PROFESSIONAL DESIGN SERVICES AGREEMENT

This PROFESSIONAL DESIGN SERVICES AGREEMENT, (hereinafter referred to as "Agreement"), is made and entered into to be effective the 27th day of April, 2022 by and between the ORANGE COUNTY SANITATION DISTRICT, (hereinafter referred to as "OC SAN"), and BLACK & VEATCH CORPORATION, (hereinafter referred to as "CONSULTANT").

WITNESSETH:

WHEREAS, OC SAN desires to engage CONSULTANT for **Primary Sedimentation Basins No. 3-5 Replacement at Plant No. 1, Project No. P1-126**; and to provide professional design services for new circular primary sedimentation basins, odor control facilities, and all ancillary facilities, (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 April 27, 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

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 its Subconsultants.

B. CONSULTANT is responsible for the quality of work prepared under this AGREEMENT and shall perform its work in accordance with professional engineering standards in effect for clarity, uniformity, and completeness. 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. 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 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 CONSULTANTS and Subconsultants using 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. 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.

G. OC SAN shall furnish the CONSULTANT available studies, reports and other data pertinent to the CONSULTANT's service; obtain or authorize the CONSULTANT to obtain or provide additional reports and data as required; furnish to the CONSULTANT services of others required for the performance of the CONSULTANT's services hereunder, and the CONSULTANT shall be entitled to use and rely upon all such information and services provided by OC SAN or others in performing the CONSULTANT's services under this Agreement.

H. CONSULTANT shall not be responsible for delays caused by circumstances beyond its reasonable control, including, but not limited to (1) strikes, lockouts, work slowdowns or stoppages or accidents, and (2) acts of God. Without limiting the above, while CONSULTANT has made reasonable efforts to incorporate into its plan for the Project any known current project impacts of the COVID-19 pandemic, CONSULTANT has not accounted for, and is not responsible nor liable for, unknown future changes due to the COVID-19 pandemic, including, without limitation, additional restrictions by government agencies or others (such as the availability of the site for access or client or CONSULTANT staff or others) to the extent they delay or otherwise impact the Project. In that event, CONSULTANT will notify OC SAN and CONSULTANT shall be entitled to reasonable and equitable adjustment to the contract schedule and price to account for such impacts. The parties shall negotiate such changes in good faith to equitably address any such unexpected impacts.

2. COMPENSATION

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

A. Total Compensation

Total compensation shall be in an amount not to exceed Fourteen Million One Hundred Sixty-Three Thousand Dollars ($14,163,000). Total compensation to 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 CONSULTANT, OC SAN shall pay to CONSULTANT a sum equal to the burdened salaries (salaries plus benefits) actually paid by CONSULTANT charged on an hourly-rate basis to this project and paid to the personnel of CONSULTANT. Upon request of OC SAN, 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 CONSULTANT, OC SAN shall compensate CONSULTANT and Subconsultants for overhead at the rate equal to the percentage of burdened labor as specified in Attachment “E” - Fee Proposal.

The fringe and overhead rates in this Agreement are based on the 2020 financial audit report provided by CONSULTANT. CONSULTANT may request an adjustment of its fringe and overhead rates when CONSULTANT’s 2022 financial audit report is available. In that case, CONSULTANT shall provide the 2022 financial audit to OC SAN for validation. If agreed upon, the adjusted fringe and overhead rates shall be fixed for the remaining duration of the Agreement.

In the event CONSULTANT does not request an adjustment to the overhead rate, then the previously agreed to overhead rate shall apply for the duration of the Agreement.

D. Profit

Profit for 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 CONSULTANT and Subconsultants, OC SAN shall pay profit for all services rendered by 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), 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, CONSULTANT may pay to Subconsultant total compensation on an hourly-rate basis per the attached hourly rate Schedule and as specified in the Scope of Work. OC SAN shall pay to 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 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 CONSULTANT actual costs for equipment rentals, leases or purchases with prior approval of OC SAN. Upon request, CONSULTANT shall provide to OC SAN receipts and other documentary records to support CONSULTANT's request for reimbursement of these amounts, see 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 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 Internal Revenue Service (IRS). The plan includes a combination of reimbursements based upon receipts and a "per diem" component approved by IRS. The most recent schedule of the per diem rates utilized by OC SAN can be found on the U.S. General Service Administration 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.

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 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 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, CONSULTANT estimates the cost of performing the services described in CONSULTANT's Proposal will exceed seventy-five percent (75%) of the not-to-exceed amount of the Agreement, including approved additional compensation, 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 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: 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. CONSULTANT shall allocate costs in the same manner as it would for payment requests as described in this Section of the Agreement. CONSULTANT shall warrant and certify the accuracy of these costs and understand that submitted costs are subject to Section 11 - AUDIT PROVISIONS.

B. 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 CONSULTANT under this Agreement and shall be prepared by CONSULTANT and accompanied by such supporting data, including a detailed breakdown of all costs incurred and project element 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 CONSULTANT as soon as practicable of one hundred percent (100%) of the invoiced amount on a per-project-element basis.

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

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

ii. The percentage of the work accomplished for each project element.

He may, at his discretion, 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 project element or the project in its entirety.

C. 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-project-element basis. In the event OC SAN's Director of Engineering 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 CONSULTANT of the work called for under the terms of this Agreement, and upon acceptance of such work by OC SAN, 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, 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 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 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, 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 Enforcement of the Department of Industrial Relations.

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. 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 CONSULTANT, provided that the service rendered by 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 CONSULTANT to substitute any insurer whose rating drops below the levels herein specified. Said substitution shall occur within twenty (20) days of written notice to 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 aggregate limit may be equivalent to the per occurrence limit. Said insurance shall include coverage for the following hazards: premises-operations, products liability/completed operations (including any product manufactured or assembled), broad form property damage, contractual liability, independent contractors liability, personal and advertising injury, mobile equipment, vicarious 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, 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 (except Errors and Omissions/Professional Liability), 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, 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 CONSULTANT in the amount of one million dollars ($1,000,000) in 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

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 (5) years from the date of the completion of the services hereunder.

In the event of termination of said policy during this period, CONSULTANT shall obtain continuing insurance coverage for the prior acts or omissions of CONSULTANT during the course of performing 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 CONSULTANT during the course of performing services under the term of this Agreement.

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 ten (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 certificates 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. CONSULTANT shall provide the SANITATION DISTRICT with copies of its insurance certificates and amendatory endorsements affecting coverage. Confidential information may be redacted from said policies, provided that verification of coverage, name of carriers and agent/broker may not be redacted. Said policies and endorsements shall conform to the requirements herein stated.

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, Vendor/Contractor 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 (2) 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 (2) 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 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 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. OC SAN will not invoke the option expressed in this paragraph unless it has reasonable cause to question CONSULTANT’s financial strength.

N. Defense Costs

The general and automobile liability policies (except Errors and Omissions/Professional Liability) 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 CONSULTANT. Nothing in this section, however, requires CONSULTANT in the absence of litigation to reveal its Errors and Omissions/Professional Liability limits beyond that required above in Section 7.

8. SCOPE CHANGES

In the event of a change in the Scope of Work, 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.

9. PROJECT TEAM AND SUBCONSULTANTS

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

There shall be no substitution of the listed Subconsultants and 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 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 CONSULTANT's compliance with all requirements under this Agreement during the term of this Agreement and for a period of three (3) years after its termination.

C. 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, 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 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 92708-7018
Attention: Wai Chan, Contracts Administrator
Copy: Andrew Brown, Project Manager

Notices shall be mailed to CONSULTANT at:

BLACK & VEATCH CORPORATION
550 S. Hope Street, Suite 2250
Los Angeles, CA 90071
Attention: James H. Clark, Senior Vice President

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 thirty (30) days written notice to CONSULTANT. In the event of such termination, CONSULTANT shall be entitled to compensation for work performed on a prorated basis through and including the effective date of termination.

CONSULTANT shall be permitted to terminate this Agreement upon thirty (30) days written notice only if 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 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. 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

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

CONSULTANT and its subconsultants and subcontractors shall comply with all applicable federal, state and local air pollution control laws and regulations.

C. Iran Contracting Act

CONSULTANT and its subconsultants and subcontractors shall comply with the Iran Contracting Act of 2010 (Public Contract Code sections 2200-2208).

17. AGREEMENT EXECUTION AUTHORIZATION

Both OC SAN and 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 tenth 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

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 CONSULTANT that any part of the services fails to meet those standards, 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, CONSULTANT shall indemnify, defend (at 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, CONSULTANT's, 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 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 CONSULTANT in carrying out its obligations under this Agreement to the extent of the negligent, recklessness and/or willful misconduct of CONSULTANT, its principals, officers, agents, employees, CONSULTANT's suppliers, CONSULTANT, Subconsultants, subcontractors, 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 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 CONSULTANT's supplier, CONSULTANT, Subconsultant, subcontractor, nor anyone employed directly or indirectly by any of them.

Exceptions (A) through (B) above shall not apply, and 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.

CONSULTANT's liability for indemnification hereunder is in addition to any liability CONSULTANT may have to OC SAN for a breach by 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 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 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 CONSULTANT. Payment to 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 the DISTRICT will reimburse CONSULTANT for the reasonable costs of defending the Indemnified Parties against such claims.

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

CONSULTANT shall comply with all OC SAN policies and procedures including the Contractor Safety Standards, 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 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. CONSULTANT shall submit all outstanding billings, work submittals, deliverables, reports or similarly related documents as required under the Agreement within thirty (30) days of receipt of notice of Agreement closeout.

Upon receipt of 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.

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. OPINIONS OF COST

OC SAN acknowledges that construction estimates, financial analyses and feasibility projections are subject to many influences including, but not limited to, price of labor and materials, unknown or latent conditions of existing equipment or structures, and time or quality of performance by third parties. OC SAN acknowledges that such influences may not be precisely forecasted and are beyond the control of CONSULTANT and that actual costs incurred may vary substantially from the estimates prepared by CONSULTANT. CONSULTANT does not warrant or guarantee the accuracy of construction or development cost estimates.

28. 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 CONSULTANT by their respective duly authorized officers as of the day and year first written above.

BLACK & VEATCH CORPORATION

By _____
Date

_____
Printed Name & Title

ORANGE COUNTY SANITATION DISTRICT

By _____
John B. Withers 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

WC:yp

ATTACHMENT “A”

SCOPE OF WORK

ATTACHMENT "A"

SCOPE OF WORK

Primary Sedimentation Basins No. 3-5 Replacement at Plant No. 1

Project No. P1-126

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1. PROJECT REQUIREMENTS

1.0 SUMMARY

1.0.1 PROFESSIONAL DESIGN ENGINEERING SERVICES

A. Provide professional design engineering services for the project as described herein.

1. Preliminary Design Report
2. Environmental documentation services
3. Permitting assistance
4. Preparation of bid documents

1.0.2 PROFESSIONAL LICENSING REQUIREMENTS

A. All plans and specifications shall be prepared by a professional engineer licensed in the State of California of the associated discipline.

B. CONSULTANT shall secure the services of a Professional Architect licensed in the State of California to determine the architectural requirements, develop and prepare preliminary design documents, and prepare final plans and specifications.

C. CONSULTANT shall secure the services of a Professional Fire Protection Engineer licensed in the State of California to determine fire protection requirements, develop and prepare preliminary design documents, and prepare final plans and specifications.

1.1 BACKGROUND

There are various primary treatment facilities at Plant 1, the oldest being the three circular primary clarifiers. These facilities were constructed around the early 1960's by projects P1-1 and P1-11 and are nearing the end of their useful life.

A concept study was performed in 2017 to assess the condition of the east side primary treatment facilities and identify recommended improvements. The study concluded the best alternative is to replace the primary clarifiers in-kind, only at a higher elevation to allow for the abandonment of the Primary Effluent Pump Station (PEPS).

A subsequent study, PS19-02, also evaluated the facilities to understand if P1-126 could take a phased approach to construction to allow for some amount of treatment capacity to be available from the circular primary clarifiers. The conclusion of this study was that, while possible, a phased approach is not preferred.

1.2 GENERAL PROJECT DESCRIPTION

The primary purpose of this project is to replace Primary Clarifiers 3, 4, and 5 (circular) at Plant 1, which are nearing the end of their useful life. The replacement clarifiers will renew the useful life of this process area, providing necessary treatment capacity and flexibility. The project will also replace all ancillary facilities necessary for the operation of the clarifiers, such as electrical facilities, yard piping, and utilities. The project will also demolish the old control center and primary clarifiers 1 and 2. The project includes the replacement of the primary scrubber facility with a new facility adequate to treat odors from Primary Clarifiers 3-31 (circular and rectangular). Figure 1 shows the general boundary of the project. Exhibit 19 Plant No. 1 Hydraulic Map shows structures and pipelines referenced in this scope of work and provides an overview of the general hydraulic layout.

