

2. Explorations shall be located strategically within the footprint of the proposed excavation or on the centerline of proposed pipeline alignments. A total of one boring, located on the future pump station site, shall be cased and converted into water level monitoring wells for use during construction according to local agency requirements. The CONSULTANT shall obtain all necessary permits for the installation of monitoring wells. The CONSULTANT shall also be responsible for abandoning the wells after the construction is completed and the monitoring wells are no longer useful.

3. Work conducted outside OC SAN's treatment plant shall comply with the storm water requirements of the local jurisdiction.

2.3.10 UTILITY INVESTIGATION

A. To better manage the risks associated with construction excavation, the CONSULTANT shall perform a thorough search of all utilities impacted by the work for all applicable Project Elements of this Scope of Work, regardless of size and all other facilities above or below ground. Utilities include all in-plant, utility company-owned and public agency-owned piping, duct banks, and other interferences. The search shall include utilities within the public right-of-way, and those located on private property impacted by the proposed project. The search shall include the records and plans of OC SAN and all respective public and private companies and utilities.

B. Review of OC SAN Records

1. OC SAN's "As-built/Record" plans may be incomplete or inaccurate with respect to the routing of individual utilities, pipelines, etc. in the vicinity of the project. The CONSULTANT shall check OC SAN records against those of the other agencies, companies, and utilities. These may include, but not be limited to, oil, gas, fuel, water, and sewer pipelines, traffic control facilities, telephone and electrical conduit and duct banks, storm drains, manholes, and other structures.

C. Review of Outside Agency Records

1. The CONSULTANT shall contact, in writing, all jurisdictional agencies and utility owners to inform them of OC SAN's project. The CONSULTANT shall request plans showing all the agencies or utility's facilities, pipelines, etc. in the project area. The CONSULTANT shall also request plans and schedules for all proposed construction in the project areas. The CONSULTANT shall develop a schedule to minimize project conflicts and/or coordinate OC SAN projects with local agencies.

2. The CONSULTANT shall personally visit each agency/company and search through all available plans, files, and documents. The CONSULTANT shall meet with applicable field staff from each agency to confirm the completeness of their research. Abandoned utilities shall also be considered.

3. The CONSULTANT shall document the contacts and information requested and received, including that from Underground Service Alert (USA). OC SAN shall be copied on all correspondence between the CONSULTANT and public and private agencies, and utility companies. The CONSULTANT shall submit a copy of all documentation to OC SAN with an itemized submittal letter. The CONSULTANT's Project Manager shall sign the transmittal cover letter and the cover letter shall confirm that the CONSULTANT has sent a representative to each agency/company/utility, performed on-site inspections for each utility, and has listed the utilities.

4. The CONSULTANT shall contact USA and request a Substructure listing for the project area.

D. On-Site Inspection

1. An on-site inspection shall be made in the project area. During the on-site inspection, a senior-level CONSULTANT representative shall walk the site accompanied by OC SAN's Project Engineer and Supervising Inspector. The CONSULTANT representative shall be experienced in the location and identification of utilities in the field. During the on-site inspection the CONSULTANT shall document all visible features that indicate utilities within the project area and compare them with the available utility plans.

E. Utilities for Adjacent Properties

1. The CONSULTANT shall investigate all utilities serving properties adjacent to the work, and submit a spreadsheet at the end of the utility research accounting for all anticipated utilities for OC SAN review, with the following information:

a. List all utilities anticipated or each adjacent property.

b. Indicate whether each such utility was found on as-built drawings of any agency, with an identification of the agencies identifying such utility.

c. Indicate whether the utility was field located by utility through USA process, and, if so, by which agency.

F. The CONSULTANT shall provide all required stamped traffic control plans as part of the encroachment application process required by all cities for use during the geophysical investigations, potholing, geotechnical borings, and field investigations.

G. Subsurface Utility Investigations

1. Investigation of existing utilities shall be in accordance with the respective ASCE guidelines, except as amended by this Scope of Work. A brief description of the ASCE guidelines defines the Quality Level of detail for researching subsurface utilities as follows:

a. **Quality Level D:** Information derived from existing records or oral recollections.

b. **Quality Level C:** Information obtained by surveying and plotting visible above-ground utility features and by using professional judgment in correlating this information to Quality Level D information.

c. **Quality Level B:** Information obtained through the application of appropriate surface geophysical methods to determine the existence and approximate position of subsurface utilities. Quality Level B data shall be reproducible by surface geophysics, such as ground penetrating radar, at any point of their depiction. This information is surveyed to applicable tolerances and reduced onto plan documents.

d. **Quality Level A:** Precise horizontal and vertical location of utilities obtained by the actual exposure (or verification of previously exposed subsurface and surveyed utilities) and subsequent measurement of subsurface utilities, usually at a specific point. Minimally intrusive excavation equipment is typically used to minimize the potential for utility damage. A precise horizontal and vertical location, as well as other utility attributes, is shown on the plan documents. Accuracy is typically set to 15-mm vertical and to applicable horizontal survey and mapping accuracy.

2. Refer to CI/ASCE 38-02, Standard Guidelines for Collection and Depiction of Existing Subsurface Utility Data for details.

3. The CONSULTANT shall determine all utilities impacted by the work for all applicable Project Elements of this Scope of Work. Utilities include utility company-owned, and public agency-owned piping, duct banks, and other interferences. All utilities encountered during the preliminary design shall be shown on the plans.

4. Subsurface investigation for all utilities in and around the work area shall be performed to Quality Level D and Quality Level C. All utilities shall be plotted both in plan and profile on a scaled drawing that can later be incorporated into scaled (1” = 40’) plan drawings.

5. The CONSULTANT shall submit, for acceptance by OC SAN, recommendations on which utilities should be investigated to Quality Level A and where Quality Level B investigations should be performed. As part of the submittal, a Potholing Plan and Geophysical Investigation Plan shall be developed including proposed pothole locations and type of geophysical investigation.

6. Prior to OC SAN’s acceptance of the Potholing Plan/Geophysical Investigation Plan, a project field walk by the CONSULTANT Project Manager, OC SAN Project Engineer, Supervising Inspector, and other designated OC SAN personnel shall be performed.

H. Potholes and Geophysical Investigation

1. The CONSULTANT shall secure the services of a subcontractor to perform the pothole work and geophysical investigation (including ground-penetrating radar).

2. The CONSULTANT shall “pothole” and perform geophysical investigation on all utilities described and shown in the accepted Potholing Plan/Geophysical Investigation Plan. The CONSULTANT’s staff shall be on-site during potholing to provide direction to potholing crew. OC SAN staff shall also be present during potholing. Field investigations include visiting the project work site and each utility to verify the location of all interferences.

3. The CONSULTANT shall provide all the related work necessary, including, but not limited to:

a. Documentation of information

b. Notification of USA’s “Dig Alert”

c. Providing field survey

d. Obtaining required permits

e. Submission of traffic control plans

f. Setting up traffic control

g. Soft dig potholing

h. Ground-penetrating radar

i. Excavating

j. Backfilling

k. Repairing pavement to local jurisdiction requirements

4. “Soft” excavation potholing methods such as vacuum extraction is preferred; however, excavation methods shall be chosen to adequately define the utility. Crosscut trenches may be preferred for defining some utility locations. Hydro-jetting soft dig should be avoided in sandy, wet, and contaminated soil conditions.

5. Potholing subcontractor shall measure and document the depth of pavement and of base material at each pothole, and every five feet along crosscut trenches.

6. Work shall comply with the stormwater requirements of the local jurisdiction.

7. The CONSULTANT shall provide a licensed land surveyor or hire a licensed survey subcontractor(s) to field-locate the actual horizontal and vertical location of the constructed potholes. Survey controls shall be set and coordinated with the survey controls used on previous construction drawings. City and County control points shall be checked; northing, easting and elevation data for each pothole shall be shown on the drawings; and physical tie-ins provided to easily re-establish pothole locations after construction. The CONSULTANT shall supply and supervise survey work and subcontractors needed to perform the pothole work. Survey datum differences shall also be reconciled.

