moulton niguel water district

TECHNICAL COMMITTEE MEETING
MOULTON NIGUEL WATER DISTRICT
BOARD OF DIRECTORS
26880 Aliso Viejo Pkwy, Suite 150, Aliso Viejo
August 31, 2020
7:30 AM
Approximate Meeting Time: 1 Hour

IN AN EFFORT TO PREVENT THE SPREAD OF COVID-19 (CORONAVIRUS), AND IN ACCORDANCE WITH THE GOVERNOR'S EXECUTIVE ORDER N-29-20, THERE WILL BE NO PUBLIC LOCATION FOR THE PUBLIC TO ATTEND THIS BOARD MEETING IN PERSON. MEMBERS OF THE PUBLIC MAY LISTEN AND PROVIDE PUBLIC COMMENT TELEPHONICALLY BY CALLING THE FOLLOWING NUMBER:

DIAL: 1-669-900-9128
MEETING ID: 816-0233-6707#

1. CALL MEETING TO ORDER

2. APPROVE THE MINUTES OF THE AUGUST 3, 2020 TECHNICAL COMMITTEE MEETING

3. PUBLIC COMMENTS
   As permitted under the Brown Act, and in order to provide an equal opportunity for members of the public to provide comment without everyone talking over one another, the Board of Directors will receive all public comments, on items on or off the agenda, during the Public Comment portion of this meeting. Comments are limited to five minutes unless further time is granted by the Presiding Officer.

DISCUSSION ITEMS

4. Construction Contract Award for Regional Treatment Plant Southerly Influent Sewer Improvements

5. Professional Services Agreement for Crown Valley Pipeline Replacements

6. Construction Contract Award for Moulton Peak Radio Tower Replacement

7. Wastewater Inflow and Infiltration Flow Monitoring Services

8. Cooperative Services Agreement for Salt and Nutrient Management Plan

ADJOURNMENT

The Board of Directors' Meeting Room is wheelchair accessible. If you require any special disability related accommodations (i.e., access to an amplified sound system, etc.), please contact the Moulton Niguel Water District Secretary's office at (949) 831-2500 at least forty-eight (48) hours prior to the scheduled meeting. This agenda can be obtained in alternate format upon written request to the Moulton Niguel Water District Secretary at least forty-eight (48) hours prior to the scheduled meeting.

Agenda exhibits and other writings that are disclosable public records distributed to all, or a majority of, the members of the Moulton Niguel Water District Board of Directors in connection with a matter subject to discussion or consideration at an open meeting of the Board of Directors are available for public inspection at the District Office, 26880 Aliso Viejo Parkway, Suite 150, Aliso Viejo, CA ("District Office"). If such writings are distributed to members of the Board less than seventy-two (72) hours prior to the meeting, they will be available in the reception area of the District Office at the same time as they are distributed except that, if such writings are distributed immediately prior to, or during the meeting, they will be available in the Board meeting room and on the District website at www.mnwd.com.

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DRAFT
MINUTES OF THE TECHNICAL COMMITTEE MEETING
MOULTON NIGUEL WATER DISTRICT
BOARD OF DIRECTORS

August 3, 2020

A Regular Meeting of the Technical Committee of the Moulton Niguel Water District was held in accordance with the Governor's Executive Order N-29-20 in an effort to prevent the spread of COVID-19 (Coronavirus). As a result, there was no public location for the public to attend in person. The meeting was called to order at 7:38 AM on August 3, 2020. There were present and participating at 26880 Aliso Viejo Pkwy, Suite 150, Aliso Viejo, CA:

DIRECTORS

Duane Cave	Vice President/Chair
Donald Froelich	Vice President
Bill Moorhead	Director

Also present and participating were:

STAFF MEMBERS IN-PERSON

Matt Collings	Assistant General Manager
Paige Gulck	Board Secretary

STAFF MEMBERS, LEGAL COUNSEL, AND MEMBERS OF THE PUBLIC TELEPHONICALLY

Joone Lopez	General Manager
Rod Woods	Director of Engineering
Drew Atwater	Director of Finance & Water Resources
Gina Hillary	Director of Human Resources
Todd Novacek	Director of Operations
Jeff Ferre	Best, Best, & Krieger (General Counsel)
Tim Bonita	Recording Secretary
Trevor Agrelius	MNWD
Larry Ballew	MNWD
Matt Brown	MNWD

Todd Dmytryshyn	MNWD
Jesus Garibay Jr.	MNWD
Ronin Goodall	MNWD
Jin Kim	MNWD
David Larsen	MNWD
Mark Mountford	MNWD
Sheldon Yu	MNWD

1. CALL MEETING TO ORDER

The meeting was called to order by Chairman Cave at 7:38 a.m. Chairman Cave stated that the meeting was being conducted by teleconference pursuant to the Brown Act waivers provided for under the Governor's Executive Orders in response to the COVID-19 State of Emergency. As stated on the agenda, there was no public location for attending the meeting in person. The agenda also stated that the public could listen and provide comment telephonically by calling the number listed on the agenda.

2. APPROVE THE MINUTES OF THEJUNE 29, 2020 TECHNICAL COMMITTEE MEETING

MOTION DULY MADE BY DONALD FROELICH AND SECONDED BY BILL MOORHEAD, MINUTES OF THE JUNE 29, 2020 TECHNICAL COMMITTEE MEETING WERE APPROVED AS PRESENTED. THE VOTE WAS UNANIMOUS WITH DIRECTORS DUANE CAVE, DONALD FROELICH AND BILL MOORHEAD ALL VOTING 'AYE'.

3. PUBLIC COMMENTS

Chairman Cave stated that as permitted under the Brown Act, and in order to provide an equal opportunity for members of the public to provide comment without everyone talking over one another, public comments, on items on or off the agenda, would be taken during the Public Comment portion of the meeting. Chairman Cave then asked if there was anyone on the phone who would like to provide comment. Hearing none, the Public Comment portion of the meeting was closed.

DISCUSSION ITEMS

4. On-Call Service Agreement for Sewer Pipe Short Liner Installation

Rod Woods presented the On-Call Service Agreement for Sewer Pipe Short Liner Installation. The committee recommended sending this item to the Board for approval.

5. Construction Contract Award for Plant 3A Primary Clarifiers No. 3 and No. 4 Rehabilitation

Rod Woods presented the Construction Contract Award for Plant 3A Clairfiers No. 3

and No. 4 Rehabilitation. The committee recommended sending this item to the Board for approval.

6. Pump Refurbishment Service Agreements

Todd Novacek presented the Pump Refurbishment Service Agreements. The committee recommended sending this to the Board for approval.

INFORMATION ITEMS

7. Pretreatment & Source Control Program-Ordinance Update

Mark Mountford presented the Pretreatment & Source Control Program Ordinance Update.

ADJOURNMENT

The meeting was adjourned at 8:10 a.m.

Respectfully submitted,

Tim Bonita
Recording Secretary

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STAFF REPORT

TO: **Board of Directors** **MEETING DATE: August 31, 2020**

FROM: **Rod Woods, Director of Engineering**
Sheldon Yu, Senior Engineer

SUBJECT: **Construction Contract Award for Regional Treatment Plant Southerly Influent Sewer Improvements**

SUMMARY:

Issue: Board action is required for the Notice Inviting Sealed Bids for the Regional Treatment Plant Southerly Influent Sewer Improvements, Project No. 2018.027.

Recommendation: It is recommended that the Board of Directors award the construction services contract to T.E. Roberts Inc. in the amount of $1,368,840; authorize the General Manager or Assistant General Manager to execute the contract; and to approve change orders up to 10% of the contract value.

Fiscal Impact: Project No. 2018.027 is budgeted in Fund 7, Rehabilitation and Replacement, with a current project budget of $1,775,000. The proposed project budget is $1,764,114. The overall Fiscal Year 2020-21 Fund 7 budget is $41,393,593.

Reviewed by Legal: Yes

BACKGROUND:

The District's gravity sewer system conveys an average daily flow of approximately 2.5 million gallons of wastewater to the southerly end of Regional Treatment Plant (RTP). As part of the work completed to the influent piping at the RTP in 2016, the District identified necessary improvements to the southerly gravity sewer system, including rehabilitation of piping and manholes.

This project was subsequently developed to implement these improvements to the District's southerly sewers entering the RTP. The scope of work generally includes: the removal and replacement of a diversion structure and adjacent sewer main; cured-in-place pipe lining of the concrete pipes leading into the headworks; relocation

of the existing digester gas pipelines to facilitate construction; rehabilitation of several manholes; grading and miscellaneous sitework; and sewer bypassing during a portion of construction. The proposed project will significantly improve the District's southerly gravity sewer system in this area. The scope of work has been coordinated extensively with the South Orange County Wastewater Authority and the City of Laguna Niguel staff.

Construction documents for the project were prepared by Tetra Tech, Inc. utilizing the previous on-call engineering services agreement. A categorical exemption was prepared in accordance with State CEQA Guidelines and a Notice of Exemption was filed with Orange County on February 1, 2019.

DISCUSSION:

A request for bids was issued to five qualified contractors. The District received four sealed bids for the subject contract on August 6, 2020. The table below summarizes the bids received:

Firm	Bid
T.E. Roberts Inc.	$1,368,840
Paulus Engineering, Inc.	$1,387,773
Ferreira Construction Co. Inc.	$1,621,471
Shoffeitt Pipeline, Inc.	$1,774,167
Engineer's Estimate	**$1,600,000**

Staff has determined that the lowest responsible and responsive bidder was T.E. Roberts. Staff has completed its review of the contract documents and has determined that they are in order. T.E. Roberts has performed quality work for the District in the past and is well-qualified to perform this type of work.

SUMMARY OF PROJECT BUDGET:

	Project Budget *	Proposed / Approved Contract	Proposed / Authorized Contingency	Total Proposed / Authorized Amount
Project Items				
Engineering	$203,390	$184,900	$18,490	$203,390
Construction	$1,516,610	$1,368,840	$136,884	$1,505,724
Specialty Inspection	$20,000	$20,000	$0	$20,000
District Labor, Legal, Permits	$35,000	$35,000	$0	$35,000
Totals	$1,775,000	$1,608,740	$155,374	$1,764,114

* $154,147 has been expended to date.

Currently Proposed Amount

Attachments:

1. Exhibit A – Location Map
2. Exhibit B – Vendor Contact List

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0 50 100 200 300 400 Feet

Scale = 1:2,600

Exhibit "A" Location Map
Regional Treatment Plant
Southerly Influent Sewer Improvements
Contract No. 2018.027

EXHIBIT "B" VENDOR CONTACT LIST

Company Name	Company Address	Contact Person	Telephone #	E-Mail
Ferreira Construction Co. Inc.	10370 Commerce Center Dr, Ste B-200 Rancho Cucamonga, CA 91730	Bree Scott	(909) 606-5900	BScott@ferreiraconstruction.com
Paulus Engineering, Inc.	2871 E. Coronado St Anaheim, CA 92806	Jake Yarter	(714) 632-3975	jyarter@paulusengineering.com
Shoffeitt Pipeline, Inc.	15795 Rockfield Blvd, Suite G Irvine, CA 92618	John Shoffeitt	(949) 581-1600	john@shoffeittpipeline.com
T.E. Roberts Inc.	306 W. Katella Ave, Unit B Orange, CA 92867	Tim Roberts	(714) 669-0072	troberts@teroberts.com

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STAFF REPORT

TO: **Board of Directors** **MEETING DATE: August 31, 2020**

FROM: **Rod Woods, Director of Engineering**
Todd Dmytryshyn, Engineering Manager

SUBJECT: **Professional Services Agreement for Crown Valley Pipeline Replacements**

SUMMARY:

Issue: Board action is required to execute a Professional Services Agreement (PSA) for the Crown Valley Pipeline Replacements, Project Nos. 2013.005, 2015.006, and 2019.037.

Recommendation: It is recommended that the Board of Directors approve the Professional Services Agreement with Tetra Tech in the amount of $1,090,000; authorize the General Manager or Assistant General Manager to execute the agreement; approve up to $50,000 for additional services as described herein; and approve amendments up to 10% of the contract value.

Fiscal Impact: Project Nos. 2013.005, 2015.006, and 2019.037 are budgeted in Fund 7, Replacement and Rehabilitation, with a current combined project budget of $11,550,000. The overall Fiscal Year 2020-21 Fund 7 budget of $41,393,593 will not be impacted.

Reviewed by Legal: Yes

BACKGROUND:

The Crown Valley Pipeline Replacements Project consists of the Lower Salada Lift Station Force Main Replacement, the Crown Valley Parkway Transmission Main Lower Reach Replacement, and the I.D. No. 1 Master Meter Relocation. All of these facilities are located along the same portion of Crown Valley Parkway between Camino del Avion and Niguel Road in the Cities of Laguna Niguel and Dana Point.

The Lower Salada Lift Station Force Main conveys wastewater from the Lower Salada Lift Station located just south of the intersection of Crown Valley Parkway and

Camino del Avion to a summit manhole located approximately 1.75 miles north along Crown Valley Parkway, where it transitions to a gravity sewer pipeline. The existing Lower Salada Lift Station Force Main is a 12-inch diameter asbestos-cement force main that was constructed in 1963. Approximately half of the existing force main is located within Crown Valley Parkway and half is within a residential housing tract on the east side of Crown Valley Parkway bordering El Niguel Country Club.

The Crown Valley Parkway Transmission Main is a major potable water transmission main, traversing along Crown Valley Parkway from Dana Point to Mission Viejo. The lower reach of the transmission main extends from Camino del Avion to the I.D. No. 1 Master Meter located approximately 1.75 miles north along Crown Valley Parkway. The existing lower reach of the transmission main is a 12-inch diameter concrete cylinder pipe that was also constructed in 1963.

The Joint Transmission Main (JTM) is part of the Joint Regional Water Supply System (JRWSS). The JRWSS includes facilities with multiple owners by capacity share, including the District. South Coast Water District (SCWD) is responsible for operations and maintenance of the JRWSS, including the JTM. The JTM is a 39-inch steel pipe that supplies potable water to the District via the I.D. No. 1 Master Meter interconnection. SCWD is planning to relocate approximately 2,500 feet of the JTM from its existing location within a residential housing tract on the east side of Crown Valley Parkway, between Paseo del Niguel and Hillhurst Drive, to a new location within Crown Valley Parkway. This portion of the JTM is in the same area as the proposed pipelines. The I.D. No. 1 Master Meter is also connected to this portion of the JTM and will need to be relocated in coordination with the JTM relocation. Staff intends to relocate the I.D. No. 1 Master Meter to a new aboveground facility.

Preliminary studies were completed for both the Lower Salada Force Main in 2014 and Crown Valley Parkway Transmission Main in 2019. Both studies recommended replacing the existing pipelines within Crown Valley Parkway. Due to the multiple pipelines planned to be replaced within Crown Valley Parkway, close coordination with SCWD and the Cities of Laguna Niguel and Dana Point will be required.

The engineering services for this professional services agreement includes preparation of construction documents, preparation of CEQA documents, permit acquisition support, bid and construction phase support.

DISCUSSION:

On June 15, 2020, staff issued a Request for Proposals (RFP) for engineering services to seven qualified firms. Four proposals were received, and the fee estimates are summarized below:

Firm	Fee Estimate
Black & Veatch	$1,011,959
Tetra Tech	$1,090,000
Brown and Caldwell	$1,309,602
Hazen and Sawyer	$1,626,088

Staff performed a comprehensive review of the proposals received. On August 12, 2020, staff conducted interviews with each of the four firms. Each firm answered a series of questions about their proposal and qualifications related to the scope of services for this project.

Based on the firms' specific project understanding and approach, overall proposal quality, project specific experience, proposed project team, proposed level of effort, and performance in the interview, staff recommends that the Board approve the professional services agreement with Tetra Tech.

The scope of the agreement does not include architectural and landscaping design services which may be necessary to meet the requirements of the City or property owner associated with the I.D. No. 1 Master Meter relocation. To account for the range of possibilities that may be required, staff requests that the Board also approve an allowance of up to $50,000 for these potential additional services, which would be added to the agreement by amendment, if necessary.

SUMMARY OF COMBINED PROJECT BUDGETS:

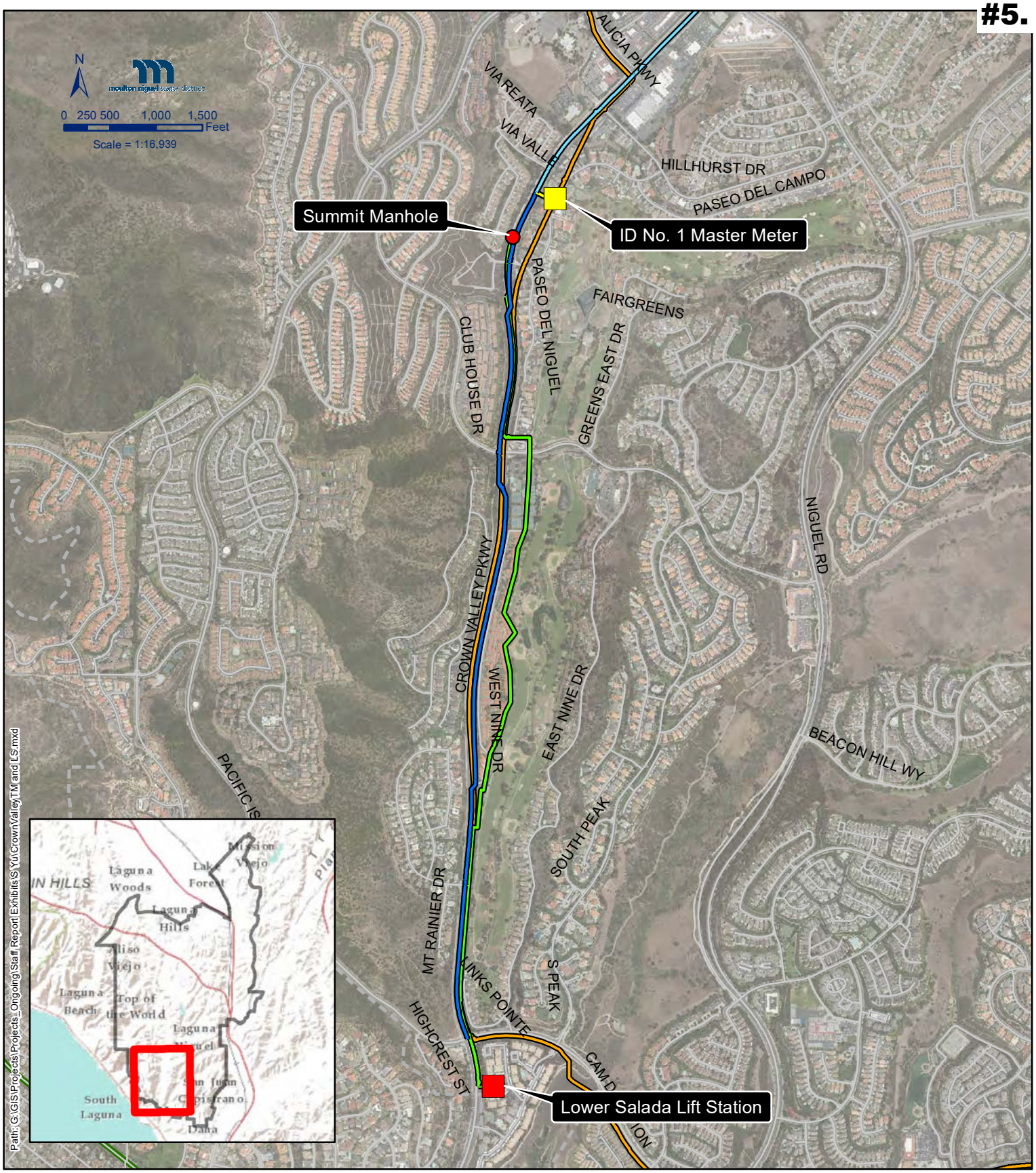
	Project Budget*	Proposed / Approved Contract	Proposed / Authorized Contingency	Total Proposed / Authorized Amount
Project Items				
Engineering	$1,250,000	$1,090,000	$109,000	$1,199,000
Additional Design Services Allowance		$50,000		$50,000
Construction Contract	$9,450,000	$9,451,000	$0	$9,451,000
CM and Inspection	$800,000	$800,000	$0	$800,000
Legal, Permits, District Labor	$50,000	$50,000	$0	$50,000
Totals	$11,550,000	$11,441,000	$109,000	$11,550,000

*$89,546.33 has been expended to date.