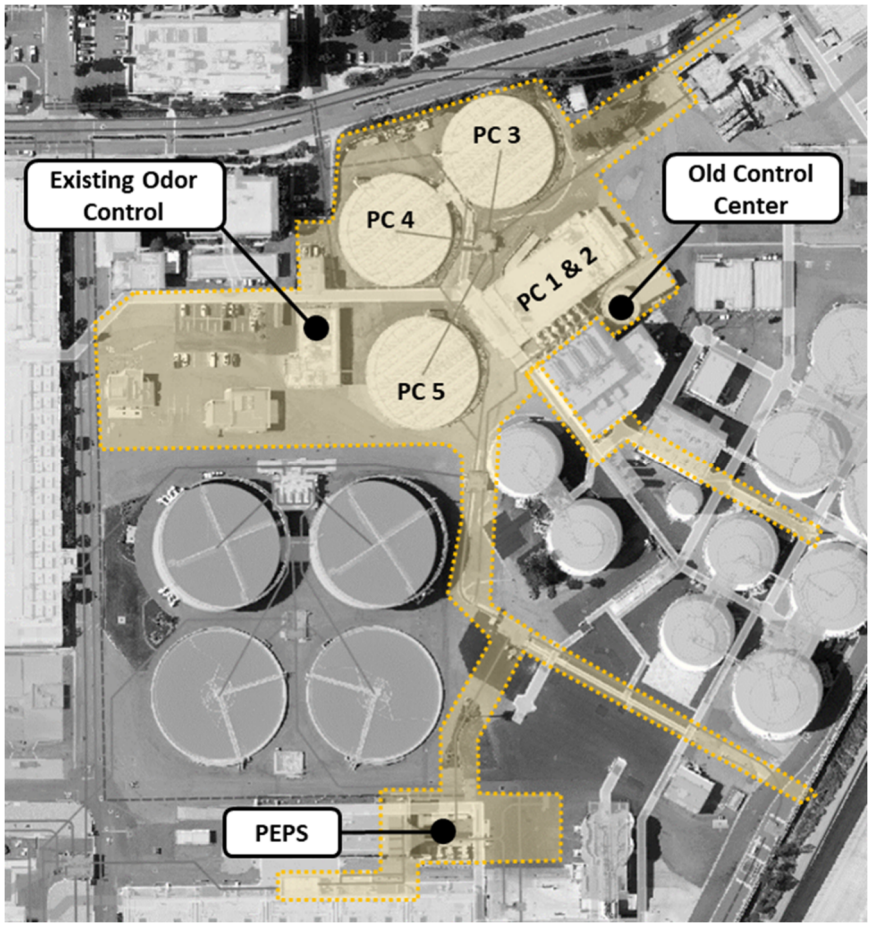

Figure 1 – Project P1-126 Boundary

1.3 PROJECT EXECUTION PHASES

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

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

Phase 2 – Preliminary Design

Phase 3 – Design

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

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

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

1.4 DESCRIPTION OF PROJECT ELEMENTS

Detailed descriptions of the Project Elements are presented below.

1.4.1 PROJECT ELEMENT 1 – DEMOLITION

A. The construction of Primary Clarifiers 3, 4, and 5 will require the demolition of certain existing facilities that include, but may not be limited to, the following (reference Exhibit 19 Plant No. 1 Hydraulic Map for location of these structures):

1. Primary clarifier 3-5 structures and associated mechanical and electrical equipment including:

    a. Sludge/scum pump room for Primary Clarifiers 3 and 4

    b. Electrical room for Primary Clarifiers 3 and 4

    c. Sludge/scum pump room for Primary Clarifier 5

    d. Electrical room for Primary Clarifier 1, 2 and 5

2. Influent structure JS-A from Headworks 1, if required to replace influent piping

3. Eastside Basin Distribution Box (EBDB)

4. Primary Effluent Diversion Box 1 (PEDB-1)

5. Primary Effluent Pump Station (PEPS) equipment

6. Primary Effluent Junction Box (PEJB) if the facility cannot accommodate the future hydraulic conditions

7. Effluent structures JB-B, JB-C, JB-5, JB-4, and primary effluent piping between these structures and PEPS as required to facilitate construction of new piping and for hydraulic improvements

8. 42-inch primary influent pipes from EBDB to each clarifier

9. All effluent piping between the clarifiers and PEPS including:

    a. 42-inch to 54-inch pipes from each clarifier to PEJB

    b. 48-inch and 60-inch pipes from PEJB to PEDB-1

    c. 60-inch pipe from PEDB-1 to PEPS

10. Plant utilities within the construction area as required to facilitate demolition and construction of the major facilities including but not limited to water, air, natural gas, and drains. Relocation of utilities are covered by Project Element 7 Utilities and Miscellaneous Items.

11. Primary Odor Control Facility including foul air piping, scrubbers, fans, and chemical equipment

B. Demolition of additional structures not directly related to the replacement of Primary Clarifiers 3, 4 and 5 and the primary odor control system include:

1. Primary Clarifiers 1 and 2

2. Old Control Center Building

3. Power Building 4 electrical equipment and standby generator as described in Project Element 5

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. Foul air piping for Primary Clarifiers 3 and 4 will be demolished or abandoned, whichever is more practical, and replaced in entirety. Foul air piping for Primary Clarifiers 6-31 will only be demolished and replaced to the extent required to facilitate

construction of and connection to the new Primary Odor Control Facility. Primary odor control treatment capacity must be maintained during construction of this project.

b. Tunnels 12 and 14 must be protected in place except for the portion of Tunnel 12 between Tunnel 14 and the Primary Clarifiers 3 and 4 pump room.

c. All other existing tunnels will be protected in place.

d. Demolition of the PEPS facility will include only the mechanical, piping, associated electrical, and ancillary support equipment. The building will be protected in place because it is shared with Blower Building 1.

e. Cengen catalytic converters (Project J-111) are supported by the south wall of primary clarifiers 1-2. The catalytic converters must be protected in place.

f. Plant radio tower adjacent to the Old Control Center must be relocated to facilitate demolition of the Old Control Center.

1.4.2 PROJECT ELEMENT 2 – PRIMARY CLARIFIERS 3, 4, AND 5

A. Replacement of the three existing circular primary clarifiers (3, 4, and 5) is required per Alternative 2 of the Concept Report. The clarifiers will be replaced in-kind, approximately in the same locations, with the same treatment and hydraulic capacity, but with a higher operating elevation to allow for gravity flow to Activated Sludge Plant 1 (AS-1). All mechanical and electrical support facilities including sludge and scum pump rooms, electrical rooms, ventilation systems and piping, drain systems, utility systems, piping, cables, and conduit will be replaced. The clarifiers will have sludge blanket analyzers, sludge density meters, weir washing system, and a tank washing system. Primary sludge will be conveyed through a new 12-inch primary sludge line (PS3) from the new clarifiers through Tunnels 12, 13, and 9 to the digesters and along East Perimeter Road to the thickening process.

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. Demolition and replacement of all three clarifiers will occur concurrently. Phased clarifier construction was evaluated under PS19-02 and is not preferred (see Exhibit 19). However, completion of effluent structures between PEJB and AS-1 may be required as early completion milestones in order to improve wet weather flow conveyance from Primary Clarifiers 6-31 to the secondary process prior to completion of the clarifiers and the influent piping.

b. The clarifiers will have flat covers, with the same functionality as the aluminum covers designed for the P2-98A project with at least 80% of cover panels hinged to allow visual observation of the water surface. The covers may require a sole source procurement. Drawings of the P2-98A covers are included in Exhibit 19.

c. The new basins will be designed at a higher hydraulic grade to allow for the elimination of the downstream PEPS. The new hydraulic grade will also allow for greater flexibility to manage flow between the eastside and westside clarifiers, and for primary effluent flow routing between AS-1, AS-2, and the Trickling Filters under various flow conditions.

d. Primary Clarifiers 3 and 4 are currently served by a common pump room and electrical room. Primary clarifier 5 is served by its own pump room and electrical room which also serves existing Primary Clarifiers 1 and 2. Two separate pump rooms and two separate electrical rooms are required to serve the three clarifiers due to their location and Tunnels 12 and 14.

e. New arc-rated motor control centers, RIO panels, PLC, network equipment, field control panels, and associated power distribution equipment will be housed in the new electrical rooms. All existing cables, conduits, and instrumentation will be replaced.

f. The existing PS1 and PS2 pipelines will also serve Primary Clarifiers 3-5, however the new PS3 pipeline will convey primary sludge only from the Primary Clarifiers 3-5. The new PS3 pipeline will connect to the sludge blend tanks at the Thickening and Dewatering facility and the digesters. Connections at the digesters will be on the PS1/PS2 header or in the TWAS connection. No new digester penetrations are required. The alignment of the PS3 pipeline will be along the same general alignment as the existing PS1/PS2 pipelines through Tunnels 12, 13, 9 and along the pipe rack on East Perimeter Road. Modifications to the existing pipe racks will be required to accommodate the new pipeline. Drawings of the pipe rack on East Perimeter Road are included in Exhibit 19.

g. Analysis of the clarifiers includes identifying the maximum allowable treatment capacity of the new clarifiers beyond the existing capacity. Identifying the maximum recommended clarifier capacity shall be limited to a review of industry accepted practice and CONSULTANT experience. Recommendations will be presented for clarifier improvements to maximize capacity (e.g. sidewater depth, perimeter baffles, or center feedwell baffles). Additional analysis including, but not limited to, CFD modeling of the clarifiers is not included in this effort.

1.4.3 PROJECT ELEMENT 3 – ODOR TREATMENT SYSTEM

A. Foul air from the existing Primary Clarifiers 1-5, Primary Clarifiers 6-31, and EBDB is currently treated at the Primary Odor Scrubber Complex for hydrogen sulfide (H_2S). Foul air from three 48-inch pipes from the westside clarifiers (Primary Clarifiers 6-31) and two 48-inch pipes from the eastside clarifiers (Primary Clarifiers 1-5) currently combine in a common header at the Primary Odor Scrubber Complex and is fed into four chemical scrubbers operating in a three duty, one standby configuration. However, currently all four scrubbers are needed to be in operation to serve Primary Clarifiers 6-31. Four, two-speed blowers convey approximately 120,000 cfm of combined foul air from all the primary clarifiers. Odor is treated using caustic, bleach, and muriatic acid chemical feeds based on monitored hydrogen sulfide levels.

B. The existing Primary Odor Scrubber Complex does not have sufficient capacity to provide the required air exchanges per hour to all of the eastside and westside primary clarifiers and is at the end of its useful life. A new, single Primary Odor Scrubber Complex serving Primary Clarifiers 6-31, Primary Clarifiers 3-5, and the EBDB will be constructed to replace the existing facility. The new facility will provide treatment of hydrogen sulfide (H_2S) and methyl mercaptan odor compounds and will be designed to meet SCAQMD permit requirements for H_2S removal.

C. The new Primary Odor Scrubber Complex will also include caustic storage, pumping, and piping facilities to provide chemical dosing to the Trickling Filter wetwell for the purposes of pH adjustment for snail control. New pH meters will be required at the Trickling Filters to measure and control the caustic dosing. Currently, dosing is performed manually at the Tricking Filters by lifting totes to the top of the wet well and feeding with a hose.

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 location of the new Primary Odor Scrubber Complex will be determined during Preliminary Design. For design level of effort, assume the location will be in the area of the existing parking lot directly west of the existing Primary Scrubber Complex such that the existing facility may remain in service while the new facilities are constructed.

b. New foul air ventilation ductwork from the westside clarifiers to the Primary Scrubber Complex will only be replaced to the extents required to make the connections to the new Primary Scrubber Complex.

c. For design level of effort, assume dual stage chemical scrubbers as the basis for design.

1.4.4 PROJECT ELEMENT 4 – PRIMARY METERING STRUCTURES

A. The existing primary influent structure consists a confined-space vault structure north of the existing Headworks 1 and Grit Chamber facilities with an insertion-type flowmeter on each of the three primary influent pipelines. The meters have been unreliable and are difficult to access for maintenance. Currently, there is no flow to the eastside clarifiers but Primary Clarifiers 3 and 4 may be placed in operation in the near future until the facilities are demolished. Flow to the westside clarifiers is calculated based on the sum of influent meters at headworks as well as additional side stream flows.