8. The results of potholing and geophysical efforts shall be summarized in a field finding report.

9. The CONSULTANT shall backfill and repair potholes consistent with the requirements of the local jurisdiction. If the CONSULTANT is unable to determine local jurisdiction requirements prior to the proposal, the CONSULTANT shall assume the following requirements:

a. The materials removed from the excavation may not be used for backfilling, unless approved by the local jurisdiction. If approved, excavated material used to fill potholes shall be placed with a maximum lift thickness of four inches and mechanically compacted.

b. If not approved, the CONSULTANT shall be responsible for hauling off and disposing of excavated pothole material. In this case, excavation holes shall be filled

with a cement slurry mix from the bottom up. The excavated materials shall be tested for hazardous materials and disposed of offsite accordingly. Testing shall be the minimum required for classifying the materials. The potholing samples shall be tested by a California Environmental Laboratory Accreditation Program (ELAP) certified laboratory to identify characteristics of hazardous waste. A substance shall be considered hazardous if it possesses properties of toxicity, ignitability, corrosivity and/or reactivity per California Code of Regulations Title 22, Section 66261. In addition, the minimum laboratory testing shall include an on-site Organic Vapor Analyzer (OVA) test for potential hydrocarbon contaminants. Should the OVA reading be equal to or greater than 45 ppm, further laboratory Minimum testing shall be performed to include Benzene, Toluene, Ethyl Benzene, and Xylene (BTEX) test per EPA guideline 8020 and Total Hydrocarbons (TPH) tests per EPA guideline. should the OVA reading be equal to or greater than 45 ppm.

c. AC pavement shall be replaced to full depth or the structural section (AC & Base) plus two inches with hot mix asphalt unless otherwise required by the City of Huntington Beach. Cold mix shall only be allowed when the patch will be replaced by the project and were approved by the COHB.

d. Concrete pavement shall be replaced to full depth plus two inches with Portland cement unless otherwise required by the COHB.

I. Quantitative Assumptions

1. For CONSULTANT's fee proposal, assume up to 25 potholes during preliminary design and up to 5 potholes during final design.

2. For CONSULTANT's fee proposal, assume up to 7,000 square feet of ground penetrating radar during preliminary design following the alignment of the proposed upstream gravity sewers, proposed manhole footprints, and proposed force main alignments.

3. For CONSULTANT's fee proposal, assume 9,650 square feet of ground penetrating radar during preliminary design encompassing the future pump station site.

J. Depiction of Utilities and Potholes on Plans

1. All utilities encountered during the preliminary design shall be shown on the plans. Project work that requires other agencies to relocate existing utilities shall be coordinated during the design by the CONSULTANT. Each subsurface utility shown on the drawings shall include the Quality Level to which it was investigated as required by CI/ASCE 38-02. Pothole locations shall be shown on the drawings with survey information.

K. Relocation of Existing Utilities

1. Project work that requires other agencies to relocate existing utilities shall be coordinated during design by the CONSULTANT.

2.3.11 FIRE PROTECTION SERVICES (NOT USED)

2.3.12 ELECTRICAL LOAD MEASUREMENTS (NOT USED)

2.3.13 PUBLIC RELATIONS

A. All activities associated with public relations will be completed by OC San.

2.3.14 VALUE ENGINEERING ASSISTANCE (NOT USED)

2.3.15 ENVIRONMENTAL DOCUMENTATION

A. The CONSULTANT services related to Environmental Documentation may span across Phase 2 – Preliminary Design and Phase 3 - Design. When such services are required, they shall be based on the requirements of Section III – Project Schedule and based on the following requirements. The CONSULTANT shall allocate the budgeted hours between the

Environmental Documentation services in Phase 2 and Phase 3 based on when these services will be required.

B. Review of Existing CEQA Documentation

1. OC SAN has adopted the CEQA documentation during various programs and projects. These CEQA documents may cover or impact the proposed work on this project.

a. 2020 Programmatic Environmental Impact Report (2020 PEIR)

2. The CONSULTANT shall assume the 2020 PEIR is sufficient for the Project and no changes to CEQA are required, nor additional CEQA documentation will be necessary.

3. The CONSULTANT shall assume no changes to parcel zoning are required.

C. Mitigation, Monitoring and Reporting Program Compliance

1. OC SAN prepared a Mitigation, Monitoring, and Reporting Program (MMRP) for the 2020 PEIR.

a. The CONSULTANT shall develop a checklist of all applicable construction-phase and post-construction phase monitoring and reporting requirements originating from the following:

(1) Mitigation and Monitoring Reporting Programs (MMRPs) from previously adopted CEQA documents applicable to this project

(2) Permits anticipated to be obtained in connection with the project.

b. The checklist shall include the following:

(1) Applicable EIR Mitigation Measure Numbers

(2) Descriptions of Mitigation Measures

(3) How Mitigation Measures will be included in the Bid Documents

(4) Frequency of Monitoring During Construction

(5) Notes

2. See **Exhibit 13 - Sample MMRP Log Template**

3. The CONSULTANT shall also provide OC SAN a list of special equipment, specialty inspector qualifications, or sampling or testing firms that may be needed by OC SAN for enforcement of the Mitigation Monitoring Reporting Log (MMRL) during construction. This information shall be included in narrative form attached to the MMRL.

4. The CONSULTANT shall attend two OC SAN meetings to discuss the environmental documentation and two public meetings to assist OC SAN in presenting the project to the community. Public meetings may occur after normal business hours.

2.3.16 PERMITTING ASSISTANCE

A. The CONSULTANT services related to Permitting Assistance may span across Phase 2 – Preliminary Design and Phase 3 - Design. When such services are required, they will be based on the requirements of Section III – Project Schedule and the schedule constraints associated with each permit. The CONSULTANT shall allocate the budgeted hours between the Environmental Documentation services in Phase 2 and Phase 3 based on when these services will be required.

B. For all applicable Project Elements of this Scope of Work, the CONSULTANT shall provide bid documents that ensure that the facility features and the facility performance, and construction procedures comply with all conditions of existing permits and permits required to

construct this project. Construction drawings, specifications and supplemental drawings shall be prepared, as necessary, in the format required to obtain all permits.

C. The CONSULTANT shall assist OC SAN in obtaining permits. This assistance shall include completing application forms provided by OC SAN, preparing supporting documentation for the permit applications as required by the issuing agency, furnishing the required number of copies of all construction drawings and exhibits, and attending meetings with permitting agencies at the request of OC SAN.

D. Except for construction contractor-furnished permits, OC SAN staff will execute all applications. All permit fees will be paid directly by OC SAN and will not be part of the CONSULTANT's fee.

E. The CONSULTANT shall submit all supporting documentation in a timely fashion for all permits required for this project as described below.

F. Permits

1. City of Huntington Beach (OC SAN is exempt but fire dept might be required)

2. The CONSULTANT shall assume three meetings at two hours each.

3. Assumption: No work required for City Planning coordination or permits (e.g. re-zoning, development permit, etc.)

4.

G. City / County Encroachment Permits

1. City of Huntington Beach

2. Orange County Flood Control District

a. Encroachment permit for the new pump station site

b. Encroachment permit for the removal of existing pump station components

3. The CONSULTANT shall assume ten meetings at two hours each.

H. Streambed Alteration Agreements

1. Army Corps of Engineers at the Westminster Channel (demolition of existing pump station) and Sunset Channel (proposed pump station).

2. The CONSULTANT shall assume three meetings at two hours each.

I. Stormwater Permitting

1. CONSULTANT shall determine the required stormwater permit.

2. The CONSULTANT shall determine and specify the preliminary Risk Level and Project Type using the California State Water Resources Control Board's Storm Water Multiple Application and Report Tracking System (SMARTS) based on the R-Factor obtained from US EPA's online Rainfall Erosivity Factor Calculator for Small Construction Sites.

3. The CONSULTANT shall prepare the specification for stormwater using OC SAN's respective master specification as a starting point. The CONSULTANT shall not begin work on editing the specification until OC SAN has approved the CONSULTANT's preliminary Risk Level and Project Type.

4. It is OC SAN's intent to design linear underground/overhead projects (LUP) to LUP Type 2 requirements, whenever possible, which is often the most economical approach. The CONSULTANT shall coordinate with the OC SAN Project Manager and OC SAN Environmental Compliance Division and edit Stormwater Pollution Prevention Plant specifications accordingly.

2.3.17 PROJECT MANAGEMENT

A. The CONSULTANT shall be responsible for managing the CONSULTANT's project execution, schedule, budget, subconsultants, and coordination with other projects. The CONSULTANT shall perform the project management requirements in accordance with **Exhibit 3 - Project Management Requirements** with the project specific options identified below.

B. Project Management Plan (PMP):

☒Not required

☐Required

☐PMP approval prior to beginning technical work on the project.