Currently Proposed Amount

Attachments:

1. Exhibit A – Location Map
2. Exhibit B – PSA for Crown Valley Pipeline Replacements
3. Exhibit C – Vendor Contact List



Crown Valley Transmission Main (Upper Reach)

Crown Valley Transmission Main (Lower Reach)

Lower Salada Lift Station Force Main

JRWSS Joint Transmission Main (JTM)

Exhibit "A" Location Map
Crown Valley Pipeline Replacements
Contract Nos. 2013.005, 2015.006, and 2019.037

PROFESSIONAL SERVICES AGREEMENT
BETWEEN
MOULTON NIGUEL WATER DISTRICT AND
TETRA TECH, INC.
MNWD PROJECT: CROWN VALLEY PIPELINE REPLACEMENTS
CONTRACT NOS. 2013.005a, 2015.006a, and 2019.037a

This Agreement (the "Agreement") is made and entered into on _____ ("Effective Date") by and between the Moulton Niguel Water District ("MNWD") and TETRA TECH, INC., a corporation with its principal place of business at 17885 Von Karman Ave., Suite 500, Irvine, CA 92614 ("Consultant"). MNWD and Consultant are sometimes individually referred to as "Party" and collectively as "Parties" in this Agreement.

SECTION I – PURPOSE

Consultant shall provide certain professional services required by MNWD on the terms and conditions set forth in this Agreement. Consultant represents that it has the qualifications, experience, licenses, and facilities necessary to properly perform engineering consulting services in a competent and professional manner.

SECTION II – TERM

The term of this Agreement shall be from the Effective Date to **December 31, 2023**, unless earlier terminated as provided herein.

SECTION III – SCOPE OF SERVICES

Section 3.1. Scope of Services. The scope of services to be provided by Consultant is set forth on Exhibit "A" attached hereto and by this reference incorporated herein ("Services"). Consultant warrants that it will perform the Services as set forth herein in a competent, professional and satisfactory manner. All Services shall be subject to, and performed in accordance with, this Agreement, the exhibits attached hereto and incorporated herein by reference, and all applicable local, state and federal laws, rules, and regulations.

Section 3.2. Schedule of Services. Consultant shall complete the Services within the term of this Agreement and shall meet any other established schedules and deadlines, including any schedule of services set forth in Exhibit "A."

Section 3.3. Permits, Licenses, Fees and Other Charges. Consultant shall, in accordance with applicable laws and ordinances, obtain at his/her/its expense all permits and licenses necessary to accomplish the Services. Failure to maintain a required license or permit may result in immediate termination of this Agreement.

SECTION IV – COMPENSATION

Section 4.1. Payment for Services Rendered. Consultant shall receive compensation, including authorized reimbursements, for all Services rendered under this Agreement at the rates set forth in Exhibit "B" attached hereto and incorporated herein by reference. The total compensation shall not exceed **One Million Ninety Thousand Dollars ($1,090,000)** without

written approval by MNWD. Extra Work may be authorized, as described below, and if authorized, will be compensated at the rates and manner set forth in this Agreement.

Section 4.2. Invoices. Consultant shall submit to MNWD a monthly itemized statement which indicates work completed and hours of Services rendered by Consultant. The statement shall describe the Services and supplies provided since the initial commencement date, or since the start of the subsequent billing periods, as appropriate, through the date of the statement. MNWD shall, within 45 days of receiving such statement, review the statement and pay all approved charges thereon.

A. Payment shall not constitute acceptance of any work completed by Consultant.

B. The making of final payment shall not constitute a waiver of any claims by MNWD for any reason whatsoever.

Section 4.3. Reimbursement for Expenses. Consultant shall not be reimbursed for any expenses unless authorized in writing by MNWD.

Section 4.4. Extra Work. At any time during the term of this Agreement, MNWD may request that Consultant perform Extra Work. As used herein, "Extra Work" means any work which is determined by MNWD to be necessary for the proper completion of the Project, but which the parties did not reasonably anticipate would be necessary at the execution of this Agreement. Consultant shall not perform, nor be compensated for, Extra Work without written authorization by MNWD.

SECTION V – REPRESENTATIVES OF THE PARTIES

Section 5.1. MNWD's Representative. MNWD hereby designates its Director of Engineering, or his or her designee, to act as its representative for the performance of this Agreement ("MNWD's Representative"). Consultant shall not accept direction or orders from any person other than MNWD's Representative or his or her designee.

Section 5.2. Consultant's Representative. Consultant hereby designates Tom Epperson, or his designee, to act as its representative for the performance of this Agreement ("Consultant's Representative"). Consultant's Representative shall have full authority to represent and act on behalf of the Consultant for all purposes under this Agreement. The Consultant's Representative shall supervise and direct the Services, using his best skill and attention, and shall be responsible for all means, methods, techniques, sequences, and procedures and for the satisfactory coordination of all portions of the Services under this Agreement.

SECTION VI – RESPONSIBILITIES OF CONSULTANT

Section 6.1. Control and Payment of Subordinates; Independent Contractor. The Services shall be performed by Consultant or under its supervision. Consultant will determine the means, methods and details of performing the Services subject to the requirements of this Agreement. MNWD retains Consultant on an independent contractor basis and not as an employee. Consultant retains the right to perform similar or different services for others during the term of this Agreement. Any additional personnel performing the Services under this Agreement on behalf of Consultant shall also not be employees of MNWD and shall at all times be under Consultant's exclusive direction and control. Consultant shall pay all wages, salaries, and other amounts due such personnel in connection with their performance of Services under this

Agreement and as required by law. Consultant shall be responsible for all reports and obligations respecting such additional personnel, including, but not limited to: social security taxes, income tax withholding, unemployment insurance, disability insurance, and workers' compensation insurance.

Section 6.2. Standard of Care; Performance of Employees. Consultant shall perform all Services under this Agreement in a skillful and competent manner, consistent with the standards generally recognized as being employed by professionals in the same discipline in the State of California. Consultant represents and maintains that it is skilled in the professional calling necessary to perform the Services. Consultant warrants that all employees and subconsultants shall have sufficient skill and experience to perform the Services assigned to them. Finally, Consultant represents that it, its employees and subconsultants have all licenses, permits, qualifications and approvals of whatever nature that are legally required to perform the Services, and that such licenses and approvals shall be maintained throughout the term of this Agreement. As provided for in the indemnification provisions of this Agreement, Consultant shall perform, at its own cost and expense and without reimbursement from MNWD, any services necessary to correct errors or omissions which are caused by the Consultant's failure to comply with the standard of care provided for herein.

Section 6.3. Conformance to Applicable Requirements. All work prepared by Consultant shall be subject to the approval of MNWD.

Section 6.4. Substitution of Key Personnel. Consultant has represented to MNWD that certain key personnel will perform and coordinate the Services under this Agreement. The key personnel for performance of this Agreement are as follows: Tom Epperson, Laurence Esguerra, Mark Bush, Victor Ramirez, Mazen Kassar, Erin Cabanero, Paula Fell. Should one or more of such personnel become unavailable, Consultant may substitute other personnel of at least equal competence upon written approval of MNWD. In the event that MNWD and Consultant cannot agree as to the substitution of key personnel, MNWD shall be entitled to terminate this Agreement for cause. Furthermore, any personnel who fail or refuse to perform the Services in a manner acceptable to MNWD, or who are determined by MNWD to be uncooperative, incompetent, a threat to the adequate or timely completion of the Services or a threat to the safety of persons or property, shall be promptly removed from performing Services by the Consultant at the request of MNWD.

Section 6.5. Coordination of Services. Consultant agrees to work closely with MNWD staff in the performance of Services and shall be available to MNWD's staff, consultants and other staff at all reasonable times.

Section 6.6. Laws and Regulations. Consultant shall keep itself fully informed of and in compliance with all local, state and federal laws, rules and regulations in any manner affecting the performance of the Project or the Services, including all Cal/OSHA requirements, and shall give all notices required by law. Consultant shall be liable for all violations of such laws and regulations in connection with Services. If the Consultant performs any work knowing it to be contrary to such laws, rules and regulations, Consultant shall be solely responsible for all costs arising therefrom. Consultant shall defend, indemnify and hold MNWD, its officials, directors, officers, employees, and agents free and harmless, pursuant to the indemnification provisions of this Agreement, from any claim or liability arising out of any failure or alleged failure to comply with such laws, rules or regulations.

SECTION VII – LABOR CODE PROVISIONS

Section 7.1. Prevailing Wages. Consultant is aware of the requirements of California Labor Code Section 1720, et seq., and 1770, et seq., as well as California Code of Regulations, Title 8, Section 16000, et seq., ("Prevailing Wage Laws"), which require the payment of prevailing wage rates and the performance of other requirements on "public works" and "maintenance" projects. If the Services are being performed as part of an applicable "public works" or "maintenance" project, as defined by the Prevailing Wage Laws, and if the total compensation is $1,000 or more, Consultant agrees to fully comply with such Prevailing Wage Laws. A copy of these prevailing wage rates are on file with the Department of Industrial Relations and can be found online with the State of California at http://www.dir.ca.gov/dlsr/pwd. Consultant shall make copies of the prevailing rates of per diem wages for each craft, classification or type of worker needed to execute the Services available to interested Parties upon request, and shall post copies at the Consultant's principal place of business and at the project site. It is the intent of the Parties to effectuate the requirements of sections 1771, 1774, 1775, 1776, 1777.5, 1813, and 1815 of the Labor Code within this Agreement, and Consultant shall therefore comply with such Labor Code sections to the fullest extent required by law. Consultant shall defend, indemnify and hold MNWD, its elected officials, officers, employees and agents free and harmless from any claim or liability arising out of any failure or alleged failure to comply with the Prevailing Wage Laws.

Section 7.2. Registration and Labor Compliance. If the services are being performed as part of an applicable "public works" or "maintenance" project, then, in addition to the foregoing, pursuant to Labor Code sections 1725.5 and 1771.1, the Consultant and all subconsultants must be registered with the Department of Industrial Relations ("DIR"). Consultant shall maintain registration for the duration of the project and require the same of any subconsultants. This project may also be subject to compliance monitoring and enforcement by the Department of Industrial Relations. It shall be Consultant's sole responsibility to comply with all applicable registration and labor compliance requirements, including the submission of payroll records directly to the DIR.

Section 7.3. Labor Certification. By its signature hereunder, Consultant certifies that it is aware of the provisions of Section 3700 of the California Labor Code which require every employer to be insured against liability for Worker's Compensation or to undertake self-insurance in accordance with the provisions of that Code, and agrees to comply with such provisions before commencing the performance of the Services.

SECTION VIII – INDEMNIFICATION

To the fullest extent permitted by law, Consultant shall immediately indemnify, defend, and hold MNWD, its directors, officials, officers, employees, volunteers and agents free and harmless from any and all claims, demands, causes of action, costs, expenses, liability, loss, damage or injury of any kind, in law or equity, to property or persons, including wrongful death, in any manner arising out of, pertaining to, or incident to any alleged acts, errors or omissions of Consultant, its officials, officers, employees, subcontractors, consultants or agents in connection with the performance of the Consultant's Services or this Agreement, including without limitation the payment of all consequential damages, expert witness fees and attorneys' fees and other related costs and expenses. Consultant shall pay and satisfy any judgment, award or decree that may be rendered against MNWD or its directors, officials, officers, employees, volunteers and agents as part of any such claim, suit, action or other proceeding. Consultant shall also reimburse MNWD for the cost of any settlement paid by MNWD or its directors, officials, officers, employees, agents or volunteers as part of any such claim, suit, action or other proceeding. Such reimbursement

shall include payment for MNWD's attorneys' fees and costs, including expert witness fees. Consultant shall reimburse MNWD and its directors, officials, officers, employees, agents, and/or volunteers, for any and all legal expenses and costs incurred by each of them in connection therewith or in enforcing the indemnity herein provided. Consultant's obligation to indemnify shall survive expiration or termination of this Agreement, and shall not be restricted to insurance proceeds, if any, received by MNWD, its directors, officials, officers, employees, agents, or volunteers. Notwithstanding the foregoing, to the extent Consultant's Services are subject to Civil Code Section 2782.8, the above indemnity shall be limited, to the extent required by Civil Code Section 2782.8, to claims that arise out of, pertain to, or relate to the negligence, recklessness, or willful misconduct of the Consultant.

SECTION IX – INSURANCE

Section 9.1. Time for Compliance. Consultant shall not commence Work under this Agreement until it has provided evidence satisfactory to MNWD that it has secured all insurance required under this section. In addition, Consultant shall not allow any subconsultant to commence work on any subcontract until it has provided evidence satisfactory to MNWD that the subconsultant has secured all insurance required under this section. Failure to provide and maintain all required insurance shall be grounds for MNWD to terminate this Agreement for cause.

Section 9.2. Minimum Requirements. Consultant shall, at its expense, procure and maintain for the duration of the Agreement insurance against claims for injuries to persons or damages to property which may arise from or in connection with the performance of the Agreement by the Consultant, its agents, representatives, employees or subconsultants. Consultant shall also require all of its subconsultants to procure and maintain the same insurance for the duration of the Agreement. Such insurance shall meet at least the following minimum levels of coverage:

A. Commercial General Liability. Coverage for commercial general liability insurance shall be at least as broad as Insurance Services Office (ISO) Commercial General Liability Coverage (Occurrence Form CG 0001). Consultant shall maintain limits no less than $1,000,000 per occurrence, or the full per occurrence limits of the policies available, whichever is greater, for bodily injury, personal injury and property damage. If Commercial General Liability Insurance or other form with general aggregate limit or product-completed operations aggregate limit is used, including but not limited to form CG 2503, either the general aggregate limit shall apply separately to this Agreement/location or the general aggregate limit shall be twice the required occurrence limit. The general liability policy shall include or be endorsed (amended) to state that: (1) MNWD, its directors, officials, officers, employees, agents, and volunteers shall be covered as additional insured with respect to the Work or operations performed by or on behalf of the Consultant, including materials, parts or equipment furnished in connection with such work using as broad a form as CG 20 10 11 85 or the latest versions of both CG 20 10 and CG 20 37; and (2) the insurance coverage shall be primary insurance as respects MNWD, its directors, officials, officers, employees, agents, and volunteers using as broad a form as CG 20 01 04 13, or if excess, shall stand in an unbroken chain of coverage excess of the Consultant's scheduled underlying coverage. Any insurance or self-insurance maintained by MNWD, its directors, officials, officers, employees, agents, and volunteers shall be excess of the Consultant's insurance and shall not be called upon to contribute with it in any way.

B. Automobile Liability. Coverage shall be at least as broad as the latest version of the Insurance Services Office Business Auto Coverage form number CA 0001, code 1

(any auto). Consultant shall maintain limits no less than $1,000,000 per accident for bodily injury and property damage. The automobile liability policy shall include or be endorsed (amended) to state that: (1) MNWD, its directors, officials, officers, employees, agents, and volunteers shall be covered as additional insureds with respect to the ownership, operation, maintenance, use, loading or unloading of any auto owned, leased, hired or borrowed by the Consultant or for which the Consultant is responsible; and (2) the insurance coverage shall be primary insurance as respects MNWD, its directors, officials, officers, employees, agents, and volunteers, or if excess, shall stand in an unbroken chain of coverage excess of the Consultant's scheduled underlying coverage. Any insurance or self-insurance maintained by MNWD, its directors, officials, officers, employees, agents, and volunteers shall be excess of the Consultant's insurance and shall not be called upon to contribute with it in any way. The automobile liability policy shall cover all owned, non-owned, and hired automobiles.

C. Workers' Compensation and Employer's Liability Insurance. Consultant shall maintain Workers' Compensation insurance as required by the State of California and Employer's Liability Insurance in an amount no less than $1,000,000 per accident for bodily injury or disease. The insurer shall agree to waive all rights of subrogation against MNWD, its directors, officials, officers, employees, agents, and volunteers for losses paid under the terms of the insurance policy which arise from work performed by the Consultant.

D. Professional Liability. Consultant shall procure and maintain, and require its subconsultants to procure and maintain, for a period of five (5) years following completion of the Project, errors and omissions liability insurance appropriate to their profession covering Consultant's wrongful acts, negligent actions, errors or omissions. The retroactive date (if any) is to be no later than the effective date of this agreement. Consultant shall purchase a one-year extended reporting period: i) if the retroactive date is advanced past the effective date of this Agreement; ii) if the policy is canceled or not renewed; or iii) if the policy is replaced by another claims-made policy with a retroactive date subsequent to the effective date of this Agreement. Such insurance shall be in an amount not less than $2,000,000 per claim.

E. Excess Liability (if necessary). The limits of Insurance required in this Agreement may be satisfied by a combination of primary and umbrella or excess insurance. Any umbrella or excess coverage shall contain or be endorsed to contain a provision that such coverage shall also apply on a primary and non-contributory basis for the benefit of MNWD (if agreed to in a written contract or agreement) before MNWD's own primary or self-Insurance shall be called upon to protect it as a named insured. The policy shall be endorsed to state that MNWD, its directors, officials, officers, employees, agents, and volunteers shall be covered as additional insured at least as broad a form as CG 20 10 11 85 or the latest versions of both CG 20 10 and CG 20 37. The coverage shall contain no special limitations on the scope of protection afforded to MNWD, its directors, officials, officers, employees, agents, and volunteers.

Section 9.3. All Coverages. The Consultant is required by this Agreement to state that: (i) coverage shall not be suspended, voided, reduced or canceled except after thirty (30) days prior written notice by certified mail, return receipt requested, has been given to MNWD; If any of the required coverages expire or cancel during the term of this agreement, the Consultant shall deliver the renewal certificate(s) including the general liability additional insured endorsement to MNWD at least ten (10) days prior to the cancellation or expiration date; and (ii) any failure to comply with

reporting or other provisions of the policies, including breaches of warranties, shall not affect coverage provided to MNWD, its directors, officials, officers, employees, agents, and volunteers.

Section 9.4. Separation of Insureds; No Special Limitations. All insurance required by this Section shall contain standard separation of insureds provisions. In addition, such insurance shall not contain any special limitations on the scope of protection afforded to MNWD, its directors, officials, officers, employees, agents, and volunteers.