B. In order to operate the new eastside clarifiers, reliable flow measurement is required on the 72-inch primary influent pipe. This project will address the need for flow measurement to the eastside clarifiers by replacing the flowmeter for the 72-inch primary influent pipe and providing a new vault structure for maintenance access. The vault structure will include ventilation and stairway access to eliminate the need for a confined space permit for maintenance.

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. Replacement of the flowmeters on the two, 90-inch primary influent pipes is not part of the scope of work.

b. Additional flow metering may be required for flow control across the eastside and westside clarifier trains. For design level of effort, assume one flow metering structure will be required for metering of primary effluent flow on the new primary effluent pipeline.

1.4.5 PROJECT ELEMENT 5 – ELECTRICAL IMPROVEMENTS

A. Power Building 4 (PB-4) provides power to the Control Center, Lab, Chiller Building, Vehicle Maintenance Building, Waste Side Stream Pump Station, Shops, and the Primary Odor Scrubber Complex. The following improvements will be required for PB-4:

1. All existing motor control centers and 12kV load interrupter switches in PB-4 will be replaced with new 12kV load interrupter switches (one for each 12kV feed and no tie), 480V switchgear with an automatic transfer scheme, motor control centers, and lighting transformer and panelboard. Required new equipment and associated appurtenances, such as battery systems for switchgear control, shall also be provided. Air conditioning will be added to the PB-4 generator room. The existing oil-filled transformers and associated high resistance grounding equipment will They be re-used and tied in to the new equipment. The high resistance grounding equipment shall be relocated as required. Electrical SCADA shall be provided per OC San design guidelines.

2. The existing standby power generator which serves PB-4 fed loads, will be demolished and standby power for PB-4 will be provided through a new connection to the standby power generator in Power Building 8 (PB-8) upon confirmation of adequate spare capacity.

3. Seismic retrofits will be added to the building roof and louvers as identified by PS15-06 to meet current California Building Code (CBC) requirements.

B. PB-7 provides power to the primary polymer facility, Primary Clarifiers 6-31, and Primary Clarifiers 3-5. The following improvements will be required for PB-7:

1. Provide new power feeds to the new MCCs associated with new Primary Clarifiers 3-5 and the Primary Odor Scrubber Complex. The original PB-7 design accounted for the existing Primary Odor Scrubber Complex loads and included two motor control centers (MCC-SA and MCC-SB) that were never used and it is unclear if conduits were ever installed. These MCCs will be replaced with new MCCs within PB-7 that will provide power to the new Primary Odor Scrubber Complex.

C. PB-8 provides power to the trickling filters. The following improvements will be required for PB-8:

1. Provide standby power feeds to the new PB-4 480V switchgear. The required modifications to existing PB-8 (electrical and controls) will be performed to accommodate the new power feeds.

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. New 480V switchgear in PB4 will be double-ended switchgear with an automated transfer scheme. Normal power and standby power sources will be connected to the new switchgear based on OC San design guidelines.

b. All equipment associated with the PB-4 generator, including batteries, control panels, day tank, underground storage tank, wiring, piping and associated appurtenances no longer utilized will be demolished.

c. Relocation of the switchgear in PB-4 will require associated HMI to be relocated as well. Associated PLC and network equipment will be added and relocated as necessary.

d. Existing feeds to Control Center, Lab, Chiller Building, Vehicle Maintenance Building, Waste Side Stream Pump Station, and Shops, which are presently fed from MCCs-SP and MCC-R, will be re-fed from the new 480V switchgear.

e. New 12kV power distribution will be via new LI switches located in PB-4.

f. New switchgears and MCCs will be arc-rated with the required arc blast exhaust ducting. Arc-blast ductwork from arc-resistant low voltage switchgear and MCCs will exhaust inside the room as permitted by manufacturer’s space requirements. Arc-blast ductwork from arc-resistant medium voltage switchgear will be routed out of the building and/or electrical rooms to locations that are deemed safe for personnel and avoid hazardous conditions.

g. Existing cables and conduit associated with the demolished MCCs and switchgears will be replaced.

h. The new Odor Scrubber Complex will be fed from PB-7 upon confirmation of adequate spare capacity in the normal and standby modes of operation.

i. The J-47 Cable Tray Improvements at Plant No. 1 Study identified existing electrical and structural cable tray deficiencies in the Plant No. 1 primary clarifiers area. For design level of effort, assume that the existing deficient cable trays will be utilized and modified by this project in all areas except the basement of Power Building 4 and that the deficiencies identified by Project J-47 will need to be corrected by this project for the impacted cable trays. Reference **Exhibit 26** for details.

j. Seismic retrofits required for PB-4 will be those identified by PS15-06 (listed below) to mitigate incomplete load path at the north side of the high roof diaphragm.

(1) Provide concentric x-braced frames at 4 existing 8 ft by 5 ft louvers.

(2) Provide steel framed blocking at the roof level welded to the roof deck. Provide a new steel member sill anchored to the top of the existing masonry wall with epoxy anchors.

1.4.6 PROJECT ELEMENT 6 – YARD PIPING

A. Yard piping includes the following:

1. Distribution boxes and junction structures required for primary influent and effluent flow conveyance including the EBDB, PEJB, PEDB 1, and PEJB-1.

2. Overflow piping from distribution boxes and junction structures listed above.

3. All primary influent piping from existing Primary Influent Metering Structure to eastside clarifiers.

4. All primary effluent piping from the eastside clarifiers to AS-1 and secondary effluent piping from Trickling Filters to AS-1.

5. Cengen cooling water discharge piping into PEDB-1 and the Dissolved Air Flotation Thickeners (DAFT) underflow discharge into PEPS which may need to be relocated to facilitate the demolition of PEPS.

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. All piping, including the primary effluent piping connection to AS-1, will be replaced and not rehabilitated.

b. The PEJB may be adequate to handle the increased hydraulic head from raising Primary Clarifiers 3-5. However, the CONSULTANT should assume the structure is requires replacement to accommodate the new piping connections between the clarifiers, Trickling Filters, and PEDB-1.

c. New effluent structures must provide for flow control of primary effluent from Primary Clarifiers 3-5 to AS-1 and to the Trickling Filters. Additionally, new effluent structures and piping must allow primary effluent from the eastside of Primary Clarifiers 6-31 to be conveyed to AS-1 by flowing past the Trickling Filters and directly into the AS-1 influent box from the east side. The primary effluent piping to AS-1 will require replacement of JB-B and JB-C. The existing connection from the Trickling Filter effluent box to AS-1 will discharge to new PEDB-1 overflow because the effluent weir is lower than the AS-1 influent weirs.

d. For design level of effort, CONSULTANT shall perform analysis to determine if DAFT underflows, Cengen Cooling and associated drainage in that part of the plant can be redirected by gravity to AS-1 or by gravity to the plant drain system tributary to the sidestream waste pump station. If determined feasible, effort includes development of a recommendation and design. Design of a lift station solution or modifications to existing sump pump pumping/piping is not included.

e. Replacement of the primary effluent piping connection to AS-1 will require relocation of the transformers for the blower building and PEPS as well as the CNG facilities.

f. Improvements to the westside clarifiers and primary effluent structures are not included in this scope.

g. The connection into AS-1 will terminate upstream of the AS-1 eastside influent flowmeter isolation valve.

1.4.7 PROJECT ELEMENT 7 – UTILITIES & MISCELLANEOUS ITEMS

A. Utility system connections required for the new eastside clarifier facilities include:

1. Electrical power distribution and controls
2. Water, air, and drains
3. Chemical feed piping from existing Primary Polymer Facility
4. HVAC, fire alarm, fiber and communications, telephone, public address system, access control and security cameras
5. Utility relocations required for construction of the new facilities
6. New Primary Sludge pipeline (PS 3) from Primary Clarifiers 3-5 to solids process through Tunnels 12, 13, and 9
7. Tunnel 12 modifications
8. Grading, paving, and storm water drainage

The project boundary in Figure 1 shows the general extents of utility systems.

1.4.8 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. 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, 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. Temporary MCCs and power feeds from existing MCCs
2. Temporary piping to phase the replacement of the utilities in the tunnels
3. Bypass pumping to rehabilitate process structures
4. Temporary standby power to accommodate the transfer of electrical loads from existing electrical equipment to new electrical equipment and the phasing of the electrical system from the existing standby power electrical distribution equipment to the new equipment.
5. Temporary piping to re-route side stream flows from PEPS including the 12-inch Central Power Generation cooling water discharge into PEDB-1 and the DAFT underflows.
6. Temporary facilities for commissioning

1.4.9 COORDINATION WITH OTHER PROJECTS

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

1. **P1-105, Headworks Rehabilitation at Plant No. 1.** This project will rehabilitate and upgrade Plant No. 1 Headworks. Major facilities to be rehabilitated include the Metering and Diversion Structure, the Bar Screen Building, the Bin Loading Building, the Main Sewage

Pump Station, the Grit Basins, the Primary Influent channels, the Headworks Odor Control Scrubbers, and electrical power distribution and control systems. New structures to be constructed as part of this project include Grit Pump Station, Grit Handling Building, Headworks Odor Control Facility, Electrical Buildings, and other support systems.

2. **P1-132, Uninterruptible Power Supply Improvements at Plant 1.** This project will provide a new regional Uninterruptible Power Supply (UPS) at Power Building 8 to provide critical power to facilities in the northwest region of Plant No. 1. New electrical distribution and branch circuit panelboards will replace existing old and obsolete equipment. The project will provide temporary power to maintain services to critical loads during construction. Miscellaneous 480-volt cables and circuit breakers will also be replaced.

3. **P1-133, Primary Sedimentation Basins No. 6-31.** This project will increase the reliability of the rectangular primary clarifiers at Plant No. 1 by replacing three primary sludge pumps, replacing the launders in the Primary Influent Splitter Box, and installing a sump pump to remove water accumulation in a below-grade foul air pipe.

4. **P1-140, Activated Sludge-1 and Secondary Clarifier Rehabilitation.** This project will perform a comprehensive rehabilitation of the Activated Sludge Facility No. 1 at Plant No. 1. The facilities in this project include Blower Building No. 1, Aeration Basins Nos. 1-10, Return Activated Sludge Pump Station and Secondary Clarifiers Nos. 1-26. A new Mixed Liquor Recycle (MLR) pump station and associated piping is also included in this project.

5. **P2-133, B/C-Side Primary Sedimentation Basins Rehabilitation at Plant No. 2.** This project will extensively rehabilitate B & C Sides of primary basins at Plant 2 to extend uselife by another 40 years. The work will rehabilitate 10 primary basins with new flat covers; rehabilitate sludge/ scum pump stations; rehabilitate distribution structure B & C; replace all mechanical and electrical systems; replace polymer system; rehabilitate structural and yard piping; replace North Scrubber Complex; relocate electrical and controls to Distribution Center F; and miscellaneous upgrades.

6. **J-124 Digester Gas Facilities Replacement.** This project will replace the low and high pressure digester gas facilities at Plant No. 1 and No. 2 to meet current and future needs such as projected gas production and Air Quality Management District and National Fire Protection Association regulations. The Plant No. 1 work includes replacement of all compressors and flares and rehabilitation of the existing gas compressor building. The Plant No. 2 work includes construction of a new gas compressor building, and replacement of the flares and gas compressors.

7. **J-133 Laboratory Rehabilitation at Plant No. 1.** This project will rehabilitate the existing Laboratory building at Plant No. 1 to meet current building, electrical and safety codes and to incorporate recommendations from the Seismic Evaluation Study. Amenities, utilities, and equipment will be upgraded and working spaces will be re-purposed and optimized to meet the existing needs of the Laboratory. This project also includes temporary Laboratory service relocations since it will need to be shut down during rehabilitation.

8. **J-136 Power Building Structural Seismic Improvements at Plant No. 1 and 2.** The buildings at Plant No. 1 and 2 that house electrical systems will undergo structural and geotechnical (soil) improvements to reduce the risk of failure during a significant seismic event. At Plant No. 1, this includes the 12 kV Service Center, Central Power Generation, and Power Buildings 2 and 4. At Plant No. 2, this includes the Boiler Building, Headworks Power, Headworks Standby Power, Central Power Generation, and Power Buildings B, C, D.

1.5 DESIGN CONSIDERATIONS

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

1.5.1 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.

1.5.2 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.

1.5.3 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.

C. The construction cost estimate shall be as described in Engineering Design Guidelines Section 01.4.6 included as **Exhibit 16 - OC San Engineering Design Guidelines and Standards – Available online at https://www.OC San.com/about-us/transparency/**document-central/-folder-917. Life cycle cost analysis is described in Section 01.2.19 of the Guidelines.

1.5.4 PROJECT ELEMENT DESCRIPTION REVISIONS

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.