C. Project Logs

☒Major Decision Log

☒Project Decision Log

☒Action Item Log

☒Decision Issues Log

☒Meeting Log

☐Risk Management Log

D. Progress Report, Status of Cost Model

☐Not required

☒Required

E. Project Invoices

1. Estimating earned value, tasks shall be further broken down to subtasks of no more than $50,000.

2. Costs for invoicing shall be grouped into the following work packages:

Work Package	Description	Tasks
3146	Preliminary Design	All Phase 2 tasks
3250	CONSULTANT Services During Design	Tasks 3.0. through 3.3.10
		Tasks 3.0 through 3.3.10, divided into effort by design submittal. FDS is charged against DS3.
3252	Design Submittal 2	
3253	Design Submittal 3	
3254	Bid Support Services	Task 3.4 – 3.4.3

2.3.18 RISK MANAGEMENT

A. When required below, the CONSULTANT shall provide risk management in accordance with **Exhibit 4 - Risk Management Requirements** with the project specific options identified below.

B. Risk Management:

☐Not required
☒Required
☐Initial Risk Workshop
☒PDR Risk Management Workshop: 2 hours. (held 4 weeks prior to draft PDR)

C. Moderator

1. The CONSULTANT shall conduct the Workshops defined in **Exhibit 4 - Risk Management Requirements**.

2.3.19 QUALITY CONTROL

A. The CONSULTANT shall provide quality control requirements in accordance with **Exhibit 6 - Quality Control Requirements**.

2.4 PDR WORKSHOPS AND MEETINGS

2.4.1 GENERAL

A. Workshop and meeting planning, requirements, agendas, and meeting minutes shall be in accordance with **Exhibit 5 - Workshop and Meeting Requirements**.

2.4.2 MANDATORY CONSULTANT TRAINING

A. One-hour BlueBeam training is required for consultants. The topics will focus on the information included in **Exhibit 14 - Bluebeam Designer Training for Submission** and **Exhibit 15 - Bluebeam Designer User Training**.

B. One-hour P&ID Development training is required prior to starting P&ID development.

C. One-hour EID Development training is required during preliminary design for the Demolition EID and during design phase for new equipment.

D. Two-hour CAD training is required to provide the consultant guidance on CAD document development.

E. Two-hour Tagging Procedures training is required prior to the development of tagging protocol.

F. One-hour Commissioning Package List training will be initiated by the Commissioning Coordinator and will review how to develop a commissioning package list.

G. Two-hour SAT training is required during the preliminary design phase.

2.4.3 PDR PRODUCTION WORKSHOPS

A. Predesign Kickoff Workshop

1. A four-hour project kick-off meeting shall be held with OC SAN staff to introduce principal members of OC SAN and the CONSULTANT's teams. The discussion topics shall include: OC SAN responsibilities, the CONSULTANT's responsibilities, invoice procedures, personnel badges, parking, site access, the CONSULTANT's Scope of Work, detailed project schedule with milestones, Work Breakdown Structure requirements, and OC SAN confined space and other safety policy training.

B. PDR Production Workshops shall be held during Preliminary Design to review the topics listed below. The list below also indicates the number of workshops to be held to cover the specific topic. Unless otherwise noted, each workshop shall be three hours in length.

PDR PRODUCTION WORKSHOPS	
TOPIC	**NUMBER OF WORKSHOPS**
Predesign Kickoff Workshop	**1**
PDR Production Workshops:	
Hydraulics and Mechanical Process Design	**2**
Initial Investigation (geotechnical, utility, etc.) Findings	**1**
Permit Requirements	**1**

PDR PRODUCTION WORKSHOPS	
TOPIC	**NUMBER OF WORKSHOPS**
Basis of Design – Pump Station, Collection System and Force Main	**1**
Electrical and Instrumentation	**3**
Structural (including waterproofing) and Architectural Design	**2**
Odor Control Facilities	**2**
Civil Design (Sunset Channel Slope Stabilization) and Utilities	**1**
Maintainability and Facilities Operation and Maintenance	**2**
Hazardous Materials and Design Safety Requirements	**1**
Basis of Design – Collection System	**1**
Traffic Control	**1**
Environmental, Stormwater, Public Impacts and Regulatory Requirements	**1**
Implementation Plan and Construction Sequencing	**2**
Demolition	**1**

2.4.4 PDR REVIEW WORKSHOPS

A. The CONSULTANT shall hold the following workshops to review the draft Preliminary Design Report as required in **Exhibit 5 - Workshop and Meeting Requirements**:

1. Design Memo Validation Meeting (assume two-hour meeting for up to 7 design memos)
2. Draft PDR Presentation Workshop (assume four-hour meeting)
3. Draft PDR Review Workshop (assume four-hour meeting)
4. PDR Validation Workshop (assume four-hour meeting)

2.4.5 MAINTAINABILITY WORKSHOPS

A. A maintainability workshop shall be held after draft floor plans have been developed to:

1. Review the working space around equipment, accessibility requirements, specific activities required to be performed by maintenance staff, ease of servicing for equipment and devices, means to removing equipment from the point of installation to a location outside the facility.

2. The workshop shall be used to develop a set of project maintainability design rules based on the requirements in Chapter 7 of the Engineering Design Guidelines, coordination with OC SAN staff, lessons learned from prior projects, the CONSULTANT staff expertise, and manufacturer data.

3. The CONSULTANT shall research and provide the following maintainability information for the workshop:

    a. Main Sewage Pumps

4. Operations and Maintenance (O&M) staff including staff from Maintenance Reliability and Planning must be involved in the establishment of the maintainability design rules.

B. The maintainability workshop shall be held virtually and shall generally be 4 hours in length. OC SAN and the CONSULTANT staff shall attend this workshop.

C. A follow up maintainability workshop shall be held virtually to review the draft project maintainability design rules.

D. The project maintainability design rules shall be followed during detailed design.

E. The CONSULTANT shall be responsible for completing the following tasks relative to the workshop:

1. Prepare package for the maintainability workshop participants. The package shall consist of plans, process flow diagrams, P&IDs and other information selected by the CONSULTANT.

2. Prepare presentation on the project.

3. Review 3D model if applicable to the project.

4. Summarize the maintainability review workshop comments and action taken on each comment in a memorandum.

5. All comments and recommendations of the workshop and the project maintainability design rules shall be incorporated into the Maintainability Design Memo and the bid documents.

2.4.6 PDR CONSTRUCTABILITY WORKSHOP

A. A constructability workshop shall be held after the draft PDR submittal review to identify any fatal flaws in the design relative to constructability. Some of the subjects that shall be covered in this workshop include the following: conflicts between design disciplines, geotechnical considerations, shoring, dewatering methods, construction sequencing, power outages, equipment shutdowns, safety, operational requirements, access for maintenance, size-critical equipment requirements and constraints, permitting, public nuisance issues, other local conditions, and constraints.

B. This workshop shall generally be four hours in length. OC SAN and the CONSULTANT staff shall attend this workshop.

C. The CONSULTANT shall be responsible for completing the following tasks relative to the workshop:

1. Prepare package for constructability review workshop participants. The package shall consist of detailed plans and specifications and other information selected by the CONSULTANT.

2. Prepare presentation on the project.

3. Summarize the constructability review workshop comments and action taken on each comment in a memorandum.

4. All comments and recommendations of the workshop shall be incorporated into Implementation Plan Design Memo and the Bid Documents.

2.4.7 TECHNICAL PROGRESS MEETINGS

A. Technical Progress Meetings shall be held every four weeks for two hours to review various issues with OC SAN's project team. The CONSULTANT shall coordinate with the OC SAN Project Manager to determine what topics will be covered in what meetings, and what OC SAN and the CONSULTANT team members are required for each.

2.4.8 FOCUSED MEETINGS

A. Focused meetings shall be held throughout preliminary design to discuss specific issues in detail and generate comments and direction from OC SAN staff. Assume up to 7 one hour virtual meetings unless noted otherwise. The following tentative list of topics may be covered in these meetings:

1. Geotechnical report
2. Quality control plan
3. Permits
4. OC SAN Safety Standards, confined space, and other safety requirements
5. City of Huntington Beach (COHB) requirements
6. Orange County Flood Control District requirements
7. Survey and geotechnical requirements
8. Potholing
9. Structural design (waterproofing)
10. Hazardous Area classification (with OC SAN authority having jurisdiction representative participating)
11. Utilities and utility tie-ins
12. Temporary facilities during construction
13. Sample P&ID; basis for equipment tag numbering
14. Sample control descriptions
15. Sample EID database
16. Sample SAT database
17. Data network block diagram/network connection diagram
18. I/O relocation plan
19. Electrical distribution system
20. Single-line diagrams
21. Constructability (shoring and dewatering)
22. Construction sequencing
23. Traffic control
24. Additional meetings as necessary

B. Depending on subject matter and attendees, one meeting may cover multiple subjects. The CONSULTANT shall determine how many meetings will be needed to cover these topics. The CONSULTANT may suggest additional topics as necessary. Supplementary meetings may be scheduled with OC SAN staff, as necessary to allow coordination between the CONSULTANT and OC SAN staff.