Section 9.5. Deductibles and Self-Insurance Retentions. Any deductibles or self-insured retentions must be declared to and approved by MNWD. Consultant shall guarantee that, at the option of MNWD, either: (i) the insurer shall reduce or eliminate such deductibles or self-insured retentions as respects MNWD, its directors, officials, officers, employees, agents, and volunteers; and insurer shall provide or be endorsed to provide that the deductibles or SIR may be satisfied by either the named or additional insureds, co-insurers, and/or insureds other than the First Named Insured or (ii) the Consultant shall procure a bond guaranteeing payment of losses and related investigation costs, claims, and administrative and defense expenses.

Section 9.6. Acceptability of Insurers. Insurance is to be placed with insurers with a current A.M. Best's rating no less than A-:VII or equivalent, or as otherwise approved by MNWD.

Section 9.7. Verification of Coverage. Consultant shall furnish MNWD with certificates of insurance and endorsements effecting coverage required by this Agreement on forms satisfactory to MNWD. The certificates and endorsements for each insurance policy shall be signed by a person authorized by that insurer to bind coverage on its behalf, and shall be on forms provided by MNWD if requested. All certificates and endorsements must be received and approved by MNWD before work commences. MNWD reserves the right to require complete, certified copies of all required insurance policies, at any time. In the event that the Consultant employs other consultants (sub-consultants) as part of the services covered by this agreement, it shall be the Consultant's responsibility to require and confirm that each sub-consultant meets the minimum insurance requirements specified above.

Section 9.8. Reporting of Claims. Consultant shall report to MNWD, in addition to Consultant's insurer, any and all insurance claims submitted by Consultant in connection with the Services under this Agreement.

SECTION X – TERMINATION

Section 10.1. Grounds for Termination. MNWD may, by written notice to Consultant, terminate the whole or any part of this Agreement at any time and without cause by giving written notice to Consultant of such termination, and specifying the effective date thereof, at least seven (7) days before the effective date of such termination. Upon termination, Consultant shall be compensated only for those services which have been adequately rendered to MNWD, and Consultant shall be entitled to no further compensation. Consultant may not terminate this Agreement except for cause.

Section 10.2. Effect of Termination. If this Agreement is terminated as provided herein, MNWD may require Consultant to provide all finished or unfinished Documents and Data and other information of any kind prepared by Consultant in connection with the performance of Services under this Agreement. Consultant shall be required to provide such document and other information within fifteen (15) days of the request.

Section 10.3. Additional Services. In the event this Agreement is terminated in whole or in part as provided herein, MNWD may procure, upon such terms and in such manner as it may determine appropriate, services similar to those terminated.

SECTION XI – OWNERSHIP OF MATERIALS AND CONFIDENTIALITY

Section 11.1. Documents & Data; Licensing of Intellectual Property. This Agreement creates a non-exclusive and perpetual license for MNWD to copy, use, modify, reuse, or sublicense any and all copyrights, designs, and other intellectual property embodied in plans, specifications, studies, drawings, estimates, and other documents or works of authorship fixed in any tangible medium of expression, including but not limited to, physical drawings or data magnetically or otherwise recorded on computer diskettes, which are prepared or caused to be prepared by Consultant under this Agreement ("Documents & Data"). All Documents & Data shall be and remain the property of MNWD, and shall not be used in whole or in substantial part by Consultant on other projects without MNWD's express written permission. Within thirty (30) days following the completion, suspension, abandonment or termination of this Agreement, Consultant shall provide to MNWD reproducible copies of all Documents & Data, in a form and amount required by MNWD. MNWD reserves the right to select the method of document reproduction and to establish where the reproduction will be accomplished. The reproduction expense shall be borne by MNWD at the actual cost of duplication. In the event of a dispute regarding the amount of compensation to which the Consultant is entitled under the termination provisions of this Agreement, Consultant shall provide all Documents & Data to MNWD upon payment of the undisputed amount. Consultant shall have no right to retain or fail to provide to MNWD any such documents pending resolution of the dispute. In addition, Consultant shall retain copies of all Documents & Data on file for a minimum of fifteen (15) years following completion of the Project, and shall make copies available to MNWD upon the payment of actual reasonable duplication costs. Before destroying the Documents & Data following this retention period, Consultant shall make a reasonable effort to notify MNWD and provide MNWD with the opportunity to obtain the documents.

Section 11.2. Subconsultants. Consultant shall require all subconsultants to agree in writing that MNWD is granted a non-exclusive and perpetual license for any Documents & Data the subconsultant prepares under this Agreement. Consultant represents and warrants that Consultant has the legal right to license any and all Documents & Data. Consultant makes no such representation and warranty in regard to Documents & Data which were prepared by design professionals other than Consultant or its subconsultants, or those provided to Consultant by MNWD.

Section 11.3. Right to Use. MNWD shall not be limited in any way in its use or reuse of the Documents and Data or any part of them at any time for purposes of this Project or another project, provided that any such use not within the purposes intended by this Agreement or on a project other than this Project without employing the services of Consultant shall be at MNWD's sole risk. If MNWD uses or reuses the Documents & Data on any project other than this Project, it shall remove the Consultant's seal from the Documents & Data and indemnify and hold harmless Consultant and its officers, directors, agents and employees from claims arising out of the negligent use or re-use of the Documents & Data on such other project. Consultant shall be responsible and liable for its Documents & Data, pursuant to the terms of this Agreement, only with respect to the condition of the Documents & Data at the time they are provided to MNWD upon completion, suspension, abandonment or termination. Consultant shall not be responsible or liable for any revisions to the Documents & Data made by any party other than Consultant, a

party for whom the Consultant is legally responsible or liable, or anyone approved by the Consultant.

Section 11.4. Intellectual Property Indemnification. Consultant shall defend, indemnify and hold MNWD, its directors, officials, officers, employees, volunteers and agents free and harmless, pursuant to the indemnification provisions of this Agreement, for any alleged infringement of any patent, copyright, trade secret, trade name, trademark, or any other proprietary right of any person or entity in consequence of the use on the Project by MNWD of the Documents & Data, including any method, process, product, or concept specified or depicted.

Section 11.5. Confidentiality. All Documents & Data, either created by or provided to Consultant in connection with the performance of this Agreement, shall be held confidential by Consultant. All Documents & Data shall not, without the prior written consent of MNWD, be used or reproduced by Consultant for any purposes other than the performance of the Services. Consultant shall not disclose, cause or facilitate the disclosure of the Documents & Data to any person or entity not connected with the performance of the Services or the Project. Nothing furnished to Consultant that is otherwise known to Consultant or is generally known, or has become known, to the related industry shall be deemed confidential. Consultant shall not use MNWD's name or insignia, photographs of the Project, or any publicity pertaining to the Services or the Project in any magazine, trade paper, newspaper, television or radio production or other similar medium without the prior written consent of MNWD.

SECTION XII – ACCOUNTING, INSPECTION AND AUDIT

Section 12.1. Records. Consultant shall keep and shall preserve for four (4) years after final completion of the services, accurate and detailed records of all ledgers, books of account, invoices, vouchers, cancelled checks, and other documents or records evidencing or relating to the work, services and disbursements charged to MNWD under this Agreement (collectively, "Books and Records"). Any and all Books and Records must be maintained in accordance with generally accepted accounting principles and must be sufficiently complete and detailed so as to permit an accurate evaluation of the services provided by Consultant under this Agreement. During such four (4) year period, Consultant shall give MNWD and its agents, during normal business hours, access to such Books and Records. MNWD and its agents shall have the right to make copies of any of the said Books and Records.

Section 12.2. Custody. Where MNWD has reason to believe that any of the Books and Records required to be maintained by this Article may be lost or discarded due to dissolution or termination of Consultant's business, MNWD may, by written request, require that custody of such Books and Records be given to a person or entity mutually agreed upon and such Books and Records thereafter shall be maintained by such person or entity at Consultant's expense. Access to the Books and Records shall be granted to MNWD and its Representatives.

SECTION XIII – GENERAL PROVISIONS

Section 13.1. Delivery of Notices. All notices permitted or required under this Agreement shall be given to the respective Parties at the following address, or at such other address as the respective Parties may provide in writing for this purpose:

MNWD:	CONSULTANT:
Moulton Niguel Water District	Tetra Tech, Inc.
P.O. Box 30203	17885 Von Karman Ave., Suite 500
Laguna Niguel, CA 92607	Irvine, CA 92612
Attn: Director of Engineering	Attn: Tom Epperson

Such notice shall be deemed made when personally delivered or when mailed, forty-eight (48) hours after deposit in the U.S. Mail, first class postage prepaid and addressed to the Party at its applicable address. Actual notice shall be deemed adequate notice on the date actual notice occurred, regardless of the method of service.

Section 13.2. Subcontracting/Subconsulting. Consultant shall not subcontract any portion of the work required by this Agreement, except as expressly stated herein, without prior written approval of MNWD. Subcontracts, if any, shall contain a provision making them subject to all provisions stipulated in this Agreement.

Section 13.3. Equal Opportunity Employment. Consultant represents that it is an equal opportunity employer and it shall not discriminate against any subconsultant, employee or applicant for employment because of race, religion, color, national origin, handicap, ancestry, sex or age. Such non-discrimination shall include, but not be limited to, all activities related to initial employment, upgrading, demotion, transfer, recruitment or recruitment advertising, layoff or termination. Consultant shall also comply with all relevant provisions of MNWD's Minority Business Enterprise program, Affirmative Action Plan or other related programs or guidelines currently in effect or hereinafter enacted.

Section 13.4. Time of Essence. Time is of the essence for each and every provision of this Agreement.

Section 13.5. MNWD's Right to Employ Other Consultants. MNWD reserves right to employ other consultants in connection with this Project.

Section 13.6. Successors and Assigns. This Agreement shall be binding on the successors and assigns of the Parties.

Section 13.7. Assignment or Transfer. Consultant shall not assign, hypothecate or transfer, either directly or by operation of law, this Agreement or any interest herein without the prior written consent of MNWD. Any attempt to do so shall be null and void, and any assignees, hypothecates or transferees shall acquire no right or interest by reason of such attempted assignment, hypothecation or transfer.

Section 13.8. Construction; References; Captions. Since the Parties or their agents have participated fully in the preparation of this Agreement, the language of this Agreement shall be construed simply, according to its fair meaning, and not strictly for or against any Party. Any term referencing time, days or period for performance shall be deemed calendar days and not workdays. All references to Consultant include all personnel, employees, agents, and subconsultants of Consultant, except as otherwise specified in this Agreement. All references to MNWD include its elected officials, officers, employees, agents, and volunteers except as otherwise specified in this Agreement. The captions of the various articles and paragraphs are for convenience and ease of reference only, and do not define, limit, augment, or describe the scope, content or intent of this Agreement.

Section 13.9. Amendment; Modification. No supplement, modification or amendment of this Agreement shall be binding unless executed in writing and signed by both Parties.

Section 13.10. Waiver. No waiver of any default shall constitute a waiver of any other default or breach, whether of the same or other covenant or condition. No waiver, benefit, privilege, or service voluntarily given or performed by a Party shall give the other Party any contractual rights by custom, estoppel or otherwise.

Section 13.11. No Third Party Beneficiaries. There are no intended third party beneficiaries of any right or obligation assumed by the Parties.

Section 13.12. Invalidity; Severability. If any portion of this Agreement is declared invalid, illegal, or otherwise unenforceable by a court of competent jurisdiction, the remaining provisions shall continue in full force and effect.

Section 13.13. Prohibited Interests. Consultant maintains and warrants that it has not employed nor retained any company or person, other than a bona fide employee working solely for Consultant, to solicit or secure this Agreement. Further, Consultant warrants that it has not paid nor has it agreed to pay any company or person, other than a bona fide employee working solely for Consultant, any fee, commission, percentage, brokerage fee, gift or other consideration contingent upon or resulting from the award or making of this Agreement. Consultant further agrees to file, or shall cause its employees or subconsultants to file, a Statement of Economic Interest with MNWD's Filing Officer as required under state law in the performance of the Services. For breach or violation of this warranty, MNWD shall have the right to rescind this Agreement without liability. For the term of this Agreement, no member, officer or employee of MNWD, during the term of his or her service with MNWD, shall have any direct interest in this Agreement, or obtain any present or anticipated material benefit arising therefrom.

Section 13.14. Cooperation; Further Acts. The Parties shall fully cooperate with one another, and shall take any additional acts or sign any additional documents as may be necessary, appropriate or convenient to attain the purposes of this Agreement.

Section 13.15. Governing Law. This Agreement shall be governed by the laws of the State of California. Venue shall be in Orange County.

Section 13.16. Government Code Claim Compliance. In addition to any and all contract requirements pertaining to notices of and requests for compensation or payment for extra work, disputed work, claims and/or changed conditions, Consultant must comply with the claim procedures set forth in Government Code sections 900 et seq. prior to filing any lawsuit against MNWD. Such Government Code claims and any subsequent lawsuit based upon the Government Code claims shall be limited to those matters that remain unresolved after all procedures pertaining to extra work, disputed work, claims, and/or changed conditions have been followed by Consultant. If no such Government Code claim is submitted, or if any prerequisite contractual requirements are not otherwise satisfied as specified herein, Consultant shall be barred from bringing and maintaining a valid lawsuit against MNWD.

Section 13.17. Attorneys' Fees. If either Party commences an action against the other Party, either legal, administrative or otherwise, arising out of or in connection with this Agreement, the prevailing Party in such litigation shall be entitled to have and recover from the losing Party reasonable attorneys' fees and all other costs of such action.

Section 13.18. Authority to Enter Agreement. Consultant has all requisite power and authority to conduct its business and to execute, deliver, and perform the Agreement. Each Party warrants that the individuals who have signed this Agreement have the legal power, right, and authority to make this Agreement and bind each respective Party.

Section 13.19. Counterparts. This Agreement may be signed in counterparts, each of which shall constitute an original.

Section 13.20. Entire Agreement. This Agreement contains the entire Agreement of the Parties with respect to the subject matter hereof, and supersedes all prior negotiations, understandings or agreements. This Agreement may only be modified by a written amendment signed by both Parties.

MOULTON NIGUEL WATER DISTRICT:	**TETRA TECH, INC.:**
By: _____	By: _____ (Authorized Representative of Consultant)
Printed Name: _____	Printed Name: _____
Title: _____	Title: _____
Dated: _____	Dated: _____

Section 1 – Project Understanding and Approach

PROJECT UNDERSTANDING

The Crown Valley Pipeline Replacements Project consists of three components: Lower Salada Lift Station Force Main Replacement, Crown Valley Parkway Transmission Main Lower Reach Replacement, and I.D. No. 1 Master Meter Relocation as these facilities are along the same area of Crown Valley Parkway requiring the design and construction to be coordinated. In addition, South Coast Water District (SCWD) is planning to relocate 2,500 linear of the existing 39-inch Joint Transmission Main (JTM) currently located on private property onto Crown Valley Parkway requiring coordination with SCWD's design firm on the location of the relocated 39-inch JTM and outlet for the relocated I.D. No. 1 Master Meter.

Lower Salada Lift Station is located at 32332 Crown Valley Parkway in the City of Dana Point and is a vital sewer facility in the southern portion of the District. The lift station pumps into an existing 12-inch asbestos cement pipe force main that is located within Crown Valley Parkway right-of way and easement through the El Niguel Country Club. The 12-inch force main discharges into a 15-inch gravity sewer in Crown Valley Parkway at the summit manhole located just north of the intersection of Paseo del Niguel. The sewer then flows by gravity in a northerly direction to the Joint Regional Wastewater Treatment Plant, which is operated by the South Orange County Wastewater Authority (SOCWA). The existing force main was constructed in 1963 and due to age and concerns regarding the condition of the force main, the District desires to replace approximately 9,250 feet of existing force main and relocate the force main within Crown Valley Parkway. Approximately 8,860 feet of dual 12-inch force main is proposed.

The existing Crown Valley Parkway Transmission Main Lower Reach is a 12-inch potable water concrete cylinder pipe (CCP) located from Camino del Avion at the south end to approximately 800 feet north of the intersection of Paseo del Niguel at the north end, in the City of Laguna Niguel. The total length of the transmission main is approximately 9,400 feet. The north end of the 12-inch pipe terminates at the I.D. No. 1 Master Meter where it transitions to a 16-inch cement mortar lined & coated (CML&C) steel pipe (Upper Reach) and continues north on Crown Valley Parkway. The Crown Valley Parkway Transmission Main serves the District's 450 Pressure Zone. The pipeline was constructed in the 1960s and has a history of corrosion related pipe leaks and joint failures. The District desires to replace the existing 12-inch Lower Reach with a parallel 12-inch pipeline located outside the raised median island.

The JTM is part of the Joint Regional Water Supply System (JRWSS) supplying imported water to Southern Orange County. The JTM is a 39-inch CML&C steel pipe that supplies the District with potable water via the I.D. No. 1 Master Meter interconnection. SCWD is responsible for operations and maintenance of the JRWSS and JTM. A portion of the JTM is located within a residential housing tract east of Crown Valley Parkway, between Paseo del Niguel and Hillhurst Drive. SCWD is planning to relocate this portion of the JTM into the Crown Valley Parkway. This work will be adjacent to the proposed alignments of the Lower Salada Lift Station Force Main and Crown Valley Parkway Transmission Main Lower Reach replacements. In addition, I.D. No. 1 Master Meter interconnection will also need to be relocated due to the relocation of the JTM. The I.D. No. 1 Master Meter interconnection is currently located on Paseo del Valle in a residential housing tract east of Crown Valley Parkway in the City of Laguna Niguel. Coordination with SCWD on the proposed JTM alignment and outlet for the relocated master meter is necessary.

PROJECT OBJECTIVES

The Crown Valley Pipeline Replacements Project includes preliminary and final design for the proposed Lower Salada Dual Force Main and Crown Valley Parkway Transmission Main Lower Reach Pipeline and preliminary design for the relocation of I.D. No. 1 Master Meter. Final design of I.D. No. 1 Master Meter is an optional task. The work includes surveying and potholing services; geotechnical services; property acquisition support; preparation of CEQA documents; preparation of Contract Documents (construction drawings and specifications); construction cost estimates; permit acquisition support; traffic control plans; bid phase support; and construction phase services.

PROJECT APPROACH

Tetra Tech fully understands the importance of your project. We are offering an outstanding team, which combines the experience, depth, and understanding needed for the successful delivery of this project. We value the relationship that has been established with the District and look forward to continuing and further developing this association in the future. We are committed to providing the District with the same high-quality service you expect and deserve. Our strength lies in our proven track record that has led to successful completion of multiple projects for the District.

KEY DESIGN ISSUES

Successful implementation of the project will involve resolution of several key issues. We believe Tetra Tech has an excellent grasp of these issues based on our overall design experience as well as the knowledge we have gained from our similar pipeline design projects, especially the District's Regional Force Main Replacement and Mathis-Oso Bypass projects.