1.5.5 COST MODEL

A. CONSULTANT shall prepare the cost model to be used to demonstrate the true cost of major project decisions. With each major project decision, the CONSULTANT shall review and update the cost model. The cost model shall be a living document between the CONSULTANT and OC San to ensure that all changes are being acknowledged in the overall project cost.

B. The cost model shall show the implications of the decisions on the life cycle costs and shall be used in the decision-making process. After decisions are made, the updated construction costs, and life cycle costs, shall be submitted for project records.

C. The cost model shall be used to track project changes through final design.

D. The construction cost estimate shall be as described in Engineering Design Guidelines Section 01.4.6 included as **Exhibit 16 - OC San Engineering Design Guidelines and Standards – Available online at https://www.OC San.com/about-us/transparency/**document-central/-folder-917.

1.6 PROJECT SCHEDULE

1.6.1 GENERAL

A. The table below lists the time frames associated with each major project deliverable and with OC San's review and approval of those deliverables. CONSULTANT shall comply with the deadlines indicated in that table.

B. OC San's Project Manager will issue an Administrative Notice to Proceed (NTP) that will authorize CONSULTANT to begin preparation of the Project Management Plan (PMP) as defined in Exhibit 3 – Project Management Requirements. The Administrative NTP does not authorize costs to be incurred for execution of the technical portion of the Work, except where specifically noted in the Administrative NTP.

C. Following OC San's acceptance of the PMP, 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.

D. The time frames specified below are used to estimate the actual milestone dates based on the assumed NTP date, as shown in **Exhibit 7 - Project Schedule Calculation**.

E. 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**
Submit Project Management Plan (PMP)	10 workdays from Administrative NTP.
OC San Review of PMP	**5** working days from receipt of PMP. If the PMP is sufficient, the OC San PM will set the date for the Kickoff Meeting. In any case, CONSULTANT shall issue a revised PMP within **5** working days of receipt of OC San's comments for OC San approval.
Kickoff Meeting	The kickoff meeting will be scheduled to coincide with the Preliminary Design NTP.
Preliminary Design NTP	
Submit draft Preliminary Design Report (PDR)	**375** workdays from the Preliminary Design NTP. CONSULTANT shall establish a schedule with the OC San PM 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 resources.
OC San Review of draft PDR	**25** workdays from receipt of Draft PDR
Submit final Preliminary Design Report	**50** workdays from receipt of OC San comments on Draft PDR.
Final Design NTP	CONSULTANT's schedule shall allow **20** working days from submittal of the final PDR to receipt of the Design Phase NTP.
Submit Design Submittal 1 (DS1)	**100** workdays from Design Phase NTP.
OC San Review of DS1	**20** workdays from receipt of DS1
Submit Design Submittal 2 (DS2)	**100** workdays from receipt of OC San comments on DS1.
OC San Review of DS2	**20** workdays from receipt of DS2
Submit Design Submittal 3 (DS3)	**135** workdays from receipt of OC San comments on DS2.
OC San Review of DS3	**25** workdays from receipt of DS3
Submit Final Design Submittal (FDS)	**60** workdays from receipt of OC San comments on DS3. 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 PRELIMINARY DESIGN DECISION PLAN (PDDP)

A. CONSULTANT shall prepare a Preliminary Design Decision Plan (PDDP) for how project-specific decisions will be properly planned and scheduled such that:

1. The work is planned to meet the specified schedule while providing appropriate opportunities for OC San input.

2. OC San input is planned with appropriate timing to ensure a high-quality final product.

3. Specific major decisions are made in a timely manner by the project team and project stakeholders and do not impact the project schedule.

4. Workshops and meetings are scheduled at the start of the project to ensure maximum participation.

B. The PDDP shall include, at a minimum the following information:

1. A list of major project decision that need to be made.

2. Discussion of how major decisions will be made on the project (utilizing a decision tree as appropriate), and the process to gain OC San concurrence.

3. Summary and timing of major decisions to fit the project schedule.

4. List of workshops, technical design meetings and focused meetings where major decisions will be made, date of workshop or meeting, and the list of required attendees.

5. Schedule for all workshops, technical design meetings, and focus meetings and list of anticipated attendees.

C. The PDDP shall be developed by the CONSULTANT and submitted for OC San review. CONSULTANT shall make the appropriate revisions and submit the final version for use as the basis for execution.

2.1 PRELIMINARY DESIGN PRODUCTION

2.1.1 GENERAL

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

2.1.2 DESIGN MEMOS

A. The CONSULTANT shall produce Design Memos as indicated below in accordance with Error! Reference source not found.. The CONSULTANT shall discuss the combining of design memos with OC San and develop a design memo submittal list.

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

☒**Hydraulic Analysis**
- ☒Hydraulic Analysis

☒Hydraulic Profile

Requirements for Hydraulic Analysis design memo are in addition to project specific Design Memo for Plant No . 1 Hydraulic Model Update below. Design memos may be combined.

☒**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 up to three alternative concepts for review and acceptance

☒**Process Mechanical Design Parameters**

☒**Building Mechanical Design Parameters**

☒**Fire Protection**

☒Fire Protection Requirements

☒Fire Water Flow Analysis

☒Fire Protection Requirements for Existing Facilities

☒**Electrical**

☒Codes/standards.

☒ Brief description of electrical system.

CONSULTANT shall evaluate the location of the MCCs for the Primary Odor Scrubber Complex. The evaluation shall include the following:

- Available spare capacity in PB-7 (normal and standby power)
- Available spare capacity in PB-4 (normal and standby power)
- Feasibility of routing new conduits from the new MCCs (located in ether PB-4 or PB-7) to the Primary Odor Scrubber Complex
- Construction sequencing of the cut-over work

☒ 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

☐**Landscaping**
☐Landscaping Requirements
☐Develop up to three alternative concepts for review and acceptance

☒**Plant Utility Investigation Findings**

☐**Vibration Analysis**

☐**Collections Basis of Design**
☐Codes and Standards
☐Hydraulic Analysis
☐Pipeline Basis of Design
☐Manhole Basis of Design
☐Hydraulic Profiles

☐**Collections Rehabilitation Alternatives**
☐Pipeline Rehabilitation
☐Manhole Rehabilitation

☐**Collections Pipeline Design**
Assume 3 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**

The scope of this section is limited to identification of potential public impacts and mitigation measures. Public outreach plan and execution will be handled by OC San.

Environmental and Regulatory Requirements
☐CEQA Part of Programmatic EIR
☒CEQA work consists of a Notice of Exemption (NOE) since the project is replacing existing facilities and not expanding capacity. The NOE will be filled by OC San.
☐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**

In addition to the requirements for assessment of asbestos and lead in Exhibit 1, disposal of the existing nuclear density meters in the Primary Clarifiers 1-5 pump rooms must be addressed as well.

☒**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 and Potential Project Interdependencies

☒Preliminary Commissioning Package List

☒Preliminary Construction Sequencing Plan

☒Review of Constructability Issues

☒Temporary Handling of Flow

In addition to the requirements in Exhibit 1, this design memo shall also address the hydraulic risks associated the long term outage of the eastside clarifiers during construction.

☒**Construction Odor Monitoring and Mitigation**

☒**Preliminary Technical Specification List**

2.1.3 PROJECT SPECIFIC DESIGN MEMOS

Preparation of the following project specific Design Memos is required as part of preliminary design activities. The content of these Design Memos are further described under the corresponding Preliminary Design Activities tasks.

1. **Plant No. 1 Hydraulic Model Update**
2. **Condition Assessment**
3. **Primary Odor Scrubber Complex Condition Assessment**
4. **Primary Odor Scrubber Complex Rehabilitation and Replacement**
5. **Primary Effluent Pipeline Configurations**

2.1.4 PRELIMINARY DESIGN DRAWINGS

A. The CONSULTANT shall produce the following Preliminary Design Report drawings in accordance with Error! Reference source not found..

☒General

☒Demolition

☒Civil

☐Landscape

☒Structural

☒Architectural

☒Mechanical

☒Electrical

☒Instrumentation and Control

2.1.5 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 list below)
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.

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 8 - Deliverables Quantities**. The labeling and organization of the PDF submittal shall be in accordance with **Exhibit 13 - Bluebeam Designer Training for Submission**.

E. Each evaluation memo and 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 in order to initially confirm that the submittal is ready for printing.

2.1.6 PRELIMINARY DESIGN COST ESTIMATE

A. The CONSULTANT shall provide a cost estimate for the associated PDR submittal indicated below in accordance with Error! Reference source not found..

2.2 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.

2.2.1 PLANT NO. 1 HYDRAULIC MODEL UPDATE

A. The consultant shall provide engineering and hydraulic modeling services to update the Plant No. 1 hydraulic model. The updated model will represent the changed conditions of Plant No. 1 after elimination of the PEPS facility and increasing the elevation of the effluent weirs of the eastside clarifiers to allow gravity flow of primary effluent into AS-1. The model will be used as a planning tool to demonstrate modes of operation under various flow conditions and to simulate the modified hydraulics.

1. Update Hydraulic Model Datum

   a. The existing hydraulic model is based on plant datum. Perform field surveys of key hydraulic structures to update hydraulic model elements to NAVD 88 datum. Surveys shall be limited to top of concrete structure and weir elevations only. All other elevations in the hydraulic model will be adjusted relative to top of structures. Using the current hydraulic model which has previously been calibrated as part of PS17-09, update model elements to NAVD 88 elevations with results from field surveys. Provide update of hydraulic model reference files from SP-173 with markup of all changed elevations.

b. Incorporate changes made by Project No. P1-105 pumps, grit channels, grit chambers, headworks splitter box and primary influent piping into hydraulic model.

2. P1 Primary Influent and Effluent Hydraulic Improvements

a. The hydraulic model is calibrated to represent the system under peak flow conditions and requires additional adjustments to settings to simulate average day operating conditions. Real Time Controls (RTC's) are utilized in the model to allow for alternatives analysis. CONSULTANT shall add and modify settings and controls as necessary to develop the flow scenarios required.

b. CONSULTANT shall develop hydraulic model scenarios to identify capacity issues and system bottlenecks in the primary influent and effluent conveyance processes. Identify potential system improvements (for example, changes to weir elevations and overflows, variable flow control, or larger pipe sizes) to address these issues. At a minimum, address:

(1) Options for mitigating risks associated with peak wet weather flow during construction of P1-126 including potential options for conveyance of the full 320 mgd peak flows through Primary Clarifiers 6-31 with the 72-inch primary influent pipeline offline.

(2) Hydraulic limitations at PEDB-1 which contribute to potential overflow issues when primary effluent from Primary Clarifiers 6-31 are conveyed to the Trickling Filters and to AS-1 splitter box from the east side.

(3) Hydraulic limitations at PEDB-2 during high flows identified by SP-173

(4) Potential for flow routing to the Trickling Filter to attenuate high flows or overflow conditions at PEDB-1 and PEDB-2.

(5) Improvements to reduce potential for primary effluent overflows or to allow for increased response time to a potential overflow event.

(6) Other hydraulic system limitations identified in SP-173, PS17-09, P1-126 Concept Report, and PS19-02.

(7) Flow conveyance through the eastside clarifiers with only two clarifiers in service.

3. Updated P1 Hydraulic Model

(1) Develop final hydraulic model scenarios representing the improved conditions as determined by the preliminary design. CONSULTANT shall also update the hydraulic model again after final design to reflect any changes made during design.

(2) The hydraulic model must be updated within the existing modelling software platform, Infoworks ICM. Updated model functionality, spatial alignment and representation, hydraulic element naming conventions, and level of detail must be consistent with the existing model.

(3) The final hydraulic model must include scenarios for dynamic peak wet weather and average day flow scenarios under the existing and improved conditions.

(4) Develop and describe the hydraulic profile for the new facilities. See Engineering Design Guidelines, Appendix A, Section A.2.6 "Hydraulic Profile" for requirements. Describe modifications or improvements required to resolve these impacts.

(5) The existing hydraulic model master database contains both Plant 1 and Plant 2. Updates to Plant 2 hydraulic model are not required. CONSULTANT may utilize boundary conditions to isolate the P2 from the P1 system. However, final

hydraulic model must include one single master database model which includes both plants.

(6) Perform a calibration check based on available data related to PEDB-2.

(7) Review loss coefficients for P1 related to facilities critical to the project.

(8) Validate the critical portions of the system against calculations performed in Visual Hydraulics.

(9) Conduct a sensitivity analysis of the model.

B. CONSULTANT shall hold workshops, technical progress meetings, and focused meetings as necessary to obtain input from OC San staff to update the model, develop model scenarios, validate and present the model results, and provide recommendations for hydraulic system improvements and design criteria for the new eastside clarifier facilities.