2.4.9 COORDINATION WITH OTHER PROJECTS MEETINGS

A. The project shall be a complete and fully functional facility that is integrated with existing facilities and coordinated with other construction projects. The CONSULTANT shall coordinate potential conflicts with the following adjacent projects and participate in the number of meetings indicated in the following table:

PROJECT COORDINATION MEETINGS		
PROJECT	**PROJECT DESCRIPTION**	**COORDINATION MEETINGS**
J-120 Process Control Systems Upgrades	**Update SCADA System**	**3 meetings @ 2 hours**
PS18-06 Go/No-Go Lights and Signage	**Lights, signage and warning systems**	**1 meeting @ 2 hours**

2.4.10 STORMWATER COMPLIANCE MEETING

A. A formal meeting shall be held with OC SAN's stormwater compliance staff to review the project scope and identify all issues during and after construction affecting compliance with stormwater regulatory requirements and OC SAN's policies and practices.

3. PHASE 3 – DESIGN

3.0 BID DOCUMENTS

3.0.1 GENERAL

A. The CONSULTANT shall provide engineering services to prepare biddable plans, technical specifications, and other Bid Documents as required based on the design concepts and criteria developed during Phase 2 - Preliminary Design. In this Scope of Work, construction documents include specifications; drawings; cable, conduit, and cable tray schedules; commissioning plan materials; equipment and instrumentation database (EID); SCADA Administration Tool (SAT); and bypassing plans.

3.0.2 ENGINEERING DESIGN GUIDELINE UPDATES

A. All changes in OC SAN's Engineering Standards, OC SAN's Design Guidelines, and/or changes in design concepts and facility layouts because of OC SAN comments that may occur up to transmittal of OC SAN comments on Design Submittal 2 shall be incorporated into the design by the CONSULTANT with no increase in CONSULTANT's Not-to-Exceed upper limit on fees.

3.0.3 GENERAL REQUIREMENTS AND ADDITIONAL GENERAL REQUIREMENTS

A. The following are the minimum Additional GRs topics required for this project:

☒Summary of Work
☒Work Sequence
☒Work Restrictions
☒Work Restrictions for Collections
☒Permits
☒Environmental Restrictions and Controls
☒Measurement and Payment (includes Mobilization/Demobilization)
☒Seismic Design Criteria (for those restraints, supports, etc. to be design by the Contractor)
☒Traffic Control
☒Contractor and Engineer's Field Offices
☒Shipping, Storage and Handling
☒Project Control Management System (PMWeb construction management software)
☒Equipment Service Manuals
☒Equipment and Instrument Database (EID)
☒Commissioning
☒Training of OC SAN Personnel
☒Hazardous Materials Mitigation and Controls

3.0.4 DESIGN SUBMITTALS

A. The CONSULTANT shall produce the following design submittals as indicated below in accordance with **Exhibit 2 - Design Requirements.** If a design submittal is eliminated, then the design submittal shall include the requirements associated with the required design submittal along with the requirements associated with the previous unchecked design submittals.

☒Design Submittal 2
☒Design Submittal 3
☒Final Design Submittal

B. Continuing Work After Design Submittal Submission

☒ For Design Submittal 3, the CONSULTANT shall stop all design work until receipt of OC SAN comments on that submittal.
☐The CONSULTANT is expected to **stop design work** on the project until OC SAN staff completes the review of each Design Submittal.

3.0.5 CABLE AND CONDUIT SCHEDULE

☒The CONSULTANT shall put the cable and raceway schedule on the drawings. The CONSULTANT may utilize an Excel spreadsheet and copy the spreadsheet onto the drawings.
☐The CONSULTANT shall utilize OC SAN's Microsoft Access Cable and Raceway Schedule database electronic format.

3.0.6 COMMISSIONING PLAN MATERIALS

A. The CONSULTANT shall provide a commissioning plan material in accordance **Exhibit 2 - Design Requirements.**

B. Specifications Section 01810, Commissioning

☐OC SAN will prepare Section 01810
☒The CONSULTANT shall edit Section 01810
☒The CONSULTANT shall prepare Section 01810-Attachment A

C. ORT Procedures

☐OC SAN will prepare ORT procedures
☒The CONSULTANT shall prepare ORT procedures using OC SAN's ORT procedure generator
☐The CONSULTANT shall prepare new ORT procedures for missing or non-standard equipment

D. Pre-FAT Procedures

☐Pre-FAT procedures not required
☐OC SAN will prepare Pre-FAT procedures
☒The CONSULTANT shall prepare Pre-FAT procedures

E. FAT Procedures

☐OC SAN will prepare FAT procedures
☒The CONSULTANT shall prepare FAT procedures and narrative

F. RAT Procedures

☐RAT procedures not required
☐OC SAN will prepare RAT procedures
☒The CONSULTANT shall prepare RAT procedures

G. PAT Procedures

☐PAT procedures not required
☐OC SAN will prepare PAT procedures
☒The CONSULTANT shall prepare PAT procedures

3.0.7 EQUIPMENT AND INSTRUMENTATION DATABASE (EID)

☐EID is not required.
☐OC SAN will develop the EID in accordance **Exhibit 2 - Design Requirements.**
☒The CONSULTANT shall develop EID in accordance **Exhibit 2 - Design Requirements.**

3.0.8 SCADA ADMINISTRATION TOOL (SAT)

☐SAT is not required.
☐OC SAN will develop the SAT in accordance **Exhibit 2 - Design Requirements.**
☒The CONSULTANT shall develop the SAT in accordance **Exhibit 2 - Design Requirements.**

3.0.9 CONSTRUCTION SUBMITTAL ITEMS LIST

☐OC SAN will develop the Construction Submittal Items List in accordance with **Exhibit 2 - Design Requirements.**
☒The CONSULTANT shall develop the Construction Submittal Items List in accordance with **Exhibit 2 - Design Requirements.**

3.0.10 TEMPORARY FACILITIES DURING CONTRUCTION

☐Temporary facilities and bypass pumping are not required.

☐Temporary facilities and bypassing during construction are required, as described under the "Temporary Facilities During Construction" paragraph under the Project Elements, and shall be described in words on the drawings and technical specifications.

☒Detailed plans and work sequence for temporary facilities and bypassing during construction, as described under the "Temporary Facilities During Construction" paragraph under the Preliminary Design Activities

3.1 DESIGN SUPPORT DOCUMENTATION

3.1.1 DESIGN SUBMITTAL SUPPORT DOCUMENTATION

A. The CONSULTANT shall provide a Design Submittal Support Documentation in accordance **Exhibit 2 - Design Requirements.**

B. Design Information

1. The CONSULTANT shall include the following material with each Design Submittal:

   a. The CONSULTANT shall maintain the Project Logs specified under Phase 2 Project Management through Phase 3. Current copies of all logs shall be included with each Design Submittal.

   b. Written response log to OC SAN comments on the previous submittal.

   c. CEQA and Regulatory Compliance Matrix. This matrix shall list each applicable CEQA mitigation requirement and all known permit requirements with the corresponding description of how each requirement is to be satisfied. Measures to satisfy requirements might be in the GRs, Additional GRs, particular specification requirements, or actions taken separately from the construction contract.

   d. Calculations

   e. Draft or final Geotechnical Reports not submitted in the previous submittal and those revised since the previous submittal.

f. Proposed list of suppliers to be named in the specifications for major equipment

g. Draft or final Fire Protection Reports not submitted in the previous submittal and those revised since the previous submittal.

h. Draft or final Field Findings Reports not submitted in the previous submittal and those revised since the previous submittal.

i. Equipment data sheets

j. Equipment catalog cuts and vendor quotations.

k. Commissioning Package List: The Preliminary Commissioning Package List first developed in the PDR Production Phase shall be updated in each Design Submittal and used as a starting point to develop the list of commissioning procedures.

l. All memos that may have been prepared since the previous submittal was delivered.

m. At DS 3, provide an updated life cycle cost estimate for the project.

C. Facility Operation and Maintenance

☐Not required.
☒Update operating philosophies
☐Update estimates of Operation and Maintenance staffing requirements

D. Electrical Design Documentation

☐Electrical design documentation not required.
☒Updated Electrical Load Criticality Table
☐Electrical Analysis Report
☒Load list for all equipment
☒Equipment sizing from three manufacturers for motor control centers, switchgear, transformers, and power panels
☒Lighting calculations
Standby generator sizing calculations
☐Ductbank cable pulling tension, derating, and cable tray fill calculations

E. Power System Studies

☐ETAP not required.
☒Pump Station ETAP model for the project performed by OC SAN.
☐Plant ETAP model for the project performed by the CONSULTANT.
☒ OC SAN will prepare the Electrical System Analysis Report.