Our approach to resolving key project issues is summarized below:

SUMMARY OF KEY ISSUES

Issue	Tetra Tech Approach
Force Main and Water Main Location and Design	• Department of Drinking Water Separation Requirements: Proposed sewer force main shall be located a minimum of 10 feet horizontally (OD to OD) and 1 foot below vertically from existing and proposed potable water mains. Proposed potable water mains shall be located a minimum of 4 feet horizontally (OD to OD) and 1 foot above vertically from existing recycled water and storm drain pipelines. See Figures 1 and 2 for available corridors. Evaluate potential exemptions. • Pipeline Material: C-900, DR-14 polyvinyl chloride pipe and Class 350 ductile iron pipe and fittings (epoxy lined for sewer force main and cement lined for potable water). • Traffic Control: Maintain the minimum number of temporary travel lanes required by City. May impact available utility corridors. • Bore and Jack vs Trenched Construction of Intersections: Evaluate location of jacking and receiving pits, identify existing utilities to be supported or relocated, impacts to existing traffic (Bore and Jack: 24 hour, 7 day a week traffic control on Crown Valley Parkway; Trenched: Phased construction), construction duration.
I.D. No. 1 Master Meter Location and Design	• Mechanical Layout: Coordinate with District 1) Similar to existing; modulating plug/ball valve with propeller/magnetic flow meter 2) Similar to Mathis-Oso; rate of flow control valve with magnetic flow meter. • Site Layout: Coordinate maintenance access requirements, piping layout, security, etc. • Building vs. Vault: Evaluate pros and cons; construction costs, etc. • Potential Sites: Evaluate costs for acquisition of property from private interest and/or obtaining a secondary use license or franchise agreement from a public agency. Current property appraisals are required at negotiation and closing of escrow.
SCWD Coordination	• Coordinate the location of the relocated 36-inch JTM and location of master meter outlet. • Determine SCWD mechanical requirements for master meter outlet.
Permitting	• City of Laguna Niguel and Dana Point Encroachment Permit: Meet with Cities at beginning of project for City requirements (work hours and days, temporary traffic lanes, backfill, pavement replacement, etc.) and to discuss crossing of intersections. • CEQA Documentation. • Department of Drinking Water Separation Exemption Request.

PROJECT MANAGEMENT

Over the years, Tetra Tech has established a set of well-defined and rigorous procedures for project management. These techniques have been developed and refined and have contributed to our success and reputation. The keys to our project management system are communication, project planning, monitoring, and quality assurance. The Tetra Tech team's goal is to keep District staff "in the loop" from Day One of the project.

Communication tools include formal progress reports afforded through our project management system and an informal give-and-take approach starting with **Tom Epperson, PE, our Project Director,** and **Laurence Esguerra, PE, our Project Manager,** and extending to every member of the Tetra Tech team. At the project's onset, the chain of command and appropriate communication methods will be agreed upon and can be as formal or as informal as the District desires. Using the entire communication spectrum, we will conduct formal meetings with agenda and typewritten notes and informal meetings with notes to file. We will also have documentation of telephone communications, with notes to file or letters of understanding as appropriate follow-up.

Each month we will prepare a project status report containing the following: summary of completion of tasks; description of key issues/concerns which have surfaced, along with proposed options and solutions; status of action items; and a project status summary report showing current schedule and budget status.

COMMUNICATIONS

The key to any successful project is good communication. As our project partner, we propose to involve your staff in open, honest communications from the very start of the project. Our communications include: e-mail updates; monthly progress conference calls, monthly reports, invoices, and schedule updates; meetings with District staff; and project documentation, available upon request. All information can be provided electronically via e-mail or through a website portal. At each meeting our team will have our Project Manager and key design staff present to facilitate the discussion.

QUALITY CONTROL

Our team clearly understands the importance of ensuring the District receives a quality product. We have assigned a **Quality Control/Quality Assurance (QA/QC) Manager, Mark Bush, PE,** to ensure that all the project goals are met. A detailed QA/QC Plan will be prepared and submitted for review. This plan establishes lines of communications and procedures for ensuring quality during all phases of the project's design. In keeping with our open communications policy, our Quality Control documents will be made available to the District. Information, including design reviews, responses to comments, and redline plans can be provided in either hard copy or electronic format upon your request.

Section 2 – Scope of Work

Members of the Project Team have performed an in-depth review of the project description and scope of work within the RFP. As requested in the RFP, any changes/additions/deletions have been italicized to make sure they are apparent. The services required will include:

2.1 Project Administration/Management

Tetra Tech will include in the scope of work sufficient time and budget to administer the services provided. ***Tetra Tech will administer the*** project kick-off meeting and site visits, project design review meetings after each submittal (as identified in Task 2.8), a review workshop related to Draft and Final CEQA documents (as identified in Task 2.7), coordination meetings with the Cities of Laguna Niguel and Dana Point, coordination meetings with South Coast Water District and/or its engineering consultant to plan out the pipe alignments along Crown Valley Parkway, and preparation of meeting agendas and minutes for each meeting. Project administration shall also include preparation and maintenance of the project schedule.

Deliverables: Agendas and minutes for 15 meetings (including 3 coordination meetings with SCWD and/or its engineering consultant); biweekly schedule updates. ***Tetra Tech has assumed two (2) hours for each meeting.***

2.2 Records Search and Records Review

The preliminary design report for "Lower Salada Lift Station Force Mains Replacement Study", Contract No. 2013.005, was completed in 2014. The selected alignment (Alternative No. 1) is new dual 12-inch sewer force mains entirely within Crown Valley Parkway right-of-way.

The preliminary design report for "Crown Valley Parkway and Southwestern Transmission Main Rehabilitation Study", Contract No. OM17-18.070, was completed in. The selected alignment (Alternative No. 1) is a new 12-inch potable water line within Crown Valley Parkway right-of-way, outside the median island within the travel lanes.

The District has made the following information available:

- Lower Salada Lift Station Force Mains Replacement Study, Contract No. 2013.005
- Lower Salada Sewer Lift Station Pump and Motor Replacement Drawings, Contract No. 2005.011
- Lower Salada Ventilation Unit Replacement (2012.007 & 2012.008)
- Lower Salada Lift Station Rehabilitation, Contract No. 1A-102 (2000)
- Lower Salada Lift Station Pump Installation, Contract No. 1A-55 (1993)
- Lower Salada Lift Station Upgrade & Expansion, Contract No. 1A-15 (1984)
- Super Oxygenation Treatment Odor Control, Contract No. 2007.002 (2010) & specifications for proposed upgrade (scheduled to be installed June 2020)
- Arroya Salada Force Main Drawings (1963)
- Crown Valley Parkway and Southwestern Transmission Main Rehabilitation Study, Contract No. OM17-18.070
- Crown Valley Parkway Transmission Main Drawings
- I.D. No. 1 Master Meter Vault Upgrade Drawings
- Sectional Maps
- SCWD Joint Transmission Main Realignment in Crown Valley Parkway RFP Scope of Work

This task covers detailed review of these records. After award, the District will attempt to locate any other information requested by ***Tetra Tech***.

Tetra Tech will perform all "Records Search" required in order to establish street centerlines, property lines, easements, and utilities. "Records Search" shall include, but is not limited to the following:

- Any available recorded and unrecorded maps on file with the County or City, including assessors' maps, records of survey, tract maps, and parcel maps
- Monument ties and benchmark data
- Easements
- Environmental constraints
- See Task 2.3 regarding utility research

Deliverables: Electronic copies of relevant information obtained from Records Search.

2.3 Utility Research

Tetra Tech will implement a systematic approach to accurately identify and locate existing utilities in construction area. Said approach will include the following:

- Submit letters to all utilities identified on USA's database
- Organize a USA meet and mark ***(The District will need to coordinate this meet and mark as this typically does not occur unless construction work is going to occur.)***
- Pre-mark all visible facilities during site walk-through

- Ensure that the utilities shown on available record drawings are accurate; update as required
- Submit preliminary construction drawings to any other affected utility owners (if any) requesting their review to ensure their facilities are correctly shown

Deliverables: Copies of any correspondence with other utility owners; drawings to indicate any recommended potholing.

2.4 Design Survey and Base Construction Drawing

Tetra Tech will implement a systematic approach to accurately complete a design survey and prepare a base construction drawing. ***Metz Surveying, Inc. will*** provide a ground control survey for right-of-way, curbs and gutters, easements, surface and utilities (including appurtenances) above grade, below ground utilities, and other elements relevant to preparing comprehensive construction drawings for construction of the new sewer force main and potable water main. Said approach may include, but is not limited to the following:

- Research survey records and horizontal/vertical datums to be used
- Perform control survey(s)
- Dip storm drain and sewer manholes along the limits of the proposed pipe runs
- Analyze field and record survey data
- Reference all survey data to appropriate datums and permanent survey monuments
- Provide contours at appropriate interval

Metz Surveying, Inc. will provide a new digital terrain model and color aerial photography for the project area at a scale of 1" = 40', with 1-foot contour intervals. ***Metz Surveying, Inc. will*** provide 500-foot wide color photo background imagery centered along the project alignment utilizing the aerial photography. Survey information ***will*** be overlaid onto the aerial photography in plan view for all project plan sheets. Aerial photography shall be adjusted and georeferenced to coordinate with the survey information.

The Base Drawing ***will*** incorporate SCWD's relocated 39-inch JTM within the Crown Valley Parkway corridor to confirm that sufficient horizontal and vertical separation is available between the various utilities.

Deliverables: One (1) electronic copy of the completed Base Construction Drawing, together with the proposed horizontal alignment of the sewer force main and potable water main (this is essentially considered the 50% submittal). The District will complete a cursory review prior to authorizing Consultant to proceed with the tasks below.

"Full size" Drawings/Plans ***will*** be 22"x34" such that 11"x17" prints are true half size. Also, construction drawings ***will*** be tied to the State Plane Coordinate System.

2.5 Potholing

Following the completion of Tasks 2.3 and 2.4 above, ***Tetra Tech will*** prepare a potholing plan for locating and profiling underground utilities. The plan ***will*** include a list and redlined drawings of recommended utilities to be potholed. The District will approve this list prior to commencing. Potholing shall be performed to verify the exact horizontal and vertical locations of all potential utility conflicts. Potholing depth shall be sufficient to determine the top and bottom of the potential utility conflicts (such that elevations can be accurately plotted in the profile view). ***Potholing will be performed by TE Roberts (a pipeline contractor), who will*** submit a pothole report to document findings.

For this proposal, ***Tetra Tech will*** assume that approximately fifty (50) potholes will be required. ***TE Roberts will*** be responsible for obtaining encroachment permits from the Cities and preparing traffic control plans, as needed, for potholing activities ***and have assumed permits fees will be paid by the District.***

To assist TE Roberts in providing potholes per the District approved pothole plan, a Tetra Tech representative will be on-site part time during the potholing activities. The Tetra Tech Representative will provide guidance to the location and depth of the pothole when there is a conflict between the USA Mark, Base Construction Drawing, and/or Record Drawing. We have assumed five (5) days of pothole observation.

Deliverables: List and drawings of proposed pothole locations; pothole report.

2.6 Geotechnical Exploration

Tetra Tech will prepare a geotechnical exploration and testing plan for the proposed pipeline alignments. The plan ***will*** include a list and redlined drawings of recommended geotechnical boring locations. The District will approve this list prior to commencing. The depth of the soil borings ***will*** be adequate to characterize the soils to a depth of at least four feet below the proposed pipelines. Samples ***will*** be collected as needed to be adequate, in the ***geotechnical engineer's*** judgement, to define the soils properties affecting the design and construction of the pipelines. ***This work will be performed by Leighton Consulting, Inc. Leighton will*** submit a geotechnical report to document findings and provide recommendations. The locations of all borings ***will*** be plotted on a map and attached to the report. Complete logs of all soil profiles ***will*** be included in the report with all thicknesses (including pavement and base thicknesses), descriptions, classifications, and properties relevant to the design and construction of the pipelines. The geotechnical report ***will*** also discuss the corrosion potential ***(in depth soil corrosivity assessment and corrosion control design is not included)***. The report shall make recommendations relevant to the design, including but not limited to dewatering, shoring, backfill, compaction, and corrosion ***potential***.

For this proposal, ***Tetra Tech assumes ten (10) hollow-stem auger borings along the pipeline alignment at a horizontal spacing of 1,000 feet. The borings will be drilled to depths of 10 to 15 feet of 4 feet below pipe invert, whichever is deeper.***

Leighton Consulting, Inc will be responsible for obtaining encroachment permits from the Cities and preparing traffic control plans, as needed, for geotechnical activities ***and have assumed permits fees will be paid by the District.***

Deliverables: List and drawings of proposed boring locations; geotechnical report.

2.7 Environmental Services

Tetra Tech will prepare, publish and file the necessary Environmental Documentation. An Initial Study, Negative Declaration, and Mitigation Measures will be prepared, as it is anticipated that the Project will not have a significant effect.

Tetra Tech will prepare an Initial Study and the associated CEQA compliance report in accordance with the requirements of CEQA guidelines. ***Tetra Tech will prepare various technical studies are typically required to gather enough baseline data to support the impacts analysis. These studies will include an air quality, energy, and greenhouse gas (GHG) emission technical report, a biological resources analysis, a cultural resources letter report, and a noise and vibration technical report. Technical analysis for the other CEQA IS resource issues will be based on previously prepared documents, information provided by the District, and/or other available information. These IS resource issues include: agriculture and forestry resources, biological resources, geology/soils, hazards and hazardous materials, hydrology/water quality, land use/planning, mineral resources, noise, population/housing, public services, recreation, transportation, utilities/service systems, and wildfire. An MND will be prepared based on the supporting analysis provided by the IS. Tetra Tech will*** be responsible for all publishing and filing requirements of the Initial Study and Negative Declaration.

2.7.1 Air Quality, Energy, and Greenhouse Gas Emissions Analysis

Tetra Tech will prepare an air quality analysis and GHG emissions analysis technical report to evaluate potential air quality and GHG impacts associated with the Project. The report will be included as an appendix to the IS/MND report, which will include the CEQA air quality and GHG checklists and summary responses to each checklist question. This analysis will be prepared in accordance with the South Coast Air Quality Management District's CEQA guidance. The report will summarize the existing local and regional air quality, identify the appropriate air quality thresholds of significance, describe the method used for calculating emissions from the construction and operation of the Project, assess the Project impacts, and specify the mitigation measures to be employed (if necessary). A discussion of GHGs and their potential effects on global climate change will be included. Emissions of carbon dioxide, a key GHG identified in Assembly Bill (AB) 32, and other major GHGs such as methane and nitrous oxide from direct and indirect Project-related sources will be evaluated.

Air quality and GHG impacts from construction sources will be analyzed based on the equipment type, construction schedule, fuel type, equipment emission factors, horsepower, load factor, and the duration of construction activities. Exhaust and dust emissions from worker commutes and equipment travel will be calculated based on available information. Fugitive dust (particulate matter, less than 2.5 and 10 micrometers in diameter) emissions would result from trenching activities and vehicles traveling on paved and unpaved roads. Emissions associated with asphalt paving will also be evaluated. Emissions will be calculated using the California Emissions Estimator Model (CalEEMod), based on available construction and vehicle usage information provided to Tetra Tech. Mitigation measures, if required, will also be evaluated in CalEEMod. The total project construction and operational emissions will be compared to the suggested District threshold criteria, and a determination of significance will be made.

Assumptions for Subtask 2.7.1:

Consolidated review/revision comment cycle of the air quality, energy, and GHG emissions technical report and CEQA sections will take place in conjunction with the review of the IS/MND.

Air quality and GHG emissions analyses technical report and CEQA sections to be included with the IS/MND.

2.7.2 Biological Resources

Project activities are expected to take place mostly in Crown Valley Parkway and other built environment however, portions of the Project route will be adjacent to undeveloped land. In addition, the Project is located within the boundary of the Natural Community Conservation Plan/Habitat Conservation Plan for the Central/Coastal Subregion of Orange County (Central/Coastal Orange County Natural Community Conservation Plan/Habitat Conservation Plan), more specifically within the coastal subregion.

Tetra Tech will assess the potential for impacts on biological resources at the Project site. A Tetra Tech biologist will research readily available information, including relevant literature, databases, agency web sites, city websites, Geographic Information Systems data, maps, aerial imagery, and in-house records to: 1) assess habitats, special-status plant and wildlife species, jurisdictional waters, critical habitats, and wildlife corridors that may occur in and near the Project site, and 2) identify local or regional plans, policies, and regulations that may apply to the Project.

Following the literature review, the Tetra Tech biologist will conduct a general biological survey on the Project site. The pedestrian survey will cover all accessible areas of the Project site and photographs will be taken to further document the biological resources of the site. The Tetra Tech biologist will characterize the existing habitat and search for the presence of sensitive plant communities, special-status plants and wildlife, jurisdictional areas, and potential wildlife corridors.

Following completion of the survey, Tetra Tech will prepare the biological resources analysis for the biological resources section of the IS/MND.

Assumptions for Subtask 2.7.2:

- ***This proposal assumes that the minimal amount of survey will be necessary to meet environmental compliance.***
- ***A formal jurisdictional delineation or protocol plant and wildlife surveys are not included. A change order will be required if any of these surveys and reports are found to be necessary.***
- ***Consolidated review/revision comment cycle of the biological resources CEQA section will take place in conjunction with the review of the IS/MND.***

Biological resources analysis to be included as section in the IS/MND.

2.7.3 Cultural Resources

Tetra Tech will conduct cultural resources assessment for the Project site, which will include the following:

Cultural Resources Record and Literature Search: Tetra Tech will conduct a cultural resource record search via the South-Central Coastal Information Center (SCCIC) at California State University Fullerton, part of the California Historical Resource Information System. The SCCIC search will include a review of previous cultural resource surveys and known archaeological sites within the Project area and a 0.25-mile buffer surrounding the Project area. The search will also include a review of the following publications and lists: California Office of Historic Preservation's Historic Property Data File for Orange County, Office of Historic Preservation Archaeological Determinations of Eligibility, California Inventory of Historical Resources/California Register of Historic Resources, California Points of Historical Interest, California Historical Landmarks, ethnographic information, pre-contact and historical literature, historical maps, patents, and General Land Office plats, and local historic resource inventories.

Native American Heritage Commission and Tribal Coordination: Early in the CEQA process (as soon as Project is awarded), Tetra Tech staff will conduct a Native American Heritage Commission (NAHC) Sacred Lands File search for the Project through the California NAHC to identify any known tribal cultural resources within the Project or surrounding areas. The NAHC will also provide a list of local Native American contacts with knowledge of the Project area. The NAHC recommends conducting outreach to the listed tribes or individuals as they may have knowledge of tribal resources within or near the Project area. Tetra Tech will provide AB52 consultation support to the District by drafting a project letter for Tribes that have requested consultation under AB52, to identify and address potential adverse impacts to tribal cultural resources pursuant to CEQA guidelines and AB52. Tetra Tech will submit letters and maintain a matrix of tribal responses. Tetra Tech will follow up with contacted tribes via telephone or email.

Confidential Cultural Resource Letter Report: Tetra Tech will produce one (1) confidential cultural resource letter report of findings and recommendations meeting the standards of CEQA. The report will include required front matter, an introduction describing the Project and regulatory context, summary of the results of the record search, summary of NAHC Sacred Lands File results and tribal consultation, an assessment of significant impacts, recommendations for mitigation measures, and a list of references cited (as applicable). Additionally, the report will include an appendix of the SCCIC results, and maps depicting the area of potential effect, survey coverage, and any sites within or near the area of potential effect (under confidential cover, as applicable), and tribal consultation results. The contents of the letter report will be incorporated in the Cultural Resource Section of the IS/MND document, and any tribal consultation results will be incorporated in the Tribal Cultural Resource Section of the IS/MND.