C. This task shall be documented under the corresponding Project Specific Design Memo.

2.2.2 CONDITION ASSESSMENT

A. CONSULTANT shall conduct a field inspection and prepare a Condition Assessment Report including remedial recommendations for the facilities listed below.

1. 72-inch primary influent piping from the Primary Influent Metering Structure to the EBDB.
2. 66-inch overflow piping from PEDB-1 to PEJB-1
3. PEJB-1 structure
4. 72-inch primary effluent connection to AS-1 from PEPS

B. The condition assessment will require a manned entry inspection and core samples to be collected from the pipelines. CONSULTANT shall provide all personnel and equipment required for confined entry and inspection.

C. Existing condition assessment CCTV video data is available for the above facilities except for the 72-inch primary effluent pipe between PEPS and AS-1. The CONSULTANT shall coordinate a shutdown with OC San to inspect this facility, all other facilities are not anticipated to require process shutdowns for inspection. CONSULTANT shall submit inspection plan within one month of NTP. Based upon the hydraulic analysis and condition assessment data, CONSULTANT shall provide recommendations for rehabilitation or replacement of these assets. If the facilities must be replaced based on hydraulic criteria, a condition assessment may not be necessary.

D. This task shall be documented under the corresponding Project Specific Design Memo.

2.2.3 PRIMARY ODOR SCRUBBER COMPLEX CONDITION ASSESSMENT

A. CONSULTANT shall conduct a field inspection of the existing Primary Odor Scrubber Complex. The assessment will evaluate the feasibility of reusing the following either wholly or separately; 1) the electrical and instrumentation components of the facility including motors, instruments, wiring, conduits and tray cables, control panels, and MCC's, 2) blower fans, foul air valves and dampers, 3) chemical feed equipment including tanks and pumps, and 4) scrubber vessels. Structural components shall be considered not necessary for replacement unless required for replacement of other components.

B. A Technical Memorandum shall be prepared which describes the findings of the field assessment and presents those components that are proposed to be reused and those components which are recommended for replacement.

C. Based on the assessment findings and recommendations for component rehabilitation or replacement, a comparison of single stage versus dual stage scrubber technology approaches will be developed and presented. This evaluation will incorporate data from the OC San Odor Control Master Plan, input from CONSULTANT's odor control specialists, and OC San staff input

and experience with operating existing odor control systems. The capacity of existing scrubber assets will also be compared against preliminary expected capacity requirements.

D. Based on the feedback from the third Scrubber Assessment Workshop described as part of 2.3.4, a decision on the selected scrubber technology will be written into the final draft of the Memorandum.

E. The Primary Odor Scrubber Complex Condition Assessment shall be completed prior to start the Primary Odor Scrubber Complex Rehabilitation and Replacement task. It is anticipated that this task shall be completed within 90 **working days** after Preliminary Design NTP. An allowance of 260 hours is anticipated to complete the task.

2.2.4 PRIMARY ODOR SCRUBBER COMPLEX REHABILITATION AND REPLACEMENT

A. Based on the decisions made as part of the Primary Odor Scrubber Complex Condition Assessment task, CONSULTANT shall develop a preliminary design of the Primary Odor Scrubber Complex which may include the following:

1. CONSULTANT shall conduct odor sampling at the primary clarifiers to determine if additional odor constituents require treatment and to establish design criteria.

2. Address the feasibility of adding future capacity to the new Primary Odor Scrubber Complex to handle odor treatment requirements for future primary clarifiers and the Trickling Filters so that all primary foul air and foul air from the Trickling Filters can be treated by a single system.

B. At a minimum, the development of the preliminary design of the Primary Odor Scrubber Complex shall include:

1. Identify primary foul air treatment requirements, layout and configuration requirements, permitting requirements, capital and operating costs, and O&M considerations for the selected scrubber technology.

C. This task shall be documented under the corresponding Project Specific Design Memo.

2.2.5 PRIMARY EFFLUENT PIPELINE CONFIGURATIONS

A. The primary effluent connection to AS-1 involves significant operational and constructability challenges due to the elimination of PEPS, existing drain connections to PEPS, potential need to upsize the existing AS-1 connection pipe size, the presence of existing facilities including Tunnels 18 and 19, the PEPS wet well, the Compressed Natural Gas Building, and transformers serving the PEPS/Blower Building. CONSULTANT shall consider condition assessment, hydraulic analysis, constructability, operational, and other design factors to provide a recommended configuration of the new primary effluent pipelines and structures from the new clarifiers to PEJB and to the final connection at AS-1.

B. The results of this task will be incorporated into the Process Design Configuration Design Memos.

2.2.6 PRIMARY METERING STRUCTURE

A. Flow metering technology will be selected during Preliminary Design and may include magnetic flowmeters, ultrasonic, sonar, or other technologies recommended by CONSULTANT. OC San is in the process of pilot testing an externally mounted probe flowmeter on the existing 72-inch pipeline. The CONSULTANT will coordinate with OC San on pilot testing efforts and incorporate the results from pilot testing efforts into the recommendations of a flowmeter technology for implementation. Coordination during pilot testing efforts will be limited to recommendations for technologies to be tested by OC San, review of pilot study results, and evaluation of the applicability of the tested technologies to the project.

B. Evaluate the need for replacement of the flowmeters on the two 90-inch primary influent pipes along with the instrumentation requirements for flow control across the two eastside and westside clarifier trains.

C. The results of this task will be incorporated into the Process Design Configuration Memos.

2.2.7 EASEMENTS, PROPERTY BOUNDARIES AND WORK AREA LIMITS

A. 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.

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

2.2.8 TOPOGRAPHIC SURVEY

A. 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, 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. 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 plant 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 0.5-foot intervals.

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

6. 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)".

2.2.9 GEOTECHNICAL INVESTIGATION

A. 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 project Scope of Work

B. Soil Explorations

1. The geotechnical services shall include exploratory work such as soil borings and/or cone penetration tests (CPT's) 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; however, a maximum of five hundred feet (500') shall be allowed between pipeline alignment borings along a pipeline alignment.

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. Borings shall also be taken at or near the upstream and downstream connection points for the proposed facility.

4. The depth of the borings shall be adequate to characterize the soils to a depth of at least five feet below the bottom of an excavation or any proposed sewer invert elevation. At least two borings shall extend ten (10) feet below the proposed excavation bottom or sewer invert.

C. Soil Sampling

1. Soil samples for testing shall be collected as needed based upon CONSULTANT's professional judgment. However, samples intervals shall not exceed two-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 overdrilling and fill with cement-bentonite grout slurry, or deep pressure grouting to create a concrete seal.

E. 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 **five** borings shall be cased and converted into water level monitoring wells for use during construction according to local agency requirements. CONSULTANT shall obtain all necessary permits for the installation of monitoring wells. 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 within OC San's treatment plants shall comply with the requirements of the OC San Stormwater Management Plan. Work conducted outside OC San's treatment plant shall comply with the requirements of the local jurisdiction.

2.2.10 UTILITY INVESTIGATION

A. To better manage the risks associated with construction excavation, 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 and OC San 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. 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. 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.

D. 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. CONSULTANT shall determine all utilities impacted by the work for all applicable Project Elements of this Scope of Work. Utilities include all in-plant utilities. 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. 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.

E. Potholes and Geophysical Investigation

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

2. CONSULTANT shall “pothole” and perform geophysical investigation on all utilities described and shown in the accepted Potholing Plan/Geophysical Investigation Plan. 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. 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 conducted within OC San’s treatment plants shall comply with the requirements of the OC San Stormwater Management Plan. Work conducted outside OC San’s treatment plant shall comply with the requirements of the local jurisdiction.

7. 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. OC San control points shall be checked; northing, easting and elevation data for each pothole shall be shown on the Contract Drawings; and physical tie-ins provided in order to easily re-establish pothole locations after construction. 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 findings report.

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

   a. The materials removed from the excavation may not be used for backfill, 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, Minimum the 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 OC San. Cold mix shall only be allowed when the patch will be replaced by the project and where approved by OC San.

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

F. Quantitative Assumptions

1. 100 potholes will be needed during preliminary design and 100 potholes will be needed during final design.

2. 75,000 square feet of geophysical investigation will be needed during preliminary design.]

G. 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 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 drawings with survey information.

H. Relocation of Existing Utilities

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

2.2.11 FIRE PROTECTION SERVICES

A. CONSULTANT shall secure the services of a Subconsultant to determine the fire protection requirements and prepare preliminary design and final plans and specifications for the selected plan and assist OC San in obtaining approval from the fire authority.

B. Fire Flow Analysis:

☒Evaluation of existing potable water system is not required. Assume that the existing potable water system has adequate pressure and volume to supply the required sprinkler systems and hydrants.
☐Evaluate existing potable water system for adequate pressure and volume to supply the required sprinkler systems and hydrants.

2.2.12 ELECTRICAL LOAD MEASUREMENTS

A. CONSULTANT shall perform preliminary calculations of existing equipment (i.e. panelboards and motor control centers) early in PDR, prior to taking any load measurements to determine if there is adequate spare capacity for the new loads on the existing normal and standby power sources.

B. OC San will provide the following power monitoring data:

1. Power flow through each Cen-Gen 12kV feeder.

2. Power flow at the 480V mains of PB-4, PB-7, and PB-8 switchgears (power monitors do not exist for the individual MCC feeders).

C. CONSULTANT shall develop a list of load measurements that need to be taken to perform load calculation. OC San will perform the load measurements.

D. CONSULTANT shall take electrical measurements per Engineering Design Guidelines, Chapter 10, Section 10.2.1.4 “Report- Load Measurement and Recording”.

E. The load measurements data shall be compiled in a Load Measurement and Recording Report included as an attachment to the Electrical Design Memo.

F. CONSULTANT shall confirm and recommend whether the new odor control complex loads can be moved to PB-7.

2.2.13 VALUE ENGINEERING ASSISTANCE

A. CONSULTANT shall participate in a Value Engineering (VE) program as described in the EPA publication entitled “Value Engineering for Wastewater Treatment Works”, dated September 1984. The workshop will be managed primarily by an independent VE consultant hired by OC San.

B. Examples of topics that may be covered in the Value Engineering Study include: Project concepts, operations requirements, maintenance requirements, user friendliness and safety, possible project improvements, cost saving measures, public nuisance issues, site access, safety, and constructability.

C. The VE workshop will be held by the VE Consultant at an off-site location in or around the City of Fountain Valley, California, over a period of three days as follows:

1. CONSULTANT shall prepare all documentation to be reviewed at the workshop and mail the materials to all VE workshop participants at least one week prior to the workshop.

2. The morning of Day One shall involve a detailed presentation by CONSULTANT to the VE Consultant and OC San staff regarding the design and construction project to cover the design concepts for each project element. The presentation shall be followed by a site walk. A question and answer session shall follow and continue through lunch which will be arranged for and provided by the VE Consultant. OC San stakeholders may also be available to answer questions.

3. During the afternoon of Day One, CONSULTANT shall give a detailed presentation to the VE Consultant and OC San staff regarding the design and construction project schedule and a history of the decisions which limit the project and its sequencing. A question and answer session for this presentation shall follow. OC San stakeholders may also be available to answer questions.

4. Day Two will be a workday for the VE Consultant. At least one designated individual from the CONSULTANT shall remain to answer questions and gather additional information that the VE Consultant might need. OC San stakeholders may also be available to answer questions.

5. The morning of Day Three will be reserved for the VE Consultant to formulate their recommendations in preparation of their presentation that afternoon to CONSULTANT and OC San staff. At least one designated individual from CONSULTANT shall be available again to help the VE Consultant in their efforts. OC San stakeholders may also be available for a discussion. The afternoon presentation by the VE Consultant will outline their recommendations that are anticipated to be the body of the VE report. A designated individual from VE Consultant will record the comments and take notes from the workshop to document the process.

6. CONSULTANT shall participate in the workshop as described herein, evaluate the VE Report recommendations, conduct additional engineering analyses as determined by OC San, and meet with OC San to discuss the results of the engineering analyses and incorporation of all additional recommendations into a Final VE Report. CONSULTANT shall budget for 240 hours of staff time to evaluate VE recommendations and conduct additional engineering analysis.

2.2.14 ENVIRONMENTAL DOCUMENTATION

A. 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. CEQA Documentation Support

OC San expects that a Notice of Exemption (NOE) will be required for this project. OC San will separately arrange for preparation of required (NOE). The CONSULTANT shall produce and assemble project information required for preparation of the NOE. Assume 80 hours for level of effort.