3.1.2 CONSTRUCTION COST ESTIMATE

A. The CONSULTANT shall provide a cost estimate for the associated design **submittal indicated below in accordance with Exhibit 2 - Design Requirements.**

☐
☒Design Submittal 2
☒Design Submittal 3
☒Final Design Submittal

3.1.3 CONSTRUCTION SCHEDULE

A. The CONSULTANT shall provide a Preliminary Construction Schedule for the associated design submittal indicated below in accordance with **Exhibit 2 - Design Requirements.**

☐Construction Schedule is not Required
☒Design Submittal 2
☒Design Submittal 3
☒Final Design Submittal

3.1.4 PROCUREMENT ALTERNATIVES

A. The CONSULTANT shall recommend the appropriate procurement alternatives as described in **Exhibit 2 - Design Requirements**.

☒Procurement alternatives not required
☐Procurement alternatives required

3.2 DESIGN ACTIVITIES

The following services shall be provided by the CONSULTANT or an appropriately qualified subconsultant. In any case, the CONSULTANT shall be responsible for managing all subconsultants, including reviewing their work products prior to submission to OC SAN.

3.2.1 HYDRAULIC MODELING

The CONSULTANT services related to Hydraulic Modeling on the project are specified in Phase 2 – Preliminary Design and those services shall continue during Phase 3 – Design as required. The CONSULTANT shall allocate the budgeted hours between Phase 2 and Phase 3 based on when these services will be required.

3.2.2 ON-SITE ODOR CONTROL EVALUATION

The CONSULTANT services related to On-site Odor Control Evaluation on the project are specified in Phase 2 – Preliminary Design and those services shall continue during Phase 3 – Design as required. The CONSULTANT shall allocate the budgeted hours between Phase 2 and Phase 3 based on when these services will be required.

3.2.3 ON-SITE STANDBY POWER ANALYSIS

The CONSULTANT services related to On-site Standby Power Analysis on the project are specified in Phase 2 – Preliminary Design and those services shall continue during Phase 3 – Design as required. The CONSULTANT shall allocate the budgeted hours between Phase 2 and Phase 3 based on when these services will be required.

3.2.4 WATERPROOFING APPROACH

The CONSULTANT services related to Waterproofing Approach on the project are specified in Phase 2 – Preliminary Design and those services shall continue during Phase 3 – Design as required. The CONSULTANT shall allocate the budgeted hours between Phase 2 and Phase 3 based on when these services will be required.

3.2.5 SHORING AND DEWATERING METHODS

The CONSULTANT services related to Shoring and Dewatering Methods on the project are specified in Phase 2 – Preliminary Design and those services shall continue during Phase 3 – Design as required. The CONSULTANT shall allocate the budgeted hours between Phase 2 and Phase 3 based on when these services will be required.

3.2.6 TEMPORARY FACILITIES DURING CONSTRUCTION

The CONSULTANT services related to Temporary Facilities During Construction on the project are specified in Phase 2 – Preliminary Design and those services shall continue during Phase 3 – Design as required. The CONSULTANT shall allocate the budgeted hours between Phase 2 and Phase 3 based on when these services will be required.

3.2.7 EASEMENTS, PROPERTY BOUNDARIES AND WORK AREA LIMITS

The CONSULTANT services related to Easements, Property Boundaries and Work Area Limits on the project are specified in Phase 2 – Preliminary Design and those services shall continue during Phase 3 – Design as required. The CONSULTANT shall allocate the budgeted hours between Phase 2 and Phase 3 based on when these services will be required.

3.2.8 TOPOGRAPHIC SURVEY

The CONSULTANT services related to Topographic Survey on the project are specified in Phase 2 – Preliminary Design and those services shall continue during Phase 3 – Design as required. The CONSULTANT shall allocate the budgeted hours between Phase 2 and Phase 3 based on when these services will be required.

3.2.9 UTILITY INVESTIGATION

The CONSULTANT services related to Utility Investigation on the project are specified in Phase 2 – Preliminary Design and those services shall continue during Phase 3 – Design as required. The CONSULTANT shall allocate the budgeted hours between Phase 2 and Phase 3 based on when these services will be required.

A. Final Design Submittal Utility Coordination Reviews

1. During DS3 submittal review, the CONSULTANT shall meet with outside agencies to verify any changes made by agency during final design period and compare them with the contract drawings. The CONSULTANT shall follow through with due diligence on utilities that do not participate in the USA program, unknown owner of a facility and/or abandoned utilities.

2. During DS3 submittal review, an on-site inspection shall be made in the project area. During the on-site inspection, a senior-level CONSULTANT representative shall walk the site accompanied by OC SAN's Project Engineer and Supervising Inspector. The CONSULTANT's representative shall be experienced in the location and identification of utilities in the field. During the on-site inspection the CONSULTANT shall document all visible features that indicate utilities within the project area and compare them with the contract drawings.

3.2.10 FIRE PROTECTION SERVICES (NOT USED)

3.2.11 NOISE EVALUATION SERVICES

A. The CONSULTANT shall prepare a field finding Noise Report. This report shall include the following:

1. Visit site and conduct ambient noise measurements to establish baseline.
2. Identify external sources of noise.
3. Identify potential methods for defining noise impacts.
4. Develop noise model consistent with noise impact assessment methods.
5. Determine exterior noise levels and compliance with assessment standards.
6. If required, develop mitigation measures to meet design standards.
7. Determine compliance with OSHA's regulations.
8. If needed, determine mitigation measures to meet OSHA's requirements.
9. Prepare written report on findings and recommendations.

3.2.12 TRAFFIC CONTROL SERVICES

The CONSULTANT shall determine traffic control requirements and prepare plans and specifications for all construction activities performed within or adjacent to the public ROW. The traffic control plans shall be approved by the AHJ by FDS. Additionally, the Traffic Control

designer shall attend City and OC SAN submittal review meetings, workshops, validation meetings and focus meetings, as needed.

3.2.13 PUBLIC RELATIONS

The CONSULTANT services related to Public Relations on the project are specified in Phase 2 – Preliminary Design and those services shall continue during Phase 3 - Design. The CONSULTANT shall allocate the budgeted hours between the Public Relations services in Phase 2 and Phase 3 based on when these services will be required.

3.2.14 ENVIRONMENTAL DOCUMENTATION

The CONSULTANT services related to Environmental Documentation on the project are specified in Phase 2 – Preliminary Design and those services shall continue during Phase 3 - Design. The CONSULTANT shall allocate the budgeted hours between the Environmental Documentation services in Phase 2 and Phase 3 based on when these services will be required.

3.2.15 PERMITTING ASSISTANCE

The CONSULTANT services related to Permitting Assistance on the project are specified in Phase 2 – Preliminary Design and those services shall continue during Phase 3 - Design. The CONSULTANT shall allocate the budgeted hours between the Permitting Assistance services in Phase 2 and Phase 3 based on when these services will be required.

3.2.16 PROJECT MANAGEMENT

The CONSULTANT shall be responsible for managing the CONSULTANT's project execution, schedule, budget, subconsultants, and coordination with other projects. The CONSULTANT services related to Project Management on the project are specified in Phase 2 – Preliminary Design and those services shall continue during Phase 3 – Design as required. The CONSULTANT shall allocate the budgeted hours between Phase 2 and Phase 3 based on when these services will be required.

3.2.17 RISK MANAGEMENT

A. The CONSULTANT shall provide risk management in accordance with **Exhibit 4 - Risk Management Requirements**. Moderator shall be as specified for Phase 2 – Preliminary Design.

B. Risk Management:

☐Not required
☒Required
☒DS2 Risk Workshops: **1** hour (held during OC SAN's review of DS2)

3.2.18 QUALITY CONTROL

A. The CONSULTANT shall provide Quality Control requirements in accordance with **Exhibit 6 - Quality Control Requirements**.

☐Independent Multi-Discipline Design Workshop is not required.
☒Independent Multi-Discipline Design Workshop is required (minimum duration of **four** days)

3.3 DESIGN WORKSHOPS AND MEETINGS

3.3.1 GENERAL

A. Workshop and meeting planning, requirements, agendas, and meeting minutes shall be in accordance with **Exhibit 5 - Workshop and Meeting Requirements**.