Assumptions for Subtask 2.7.3:

- ***The Project requires CEQA compliance only and this scope does not include cost associated with requirements under National Environmental Policy Act (NEPA) and Section 106 of the National Historic Preservation Act.***
- ***The SCCIC record search fee will not exceed $1,200. If the SCCIC indicate the fees will be higher, a cost estimate will be provided for this additional cost (as applicable). Tetra Tech is not responsible for SCCIC delays due to Covid-19.***
- ***Tetra Tech assumes no more than 10 Native American tribes/individuals will require consultation. No more than 10 hard copy letters mailed via certified mail will be required.***
- ***This scope does not include in-person Native American meetings, site visits, monitoring, or other participation. If interested local Native American tribes request a site visit, or meeting requiring a Tetra Tech archaeologist, a scope and cost estimate will be submitted for this additional work.***
- ***This scope does not include an archaeological survey, as the Project area is within a built environment (e.g. paved roads, landscaping, structures) and the natural ground surface is not visible.***
- ***Consolidated review/revision comment cycle of the Cultural Resource Letter Report and CEQA sections will take place in conjunction with the review of the IS/MND.***

Subtask 2.7.3 Deliverables: Cultural Resources letter/memo style document that will include the results of the Cultural Resources Record and Literature Search and the NAHC and Tribal Coordination and electronic copies of AB52 consultation letters for the District's use. The Cultural Resources letter/memo to be included as an appendix to the IS/MND. The contents of the letter report will be incorporated in the Cultural Resource Section of the IS/MND document, and any tribal consultation results will be incorporated in the Tribal Cultural Resource Section of the IS/MND.

2.7.4 Noise and Vibration Study

Tetra Tech will evaluate and calculate noise and vibration levels for the construction phases. The noise and vibration calculations will be conducted to address the CEQA noise questions. Calculations will evaluate the construction activity, equipment type, equipment operational time, and the equipment noise and vibration emission levels. The calculations will be used to evaluate noise and vibration levels at the identified sensitive receptor locations. Tetra Tech will evaluate the operational noise from the Project in accordance with the applicable Noise Element and Noise Ordinance. The operational noise evaluation will be conducted to address the CEQA noise questions. Following completion of the evaluations, Tetra Tech will prepare an analysis for the noise section of the IS/MND.

Assumptions for Subtask 2.7.4:

- ***This Project will not incorporate or replace operating mechanical equipment.***
- ***Project plans including, grading, alignment, phases of construction, and expected amount of associated equipment will be provided.***
- ***Consolidated review/revision comment cycle of the Noise and Vibration section will take place in conjunction with the review of the IS/MND.***

Analyses to be included as section in the IS/MND.

Public Review Draft Initial Study Mitigated Negative Declaration: Tetra Tech will provide three (3) copies of the First Screencheck for review by the District. Upon incorporation of any comments, ***Tetra Tech will*** submit the document to the State Clearinghouse and circulate for the appropriate public review period. In addition to submitting to the State Clearinghouse, ***Tetra Tech will*** assume that submittals to up to ten (10) other agencies will be required (e.g. County, Cities, Library, etc.). ***Tetra Tech will*** prepare the Notice of Intent to Adopt to accompany the public review documents.

Tetra Tech will prepare appropriate newspaper notices and assume that up to two newspaper notices will be required. ***Tetra Tech assumes fee for each newspaper notice will not exceed $600.*** Once the comment period is complete, ***Tetra Tech will*** assist the District in responding to any public review comments. ***Tetra Tech will*** then incorporate any comments from the public, final comments from the District, responses to public comments (***Tetra Tech assumes responses to a maximum of 15 individual comments),*** and any edits to the CEQA document, as necessary, to constitute the final CEQA compliance report. ***Tetra Tech will also provide a draft Mitigation Monitoring and Reporting Plan to be incorporated into the final documentation of the IS/MND. The Mitigation Monitoring and Reporting Plan will include proposed mitigation measures and the following:***

- ***Project time period to which the measure applies.***
- ***Future review or reporting requirements involved.***
- ***Responsibility for mitigation implementation.***
- ***Requirements for monitoring and reporting frequency.***

Upon completion of the final document and approval by District's Board of Directors, ***Tetra Tech will file the NOD with the County Clerk and the State Clearinghouse Tetra Tech has assumed the filing fee will not exceed $2,500.00.***

General Assumptions:

- ***The Project requires CEQA compliance only and this scope does not include cost associated with requirements under NEPA and Section 106 of the NHPA.***
- ***The Project does not require an Environmental Impact Report.***
- ***Changes to the Project after the Project description has been finalized under Task 2, may result in necessary associated changes to the IS/MND and technical studies. A cost estimate will be provided for this additional cost (as applicable).***
- ***Tetra Tech has assumed a period of performance for the IS/MND starting in September 2020 through July 2021.***

Deliverables:

Tetra Tech will submit three (3) sets of the items identified below for each of the specified milestones. The submittals shall follow the ***proposed schedule.***

Draft CEQA Documents – ***Tetra Tech will*** submit three (3) copies of the Draft Initial Study, Negative Declaration, and Mitigation Measures to District for review.

Final CEQA Documents – ***Tetra Tech will*** submit three (3) copies of the Final Initial Study, Negative Declaration, and Mitigation Measures for District's use only.

Any other deliverables required to successfully complete the publishing and filing requirements in accordance with current CEQA requirements. In addition to submitting to the State Clearinghouse, ***Tetra Tech assumes no more than 10 electronic copies of the public draft IS/MND and the NOI to be sent to the mailing list provided by the District. Three (3) hard bound copies and one (1) electronic copy of the draft IS/MND to be sent to the District and one (1) hard bound copy of the draft IS/MND to the Dana Point Public Library. One (1) electronic copy of the draft IS/MND, the NOI, and the State Clearinghouse summary form to be sent to the State Clearinghouse.***

Electronic files – ***Tetra Tech will*** submit a searchable PDF file of the Initial Study and Negative Declaration. All other electronic files used in preparation of the final documents shall also be included and provided to District electronically.

2.8 Preparation of Contract Documents

Tetra Tech will prepare a complete set of Contract Documents (Construction Drawings and Specifications) for construction of the Lower Salada Force Main Replacement ***and*** Crown Valley Parkway Transmission Main Lower Reach Replacement. ***Construction Documents for*** I.D. No. 1 Master Meter Relocation ***is included in Task 2.15. Tetra Tech will*** prepare the Contract Documents using the District's standard format, standard forms, standard agreement, standard bonds, complete General Provisions, pertinent Special Provisions, pertinent Technical Specifications, and pertinent Standard Drawings. The District will provide the latest versions of these documents prior to ***Tetra Tech prior to commencing*** Task 2.8. In general, the construction drawings, bid sheets, special provisions, and technical specifications will require a high degree of specialization.

The design ***will*** address the following:

- New dual 12-inch sewer force mains as recommended in the "Lower Salada Lift Station Force Mains Replacement Study" (Task 2.2).
- New single 12-inch potable water line in Crown Valley Parkway as recommended in the "Crown Valley Parkway and Southwestern Transmission Main Rehabilitation Study" (Task 2.2).
- Abandonment of the existing 12-inch asbestos cement sewer force main and the existing 12-inch concrete cylinder pipe potable water line.
- New I.D. No. 1 Master Meter interconnection, including structure, piping, connection to the relocated JTM, and abandonment of the existing facility (Tasks 2.14 and 2.15).
- Street improvements as required by the Cities of Laguna Niguel and Dana Point along the alignments of both the force main and potable water line in Crown Valley Parkway, including pipeline trench repairs, grind & overlay and/or slurry rehabilitation, replacing any active traffic signal loops and street striping, etc.
- Traffic Control Plans (Task 2.9).

Tetra Tech will make the four (4) submittals described as follows.

<u>50% Submittal</u>

This submittal will include the complete Base Construction Drawing and proposed horizontal alignments of the sewer force mains, potable water line, and JTM (by SCWD). ***Tetra Tech anticipates*** having multiple coordinated discussions with SCWD at this submittal stage to confirm the best fit alignments for all three utilities within the Crown Valley Parkway corridor (see also Task 2.4). As part of the 50% submittal, the ***Tetra Tech will*** also prepare a comprehensive preliminary design technical memorandum (PDTM) to provide discussion, alternatives, ***and provide recommendations for approval by the District*** regarding the following:

- Final pipe material selection for the new sewer force mains and potable water pipeline. The District's preference is to use C-900 PVC for the pipeline material. ***Based on experience with recent District projects such as Regional Force Main Replacement and La Paz Road Recycled Water Extension we recommend the following pipe materials: Sewer Force Main: C-900 PVC Pipe or Ductile Iron Pipe with Ductile Iron Fittings (epoxy lined); Potable Water Main: C-900 PVC Pipe or Ductile Iron Pipe with Ductile Iron Fittings (cement lined).***
- Potential for surge and ***potential*** mitigation. ***Transient forces are commonly caused by sudden closure of valves, line breaks and sudden loss of power. A surge analysis is not included in in this proposal.***
- Potential for odor and ***potential*** mitigation. ***Odor typically originates at the wet well, manholes or air release valves that. It is our understanding Lower Salada Lift Station is equipped with a super oxygenated odor control system. Tetra Tech will research odor absorbing mitigation measures and present the findings in the PDTM.***
- Abandonment methodology for the existing 12-inch asbestos cement force main and the existing 12-inch concrete cylinder potable water line.

- Identification of any bore and jack locations, which will require City coordination. ***Tetra Tech will also evaluate temporary traffic control and construction duration of bore and jack construction and phased trenched construction for discussion with the City.***
- Preliminary connection details at lift station and summit manhole.
- Conceptual sizing and layout of new I.D. No. 1 Master Meter, identification of preferred site location (Task 2.14), detail for tie-in to relocated JTM, and coordination of tie-in location on relocated JTM alignment.
- Conceptual sequence of work/phasing plans, including consideration of CEQA monitoring/mitigation requirements, shutdown limitations for tie-ins, and City restrictions (working hours, traffic control, etc.).
- Bypassing at lift station and/or summit manhole to minimize or eliminate shutdown duration for tie-ins.
- Coordination of timing with JTM relocation.
- Overall project schedule, including design milestones, bidding, permitting, submittals, material procurement (Consultant shall verify lead times with suppliers), construction, and milestones related to JTM relocation and tie-in of I.D. 1 Master Meter.
- Conceptual-level cost estimate for complete project, including construction, permitting, environmental compliance monitoring, third-party construction management and inspection, property acquisition for I.D. No. 1 Master Meter, bypassing, traffic control, restoration, etc.
- ***Anticipated*** plan sheet ***index*** and outline of all planned technical specifications.

Tetra Tech will incorporate the selections and approaches approved by the District into the subsequent design submittals. ***Tetra Tech will*** include sufficient fees to account for the variety of approaches that may be approved by the District. After the completion of the 50% submittal and Tasks 2.5 and 2.6, the District will authorize the Consultant to proceed with the following submittals. ***We anticipate the following Drawings:***

- ***Title Sheet with Vicinity and Location Maps***
- ***General Notes, Drawing Index, Agency Index, and Code Compliance Regulations (2 sheets)***
- ***Lower Salada Lift Station Dual Force Main Horizontal Control Plan (2 Sheets)***
- ***Crown Valley Parkway Transmission Main, Lower Reach Horizontal Control Plan (2 sheets)***
- ***Lower Salada Lift Station Force Main Plan and Profile (10 sheets)***
- ***Crown Valley Parkway Transmission Main, Lower Reach Plan and Profile (11 sheets)***
- ***Gravity Air Release Drains Plan and Profile (2 sheets)***
- ***Trench and Pavement Replacement Details***
- ***Dual Force Main Details (LSLS & Summit)***
- ***Bypass Piping Details (LSLS & Summit)***
- ***Force Main Thrust and Appurtenances Details***
- ***Air Release Manhole and Gravity Sewer Details***
- ***Transmission Main Appurtenances (2 sheets)***
- ***Bore Pit / Phasing Details (Camino Del Avion and Clubhouse Drive)***
- ***Connection Details***
- ***Relocated JTM Special Construction***
- ***Pipeline Abandonment Details***
- ***Miscellaneous Details***
- ***Traffic Control Sheets (26 sheets)***

<u>90% Submittal</u>

Substantially completed draft set of construction drawings and specifications shall be submitted. All sections of the Contract Documents and Specifications shall be included along with a preliminary engineer's estimate of probable construction cost (Task 2.10). Updated overall project schedule.

Tetra Tech will anticipate a constructability review will be performed by a third-party construction management and inspection (CM&I) firm (hired separately by the District) at the 90% submittal stage. The 90% submittal ***will***

incorporate all District comments from the 50% Review (or an explanation of why the comment was dismissed). Responses ***will*** be provided in writing to all District comments and questions. This ***will*** be presented in a spreadsheet log or as markup on the PDF comments.

100% Submittal

Fully completed set of construction drawings and specifications ***will*** be submitted. All sections of the Contract Documents and Specifications ***will*** be included along with a final engineer's estimate of probable construction cost (Task 2.10). Updated overall project schedule.

The 100% submittal ***will*** incorporate all District comments from the 90% Review and the third-party CM&I constructability review (or an explanation of why the comment was dismissed). Responses ***will*** be provided in writing to all District comments and questions. This ***will*** be presented in a spreadsheet log or as markup on the PDF comments. The 100% submittal shall be ready to bid in ***Tetra Tech's*** opinion.

Final Contract Documents

After the District completes a cursory review of the 100% submittal, ***Tetra Tech*** will be instructed to prepare Final Contract Documents. The Final Contract Documents ***will*** incorporate all District Comments from the 100% Review (or an explanation of why the comment was dismissed). Responses ***will*** be provided in writing to all District comments and questions. This ***will*** be presented in a spreadsheet log or as markup on the PDF comments. The Final Contract Documents shall be stamped and signed construction plans (Bond) and unbound specifications for District's signatures.

After obtaining District's signatures, ***Tetra Tech will*** provide the District with fifteen (15) sets of bound full size construction plans and fifteen (15) sets of bound construction specifications with 11"x17" reduced construction drawings enclosed as an exhibit.

Deliverables:

- 50% Submittal – Base Construction Drawing and Preliminary Design Technical Memorandum (PDTM) – Five (5) full size copies & five (5) half size copies of the base drawing alignment and a fully searchable electronic PDF copy will be submitted. Also, five (5) copies of the Draft PDTM and a fully searchable electronic PDF copy will be submitted. After incorporation of District comments on Draft PDTM, five (5) copies of the Final PDTM and a fully searchable electronic PDF copy will be submitted.
- 90% Submittal – Five (5) full size sets of construction plans and five (5) sets of bound construction specifications with 11"x17" reduced construction drawings enclosed as an exhibit. A fully searchable PDF copy will also be submitted. Preliminary construction cost estimate will be provided.
- 100% Submittal – Five (5) full size sets of construction plans and five (5) sets of bound construction specifications with 11"x17" reduced construction drawings enclosed as an exhibit. A fully searchable PDF copy will also be submitted. The final construction cost estimate will be provided with this submittal.
- Final Contract Documents – One (1) full size set of stamped and signed reproducible construction plans (Bond) and unbound specifications for District signature. Thereafter, fifteen (15) full size sets of edge-bound (with binding strips) construction plans individually rolled ink-side-out and fifteen (15) sets of bound construction specifications printed single-sided with 11"x17" reduced construction drawings tri-folded and enclosed as an exhibit. For the final submittal, specifications will be provided with colored pages as follows: Bid Forms – White, General Provisions – Blue, Special Provisions – Pink, and Technical Specifications – Green. A fully searchable PDF copy will also be submitted. Tetra Tech will provide all final native files including AutoCAD files for plans (including all reference files; NAD-83, State Plane Zone 6, NAVD-88 of all sheets), Revit or other 3D model files used, MS Word files for specifications, and MS Excel file for cost estimate. "Full size" Drawings/Plans will be 22"x34" such that 11"x17" prints are true half size. Also, construction drawings will be tied to the State Plane Coordinate System.

2.9 Traffic Control Plans

Traffic control plans ***will*** be provided as necessary to satisfy the requirements of the Cities of Laguna Niguel and Dana Point and the W.A.T.C.H. Manual. ***Tetra Tech assumes*** engineered traffic control plans shall be required for the construction within the following areas: A) Crown Valley Parkway B) Crown Valley Parkway intersections with Camino Del Avion and Club House Drive. ***Tetra Tech assumes 26 traffic control plans will be required for Task 2.8 and an additional 10 traffic control plans will be required for Optional Task 2.15.***

Deliverables: Traffic Control Plans ***will be submittal at the 90% submittal.***

2.10 Construction Cost Estimate

Tetra Tech will provide to the District an estimate of the probable construction cost for the complete project. Two formats of the estimate shall be provided: (1) full detailed cost breakdown and (2) in the format of bid items prepared for the Construction Specifications. Construction cost estimates shall be provided with 90% and 100% Submittals (i.e. preliminary construction cost estimate and final construction cost estimate). The final construction cost estimate shall be prepared in sufficient detail that a contingency is not required.

Deliverables: Preliminary and Final Construction Cost Estimates.

2.11 Permit Acquisition Support

Tetra Tech will determine all required permits and plan check requirements for the project. ***Tetra Tech will*** prepare all permit applications and plan check packages and submit to the proper authorities on the District's behalf. ***The District will pay applicable permit and plan check fees.*** It is anticipated that permits will be required the Cities of Laguna Niguel and Dana Point. ***Tetra Tech will provide the following permit acquisition support:***

- Attendance at coordination meetings with the Cities (covered under Task 2.1)
- Providing technical support for application materials and acquisition efforts
- Ensuring that all permit conditions are incorporated into the Contract Documents

Deliverables: Permit applications, plan check packages***, and related correspondence.***

2.12 *Bid Phase Support*

During the bidding period, ***Tetra Tech will*** assist with providing information and clarification of the Contract Documents to prospective bidders as requested. ***Tetra Tech assumes*** three (3) addenda will be required during the bid process and shall incorporate this scope and fee into the proposal. ***Tetra Tech will*** also conduct an onsite pre-bid meeting.

Deliverables: Three (3) Addenda if required; pre-bid meeting agenda and minutes.

2.13 *Construction Phase Services*

During the construction of the proposed improvements, ***Tetra Tech will*** provide the following construction phase services and include appropriate fees in the submitted Proposal:

A. Pre-Construction Meeting: Conduct pre-construction meeting with the District and Contractor prior to beginning construction and prepare agenda and minutes.

B. Contractor's RFI: Respond to approximately fifty (50) Requests for Information from the Contractor and the District.

C. Shop Drawing Reviews: Review and acceptance of fifty (50) shop drawing submittals. ***It is assumed one half of the shop drawings (25) will require a second review.***

D. Conference Calls: Thirty (30) conference calls of one hour ***each*** as requested by District staff.

E. Site Visits: Twelve (12) site visits of two hours ***each*** as requested by District staff.

F. Record Drawings: At the conclusion of the construction, the District will provide ***Tetra Tech*** with a single, consolidated set of red-lined as–built drawings. ***Tetra Tech will*** prepare the final record drawings based on the same. Record drawings shall be prepared in AutoCad.

Deliverables:

- Pre-Construction meeting agenda and minutes.
- RFI responses and Submittal Review Comments.
- ***Status log of the above-mentioned RFI and Shop Drawing Submittals.***
- Three (3) full size sets of draft record drawings. Upon the District's review and approval, one (1) full size set of mylars with original signatures and one (1) full size set bond copy. In addition, provide electronic files in both AutoCad (including all reference files; NAD-83, State Plane Zone 6, NAVD-88 of all sheets) and PDF.