2.2.15 PERMITTING ASSISTANCE

A. 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 particular 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, 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. 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. With the exception of construction contractor-furnished permits, OC San staff will execute all applications. All permit fees will be paid directly by the OC San and will not be part of CONSULTANT's fee.

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

F. SCAQMD Permitting

1. CONSULTANT shall provide assistance to OC San in obtaining the South Coast Air Quality Management District (SCAQMD) permits for the project by performing following tasks:

2. Demonstration of Compliance with New Source Review for Criteria Pollutants (SCAQMD Reg. XIII)

a. Emissions Estimation: CONSULTANT shall estimate emissions of criteria pollutants in terms of both concentrations and mass rates to determine if there is an increase in

"uncontrolled" emissions (mass rates) from the project. CONSULTANT may utilize air sampling data previously collected by OC San. If OC San's data is not adequate, CONSULTANT shall perform source tests and/or conduct fate-transport modeling. CONSULTANT shall submit the emission estimates to OC San for approval prior to proceeding with the subsequent work.

b. Best Available Control Technology (BACT): If there is an increase in "uncontrolled" emissions (any amount for NOx and CO and greater than 1 lb/day each for VOC, NH3, and PM10), CONSULTANT shall evaluate and determine BACT for the affected pollutant(s).

3. Demonstration of Compliance with New Source Review for Air Toxics (SCAQMD Rule 1401)

a. Emissions Estimation: CONSULTANT shall estimate emissions of Toxic Air Contaminants (TACs) in terms of both concentrations and mass rates for each of the TAC listed in SCAQMD Rules 1401 and 1402 – "Proposed List of Air Toxic Target Compounds for POTW." CONSULTANT may utilize air sampling data previously collected by OC San. If OC San's data is not adequate, CONSULTANT shall perform source tests and/or conduct fate-transport modeling. CONSULTANT may also obtain supporting data from literature searches or from similar processes at other wastewater treatment facilities. CONSULTANT shall submit the emission estimates to OC San for acceptance prior to proceeding with the subsequent work.

b. Screening Risk Assessments: If there are any TAC emissions, CONSULTANT shall conduct a Tier 1 screening risk assessment using the latest version of Risk Assessment Procedures for Rules 1401, 1401.1 and 212 from the SCAQMD Risk Tool spreadsheet.

c. Air Dispersion Modeling and Health Risk Assessment: If the project does not pass the Screening Risk Assessments as outlined in 3.b. above, CONSULTANT shall conduct air dispersion modeling and either a Tier 3 or 4 health risk assessment(s) to demonstrate that the project will not result in an increased Maximum Individual Cancer Risk (MICR) greater than one-in-one million (1.0 x 10-6), nor an increased Chronic Hazard Index exceeding 1.0 at any off-site residential, sensitive or workplace recptor. Additionally, CONSULTANT shall demonstrate that the project will not exceed an Acute Hazard Index of 1.0 at any off-site receptor location. Prior to conducting this task, CONSULTANT shall submit the proposed modeling methodology for OC San's review and acceptance prior to conducting the work.

d. Best Available Control Technology for Toxics (T-BACT): If the MICR from the project is greater than one-in-one million (1.0 x 10-6), CONSULTANT shall evaluate and determine the T-BACT.

e. The air dispersion modeling shall be conducted using the EPA's AERMOD dispersion software. OC San has an existing AERMOD model built for a previous odor modeling project which may require substantial revisions to correct deficiencies and to update structures built since the model was last updated. CONSULTANT may use the data in the existing model, provided CONSULTANT verifies the accuracy of the data with OC San. The health risk assessment shall be conducted per SCAQMD's latest "Risk Assessment Procedures for Rule 1401 and 1402.

4. Demonstration of Compliance with Odor Nuisance (SCAQMD Rule 402)

a. The results of the foul air characterization and odor dispersion modeling conducted under this task may be used to demonstrate that the project complies with SCAQMD Rule 402.

5. Planning and Design Strategies for Air Pollution Control System

a. If an air pollution control system is required for BACT, T-BACT, and/or Odor, CONSULTANT shall be responsible for planning and design strategies to meet

regulatory and OC San standards and perform any additional air dispersion modeling to determine the efficacy of the proposed air pollution system. All exhaust stacks, vents, and sample ports required shall meet SCAQMD's Guidelines for Construction of Sampling and Testing Facilities.

6. Demonstration of Compliance with SCAQMD Rule 212

   a. If there is a K-12 school within 1,000 feet of the project, CONSULTANT shall notify OC San for further instruction.

7. Preparation of the Draft Application Package

   a. CONSULTANT shall provide the draft application package for OC San's review and comments. The package shall include all applicable permit application forms available on SCAQMD's website and supplemental information including, but not limited to, the following:

      (1) General Project Description and Location

      (2) Process/Equipment Description

      (3) Design Criteria for Process/Equipment and Air Pollution Control System

      (4) Process/Equipment Drawings

      (5) Summary of Work Performed under Items 1 thru 5 above

      (6) Demonstration of Compliance with Other Applicable SCAQMD, State, and Federal Air Quality Regulatory Requirements

8. SCAQMD Permitting Meetings

   a. CONSULTANT shall assume meetings for the following subjects related to SCAQMD permitting:

      (1) SCAQMD Permitting Kickoff Meeting

      (2) Air Emissions Estimates

      (3) Air Dispersion and Health Risk Assessment

      (4) Compliance Demonstration Review

      (5) Permit Application Material (2 meetings)

      (6) Review of draft SCAQMD permits.

   b. The CONSULTANT shall assume 4 meetings at 1 hours each.

G. Building Permits

   1. City of Fountain Valley Fire Department Permit (for chemical areas)

   2. The CONSULTANT shall assume **3** meetings at **1** hours each.

H. Stormwater Permitting

   1. Stormwater permitting is not required for this project.

2.2.16 PROJECT MANAGEMENT

A. CONSULTANT shall be responsible for managing CONSULTANT's project execution, schedule, budget, subconsultants, and coordination with other projects. The CONSULTANT shall perform the project management requirements in accordance with **Exhibit 2 - 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 $100,000.

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

Work Package	Description	Tasks
3146	Preliminary Design	**All Phase 2 tasks, except those listed above.**
3251	Design Submittal 1	**Tasks 3.0 through 3.3, 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**

2.2.17 RISK MANAGEMENT

A. When required below, CONSULTANT shall provide risk management in accordance with **Exhibit 3 - Risk Management Requirements** with the project specific options identified below.

B. Risk Management:

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

C. Moderator

1. CONSULTANT shall provide a suitably qualified moderator to conduct the Workshops defined in **Exhibit 3 - Risk Management Requirements**. The moderator shall have the following attributes:

a. Sufficiently technically knowledgeable to understand the nature of the risks involved, but the moderator need not be a subject matter expert.

b. Not extensively involved in the project to date, so that the moderator has no personal stake in the issues. CONSULTANT's Project Manager and Project Engineers for this project are not considered suitable.

(1) Employed by CONSULTANT or a Subconsultant.

2. The Preliminary Design Risk Management Workshop shall be planned and scheduled for a duration of **4** hours and will be held at OC San offices.

2.2.18 QUALITY CONTROL

A. The CONSULTANT shall provide quality control requirements in accordance with **Exhibit 5 - Quality Control Requirements**.

2.3 PDR WORKSHOPS AND MEETINGS

2.3.1 GENERAL

A. Workshop and meeting planning, requirements, agendas, and meeting minutes shall be in accordance with **Exhibit 4 - Workshop and Meeting Requirements**.

2.3.2 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 CONSULTANT's teams. The discussion topics shall include: OC San responsibilities, CONSULTANT's responsibilities, invoice procedures, personnel badges, parking, site access, 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 discuss the topics listed below. PDR Production Workshops shall be held to discuss topics to facilitate preparation of design memos and are separate from PDR Design Memo Workshops and PDR Review Workshops which are described further in the following sections. The list below indicates the number of PDR Production Workshop topics anticipated to be held to cover the specific topic. Unless otherwise noted, each workshop shall be 2 to 4 hours in length. Workshops may be combined as needed and additional workshops may be held as needed to facilitate PDR production. Some workshops may be held as technical progress meetings.

PDR PRODUCTION WORKSHOPS	
TOPIC	**NUMBER OF WORKSHOPS**
PDR Production Kickoff	1
PDR Production Workshops	-
Design Parameters	1
Facility Operation and Maintenance (Project-wide issues)	1
Geotechnical	1
Permitting and Compliance	2
Electrical	3
Instrumentation and Control	3
Utility Investigations	1

PDR PRODUCTION WORKSHOPS	
TOPIC	**NUMBER OF WORKSHOPS**
Hazardous Materials	1
Implementation Plan and Sequencing Constraints	3
Equipment and Process Redundancy Workshop (described below)	1
Maintainability Workshop (described below)	1
PDR Constructability Workshop (described below)	1

2.3.3 DESIGN MEMO WORKSHOPS

A. CONSULTANT shall hold workshops to present and review the Design Memos as required in **Exhibit 4 - Workshop and Meeting Requirements**.

2.3.4 PROJECT SPECIFIC DESIGN MEMO WORKSHOPS

A. CONSULTANT shall hold the following workshops at a minimum for the project specific design memos.

Task No.	Topic	Description
2.1.3.	**Hydraulic Analysis (3 workshops)**	**Kickoff.** Meeting to provide overview of the model, approach for incorporating updates and conducting analysis. Review parameters to be updated.
		Model Update. Meeting to present the updates to the hydraulic model and review model results.
		System Improvements. Meeting to present and review recommended system improvements.
2.1.3	**Condition Assessment (3 workshops)**	**Site Visit Planning.** Meeting will be used to confirm what facilities and equipment will be inspected and that each site visit is warranted, and a discussion of what observations should be made.
		Site Visit Debrief. The site visitors will debrief the rest of the project team on the findings of the site visits, and what conclusions can be drawn.
		Condition Assessment. CONSULTANT shall present the findings of the condition assessments for the piping and summarize the recommendations for addressing deficiencies. The workshop shall occur prior to submitting the related evaluation memo.

Task No.	Topic	Description
2.1.3	**Primary Odor Scrubber Complex Condition Assessment** **(3 workshops)**	**Site Visit Planning.** Meeting will be used to confirm what facilities and equipment will be inspected and that each site visit is warranted, and a discussion of what observations should be made. **Review of Findings.** CONSULTANT shall discuss individual components of the facilities, rehabilitation options, and how the components may be replaced while maintaining system operation. **Review of Technologies.** CONSULTANT shall present the options for single stage scrubber and dual stage scrubber technologies relative to the findings of the condition assessment.
2.1.3	**Primary Odor Scrubber Complex Rehabilitation and Replacement** **(1 workshops)**	**Design Criteria.** CONSULTANT shall present draft design criteria based on decisions made in 2.2.3. If applicable, the results of odor sampling may be presented. Preliminary layout and configuration of the scrubber system shall be presented.

2.3.5 PDR REVIEW WORKSHOPS

A. CONSULTANT shall hold the following workshops to review the draft Preliminary Design Report as required in **Exhibit 4 - Workshop and Meeting Requirements**:

1. Draft PDR Presentation Workshop
2. Draft PDR Review Workshop
3. PDR Validation Workshop

2.3.6 EQUIPMENT AND PROCESS REDUNDANCY WORKSHOP

A. An equipment and process redundancy workshop shall be held after the draft process flow diagrams have been developed to review the proposed redundancy requirements and equipment sizing versus equipment quantity for the systems provided by the project. The equipment and processes shall be designed to include sufficient redundancy in process trains and standby equipment to allow for serviceability without disruption in plant operations. Philosophies to be discussed shall include the following:

1. Equipment which may be difficult, costly, or time consuming to maintain may require additional redundancy to mitigate reliability issues.

2. In general, there is a trade off on the size of the selected equipment. Large equipment reduces the total quantity of equipment to perform the function. This helps with reducing the number of equipment pieces that must be maintained, but may result in burdensome and lengthy downtime periods for repair. Small equipment provides the reverse. More equipment is needed for the function creating more things to maintain. However, it provides for more flexibility and typically has a shorter down time.

3. Considerations must be provided to avoid single points of failure. For example, redundancy in mechanical equipment can be negated if all equipment is powered on a single common MCC.

4. The Consultant shall develop and establish the reliability and redundancy criteria through workshops and evaluation and design memoranda.

5. 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 equipment and process redundancy workshop shall be held at OC San's facilities and shall generally be 2 to 4 hours in length. The CONSULTANT shall facilitate this workshop and OC San and CONSULTANT staff shall attend.

C. A follow up workshop shall be held at OC San's facilities to review the final equipment and process redundancy requirements.