3.3.2 DESIGN PHASE WORKSHOPS

A. The focus of workshops is to review project progress to date and the technical decisions that have been made in focused meetings. The CONSULTANT shall conduct the workshops listed

below in Phase 3 – Design after each design submittal. The CONSULTANT shall allow the following time for each workshop:

DESIGN PHASE WORKSHOPS	
WORKSHOP TYPE	**DURATION**
Design Kickoff Workshop	2 hours
Design Review Meetings	2 hours per discipline
Design Validation Meeting	4 hours

B. The following Design Review Meetings shall include the following topics, as applicable to the project:

1. Electrical
2. I&C
3. Process
4. Civil/Yard
5. Construction
6. Maintainability

3.3.3 PRE-DS3 CONSTRUCTABILITY WORKSHOP

A. A constructability workshop shall be held prior to the DS3 submittal and shall be a three-day workshop. The constructability review is intended to provide OC SAN with an objective third-party review of the bid documents for effectiveness in communicating information to prospective bidders. The review shall determine if the bid documents have sufficient information needed to bid and construct the project and avoid misunderstandings and misinterpretations that may lead to conflict, confusion or claims during construction. This review is not a comprehensive plan check, a dimensional check, or a value engineering assignment. Further, it is recognized that comments may only be given on the level of detail provided at this level of design.

B. Constructability review participants shall include highly experienced individuals from construction, OC SAN construction management staff and the CONSULTANT construction management staff. Specialty consultants and discipline engineers may also be included.

C. Each constructability review participant shall receive a package at least two weeks in advance. The package shall include plans and specifications, general conditions, the CPM schedule, the construction cost estimate, permits, and other pertinent information. The confirmation statements regarding the size-critical equipment as required in the Engineering Design Guidelines, Chapter 01, Design Guidelines – General Requirements, Section 01.2.15.2 “Size-Critical Equipment” shall also be included in the review package.

D. The constructability review shall be held on-site.

E. Day 1 shall start with a site visit, for the reviewers to acquaint themselves with the site conditions. After the site visit, the CONSULTANT shall make a short presentation, followed by a question-and-answer period. This is anticipated to take about 1/2 day. The second half of Day 1, Day 2, and the first half of day three shall be individual workdays for the Constructability Review Team.

F. On the afternoon of Day 3, the CONSULTANT shall return and listen to comments from the Constructability Review Team. A designated individual shall record the comments, and take notes from the workshop, to document the process.

G. Topics the Constructability Review Team must consider shall include:

1. Project consistency, discrepancies, and constructability issues
2. Contradictions, bid package strategies, and biddability issues
3. Size critical equipment requirements and constraints

4. Utility company requirements
5. Construction methods and mitigating impacts
6. Operational requirements
7. Access for maintenance
8. Access to make proper connections
9. User-friendliness and safety
10. Coordination with other projects
11. Draft Commissioning Plan
12. Public nuisance issues
13. Risk sharing
14. Construction sequencing and schedule, materials storage, and work zone accessibility
15. Clarity of the scope of work, and interface activities
16. Access
17. Cost control
18. Partnering with contractor
19. Other local conditions and constraints

H. The Constructability Review Team shall provide a list of comments and the CONSULTANT shall respond to each comment, selecting those comments to be included in the final plans and specifications.

I. To facilitate the Constructability Review Workshop, the CONSULTANT shall complete the following tasks:

1. Prepare package for constructability review participants. The package shall consist of detailed plans and specifications and other information selected by the CONSULTANT. The package shall be mailed to participants at least one week prior to the workshop.
2. Arrange for off-site location for Constructability Review Workshop.
3. Provide for a constructability review facilitator.
4. Prepare presentation on the project for the Constructability Review Team.
5. Meet with Constructability Review Team to receive comments.
6. Provide listing of constructability review comments and action taken on each comment. (The summary report of constructability review comments shall be prepared by the Constructability Review Team.)

J. All comments and recommendations of the workshop shall be incorporated into the bid documents at no additional cost to OC SAN.

K. Prior to Final Design, the Commissioning Team shall also conduct an additional constructability review of the final bid documents to review clarity of the bid package, project completeness, and other issues, as necessary.

3.3.4 DESIGN PHASE MEETINGS

A. Technical Progress Meetings

1. Technical Progress Meetings shall be held every four weeks for one hour to review various issues with OC SAN's project team. The CONSULTANT shall coordinate with the

OC SAN Project Manager to determine what topics will be covered in what meetings, and what OC SAN and the CONSULTANT team members are required for each.

B. Focused Meetings

1. Focused meetings shall be held throughout preliminary design to discuss specific issues in detail and generate comments and direction from OC SAN staff. Assume two-hour virtual bi-weekly meetings unless noted otherwise. The following tentative list of topics may be covered in these meetings:

2. Geotechnical report

3. Quality control plan

4. Permits

5. Contractor Safety Standards, confined space, and other safety requirements

6. City of Huntington Beach requirements

7. Orange County Flood Control District requirements

8. Army Corps of Engineers Requirements

9. Survey and geotechnical requirements

10. Potholing

11. Hazardous Area classification (with OC SAN authority having jurisdiction representative participating)

12. Utilities and utility tie-ins

13. Temporary facilities during construction

14. Sample P&ID; basis for equipment tag numbering

15. Sample control descriptions

16. Sample EID database

17. Sample SAT database

18. Data network block diagram/network connection diagram

19. I/O relocation plan

20. Single-line diagrams

21. Construction sequencing

22. Traffic control

23. Additional meetings as necessary

24. The CONSULTANT may suggest additional topics as necessary. Supplementary meetings may be scheduled with OC SAN staff, as necessary to allow coordination between the CONSULTANT and OC SAN staff.

3.3.5 VIRTUAL CONSULTANT OFFICE TECHNICAL MEETINGS (VCOTMS)

A. The CONSULTANT shall schedule, at a minimum, the following Virtual CONSULTANT Office Technical Meetings (VCOTMs):

1. One two-hour visit to review the Loop Tag Number scheme and control documentation.

2. Three two-hour visits to review the CONSULTANT Implementation of CAD standards and P&ID tag extraction.

3. Two two-hour visits to review the first few P&ID drawings.

4. Two two-hour visits to review the early Control Strategies.

5. One two-hour visit to establish the basic control panel design.

6. One two-hour visit to review the Conduit, Tray and Cable Schedules

7. One two-hour visit to review each of the first elementary diagrams, first panel schematics.

8. One two-hour visit to review each of the SAT and EID products, including P&ID, SAT, and EID coordination.

9. Four one-hour follow up visits for the above.

B. The CONSULTANT shall schedule each of the above VCOTMs and shall coordinate with OC SAN's Project Manager to be sure the correct personnel participate in the meetings. The CONSULTANT may propose additional, eliminate, or combine VCOTMs as needed to support the detailed design.

C. OC SAN may also request additional "over the shoulder" design review meetings to audit the design in other areas not listed above.

3.3.6 COORDINATION WITH OTHER PROJECTS MEETINGS

A. The project shall be a complete and fully functional facility that is integrated with existing facilities and coordinated with other construction projects. The CONSULTANT shall coordinate potential conflicts with the following adjacent projects and participate in the number of meetings indicated in the following table:

PROJECT COORDINATION MEETINGS		
PROJECT	**PROJECT DESCRIPTION**	**COORDINATION MEETINGS**
J-120 Process Control Systems Upgrades	**Update SCADA System**	**3 meetings @ 2 hours**
PS18-06 Go/No-Go Lights and Signage	**Lights, signage and warning systems**	**1 meeting @ 2 hours**

3.3.7 COMMISSIONING TEAM MEETINGS

A. Design phase commissioning team meetings shall be held on a monthly basis after completion of OC SAN's review DS2.

B. Meetings will generally be three hours in length. The CONSULTANT shall determine how many meetings shall be needed to cover these topics and organize the topics accordingly. The CONSULTANT may suggest additional topics as necessary. Supplementary meetings may be scheduled with OC SAN staff, as necessary, to allow coordination between The CONSULTANT and OC SAN staff.

C. The Commissioning Team meetings shall cover the following subjects:

1. Provide a detailed review of the proposed construction sequencing plan and make recommendations for improvements. These recommendations shall be incorporated into the plans and specifications as appropriate. Possible incentives for the contractor to finish the project early shall be explored.

2. Identify procedures, testing requirements and sequencing for commissioning.

3. Develop a detailed outline of a commissioning plan based on the results of the recommended construction sequencing plan.

4. Prepare testing requirements and plan to prove process performance relative to design criteria developed in the PDR. Testing shall be performed after the RAT and supervised by the CONSULTANT.

5. Identify timing within the construction contract schedule when commissioning activities are required, including hold points for testing and inspection.

6. Identify roles and responsibilities of the Project Manager, Resident Engineer, Inspector, Project Engineer, PCI, Engineering support, the CONSULTANT and contractor.