2.14 *Property Acquisition Support for I.D. No. 1 Master Meter*

The I.D. No. 1 Master Meter will require property acquisition to locate the facility on a new site. ***Tetra Tech will*** perform site screening of feasible sites in the area and provide a cost comparison, including property acquisition and infrastructure costs for each site. For the purposes of this proposal, ***Tetra Tech will*** assume that three (3) sites will be included in the screening.

Tetra Tech will develop a conceptual site layout for a typical site, including the proposed structure, piping layouts, etc. ***Tetra Tech will*** include two (2) conceptual site layouts: 1) aboveground building and 2) underground vault. The District's preference is for the new master meter to be located within an aboveground building; however, it may be required to be located within an underground vault structure.

Tetra Tech will provide survey and prepare legals and plats for each of the three (3) sites, including required in-fee property acquisition areas, utility easements, and temporary construction easements. ***Tetra Tech has retained Epic Land Solutions, Inc. (EPIC) to provide a higher-level cost estimate of the potential sites using similar methodology of the appraisal but requiring less initial research and dispensing with some of the formality associated with an appraisal summary report. Doing so saves significant time and cost as supposed to providing full appraisals of each site. Once a preferred site is selected by the District, EPIC will prepare a complete appraisal report that can serve as the basis for the District's offer to purchase. In addition to the time and expense saved by waiting until a site has been selected to prepare the appraisal, the appraisal will also be more recent at the time the initial offer is made, minimizing the likelihood that the property owner will challenge the value conclusion on the grounds that the appraisal is out of date. Similarly, the District may benefit from waiting until a preferred site is selected to prepare right of way engineering documents (legals and plats) so that the District's input on the conceptual site layout from the TM can be incorporated into the documents and no effort is lost in rework.***

The site evaluations, findings, and recommendations ***will*** be documented in a technical memorandum.

It will be necessary to complete the site screening process as early as possible in the project schedule. Property acquisition must be completed in time for coordinating connection of the relocated master meter to the relocated JTM.

Deliverables: Conceptual site layouts, appraisals for each site, Draft and Final technical memorandum.

2.15 *Final Design of I.D. No. 1 Master Meter – OPTIONAL TASK*

This task is to complete the Final Design of the I.D. No. 1 Master Meter, including related plans and specifications for the structure, piping and appurtenances, connection to the relocated JTM, and abandonment of the existing

facility. For this proposal, ***Tetra Tech has included the additional*** fee under this optional task to allow for the design of either a building or vault structure and approximately 1,000 feet of piping for connection of the relocated master meter to the relocated JTM. ***Tera Tech has included the additional*** fee under this optional task to perform the services under Tasks 2.1 through 2.13 for the I.D. No. 1 Master Meter. District may elect to proceed with Final Design under this contract depending on the timing of property acquisition efforts.

Tetra Tech does not expect additional level of effort for Tasks 2.1 – Project Administration and Management, 2.2 – Records Search and Review, 2.7 – Environmental Services, and 2.12 – Bid Phase Service. The following summarizes the additional level of effort to include the Final Design of I.D. No. 1 Master Meter Relocation into the Crown Valley Pipeline Replacements Contract Documents.

Task 2.3 Utility Research: Tetra Tech will perform additional utility research and perform a field investigation of the selected site per Task 2.3.

Task 2.4 Design Survey and Base Construction Drawing: Tetra Tech and Metz Survey will perform additional survey and base construction drawing of the selected site per Task 2.4.

Task 2.6 Geotechnical Exploration: Leighton Consulting will perform a geotechnical exploration to characterize the subsurface soil conditions and develop a geotechnical recommendations to aid in design and construction for the relocated master meter. We have assumed one boring to a depth of 20 feet. Leighton Consulting will present the findings and recommendation in a separate geotechnical report.

Task 2.8 Preparation of Contract Documents: We have assumed a level of effort of the master meter to be located within a above ground CMU building. Architectural and landscaped design is not included. Tetra Tech anticipates the following additional Drawings to include the I.D. Master Meter Relocation into the contract documents:

- ***Site Demolition Plan and Demolition Details (2 sheets)***
- ***Pavement Replacement Plan***
- ***Site and Grading Plan***
- ***Yard Piping Plan***
- ***JTM Lateral Plan and Profile***
- ***450 Zone Piping Plan and Profile***
- ***JTM Valve Vault Mechanical Plan and Section***
- ***I.D. No.1 Master Meter Mechanical Plan***
- ***I.D. No.1 Master Meter Mechanical Section***
- ***Site Details (2 sheets)***
- ***Mechanical Details (2 sheets)***
- ***Piping Details (2 sheets)***
- ***Vault Details***
- ***Steel Pipe Details***
- ***General Structural Notes, Special Inspections and Structural Observations (2 sheets)***
- ***I.D. No.1 Master Meter Building Foundation***
- ***I.D. No.1 Master Meter Building Roof Framing Plan***
- ***I.D. No.1 Master Meter Building Elevations***
- ***Typical Structural Details***
- ***Foundation and Wall Details***
- ***Roof Framing Details***
- ***Miscellaneous Structural Details***
- ***Electrical Symbols and Abbreviations***
- ***Overall Electrical Site Plan***
- ***Electrical Power Plan***
- ***I&C Plan***

- ***Lighting and Grounding Plan***
- ***Single Line Diagram***
- ***Conduit and Panel Schedule***
- ***Electrical Details***
- ***I&C Symbols***
- ***P&ID***
- ***Control Panel Details***
- ***PLC Network Details***
- ***Network Diagram***

Task 2.9 Traffic Control Plans: Tetra Tech has assumed an additional ten (10) traffic controls plans may be required.

Task 2.10 Construction Cost Estimate: Tetra Tech has included an additional level of effort to provide a construction cost estimate of the relocated master meter.

Task 2.11 Permitting: Tetra Tech has included an additional level of effort to provide support evaluating and incorporating the property owner's requirements into the contract documents. We have included 20 hours of support that may include telephone calls, meetings, coordination, etc.

Task 2.13 Construction Phase Services: Tetra Tech has assumed the an additional fifty (50) shop drawing submittals (one-half (25) second reviews), ten (10) Requests for Information, and additional effort for Record Drawings.

Deliverables: Same as the deliverables under Tasks 2.1 through 2.13.

2.16 ***Final Design of a Portion of Crown Valley Parkway Transmission Main Upper Reach – OPTIONAL TASK***

This task is to complete the Final Design for replacing up to 1,000 feet of the 16-inch Crown Valley Parkway Transmission Main Upper Reach. ***Tetra Tech has included the additional*** fee under this optional task to perform the associated services under Tasks 2.1 to 2.13. District may elect to proceed with this optional task under this contract depending on the location of the tie-in with the relocated I.D. No. 1 Master Meter.

Tetra Tech does not expect additional level of effort for Tasks 2.1 – Project Administration and Management, 2.2 – Records Search and Review, 2.7 – Environmental Services, Task 2.9 - Traffic Control Plans, Task 2.11 – Permitting and 2.12 – Bid Phase Service. The following summarizes the additional level of effort to include the Final Design of I.D. No. 1 Master Meter Relocation into the Crown Valley Pipeline Replacements Contract Documents.

Task 2.3 Utility Research: Tetra Tech will perform additional utility research and perform a field investigation of the selected site per Task 2.3.

Task 2.4 Design Survey and Base Construction Drawing: Tetra Tech and Metz Survey will perform additional survey and base construction drawing of the selected site per Task 2.4.

Task 2.6 Geotechnical Exploration: Leighton Consulting will perform one (1) additional boring drilled to depth of 10 to 15 feet of 4 feet below pipe invert, whichever is deeper. The geotechnical recommendations will be presented in the geotechnical report per Task 2.15.

Task 2.8 Preparation of Contract Documents: Tetra Tech anticipates the following additional Drawings to include 1,000 linear feet of 16-inch Crown Valley Parkway Transmission Main piping into the contract documents:

- ***Horizontal Control Plan***
- ***Crown Valley Parkway Transmission Main, Upper Reach Plan and Profile***
- ***Connection Details***
- ***Pavement Replacement***
- ***Miscellaneous Details***

Task 2.10 Construction Cost Estimate: Tetra Tech has included an additional level of effort to provide a construction cost estimate of the 16-inch transmission main.

Task 2.13 Construction Phase Services: Tetra Tech has assumed the an additional five (5) shop drawing and additional effort for Record Drawings.

Deliverables: Same as the deliverables under Tasks 2.1 through 2.13.

2.17 ***Property Acquisition Support for I.D. No. 1 Master Meter – OPTIONAL TASK***

Tetra Tech understands that the District may choose to present their own offer to the property owner and negotiate the purchase of the required rights using their own in-house staff. However, should the District desire EPIC carry out the acquisition on the District's, we have included these services as an Optional Task. Generally, the steps Epic would perform to support the District with acquisition would include:

- ***Obtain written District approval of Just Compensation amount***
- ***Prepare the Offer Package***
- ***Present Written Purchase Offers to the owner***
- ***Proceed with Good Faith Negotiations, Regular Contacts and Maintenance of Diary Entries***
- ***Recommendations for Fair Settlements, Counteroffers and Purchase Agreement Amendments***
- ***Escrow coordination and file closeout***

Deliverables: Copies of all related documentation and related correspondence.

Section 3 – Project Team

Key members of the Project Team have ongoing experience with the District, as far back as the 1980s. Our Project Director, Tom Epperson, has been working with the District since 1985. Several of our team members have worked with the District since 2007. Our team is founded on a long-term working relationship with the District, and our goal is to strengthen this relationship through a "teamworking and partnering" approach.

Tetra Tech has assembled a project team that possesses the knowledge, experience and enthusiasm necessary to successfully complete the project. The project team is devoted to completing your projects within schedule and under budget, and not only meet, but exceed your expectations. Additionally, brief resumes are included within the Appendix of this proposal. The following paragraphs summarize the qualifications of our key staff:

Project Director – *Tom Epperson, PE,* will lead our team as Project Director. Mr. Epperson is well known for his attention to detail, problem solving ability and level of quality of deliverables. He will apply more than 39 years of experience which includes over 200 miles of potable and recycled water pipeline projects which required finding solutions to complex issues in these water facilities. Mr. Epperson will provide the overall project direction and coordination, technical oversight, and quality management.

Project Manager – *Laurence Esguerra, PE,* will serve will be our Project Manager. Mr. Esguerra has been involved on over 15 wells, 15 pump stations and lift stations, and over 75 miles of potable and recycled water pipeline projects. His experience includes design engineering in various water and wastewater projects including domestic and reclaimed water pipelines, water main replacements, gravity sewer mains, pump stations, lift stations, reinforced concrete reservoirs, steel reservoirs, flow control facilities, and pressure reducing valve vaults.

QA/QC – *Mark Bush, PE,* will serve as the team's QA/QC Manager. Our team clearly understands the importance of making certain the District receives the highest quality product from Tetra Tech. As QA/QC Manager, it will be Mr. Bush's responsibility to oversee QA/QC for the project to ensure that all of the project goals are met.

Project Engineer (Pipelines) – *Erin Cabañero, PE,* will serve as Pipeline Project Engineer. Ms. Cabañero has more than 11 years of professional experience in water, wastewater, and recycled water engineering. She has been responsible for the completion of over 15 miles of potable water, recycled water and sewer mains, including large diameter mains.

Structural Design – *Victor Ramirez, PE, SE,* will be the Structural Design Manager supporting the structural design needs for this contract. Mr. Ramirez has more than 38 years of structural engineering design experience with special emphasis in the design of water storage/water containment and water conveyance related structures, including reservoirs, water/wastewater treatment plants, booster pump stations, flow control facilities, pressure reducing stations and pipelines.

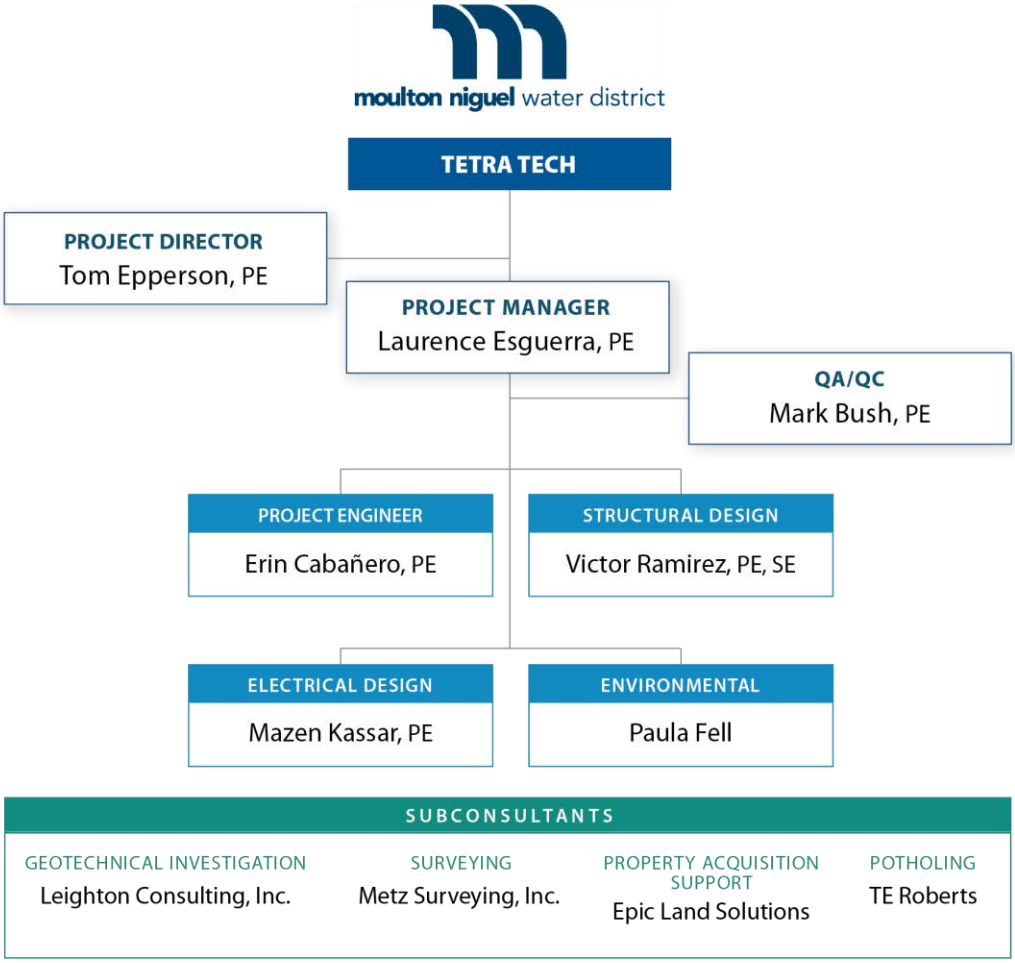
Electrical Design – *Mazen Kassar, PE,* will serve as our Electrical Design Manager. Mr. Kassar has more than 28 years of experience in electrical engineering and industry standard that include electrical engineering staff management, project management, construction management and supervision. His background includes designing medium and low voltage power distribution, designing instrumentation, control systems and SCADA systems for a wide-variety of projects, and the installation of electrical systems for remediation projects.

Environmental – *Paula Fell,* will manage our Environmental Services. Ms. Fell has prepared and managed California Environmental Quality Act/National Environmental Policy Act documents including Initial Studies, Mitigated Negative Declarations, Environmental Impact Report, Environmental Assessments, and Environmental Impact Statements, for projects throughout California on behalf of federal, state, regional, and local agencies and private clients.

Subconsultants

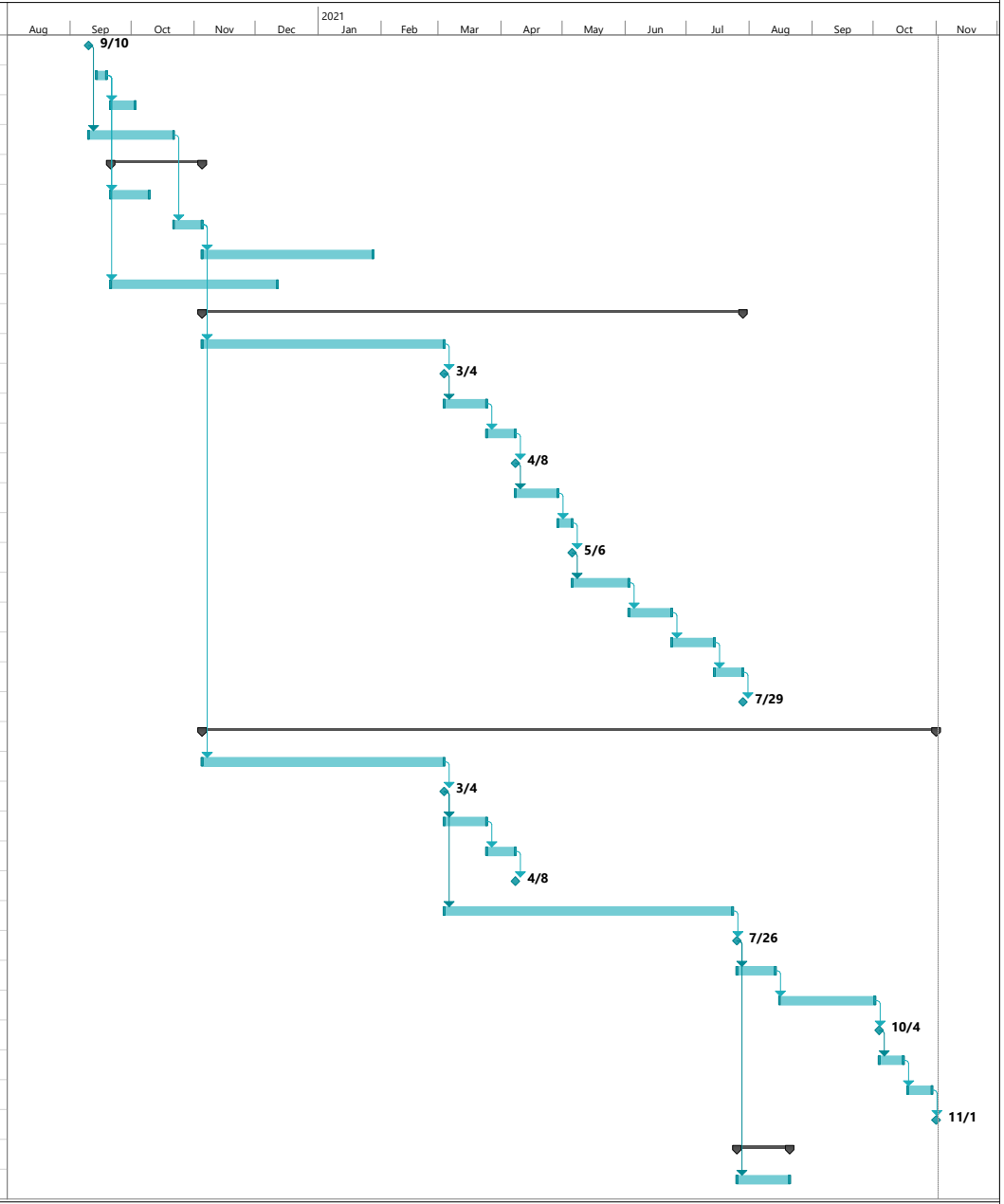
In order to provide the full range of services, we have added the following subconsultants to our project team: Tetra Tech CES for Environmental; Leighton Consulting, Inc. for Geotechnical Investigation; Metz Surveying for Design Survey and Easements; TE Roberts for Potholing, and Epic Land Solutions for Property Acquisition Support. Tetra Tech will be responsible for coordinating and integrating the efforts of each subconsultant. Tetra Tech has worked closely with our subconsultants and is confident in their ability to provide services as needed.