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

1. Prepare package for the equipment and process redundancy workshop participants. The package shall consist of process flow diagrams and other information selected by CONSULTANT.

2. Prepare presentation on the project.

3. Summarize the equipment and process redundancy workshop comments and action taken on each comment in a memorandum.

4. All comments and recommendations of the workshop shall be incorporated into the Process Design Configuration Design Memo and the bid documents.

2.3.7 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, CONSULTANT staff expertise, and manufacturer data.

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

a. Sludge pumps and grinders

b. Primary clarifier mechanical equipment

c. Primary clarifier covers

d. Odor control systems

e. Chemical containment area

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 at OC San's facilities and shall generally be 2 to 4 hours in length. OC San and CONSULTANT staff shall attend this workshop.

C. A follow up maintainability workshop shall be held at OC San's facilities to review the draft project maintainability design rules.

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

E. 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 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.

2.3.8 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, construction sequencing, power outages, equipment shutdowns, viability of equipment relocation, 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 be held at OC San facilities and shall generally be 4 to 6 hours in length. OC San and CONSULTANT staff shall attend this workshop.

C. 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 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.

2.3.9 TECHNICAL PROGRESS MEETINGS

A. Technical Progress Meetings shall be monthly to review various issues with OC San's project team. A total of 16 meetings shall be held during Preliminary Design Phase. 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 CONSULTANT team members are required for each.

2.3.10 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. The following tentative list of topics may be covered in these meetings:

1. Site survey

2. Site utility coordination

3. Geotechnical report

4. Quality control plan

5. Common names for facilities and equipment

6. Process Flow diagram/Operating Philosophy (several meetings as needed)
7. Permits
8. OC San Safety Standards, confined space and other safety requirements
9. Fire Department requirements
10. City requirements
11. Fire protection
12. Landscaping plan
13. Architectural concepts
14. Survey and geotechnical requirements
15. Potholing
16. Hazardous Area classification (with OC San Authority Having Jurisdiction representative participating)
17. Utilities and utility tie-ins
18. Technical Definitions/equipment data sheets
19. Control concepts
20. Instrumentation and control upgrades
21. Sample P&ID; basis for equipment tag numbering
22. Sample control descriptions
23. Sample EID database
24. Sample SAT database
25. Data network block diagram/network connection diagram
26. I/O relocation plan
27. Electrical distribution system, system controls and the related upgrades
28. Single-line diagrams and electrical demolition
29. Modes and analyses cases for electrical studies
30. Criticality Table update
31. Standby power
32. Construction sequencing
33. Special studies
34. Coordination with other projects
35. Additional meetings as necessary

B. Meeting lengths shall be as required to cover the topic in question. Depending on subject matter and attendees, one meeting may cover multiple subjects. CONSULTANT shall determine how many meetings will be needed to cover these topics. CONSULTANT may suggest additional topics as necessary. Supplementary meetings may be scheduled with OC San staff, as necessary to allow coordination between CONSULTANT and OC San staff. In addition to the above meetings, CONSULTANT shall anticipate bi-weekly coordination calls between OC San and CONSULTANT technical design staff to coordinate open tasks.

2.3.11 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. 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**
P1-140	Activated Sludge-1 and Secondary Clarifier Rehabilitation	**2 meetings @ 1 hours**
P1-105	Headworks Rehabilitation at Plant 1	**2 meetings @ 1 hours**
Other projects coordination	Other projects coordination	**4 meetings @ 1 hour**

2.3.12 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. 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 as a result 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 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
☒Permits
☒Measurement and Payment (includes Mobilization/Demobilization)
☒Contractors Construction Schedule and Reports

☒Seismic Design Criteria (for those restraints, supports, etc. to be design by the Contractor)
☒Quality Assurance-Quality Control Program
☒Vehicular Access, Staging and Security
☒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
☒Mold Remediation and Controls

3.0.4 DESIGN SUBMITTALS

A. The CONSULTANT shall produce the following design submittals as indicated below in accordance with **Exhibit 1 - Preliminary Design** Report Requirements

B. Exhibit 1 - 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 1
☒Design Submittal 2
☒Design Submittal 3
☒Final Design Submittal

C. Continuing Work After Design Submittal Submission

☒CONSULTANT is expected to **continue design work** on the project while OC San staff reviews Design Submittal 1 and Design Submittal 2. For Design Submittal 3, CONSULTANT shall stop all design work until receipt of OC San comments on that submittal.
☐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

☐CONSULTANT shall put the cable and raceway schedule on the drawings. CONSULTANT may utilize an Excel spreadsheet and copy the spreadsheet onto the drawings.
☒ CONSULTANT shall utilize OC San's Microsoft Access Cable and Raceway Schedule database electronic format. See exhibit titled "Cable Conduit and Tray Schedule Database".

3.0.6 COMMISSIONING PLAN MATERIALS

A. The CONSULTANT shall provide a commissioning plan materials in accordance **Exhibit 1 - Preliminary Design** Report Requirements

B. Exhibit 1 - Design Requirements**.** It is intended that commissioning plan materials developed for OC San Project No. P2-98 be used to the extent possible for this project. CONSULTANT shall identify necessary tests. OC San will provide example test procedures for standard equipment, for ORT and Pre-FAT testing, from OC San's Procedure Generator application.

C. Specification Section 01810, Commissioning

☐OC San will prepare Section 01810
☒CONSULTANT shall edit Section 01810

D. ORT Procedures

☐OC San will prepare ORT procedures
☒CONSULTANT shall prepare ORT procedures using OC San's ORT procedure generator

☐CONSULTANT shall prepare new ORT procedures

E. Pre-FAT Procedures

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

F. FAT Procedures

☐OC San will prepare FAT procedures
☒CONSULTANT shall prepare FAT procedures

G. RAT Procedures

☐RAT procedures not required
☐OC San will prepare RAT procedures
☒CONSULTANT shall prepare RAT procedures
Development of RAT procedures in this task does not require detailed narratives as shown in Exhibit 25 and shall be limited to the following approach developed for OC San Project No. P2-98:

- Define the processes that will be tested during RAT
- Define pre-requisites to RAT
- Define Length of RAT while running under normal operation.
- Develop a schedule of operations to test each operating mode.
- Develop forms to be completed by the inspection team (OC San, Contractor and Design Engineer) that document baseline operation.

H. PAT Procedures

☐PAT procedures not required
☐OC San will prepare PAT procedures
☒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 1 - Preliminary Design** Report Requirements
Exhibit 1 - Design Requirements**.**
☒CONSULTANT shall develop EID in accordance **Exhibit 1 - Preliminary Design** Report Requirements
Exhibit 1 - Design Requirements**.**

3.0.8 SCADA ADMINISTRATION TOOL (SAT)

☐SAT is not required.
☐OC San will develop the SAT in accordance **Exhibit 1 - Preliminary Design** Report Requirements
Exhibit 1 - Design Requirements**.**
☒CONSULTANT shall develop the SAT in accordance **Exhibit 1 - Preliminary Design** Report Requirements
Exhibit 1 - Design Requirements**.**

3.0.9 CONSTRUCTION SUBMITTAL ITEMS LIST

☐OC San will develop the Construction Submittal Items List in accordance with **Exhibit 1 - Preliminary Design** Report Requirements
Exhibit 1 - Design Requirements**.**

☒CONSULTANT shall develop the Construction Submittal Items List in accordance with **Exhibit 1 - Preliminary Design** Report Requirements
Exhibit 1 - 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 Project Elements.

A. 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.

B. If existing facilities such as valves, gates, stop logs, etc. are being used for shutdowns or 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, 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 function adequately during construction.

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 1 - Preliminary Design** Report Requirements

B. Exhibit 1 - Design Requirements**.**

C. Design Information

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

   a. 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 are prepared since the previous submittal was delivered.

D. Facility Operation and Maintenance

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

E. Electrical Deign 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, and power panels
☒ Lighting calculations
☒ Standby generator loading calculations
☒ Ductbank cable pulling tension, derating and cable tray fill calculations

F. Power System Studies

☐ETAP not required.
☒Plant ETAP model for the project performed by OC San.
☐Plant ETAP model for the project performed by CONSULTANT.
☐Electrical Systems Analysis Report performed by CONSULTANT.

3.1.2 CONSTRUCTION COST ESTIMATE

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

B. Exhibit 1 - Design Requirements**.**

☒Design Submittal 1 (Required in addition to Exhibit 2 and Engineering Design Guidelines 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 1 - Preliminary Design** Report Requirements

B. Exhibit 1 - Design Requirements**.**

☐Construction Schedule is not Required

☒Design Submittal 1
☒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 1 - Preliminary Design** Report Requirements

B. Exhibit 1 - Design Requirements.

☐Procurement alternatives not required
☒Procurement alternatives required

C. Equipment that may be needed to be obtained from a sole source supplier for this project includes:

1. Primary clarifier aluminum covers from Halsten Corporation

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 EASEMENTS, PROPERTY BOUNDARIES AND WORK AREA LIMITS

A. 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. CONSULTANT shall allocate the budgeted hours between Phase 2 and Phase 3 based on when these services will be required.

3.2.2 TOPOGRAPHIC SURVEY

A. 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. CONSULTANT shall allocate the budgeted hours between Phase 2 and Phase 3 based on when these services will be required.

3.2.3 GEOTECHNICAL BASELINE REPORT

1. CONSULTANT shall prepare a Geotechnical Baseline Report (GBR). The GBR shall be prepared by the prime CONSULTANT, rather than by the Geotechnical Subconsultant that prepared the Geotechnical Data Report.

2. The Geotechnical Baseline Report (GBR) shall conform to the most recent issue of the American Society of Civil Engineers (ASCE) “Geotechnical Baseline Reports of Underground Construction: Guidelines and Practices”.

3. The GBR shall be site specific and shall include a narrative of all known soil conditions and subsurface expected constraints. The GBR shall establish quantitative thresholds and shall make specific recommendations to the Contractor regarding actions to be taken by the Contractor during construction, such as dewatering, removal of boulders by size, all other excavation and backfill stages, etc. Thresholds expressed as ranges of values will not be acceptable to OC San (i.e. 100-200 gpm, or 5-10 CY). All thresholds shall be expressed in the form of one number (i.e. 150 gpm, or 7 CY).

4. The GBR will be used during construction to enforce the Differing Site Condition clause included in the construction Contract Agreement.

5. The draft GBR shall be submitted to OC San staff for review and comments along with the DS2 submittal package. The final GBR incorporating OC San comments shall be submitted with the DS3 submittal package.

3.2.4 UTILITY INVESTIGATION

A. 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. CONSULTANT shall allocate the budgeted hours between Phase 2 and Phase 3 based on when these services will be required.

B. 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. 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.

3.2.5 FIRE PROTECTION SERVICES

A. CONSULTANT shall secure the services of a Subconsultant to determine the fire protection requirements, prepare final plans and specifications for the selected plan and assist OC San in obtaining approval from the fire authority.

3.2.6 NOISE EVALUATION SERVICES

A. CONSULTANT shall secure the services of a Subconsultant to 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.

3.2.7 ENVIRONMENTAL DOCUMENTATION

A. 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.

3.2.8 PERMITTING ASSISTANCE

A. 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.

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.

3.2.9 PROJECT MANAGEMENT

A. CONSULTANT shall be responsible for managing CONSULTANT's project execution, schedule, budget, subconsultants, and coordination with other projects. 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. CONSULTANT shall allocate the budgeted hours between Phase 2 and Phase 3 based on when these services will be required.

3.2.10 RISK MANAGEMENT

A. CONSULTANT shall provide risk management in accordance with **Exhibit 3 - Risk Management Requirements**. Moderator shall be as specified for Phase 2 – Preliminary Design.

B. Risk Management:

☐Not required
☒Required
☒DS1 Risk Workshops: 1 hour (held during OC San's review of DS1 at OC San)
☒DS2 Risk Workshops: 1 hour (held during OC San's review of DS2 at OC San)
☒DS3 Risk Workshop: 2 hours (held during OC San's review of DS3 at OC San)

3.2.11 QUALITY CONTROL

A. The CONSULTANT shall provide Quality Control requirements in accordance with **Exhibit 5 - Quality Control Requirements**.

☐Independent Multi-Discipline Design Workshop is not required.
☒Independent Multi-Discipline Design Workshop is required. (minimum duration of 4 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 4 - 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. CONSULTANT shall conduct the workshops listed below in Phase 3 – Design. The CONSULTANT shall allow the following time for each workshop:

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

C. A series of workshops shall be provided for the Design Review Meetings.

D. During final design, workshops shall be held after each design submittal.

3.3.3 PRE-DS2 CONSTRUCTABILITY WORKSHOP

A. A constructability workshop shall be held prior to the DS2 submittal and shall be a 3 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 companies, OC San construction management staff and 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. The CONSULTANT shall not attend, although one designated individual from the CONSULTANT’s Design Team shall remain to answers questions and gather additional information that the constructability review team might need.