7. Develop a timeline of commissioning

8. Update the commissioning specification

9. Review OC SAN standard form style and application for testing and commissioning documentation

10. Electrical, mechanical and process tie-ins

11. Startup requirements and testing

12. O&M training

3.3.8 SAFETY AND RISK MEETING

A. Meet with OC SAN Safety and Risk Management personnel between DS2 and DS3 to review the plans and specifications in accordance with OC SAN safety policies and OC SAN Risk Management goals.

3.3.9 CONSTRUCTION SUBMITTAL ITEMS LIST MEETING

A. Meet with OC SAN between DS2 and DS3 to review the CONSULTANT's approach to developing the project Construction Submittal Items List and the CONSULTANT-provided specifications and discuss the grouping of submittals in commissioning packages and phases.

3.3.10 STORMWATER COMPLIANCE MEETING

A. A formal meeting shall be held with OC SAN's stormwater compliance staff to review the project scope and identify all issues during and after construction affecting compliance with stormwater regulatory requirements and OC SAN's policies and practices.

3.3.11 SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT (AQMD)

A. A formal meeting shall be held with OC SAN's stormwater compliance staff to review the project scope and identify all issues and review draft South Coast AQMD application prepared by CONSULTANT.

3.4 BID PHASE SUPPORT SERVICES

3.4.1 BID PHASE SUPPORT SERVICES

A. The CONSULTANT shall provide the following bid period services:

1. Participate in the pre-bid meeting.

2. Prepare project drawing set and project specification addenda to provide clarification and resolve errors and omissions identified prior to bid opening.

3.4.2 BID EVALUATION ASSISTANCE

A. Participate in reviewing alternate equipment proposals from the contractor, if applicable.

B. Participate in the evaluation of the submitted bids, furnish consultation and advice to OC SAN staff and assist with all the related equipment, cost, and other analyses as required to finalize the award decision.

3.4.3 CONFORMED DOCUMENT PREPARATION

A. Within two weeks of the bid date, prepare conformed documents set (drawings, databases, specifications, and other required materials) that incorporates the addenda. See Engineering

Design Guidelines, Chapter 01, Design Guidelines – General Requirements, Section 01.4 "Preparation of Project Deliverables" for requirements as modified in Section V of this Scope of Work, "Project-Specific Deviations from OC SAN Design Guidelines" and the requirements of the CAD Manual).

4. PHASE 4 – CONSTRUCTION AND INSTALLATION SERVICES

Not in this Scope of Work.

5. PHASE 5 – COMMISSIONING SERVICES

Not in this Scope of Work.

6. PHASE 6 – CLOSE OUT

Not in this Scope of Work.

7. GENERAL REQUIREMENTS

7.0 GENERAL

7.0.1 OC SAN ENGINEERING DESIGN GUIDELINES AND STRATEGIC PLAN

The CONSULTANT shall refer to and adhere to the requirements of the Contractor Safety Standards, OC SAN Engineering Design Guidelines, any deviations to the Engineering Design Guidelines listed below, and other OC SAN's Design Standards referenced therein. **Exhibit 17 – OC SAN Engineering Design Guidelines and Standards – Available at https://www.ocsd.com/about-us/transparency/document-central/-folder-917** is a complete set of OC SAN Design Standards. The link will navigate to the latest edition at the time of the design proposal stage.

A. The Engineering Guidelines define what design concepts/tools/methods and project management requirements shall be adhered to and in what manner they shall be used/provided by Consultants, e.g., requirements regarding design concepts, submittals, documentation details, use of OC SAN Master Specifications, and other related OC SAN Standards, etc.

B. Refer also to Section "CONSULTANT's Responsibilities" in OC SAN Engineering Design Guidelines Chapter 01. Refer to "Master Specifications Instructions for Use" that mandates rules and conventions to be used in all OC SAN project specifications.

C. The project Scope of Work defines whether each specific deliverable described in the Guidelines shall be part of the project and when each task shall take place.

D. The project Scope of Work also includes requirements that supplement and/or modify the Guidelines requirements for this project.

E. The project Scope of Work and OC SAN Engineering Design Guidelines impact the CONSULTANT's project cost.

F. Except as specified in this Scope of Work, design of all facilities shall conform to the recommendations of the currently approved Master Plan for OC SAN facilities. The project shall also incorporate all applicable mitigation measures included in associated environmental documents and site-specific local requirements.

G. In addition, OC SAN will require the CONSULTANT to follow subsequent revisions of the Contractor Safety Standards, OC SAN Engineering Design Guidelines, and other OC SAN Design Standards up to transmittal by OC SAN of comments on Design Submittal **3**. All revisions shall be incorporated into the design by the CONSULTANT with no increase in the CONSULTANT's Not-to-Exceed upper limit on fees.

H. OC SAN may update OC SAN's Master Specifications and/or add new OC SAN Master Specifications up to transmittal by OC SAN of comments on Design Submittal 2. The CONSULTANT shall utilize the new and/or modified Master Specifications for the DS3 submittal.

I. The CONSULTANT shall not begin editing the project specifications until the project team meets with OC SAN's Design Standards Custodian to discuss and receive comments regarding the CONSULTANT's proposed list of project specifications. This meeting will be used to determine which specifications are to use OC SAN's master specifications, and where other sources will be utilized.

7.0.2 PROJECT PHASES AND TASKS

A. Project tasks and deliverables shall include the requirements described in this Scope of Work. The CONSULTANT shall also refer to **Exhibit 7 – Design Submittal Requirements Matrix** for the level of detail requirements for individual deliverables in each Phase of the project not covered in the Scope of Work.

7.0.3 CONSTRUCTION SEQUENCING AND CONSTRAINTS

A. The CONSULTANT shall develop with OC SAN staff and include in the bid documents detailed requirements for construction sequencing and constraints. These shall ensure safe and reliable operation and maintenance of OC SAN facilities. The facilities must be kept on-line and fully operational with minimal interruptions throughout construction.

7.0.4 WORKING HOURS

A. Meetings with OC SAN staff shall be scheduled from Monday through Thursday between the hours of 8:00 AM and 4:00 PM. Any CONSULTANT staff working on-site shall conform to OC SAN work schedules. The CONSULTANT shall refer to the Engineering Design Guidelines, Chapter 01, Section 01.3.5 "CONSULTANT Inspection of Treatment Facilities" for further requirements.

7.0.5 STANDARD DRAWINGS AND TYPICAL DETAILS

A. All the details used in the project (OC SAN's Standard Drawings and the CONSULTANT-developed typical details) shall be shown on the plans.

7.0.6 SOFTWARE

A. The CONSULTANT is expected to develop and provide the deliverables using the standard software currently approved for use by OC SAN. The standard OC SAN software includes, but is not limited to, the following:

1. Windows Professional
2. Esri software (fGDB, pGDB or shapefile formats)
3. Microsoft Internet Explorer
4. Autodesk software (AutoCAD, AutoCAD Map3D or compatible dwg file format)
5. Microsoft Office, including MS Teams
6. Maximo
7. Bluebeam Revu Extreme
8. Primavera P6 for scheduling
9. Innovyze ICM Hydraulic Model
10. Database software as defined elsewhere in the project Scope of Work

B. Any software that the CONSULTANT needs to comply with these standards shall be purchased and maintained by the CONSULTANT at no additional cost to OC SAN. In the event

OC SAN provides the CONSULTANT with access to OC SAN software and hardware at an OC SAN facility to facilitate performance of their work, all software shall remain the property of OC SAN. Only software licensed to OC SAN shall be installed on OC SAN equipment. In addition, only OC SAN IT Department staff will perform the installation of this software.

C. Refer to Chapters 10 and 11 and Appendix A of OC SAN Engineering Design Guidelines for requirements on preparation of Criticality Tables and ETAP, SAT, and EID databases. Refer to OC SAN CAD Manual and to Chapter 11 and Appendix A of OC SAN Engineering Design Guidelines for requirements regarding P&ID drawings.

7.0.7 SUBMITTAL REVIEW USING BLUEBEAM

A. OC SAN has standardized on the use of Bluebeam Revu for reviewing and providing comments to PDF files. PDF files will be hosted in a Bluebeam cloud-based studio session for review. See **Exhibit 15 - Bluebeam Designer User Training** for a detailed explanation on how Bluebeam will be used to provide, validate, and close submittal review comments.

B. Prior to submitting electronic PDF files, format them as indicated in **Exhibit 14 - Bluebeam Designer Training for Submission** and "OC SAN CAD Standards Manual" prior to submission.

C. A one-hour training session on the use of Bluebeam and custom status menu will be provided by OC SAN. All CONSULTANT team members responsible for quality control and reconciliation of submittal comments shall attend.