PROJECT TEAM CHART



Moulton Niguel Water District
Crown Valley Pipeline Replacements
Design Schedule

ID	Task Name	Duration	Start	Finish	Predecess	Resource Names
1	Notice to Proceed	0 days	Thu 9/10/20	Thu 9/10/20		
2	Kick-off Meeting (anytime during the week of)	5 days	Mon 9/14/20	Fri 9/18/20		
3	Task 2.2 Records Search and Records Review	10 days	Mon 9/21/20	Fri 10/2/20	2	
4	Task 2.3 Utility Research	30 days	Thu 9/10/20	Wed 10/21/20	1	
5	**Task 2.4 Design Survey and Base Construction Drawing**	**33 days**	**Mon 9/21/20**	**Wed 11/4/20**		
6	Design Survey	15 days	Mon 9/21/20	Fri 10/9/20	2	
7	Base Construction Drawing	10 days	Thu 10/22/20	Wed 11/4/20	4	
8	Task 2.5 Potholing	60 days	Thu 11/5/20	Wed 1/27/21	7	
9	Task 2.6 Geotechnical Exploaration	60 days	Mon 9/21/20	Fri 12/11/20	2	
10	**Task 2.7 Environmental Services**	**190 days**	**Thu 11/5/20**	**Thu 7/29/21**		
11	Prepare 1st Screencheck Draft IS/MND	85 days	Thu 11/5/20	Wed 3/3/21	7	
12	Submit 1st Screencheck Draft IS/MND	0 days	Thu 3/4/21	Thu 3/4/21	11	
13	District Review	15 days	Thu 3/4/21	Wed 3/24/21	12	
14	Prepare 2nd Screencheck Draft ID/MND	10 days	Thu 3/25/21	Wed 4/7/21	13	
15	Submit 2nd Screencheck Draft IS/MND	0 days	Thu 4/8/21	Thu 4/8/21	14	
16	District Review	15 days	Thu 4/8/21	Wed 4/28/21	15	
17	Prepare Draft IS/MND for Public Review	5 days	Thu 4/29/21	Wed 5/5/21	16	
18	Submit Draft IS/MND for Public Review	0 days	Thu 5/6/21	Thu 5/6/21	17	
19	Draft IS/MND Public Review	20 days	Thu 5/6/21	Wed 6/2/21	18	
20	Draft Public Review Comments and MMRP	15 days	Thu 6/3/21	Wed 6/23/21	19	
21	District Review	15 days	Thu 6/24/21	Wed 7/14/21	20	
22	Prepare Final IS/MND	10 days	Thu 7/15/21	Wed 7/28/21	21	
23	Submit Final IS/MND for Board Approval	0 days	Thu 7/29/21	Thu 7/29/21	22	
24	**Task 2.8 Preparation of Contract Documents**	**257 days**	**Thu 11/5/20**	**Mon 11/1/21**		
25	Prepare 50% Design Submittal and Draft PDTM	85 days	Thu 11/5/20	Wed 3/3/21	7	
26	Submit 50% Design Submittal and Draft PDTM	0 days	Thu 3/4/21	Thu 3/4/21	25	
27	District Review	15 days	Thu 3/4/21	Wed 3/24/21	26	
28	Prepare Final 50% Design Submittal and Draft PDTM	10 days	Thu 3/25/21	Wed 4/7/21	27	
29	Submit Final 50% Design Submittal and Draft PDTM	0 days	Thu 4/8/21	Thu 4/8/21	28	
30	Prepare 90% Design Submittal	102 days	Thu 3/4/21	Fri 7/23/21	26	
31	Submit 90% Design Submittlal	0 days	Mon 7/26/21	Mon 7/26/21	30	
32	District Review	15 days	Mon 7/26/21	Fri 8/13/21	31	
33	Prepare 100% Design Submittal	35 days	Mon 8/16/21	Fri 10/1/21	32	
34	Submit 100% Desgin Submittal	0 days	Mon 10/4/21	Mon 10/4/21	33	
35	District Review	10 days	Mon 10/4/21	Fri 10/15/21	34	
36	Prepare Final Design Submittal	10 days	Mon 10/18/21	Fri 10/29/21	35	
37	Submit Final Design Submittal	0 days	Mon 11/1/21	Mon 11/1/21	36	
38	**Task 2.11 Permit Acquisition Support**	**20 days**	**Mon 7/26/21**	**Fri 8/20/21**		
39	Enroachment Permit	20 days	Mon 7/26/21	Fri 8/20/21	31	



Project: Crown Valley Pipeline R
Date: Wed 7/22/20

Task | Summary | Inactive Milestone | Duration-only | Start-only | External Milestone | Manual Progress
Split | Project Summary | Inactive Summary | Manual Summary Rollup | Finish-only | Deadline
Milestone | Inactive Task | Manual Task | Manual Summary | External Tasks | Progress

Page 1

Price Proposal

Crown Valley Pipeline Replacements

Replacement of Lower Salada Lift Station Force Main, Crown Valley Transmission Main Lower Reach and I.D. No. 1 Master Meter

Submitted to: Moulton Niguel Water District (Attn: Sheldon Yu, PE)

Contract Type: T&M

Fee Schedule

Project Phases / Tasks	Schedule From	Schedule Thru	Schedule Months	Work Days Off	Work Days	Total Labor Hrs	Proj Area >	QA/QC	Civil	Civil	Civil	Civil	Civil	Structural	Structural	Structural	Structural	Electrical	Electrical	Traffic
						2,875		Principal in Charge (Tom Epperson)	Project Manager 1 (Laurence Esguerra)	Project Engineer 2 (Erin Cabanero)	Engineer 2 (Jamie McElyea)	Sr CAD Designer 2 (Russ Wojtaszek)	Sr Project Administrator (Deana Escamilla)	Sr Project Manager (Victor Ramirez)	Project Manager 1 (Eric Yuen)	Engineer 2 (Jose Quiroz)	Sr CAD Designer 1 (Eric Hutchins)	Sr Project Manager (Mazen Kassar)	Engineer 2 (Trang Nguyen)	Sr Engineer 2 (Peter Kim)
								111	410	632	1,096	230	52	6	12	30	4	8	24	260
Section 2.1 Project Administration and Management						**108**		**25**	**56**	**12**	-	-	**15**	-	-	-	-	-	-	-
Meetings (15)						69		12	30	12			15							
Project Management (13 months)						26		13	13											
Bi-Weekly Status Reports						13			13											
Section 2.2 Records Search and Records Review						**36**		-	**4**	**8**	**24**	-	-	-	-	-	-	-	-	-
Record Drawing Search and Review						36			4	8	24									
Section 2.3 Utility Research						**42**		-	-	**8**	**22**	**8**	**4**	-	-	-	-	-	-	-
Utility Notices						10					6		4							
Utility Research						8					8									
Field Visit						24				8	8	8								
Section 2.4 Design Survey and Base Construction Drawing						**44**		-	**4**	**10**	**20**	**8**	**2**	-	-	-	-	-	-	-
Site Survey and Mahole Dips						8				2	4		2							
Preparation of Base Construction Drawing						36			4	8	16	8								
Section 2.5 Potholing						**62**		-	**2**	**14**	**40**	**4**	**2**	-	-	-	-	-	-	-
Preparation of Pothole Plans						16				4	8	4								
Perform Potholes (50) inlcuding Traffic Control						6			2	2			2							
Pothole Observation (5 days)						40				8	32									
Section 2.6 Geotechnical Exploration						**10**		-	**2**	**2**	**6**	-	-	-	-	-	-	-	-	-
Perform Geotechnical Boring (10)						10			2	2	6									
Section 2.7 Environmental Services						**41**		**4**	**17**	**20**	-	-	-	-	-	-	-	-	-	-
/MNWD						1			1											
tra Tech Assistance (40) hours						40		4	16	20										
on 2.8 Prepration of Contract Documents						**1,368**		**44**	**145**	**342**	**594**	**150**	**9**	**6**	**12**	**30**	**4**	**8**	**24**	-
eliminary Design Tech Memo						**269**		**4**	**37**	**66**	**60**	**16**	**2**	**6**	**12**	**30**	**4**	**8**	**24**	-
Civil and Mechanical Drawings (40 Sheets)						**1,099**		**40**	**108**	**276**	**534**	**134**	**7**	-	-	-	-	-	-	-
Section 2.9 Traffic Control Plans						**360**		-	-	-	**80**	**20**	-	-	-	-	-	-	-	**260**
Traffic Control Sheets (26 Sheets)						360					80	20								260
Section 2.10 Construction Cost Estimate						**26**		-	**2**	**4**	**20**	-	-	-	-	-	-	-	-	-
Construction Cost Estimate						26			2	4	20									
Section 2.11 Permitting						**56**		-	-	**8**	**40**	-	**8**	-	-	-	-	-	-	-
Laguna Niguel						28				4	20		4							
Dana Point						28				4	20		4							
Section 2.12 Bid Phase Support						**50**		**2**	**12**	**10**	**4**	**16**	**6**	-	-	-	-	-	-	-
Attend Pre-Bid Meeting						6			2	2			2							
Respond to RFC and Prepare Addendum (3)						34		2	8	8		12	4							
Prepare Conformed Drawings						10			2		4	4								
Section 2.13 Construction Phase Services						**542**		**34**	**146**	**138**	**202**	**20**	**2**	-	-	-	-	-	-	-
Project Management (12 months)						24		12	12											
Pre-Construction Meeting						6			2	2			2							
Submittal Reveiws (50/25 2nd review)						224		12	32	80	100									
Respond to Requests for Information (50)						160		10	20	40	70	20								
Conference Calls (30 hours)						30			30											
Site Visits (12 at 2 hours each)						48			48											
Record Drawings						50			2	16	32									
Section 2.14 Property Acquisition Support for I.D. No. 1 Master Meter						**130**		**2**	**20**	**56**	**44**	**4**	**4**	-	-	-	-	-	-	-
Conceptual Layouts (3)						72			4	24	40	4								
Property Legals (3)						12			4	8										
Proporty Value Assessment (3)						12			4	8										
Memorandum Preparation						32			8	16	4		4							
QA/QC						2		2												
Totals						**2,875**		**111**	**410**	**632**	**1,096**	**230**	**52**	**6**	**12**	**30**	**4**	**8**	**24**	**260**

Price Summary / Totals

Task Pricing Totals	720
Specify Add'l Fees on Setup	
Technology Use Fee	
Total Price	**720,000**

Pricing by Resource

Project Phases / Tasks	Labor Rate Esc.	Labor	Subs	Travel	Mat'ls & Equip	ODCs	Task Pricing Totals
	0.00%	457,310	246,021	-	-	16,669	**720,000**
Section 2.1 Project Administration and Management		**24,200**	-	-	-	**800**	**25,000**
Meetings (15)		14,190				800	14,990
Project Management (13 months)		7,150					7,150
Bi-Weekly Status Reports		2,860					2,860
Section 2.2 Records Search and Records Review		**4,960**	-	-	-	**40**	**5,000**
Record Drawing Search and Review		4,960				40	5,000
Section 2.3 Utility Research		**5,450**	-	-	-	**550**	**6,000**
Utility Notices		1,130				495	1,625
Utility Research		920					920
Field Visit		3,400				55	3,455
Section 2.4 Design Survey and Base Construction Drawing		**6,210**	**32,620**	-	-	**171**	**39,000**
Site Survey and Mahole Dips		1,010	32,620				33,630
Preparation of Base Construction Drawing		5,200				171	5,371
Section 2.5 Potholing		**8,150**	**64,444**	-	-	**406**	**73,000**
Preparation of Pothole Plans		2,160					2,160
Perform Potholes (50) inlcuding Traffic Control		990	64,444				65,434
Pothole Observation (5 days)		5,000				406	5,406
Section 2.6 Geotechnical Exploration		**1,460**	**38,295**	-	-	**245**	**40,000**
Perform Geotechnical Boring (10)		1,460	38,295			245	40,000
Section 2.7 Environmental Services		**8,360**	**89,445**	-	-	**195**	**98,000**
/MNWD		220	89,445			195	89,860
tra Tech Assistance (40) hours		8,140					8,140
on 2.8 Prepration of Contract Documents		**206,890**	-	-	-	**8,110**	**215,000**
eliminary Design Tech Memo		**42,780**	-	-	-	**410**	**43,190**
Civil and Mechanical Drawings (40 Sheets)		**164,110**	-	-	-	**7,700**	**171,810**
Section 2.9 Traffic Control Plans		**60,200**	-	-	-	**300**	**60,500**
Traffic Control Sheets (26 Sheets)		60,200				300	60,500
Section 2.10 Construction Cost Estimate		**3,400**	-	-	-	**100**	**3,500**
Construction Cost Estimate		3,400				100	3,500
Section 2.11 Permitting		**6,800**	-	-	-	**200**	**7,000**
Laguna Niguel		3,400				100	3,500
Dana Point		3,400				100	3,500
Section 2.12 Bid Phase Support		**8,390**	-	-	-	**610**	**9,000**
Attend Pre-Bid Meeting		990				60	1,050
Respond to RFC and Prepare Addendum (3)		5,920				110	6,030
Prepare Conformed Drawings		1,480				440	1,920
Section 2.13 Construction Phase Services		**92,460**	-	-	-	**4,540**	**97,000**
Project Management (12 months)		6,600					6,600
Pre-Construction Meeting		990				55	1,045
Submittal Reveiws (50/25 2nd review)		35,700				220	35,920
Respond to Requests for Information (50)		25,250					25,250
Conference Calls (30 hours)		6,600					6,600
Site Visits (12 at 2 hours each)		10,560				660	11,220
Record Drawings		6,760				3,605	10,365
Section 2.14 Property Acquisition Support for I.D. No. 1 Master Meter		**20,380**	**21,218**	-	-	**403**	**42,000**
Conceptual Layouts (3)		10,020					10,020
Property Legals (3)		2,200	2,933				5,133
Proporty Value Assessment (3)		2,200	18,285				20,485
Memorandum Preparation		5,300				403	5,703
QA/QC		660					660
Totals	0.00%	**457,310**	**246,021**	-	-	**16,669**	**720,000**

Price Proposal

Crown Valley Pipeline Replace OPTIONAL FEE

Optional Sections

Submitted to: Moulton Niguel Water District (Attn: Sheldon Yu, PE)

Contract Type: T&M

Project Phases / Tasks	Schedule From	Thru	Months	Work Days Off	Work Days	Total Labor Hrs	Proj Area >	QA/QC	Civil	Civil	Civil	Civil	Civil	Structural	Structural	Structural	Structural	Electrical	Electrical	Electrical	Traffic
						2,106		54	100	320	468	72	4	82	38	196	128	98	100	346	100
Section 2.15 Final Design of ID No 1 Master Meter (Optional)						**1,859**		**44**	**77**	**242**	**352**	**54**	**2**	**82**	**38**	**196**	**128**	**98**	**100**	**346**	**100**
Additional Section 2.3 Utility Research						**18**		**-**	**-**	**4**	**12**	**-**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Utility Notices						4					2		2								
Utility Research						2					2										
Field Visit						12				4	8										
Additional Section 2.4 Design Survey and Base Construction Drawing						**10**		**-**	**-**	**2**	**4**	**4**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Site Survey						-															
Preparation of Base Construction Drawing						10				2	4	4									
Section 2.6 Geotechnical Exploration						-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perform Geotechnical Boring (1)						-															
Section 2.8 Prepration of Contract Documents						**1,337**		**40**	**35**	**156**	**272**	**42**	**-**	**62**	**38**	**144**	**128**	**70**	**100**	**250**	**-**
Preliminary Design Tech Memo						**136**		**-**	**8**	**20**	**20**	**-**	**-**	**-**	**8**	**30**	**-**	**-**	**20**	**30**	**-**
Master Meter Conceptual Design						136			8	20	20				8	30			20	30	
Civil Sheets (18 Sheets)						**429**		**-**	**19**	**126**	**242**	**42**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Structural Drawings (9 Sheets)						**296**		**-**	**-**	**-**	**-**	**-**	**-**	**44**	**30**	**100**	**122**	**-**	**-**	**-**	**-**
Electrical and Controls Drawings (13 Sheets)						**360**		**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**60**	**80**	**220**	**-**
Technical Specifications						28			8	4	4			4		8					
90% Submittal						10				2	2			2		2	2				
100% Submittal						10				2	2			2		2	2				
Bid Set						10				2	2			2		2	2				
QA/QC						58		40						8				10			
ction 2.9 Traffic Control Plans						**144**		**-**	**-**	**-**	**40**	**4**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**100**
Traffic Control Sheets (10 Sheets)						144					40	4									100
ction 2.10 Construction Cost Estimate						**26**		**-**	**2**	**4**	**8**	**-**	**-**	**-**	**-**	**4**	**-**	**-**	**-**	**8**	**-**
Construction Cost Estimate						26			2	4	8					4				8	
Section 2.11 Permitting						**20**		**-**	**16**	**4**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Property Owner Support						20			16	4											
Section 2.13 Construction Phase Services						**304**		**4**	**24**	**72**	**16**	**4**	**-**	**20**	**-**	**48**	**-**	**28**	**-**	**88**	**-**
Submittal Reviews (50/25 2nd review)						244		4	20	60				16		40		24		80	
Respond to Requests for Information (10)						36			4	8				4		8		4		8	
Record Drawings						24				4	16	4									
Section 2.16 Final Design of a Portion of Crown Valley Parkway Transmission Main U						**243**		**10**	**19**	**78**	**116**	**18**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Additional Section 2.3 Utility Research						**18**		**-**	**-**	**4**	**12**	**-**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Utility Notices						4					2		2								
Utility Research						2					2										
Field Visit						12				4	8										
Additional Section 2.4 Design Survey and Base Construction Drawing						**8**		**-**	**-**	**2**	**4**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Site Survey						-															
Preparation of Base Construction Drawing						8				2	4	2									
Section 2.6 Geotechnical Exploration						-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Perform Geotechnical Boring (1)						-															
Section 2.8 Prepration of Contract Documents						**182**		**10**	**16**	**56**	**86**	**14**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Preliminary Design Tech Memo						**52**		**2**	**10**	**20**	**20**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Upper Reach Evaulation						52		2	10	20	20										
Civil Sheets (5 Sheets)						**104**		**-**	**4**	**26**	**60**	**14**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Technical Specifications						6			2	4											
90% Submittal						4				2	2										
100% Submittal						4				2	2										
Bid Set						4				2	2										
QA/QC						8		8													
Section 2.10 Construction Cost Estimate						**7**		**-**	**1**	**2**	**4**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Construction Cost Estimate						7			1	2	4										
Section 2.13 Construction Phase Services						**32**		**-**	**6**	**14**	**10**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Submittal Reviews (5)						20			2	12	6										
Record Drawings						8				2	4	2									
Section 2.17 Property Acquisition Report for ID No 1 Master Meter (Optional)						**4**		**-**	**4**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Support						4			4												
Totals						**2,106**		**54**	**100**	**320**	**468**	**72**	**4**	**82**	**38**	**196**	**128**	**98**	**100**	**346**	**100**