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. Power outages and equipment shutdowns
4. Size critical equipment requirements and constraints
5. Utility company requirements
6. Construction methods and mitigating impacts
7. Viability of equipment relocation
8. Operational requirements
9. Interim Control Plan
10. Access for maintenance

11. Access to make proper connections
12. User-friendliness and safety
13. Coordination with other projects
14. Draft Commissioning Plan
15. Public nuisance issues
16. Risk sharing
17. Construction sequencing and schedule, materials storage and work zone accessibility
18. Clarity of the scope of work, and interface activities
19. Impacts on existing operation
20. Access
21. Cost control
22. Partnering with contractor
23. 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, 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 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 DS3, 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 2 weeks 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 CONSULTANT team members are required for each.

B. Focused Meetings

1. Focused meetings shall be held throughout design to discuss specific issues in detail and generate comments and direction from OC San staff. The following tentative list of topics may be covered in these meetings:

a. Site survey

b. Site utility coordination

c. Geotechnical report

d. Quality control plan

e. Common names for facilities and equipment

f. Process Flow diagram/Operating Philosophy (several meetings as needed)

g. Permits

h. Confined space and other safety requirements

i. Fire Department requirements

j. Fire protection

k. Landscaping plan

l. Architectural concepts

m. Survey and geotechnical requirements

n. Potholing

o. Hazardous Area classification (with OC San Authority Having Jurisdiction representative participating)

p. Utilities and utility tie-ins

q. Technical Definitions/equipment data sheets

r. Control concepts

s. Instrumentation and control upgrades

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

u. Sample control descriptions

v. Sample EID database

w. Sample SAT database

x. Data network block diagram/network connection diagram

y. I/O relocation plan

z. Electrical distribution system, system controls and the related upgrades

aa. Single-line diagrams and electrical demolition

bb. Modes and analyses cases for electrical studies

cc. Criticality table update

dd. Standby power

ee. Construction sequencing

ff. Special studies

gg. Coordination with other projects

hh. Additional meetings as necessary

2. Each meeting shall generally be 2-4 hours in length. CONSULTANT shall determine how many meetings will be needed to cover these topics. 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 CONSULTANT OFFICE TECHNICAL MEETINGS (COTMS)

A. OC San has found it mutually beneficial to visit the CONSULTANT offices from time to time to observe the detailed design in process, answer detailed technical questions, and establish lines of communications with CONSULTANT staff. During the Design Phase, CONSULTANT shall arrange for OC San staff to meet in CONSULTANT's work center and audit "over the shoulder" design reviews with CONSULTANT's staff. The reviews will be monitored by a member of CONSULTANT's Management Team. Signification decisions will be reported to Consultants Project Manager and OC San's Project Manager and logged into the Decision Log. Action items will be identified.

B. The CONSULTANT shall schedule, at a minimum, the following CONSULTANT Office Technical Meetings (COTMs):

1. One four-hour visit to review the Loop Tag Number scheme and control documentation.
2. Three four-hour visits to review CONSULTANT Implementation of CAD standards and P&ID tag extraction.
3. Two four-hour visits to review the first few P&ID drawings.
4. Two four-hour visits to review the early Control Strategies.
5. One four-hour visit to establish the basic control panel design.
6. One four-hour visit to review the Conduit, Tray and Cable Schedules
7. One four-hour visit to review each of the first elementary diagrams, first panel schematics.
8. Six two-hour follow up visits for the above.
9. One six-hour visit to review each of the SAT and EID products, including P&ID, SAT and EID coordination.

C. The CONSULTANT shall schedule each of the above COTMs 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 COTMs as needed to support the detailed design.

D. OC San may also request additional "over the shoulder" design review meetings to audit the design in other areas not listed above. CONSULTANT shall anticipate that OC San will request review of the technical progress of the work in "over the shoulder" meetings at a minimum, prior to every design submittal.

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. 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**
P1-140	Activated Sludge-1 and Secondary Clarifier Rehabilitation	**2 meetings @ 1.5 hours**
P1-105	Headworks Rehabilitation at Plant 1	**2 meetings @ 1.5 hours**
Other projects coordination	Other projects coordination	**4 meetings @ 1 hour**

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 2-4 hours in length. CONSULTANT shall determine how many meetings shall be needed to cover these topics and organize the topics accordingly. CONSULTANT may suggest additional topics as necessary. Supplementary meetings may be scheduled with OC San staff, as necessary, to allow coordination between 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 the commissioning plan to be incorporated into the Commissioning Procedures specification 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, Design CONSULTANT and Contractor.

7. Develop a timeline of commissioning

8. Develop a commissioning specification

9. Develop standard forms 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 using **Exhibit 17** 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.

3.4 BID PHASE SUPPORT SERVICES

3.4.1 BID PHASE SUPPORT SERVICES

A. 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

A. CONSULTANT shall refer to and adhere to the requirements of OC San 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 15 - Spec Review using Microsoft Word and Teams**

B. **Exhibit 16 - OC San Engineering Design Guidelines and Standards – Available** online at https://www.OC San.com/about-us/transparency/document-central/-folder-917 is a complete set of the OC San Safety Standards and OC San Design Standards, the latest edition at the time of the design proposal stage.

C. The Engineering Guidelines define what plant 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.

D. 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.

E. The project Scope of Work defines whether or not each specific deliverable described in the Guidelines shall be part of the project and when each task shall take place.

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

G. The project Scope of Work and OC San Engineering Design Guidelines impact CONSULTANT's project cost.

H. 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.

I. In addition, OC San will require the CONSULTANT to follow subsequent revisions of OC San Safety Standards, OC San Engineering Design Guidelines and other OC San Design Standards up to transmittal by OC San of comments on Design Submittal 1, shall be incorporated into the Design by CONSULTANT with no increase in CONSULTANT's Not-to-Exceed upper limit on fees.

J. 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.

K. The CONSULTANT shall <u>not</u> 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. CONSULTANT shall also refer to Appendix A of OC San Engineering Design Guidelines 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. 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. 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 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:

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 in order 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 14 - 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 13 - 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 15 - Spec Review using Microsoft Word and Teams.**

7.0.9 GIS SUBMITTALS

A. 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 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:
            - Buildings\Structures

- Tunnels
- Utilities
- Pavement
- Street boundary (ROW to ROW) of possible alignment

b. Structures (Polygon)

- New structure outline
- Additions to existing structures
- Structure label

3. DS1
   a. Project boundary - *updated from PDR*
   b. Structures - *updated from PDR*
   c. Utilities (Polyline)
      (1) Utility alignment
   d. Manholes (Point)
   e. Excavation of pits (Polygon)
      (1) Pits that will stay open for extended duration
      (2) CIPP
      (3) Tunnel - jacking and receiving
      (4) All pits should be labeled
4. 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
         - Natural gas
         - Fuel pipeline
         - 12 kV Electrical
   g. Asphalt (Polygon)
      (1) Asphalt to be replaced

7.0.10 PMWEB PROCEDURES

A. This Agreement shall utilize PMWeb as the Project Control Management System (PCMS) for overall management of the Agreement. All PCMS related documents requiring formal signatures shall be digital, and all copies digitally distributed. The PCMS conforms to the requirements set forth in California Government Code section 16.5 regarding digital signatures; therefore, digital

signatures are in full force and effect and are legally the same as a hand-written signature. At least one PCMS account shall have the authority to approve Amendments.

OC SAN shall maintain the PCMS and serve as the administrator for the duration of this Agreement. OC SAN will provide the CONSULTANT with user access for approved personnel as needed for the duration of the Agreement. OC SAN shall control access to the PCMS by assigning user profiles and login credentials. Notify OC San of any changes to personnel. Access modifications shall be coordinated as needed throughout the Agreement. Do not to share PCMS account passwords with anyone inside or outside of the company.

Routine maintenance of the PCMS system may be required during the Agreement. Access to the PCMS system may be restricted or unavailable at these times and will be scheduled outside of typical working hours whenever possible.

The PCMS is a web-based environment and is therefore subject to the inherent speed and connectivity problems of the Internet. The CONSULTANT is responsible for its own connectivity to the Internet. PCMS response time is dependent on the CONSULTANT's equipment, including processor speed, Internet access speed, Internet traffic, etc.

OC SAN will not be liable for any delays associated with the utilization of the PCMS including, but not limited to: slow response time, down time periods, connectivity problems, or loss of information.

The OC SAN will provide a one-time free training session of up to two (2) hours to train CONSULTANT's designated staff on general system requirements, procedures, and methods.

Automated system notifications generated via PCMS (e.g. in-system notices, system generated email, or email with attachment) shall constitute a formal written notification in compliance with the Professional Design Service Agreement (PDSA), Professional Construction Service Agreement (PCSA), or Task Order (TO) Agreement.

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 1.2.15 "MISCELLANEOUS REQUIREMENTS"

A. Section 4 "Pipe Supports"

1. Replace the entire section with the following:

   CONSULTANT shall design pipe supports for pipes 12" and greater diameter.

   Regardless of pipe size, CONSULTANT shall design improvements to existing pipe supports (additional anchorage, support members, and/or bracing) where new conduit and/or pipes are added that increase the supported gravity load by 5% or more, or lateral seismic load by 10% or more. This condition could apply to some of the existing pipe supports in the tunnels. No rehabilitation or replacement of any other supports were assumed to be included. Design, calculations and drawings assumed for existing tunnels are:

   Civil tunnel plans assumed to have call outs to structural detail sheets for tunnel pipe supports – three structural detail sheets for tunnel pipe supports are assumed. No structural plan and section view sheets are assumed.

For individually routed pipes that are less than 12” diameter, the majority of pipe support locations will not be shown. However, the drawings will indicate required pipe support locations for specific instances that require special attention for access and maintenance. Specific pipe support details will not be called out at these locations since the pipe supports will be designed by the Contractor. To ensure adequate maintenance access is maintained, the design documents will include notes to indicate that no pipe supports are to be placed in maintenance access spaces.

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:

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. 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 NOT USED

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 CONSULTANT on the design of this project is Bob Tran at (714) 593-7463, e-mail to: btran@ocsan.gov.

10. EXHIBITS

Exhibit 1 - Preliminary Design Report Requirements

Exhibit 1 - Design Requirements

Exhibit 2 - Project Management Requirements

Exhibit 3 - Risk Management Requirements

Exhibit 4 - Workshop and Meeting Requirements

Exhibit 5 - Quality Control Requirements

Exhibit 6 - Design Submittal Requirements Matrix

Exhibit 7 - Project Schedule Calculation

Exhibit 8 - Deliverables Quantities

Exhibit 9 - Sample Construction Cost Estimate Format

Exhibit 10 - Sample Full Project Safety Review Plan

Exhibit 11 - Sample Risk Management Check List

Exhibit 12 - Sample MMRP Log

Exhibit 13 - Bluebeam Designer Training for Submission

Exhibit 14 - Bluebeam Designer User Training

Exhibit 15 - Spec Review using Microsoft Word and Teams

Exhibit 16 - OC San Engineering Design Guidelines and Standards – Available online at https://www.OC San.com/about-us/transparency/document-central/-folder-917

Exhibit 17 - Not Used

Exhibit 18 - Project Reference Material

- **P1-20 Headworks No. 2 at Plant No. 1 Record Drawings – 1987**
- **Plant No. 1 Hydraulic Map**
- **P1-126 Concept Report**
- **PS19-02 Circular Primary Clarifier Replacement Phasing Study at Plant No. 1 Final Report**
- **SP-173 Appendix H Hydraulic Model Final Report**
- **SP-173 Appendix H Hydraulic Model Reference Files (Example only, not full set)**

- **PS17-09 Peak Flow Calibration of Plant 1 and Plant 2 - Infoworks Model Final Report**
- **P2-98A Primary Clarifier Cover Drawings**
- **P1-101 East Perimeter Road Pipe Rack Drawings**
- **Single Line Drawings**

Exhibit 19 - Sample Criticality Data Table

Exhibit 20 - Commissioning Procedure Training

Exhibit 21 - ORT Procedure Examples

Exhibit 22 - Pre-FAT Procedure Examples

Exhibit 23 - Sample FAT Procedure

Exhibit 24 - Sample RAT Procedure

Exhibit 25 - Project J-47 Cable Tray Improvements Preliminary Design Report for Plant No. 1

Exhibit 26 – Not Used

Exhibit 27 - Cable Conduit and Tray Schedule Database

BT:AB:sa