7.0.8 WORD TRACK CHANGES

A. Specifications documents and other MS-Word based deliverables will be hosted in OC SAN Teams environment for review. The guidelines for reviewing and commenting on MS-Word files, including Specifications reviews, can be found in **Exhibit 16 - Spec Review using Microsoft Word and Teams.**

7.0.9 GIS SUBMITTALS

A. The CONSULTANT shall provide the following GIS deliverables propagated from approved design submittals after the design submittal is accepted. These GIS submittals will not be reviewed or presented by the CONSULTANT. The purpose is to provide project specific GIS layers that could be used to visualize interproject dependencies and conflicts.

1. Electronic Submittal
    a. Kmz files for use with Google Earth
2. Final PDR
    a. Single project boundary (Polygon)
        (1) Boundary to encompass all new facilities and existing to be modified including:
            a) Buildings\Structures
            b) Tunnels
            c) Utilities
            d) Pavement
            e) Street boundary (ROW to ROW) of possible alignment
    b. Structures (Polygon)
            a) New structure outline
            b) Additions to existing structures
            c) Structure label
3. DS2, DS3, and FDS

a. Project boundary - updated from previous DS

b. Structures - updated from previous DS

c. Utilities - updated from previous DS

d. Manholes - updated from previous DS

e. Excavation of pits - updated from previous DS

f. Critical (as defined by Dig Alert) utility crossings (Point)

(1) Crossing of Dig Alert critical utilities

(2) Critical utility label

a) Natural gas

b) Fuel pipeline

c) 12 kV Electrical

g. Asphalt (Polygon)

(1) Asphalt to be replaced

8. PROJECT-SPECIFIC DEVIATIONS FROM OC SAN DESIGN GUIDELINES

The following Scope sections change the Engineering Design Guidelines requirements for this project and apply to ALL its Project Elements:

8.0 ENGINEERING DESIGN GUIDELINES CHAPTER 01, "DESIGN GUIDELINES – GENERAL REQUIREMENTS"

8.0.1 SECTION 01.2.19 "LIFE CYCLE COSTS"

A. Replace the 1st paragraph with the following:

B. The CONSULTANT shall conduct a sensitivity analysis to see if the life cycle costing analysis is sensitive to the following assumed costs: **chemical costs**

8.0.2 ENGINEERING DESIGN GUIDELINES CHAPTER 06, "MECHANICAL DESIGN"

A. Section 06.7 "Vibration Analysis for Rotating Electrical Equipment"

1. Replace the entire section with the following:

The CONSULTANT shall perform a RUN evaluation for all pumping systems according to ANSI/HI 9.6.8-2014 or latest (Rotodynamic Pumps—Guideline for Dynamics of Pumping Machinery), to assess various vibration related phenomena. RUN is the general term used to denote the quantity obtained from multiplying the Risk (R) value and Uncertainty (U) value determined during the appropriate evaluation. This evaluation will help determine the relevant analysis level required to appropriately evaluate pumping machinery construction attributes and relevant site characteristics. The CONSULTANT shall obtain (from the manufacturers of the rotating equipment) or calculate (based on anticipated turning speeds, operational requirements, etc.) the relevant equipment and system natural and/or excitation frequencies. These frequencies will include any effect from the various torsional, lateral, and structural behaviors of the equipment or system.

All other rotating equipment such as fans, blowers, compressors, and pumps/equipment not covered by other standards or specifications, etc. shall undergo a similar evaluation to determine relevant risk and analysis requirements to ensure project success and

reliability targets are met. For these other types of rotating equipment not covered by other standards or specifications, the CONSULTANT shall propose a plan for OC SAN to approve prior to analysis being performed accordingly.

For the purpose of estimating level of effort, the Risk Value, “R”, for critical equipment that is required for continuous operation of a process system or where standard equipment is modified slightly for this application, a R-Value of 4 should be assumed. For systems dedicated to a redundant process train or where standard equipment is used, a R-Value of 2 should be assumed.

The results from the above RUN evaluation shall be used by the CONSULTANT in their subsequent design, to help provide a robust solution for the project needs. Iterations of design and equipment substitutions shall trigger additional RUN evaluations and analysis, as needed. Final equipment acceptability and commissioning shall be per ANSI/HI 9.6.4-2009 or latest (Rotodynamic Pumps—for Vibration Measurements and Allowable Values), applicable Part of ISO 10816 latest (Mechanical Vibration), ANSI/AMCA 204-05:2012 or latest (Balance Quality and Vibration Levels for Fans), ISO 1940-1:2003 or latest (Mechanical Vibration—Balance Quality Requirements for Rotors in a Constant (Rigid) State), and ISO 21940-12:2016 or latest (Mechanical Vibration—Rotor Balancing—Procedures and Tolerances for Rotors with Flexible Behavior) as applicable. In addition, all loads, forces, and moments imparted to equipment or piping, including resonance, shall be fully mitigated and all usage cases analyzed and documented per ASME 31.3-2018 or latest (Process Piping) at a minimum, and properly designed within applicable allowable stresses, etc. If there are conflicts in the standards specified, the more stringent value or condition to prevail.

8.0.3 ENGINEERING DESIGN GUIDELINES CHAPTER 10, “ELECTRICAL DESIGN CRITERIA “

A. Section 10.1.1 “Electrical Design Basis and Assumptions- Data, Measurements and Analyses”

1. Replace the 1st paragraph with the following:

2. The calculation criteria for this project shall be as follows: the CONSULTANT is to coordinate with utility for short circuit contribution.

3. The CONSULTANT shall also refer to Engineering Design Guidelines, Chapter 10, Section 10.7 "Distribution System Requirements" for requirements.

B. Section 10.2.1.11 “Report - Motor Starting Study”

1. Replace the last 2 paragraphs with the following:

2. Dynamic Motor Study as part of the Motor Starting Study shall not be required for this project

C. Section 10.2.1.18 “Report - Other Analyses”

1. Replace the text with the following:

2. The CONSULTANT shall also include in the Report the following analyses

3. All testing shall be compared to equipment manufacturer or designated equipment specification(s) by a certified testing contractor.

4. Other analyses required in accordance with recognized engineering practice to support prudent design for the project, but not necessarily indicated in the Scope of Work.

8.0.4 ENGINEERING DESIGN GUIDELINES, CHAPTER 11, “INSTRUMENTATION AND CONTROL”

A. Section 11.4.1 “Requirements Study”

1. The Requirements Study shall not be part of the Scope of Work.

9. STAFF ASSISTANCE

OC SAN staff member or designee assigned to work with the CONSULTANT on the design of this project is Hardat Khublall at (714) 720-6965, e-mail to: hkhublall@ocsan.gov.

10. EXHIBITS

Exhibit 1 - Preliminary Design Report Requirements

Exhibit 2 - Design Requirements

Exhibit 3 - Project Management Requirements

Exhibit 4 - Risk Management Requirements

Exhibit 5 - Workshop and Meeting Requirements

Exhibit 6 - Quality Control Requirements

Exhibit 7 - Design Submittal Requirements Matrix

Exhibit 8 - Project Schedule Calculation

Exhibit 9 - Deliverables Quantities

Exhibit 10a - Sample Construction Cost Estimate Format Sample 1

Exhibit 10b - Sample Construction Cost Estimate Format Sample 2

Exhibit 11 - Sample Full Project Safety Review Plan

Exhibit 12 - Sample Risk Management Check List

Exhibit 13 - Sample MMRP Log Template

Exhibit 14 - Bluebeam Designer Training for Submission

Exhibit 15 - Bluebeam Designer User Training

Exhibit 16 - Spec Review using Microsoft Word and Teams

Exhibit 17 - OC SAN Engineering Design Guidelines and Standards – Available online at https://www.ocsd.com/about-us/transparency/document-central/-folder-917

Exhibit 18 – NOT USED

Exhibit 19 - Project Reference Material

- **Exhibit 19A – Existing Edinger Pump Station Record Drawings**
- **Exhibit 19B – Project FR12-035 Record Drawings**
- **Exhibit 19C – Edinger Pump Station Rehabilitation Study Final Report**
- **Exhibit 19D – Edinger Pump Station Conceptual Design Drawings**
- **Exhibit 19E – Edinger Pump Station Geotechnical Evaluation**
- **Exhibit 19F – Edinger Pump Station Conceptual Electrical Drawings**
- **Exhibit 19G – Force Main Profile**
- **Exhibit 19H – Gravity Sewer Profile**

- **Exhibit 19l – Example Passive Odor Control System**

Exhibit 20 – ORT Procedure Examples

Exhibit 21 – Sample FAT Narrative

Exhibit 22 – Sample FAT Procedure

Exhibit 23 - Sample RAT Procedure

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