Price Summary / Totals

Task Pricing Totals	370,000
Specify Add'l Fees on Setup	0
Technology Use Fee	
Total Price	**370,000**

Pricing by Resource

Labor Rate Esc.	Labor	Subs	Travel	Mat'ls & Equip	ODCs	Task Pricing Totals
0.00%	327,810	35,736	-	-	6,454	**370,000**
	290,410	**19,297**	**-**	**-**	**5,293**	**315,000**
	2,260	**-**	**-**	**-**	**233**	**2,493**
	450				178	628
	230					230
	1,580				55	1,635
	1,370	**3,772**	**-**	**-**	**-**	**5,142**
		3,772				3,772
	1,370					1,370
	-	**15,525**	**-**	**-**	**-**	**15,525**
		15,525				15,525
	206,500	**-**	**-**	**-**	**4,400**	**210,900**
	19,720	**-**	**-**	**-**	**-**	**19,720**
	19,720					19,720
	58,890	**-**	**-**	**-**	**-**	**58,890**
	44,790	**-**	**-**	**-**	**-**	**44,790**
	55,700	**-**	**-**	**-**	**-**	**55,700**
	4,840					4,840
	1,560				550	2,110
	1,560				550	2,110
	1,560				3,300	4,860
	17,880					17,880
	23,680	**-**	**-**	**-**	**-**	**23,680**
	23,680					23,680
	3,400	**-**	**-**	**-**	**-**	**3,400**
	3,400					3,400
	4,180	**-**	**-**	**-**	**-**	**4,180**
	4,180					4,180
	49,020	**-**	**-**	**-**	**660**	**49,680**
	39,820					39,820
	6,120					6,120
	3,080				660	3,740
	36,520	**7,475**	**-**	**-**	**1,005**	**45,000**
	2,260	**-**	**-**	**-**	**165**	**2,425**
	450					450
	230				110	340
	1,580				55	1,635
	1,080	**4,025**	**-**	**-**	**-**	**5,105**
		4,025				4,025
	1,080					1,080
	-	**3,450**	**-**	**-**	**-**	**3,450**
		3,450				3,450
	27,980	**-**	**-**	**-**	**510**	**28,490**
	8,460	**-**	**-**	**-**	**-**	**8,460**
	8,460					8,460
	14,100	**-**	**-**	**-**	**-**	**14,100**
	1,100					1,100
	560				90	650
	560				90	650
	560				330	890
	2,640					2,640
	1,010	**-**	**-**	**-**	**-**	**1,010**
	1,010					1,010
	5,070	**8,964**	**-**	**-**	**486**	**14,520**
	3,110					3,110
	1,080				330	1,410
	880	**8,964**	**-**	**-**	**156**	**10,000**
	880	8,964			156	10,000
0.00%	**327,810**	**35,736**	**-**	**-**	**6,454**	**3**

TETRA TECH

2020

HOURLY CHARGE RATE AND EXPENSE REIMBURSEMENT SCHEDULE

Project Management	
Project Manager 1	$220.00
Project Manager 2	$260.00
Sr Project Manager	$305.00
Program Manager	$330.00
Principal in Charge	$330.00
Engineers	
Engineering Technician	$37.00
Engineer 1	$96.00
Engineer 2	$115.00
Engineer 3	$130.00
Project Engineer 1	$150.00
Project Engineer 2	$165.00
Sr Engineer 1	$175.00
Sr Engineer 2	$185.00
Sr Engineer 3	$210.00
Principal Engineer	$300.00
Planners	
Planner 1	$104.00
Planner 2	$115.00
Sr Planner 1	$125.00
Sr Planner 2	$151.00
Sr Planner 3	$175.00
Designers & Technicians	
CAD Technician 1	$65.00
CAD Technician 2	$75.00
CAD Technician 3	$90.00
CAD Designer	$100.00
Sr CAD Designer 1	$125.00
Sr CAD Designer 2	$145.00
CAD Director	$150.00
Survey Tech 1	$50.00
Health & Safety	
H&S Administrator	$95.00
Sr H&S Administrator	$115.00
H&S Manager	$145.00

Construction	
Construction Project Rep 1	$78.00
Construction Project Rep 2	$85.00
Sr Constr Project Rep 1	$100.00
Sr Constr Project Rep 2	$115.00
Construction Manager 1	$165.00
Construction Manager 2	$185.00
Construction Director	$233.00
General & Administrative	
Project Assistant 1	$67.00
Project Assistant 2	$75.00
Project Administrator	$95.00
Sr Project Administrator	$110.00
Sr Graphic Artist	$150.00
Technical Writer 1	$97.00
Technical Writer 2	$124.00
Sr Technical Writer	$155.00
Information Technology	
Systems Analyst / Programmer 1	$77.00
Systems Analyst / Programmer 2	$115.00
Sr Sys Analyst / Programmer 1	$130.00
Sr Systems Analyst / Programmer 2	$196.00
Project Accounting	
Project Analyst 1	$90.00
Project Analyst 2	$114.00
Sr Project Analyst	$155.00

Reimbursable In-House Costs:	
Photo Copies (B&W 8.5”x11”)	$ 0.15/Each
Photo Copies (B&W 11”x17”)	$ 0.40/Each
Color Copies (up to 8.5"x11")	$ 2.00/Each
Color Copies (to 11"x17")	$ 3.00/Each
Compact Discs	$10/each
Large format copies	$0.40 S.F.
Mileage-Company Vehicle	$0.80/mile
Mileage-POV	$0.55/mile*

*current GSA POV mileage rate subject to change

All other direct costs, such as production, special photography, delivery services, overnight mail, printing will be billed at cost plus 15% and any other services performed by subconsultant will be billed at cost plus 15%.

NOTE: Rates subject to change annually.

Exhibit "C" Vendor Contact List

Company Name	Company Address	Contact Person	Telephone #	E-Mail
Black & Veatch	5 Peters Canyon Rd., Suite 300 Irvine, CA 92606	Jeff Neemann	(949) 788-4233	NeemannJJ@bv.com
Brown and Caldwell	18200 Von Karman Ave # 400 Irvine, CA 92612	Dave May	(714) 689-4836	DMay@brwncald.com
Hazen and Sawyer	11260 El Camino Real, Suite 102 San Diego, CA 92130	Dawn Guendert	(858) 764-5523	dguendert@hazenandsawyer.com
Tetra Tech	17885 Von Karman Avenue, Suite 500 Irvine, CA 92614-6213	Tom Epperson	(949) 809-5156	Tom.Epperson@tetratech.com

moulton niguel water district

STAFF REPORT

TO: **Board of Directors** **MEETING DATE: August 31, 2020**

FROM: **Rod Woods, Director of Engineering**
Alex Thomas, Principal Engineer

SUBJECT: **Construction Contract Award for Moulton Peak Radio Tower Replacement**

SUMMARY:

Issue: Board action is required for the Notice Inviting Sealed Bids for the Moulton Peak Radio Tower Replacement, Project No. 2011.077.

Recommendation: It is recommended that the Board of Directors award the construction services contract to Pascal & Ludwig Constructors in the amount of $575,004; authorize the General Manager or Assistant General Manager to execute the contract; and to approve change orders up to 10% of the contract value.

Fiscal Impact: Project No. 2011.077 is budgeted in Fund 14, Planning and Construction with a current project budget of $265,000. The proposed project budget is $732,504. Sufficient funds are available in Fund 14; the overall Fiscal Year 2020-21 CIP budget for Fund 14 is $21,048,504.

Reviewed by Legal: Yes

BACKGROUND:

The Moulton Peak radio tower is a vital communications tower for the District's operations. The tower is currently located adjacent to the Moulton Peak Reservoir site in the City of Aliso Viejo. In its current location, access to the radio tower is very limited and no longer accessible by vehicle. This project will relocate the tower to a location within the Moulton Peak Reservoir site that improves access for maintenance activities.

The scope of work will include the construction of a new tower, concrete support footing, concrete equipment pad, retaining wall, drainage improvements, electrical

equipment, and a backup generator. Following construction of the new tower, the existing antennas will be transferred from the old tower to the new tower, and the old tower will be demolished. Due to the specialized nature of the work, the transfer of the antennas will be done under a separate contract as part of a future planned antenna replacement project.

Construction documents for the project were prepared by Dudek utilizing the on-call engineering services agreement. A categorical exemption was prepared in accordance with State CEQA Guidelines and a Notice of Exemption was filed with Orange County on April 21, 2020.

DISCUSSION:

A request for bids was issued to seven qualified contractors. The District received three sealed bids for the subject contract on July 30, 2020. The table below summarizes the bids received:

Firm	Bid
Pascal & Ludwig Constructors	$575,004
Pacific Hydrotech Corporation	$674,988
Gateway Pacific Construction	$696,351
Engineer's Estimate	**$307,088**

Staff has determined that the lowest responsible and responsive bidder was Pascal & Ludwig Constructors. Staff has completed its review of the contract documents and has determined that they are in order. Pascal & Ludwig has performed quality work for the District in the past.

The primary reason for the difference between the budget and the bids was a result of the antennas needing to be mounted higher up on the tower than was originally anticipated. This was determined during design using a signal path survey. The higher position of the antennas resulted in the need for a larger tower base, support footing, and associated retaining wall than was originally anticipated. Although the engineer's estimate took these factors into consideration, this type of construction is not common for the District and relevant cost information from previous projects is very limited. Staff thoroughly reviewed the bid results with the engineer and determined that the bid results were both reasonable and competitive. It was determined that engineer's estimate did not fully account for some of the costs that are unique to this type of construction.

SUMMARY OF PROJECT BUDGET:

	Project Budget*	Proposed / Approved Contract	Proposed / Authorized Contingency	Total Proposed / Authorized Amount
Project Items				
Engineering	$90,000	$90,000	$0	$90,000
Construction Contract	$165,000	$575,004	$57,500	$632,504
Legal, District Labor	$10,000	$10,000	$0	$10,000
Totals	$265,000	$675,004	$57,500	$732,504

*$69,497.97 has been expended to date

Currently Proposed Amount

Attachments:

1. Exhibit A – Location Map
2. Exhibit B – Vendor Contact List

N

moulton niguel water district

0 50 100 200 300 400 500 Feet

Scale = 1:3,500

Exhibit "A" Location Map
Moulton Peak Radio Tower Replacement
Contract No. 2011.077

EXHIBIT "B" VENDOR CONTACT LIST

Company Name	Company Address	Contact Person	Telephone #	E-Mail
Gateway Pacific Contractors	8055 Freeport Blvd, Sacramento, CA 95832	Evan Lundin	(916) 665-4100	Lundin@gatewaypacific.com
Pacific Hydrotech Corporation	314 E. Third Street, Perris CA 92570	Kirk Harns	(951) 943-8803	Kharns@pachydro.com
Pascal & Ludwig Constructors	2049 E. Francis Street, Ontario CA 91761	Alan Ludwig	(909) 947-4631	Aludwig@pascalludwig.com

moulton niguel water district

STAFF REPORT

TO: **Board of Directors** **MEETING DATE: August 31, 2020**

FROM: **Rod Woods, Director of Engineering**
Sheldon Yu, Senior Engineer

SUBJECT: **Wastewater Inflow and Infiltration Flow Monitoring Services**

SUMMARY:

Issue: Board action is required to execute a Service Agreement for the Wastewater Inflow and Infiltration Flow Monitoring Services, Project No. OM20-21.012.

Recommendation: It is recommended that the Board of Directors approve the agreement for wastewater inflow and infiltration flow monitoring services with ADS Corp. in the amount of $240,198; authorize the General Manager or Assistant General Manager to execute the agreement; and to approve amendments up to 10% of the contract value.

Fiscal Impact: Sufficient funds are included in the FY20-21 Operating Budget to support the project.

Reviewed by Legal: Yes

BACKGROUND:

The District maintains approximately 500 miles of gravity sewer pipelines, 11,400 manholes, and 16 active lift stations within its service area that serves more than 170,000 customers. Consistent with the Sewer System Management Plan (SSMP), the District conducted a pilot program to evaluate the level of inflow and infiltration (I&I) into its wastewater collection system during this past wet-weather season (October 1, 2019 to April 30, 2020). I&I occurs when external water sources, such as stormwater and groundwater, enter the wastewater collection system. I&I can potentially overload the collection system and impact operations, including downstream lift stations and wastewater treatment plants.

In August 2019, the District contracted with AKM Consulting Engineers to review District's SCADA lift station pump and wet well data and to identify specific areas of interest within the District's collection system and identify potential locations for sewer

monitoring. Subsequently, in September 2019, following a competitive solicitation process, the District contracted with ADS Corp., to install seasonal flow monitoring devices in the collection system, as recommended by AKM, to track I&I tributary to the Joint Regional Treatment Plant, which treats the majority of District's wastewater flows. The goal of the pilot program was to identify potential areas of concern within the collection system, and possibly locate any sources of I&I and propose improvements to address those sources. Twenty-two (22) flow monitoring devices were installed at strategic locations throughout District's collection system (e.g. near creeks, upstream of lift stations, and/or near local depressions), in addition to seven (7) above-ground rain gauges, to continuously track and measure the level of I&I into various basins of District's collection system.

Based on the storm events that occurred during the 2019-20 wet-weather season, and the flow monitoring data gathered by ADS Corp., the District's collection system performed within industry standards in terms of the I&I observed. While the District's collection system performed well during this period, several wastewater basins exhibited elevated I&I patterns compared to other basins and warrant further investigation. Therefore, staff recommends resuming selective flow monitoring within those identified basins for this upcoming wet-weather season (October 1, 2020 to April 30, 2021) to further evaluate I&I within the District's sewer system.

During this upcoming wet-weather season, it is anticipated that twenty-one (21) flow monitoring devices will be installed at strategic locations throughout the identified basins that warrant additional investigation, along with seven (7) above-ground rain gauges. AKM Consulting Engineers will also be retained to provide their expertise and prepare a work plan to further evaluate I&I within those specific basins.

DISCUSSION:

Staff proposes to enter into a new sole-source service agreement with ADS Corp. in the amount of $240,198 to continue the wastewater I&I flow monitoring services for this upcoming wet-weather season. By retaining ADS Corp.'s and AKM Consulting Engineers' services, the District will maintain continuity in how data will be collected, analyzed, and presented. ADS Corp. is also unique in that:

- ADS Corp. is both the manufacturer and supplier of the monitoring equipment, allowing for timely troubleshooting when required.
- ADS Corp. has extensive experience providing I&I evaluations and has provided excellent service to the District in the past.
- ADS Corp. utilizes advanced flow monitoring equipment and rain gauges, whereby the data collected is accessible via a web-based portal within a dynamic centralized data management system.
- ADS Corp. has observed some of the most challenging flow conditions in the field.

Attachment: Service Agreement for Wastewater Inflow and Infiltration Flow Monitoring Services

SERVICES AGREEMENT BETWEEN
MOULTON NIGUEL WATER DISTRICT AND
ADS CORP.
MNWD PROJECT: WASTEWATER INFLOW & INFILTRATION
FLOW MONITORING
CONTRACT NO. OM20-21.012

THIS AGREEMENT (the "Agreement") is dated as of _____ (the "Effective Date"), by and between ADS Corp., hereinafter referred to as the "Vendor" and Moulton Niguel Water District hereinafter referred to as "MNWD." MNWD and Vendor may sometimes be referred to in this Agreement individually as "Party" and together as "Parties."

R E C I T A L S

Vendor proposes to provide flow monitoring installation and reporting services to MNWD for the Wastewater Inflow and Infiltration Flow Monitoring Project (the "Project"). The scope of work to be performed by Vendor under this Agreement is described in Exhibit A hereto, which is incorporated herein (the "Scope of Work").

NOW, THEREFORE, in consideration of the mutual covenants contained herein, the Parties agree as follows:

A G R E E M E N T

SECTION I - SERVICES, AUTHORIZATION

Section 1.1 Vendor proposes to perform those services which are described in the Scope of Work ("Services"). Vendor shall provide all labor, materials, tools, equipment, supplies, utilities and transportation required to perform the Services, subject to compliance with the Agreement requirements, and complete all Services in a thorough, professional manner in accordance with generally accepted professional practices and principles, and to the satisfaction of MNWD.

Section 1.2 Vendor agrees to complete the work described in the Scope of Work within the time periods set forth in the Scope of Work. Vendor agrees to coordinate the work to ensure its timely completion and shall promptly notify MNWD of any anticipated delays or causes or casualties beyond Vendor's control which may affect the work schedule.

Section 1.3 Vendor's Project Manager for this Project shall be Paul Mitchell. Any subcontractors Vendor proposes to use are subject to prior written approval by MNWD. Without prior written approval of MNWD, Vendor will not make any changes in Vendor's Project Manager, in consultants, in outside labor arrangements, or associations or joint ventures which are required to accomplish any part of the Scope of Work. Vendor is responsible to MNWD for the acts and omissions of its subcontractors as it is for persons directly employed by Vendor. Nothing contained in this Agreement creates any contractual relationship between any subcontractor and MNWD. Vendor shall not allow any subcontractor to commence work or services under any subcontract until all insurance required of Vendor has been obtained for the subcontractor.

SECTION II - COMPENSATION

Section 2.1 In consideration for providing the Services referred to in SECTION I herein, MNWD agrees to compensate Vendor for such Services in accordance with the Schedule of Charges set forth in Exhibit B. In no event shall the total amount paid for services rendered by Vendor pursuant to Exhibit A exceed the sum of **Two Hundred Forty Thousand One Hundred Ninety-Eight Dollars ($240,198)** ("Contract Amount") without the written approval of MNWD.

Section 2.2 The Contract Amount shall include all business expenses that Vendor may incur while providing the services.

Section 2.3 Monthly progress payments will be made based on submittal of invoices by Vendor. Invoices will include the number of hours worked by various labor categories, the hourly billing rate per individual if applicable, and the total amount due. Only one bill per month shall be submitted by Vendor.

SECTION III - LABOR CODE PROVISIONS

Section 3.1 Vendor is aware of the requirements of California Labor Code Section 1720, et seq., and 1770, et seq., as well as California Code of Regulations, Title 8, Section 16000, et seq., ("Prevailing Wage Laws"), which require the payment of prevailing wage rates and the performance of other requirements on "public works" and "maintenance" projects. If the Services are being performed as part of an applicable "public works" or "maintenance" project, as defined by the Prevailing Wage Laws, and if the total compensation is $1,000 or more, Vendor agrees to fully comply with such Prevailing Wage Laws. A copy of these prevailing wage rates are on file with the Department of Industrial Relations and can be found online with the State of California at http://www.dir.ca.gov/dlsr/pwd. Vendor shall make copies of the prevailing rates of per diem wages for each craft, classification or type of worker needed to execute the Services available to interested parties upon request, and shall post copies at the Vendor's principal place of business and at the project site. It is the intent of the parties to effectuate the requirements of sections 1771, 1774, 1775, 1776, 1777.5, 1813, and 1815 of the Labor Code within this Agreement, and Vendor shall therefore comply with such Labor Code sections to the fullest extent required by law. Vendor shall defend, indemnify and hold MNWD, its elected officials, officers, employees and agents free and harmless from any claim or liability arising out of any failure or alleged failure to comply with the Prevailing Wage Laws.

Section 3.2 If the services are being performed as part of an applicable "public works" or "maintenance" project, then, in addition to the foregoing, pursuant to Labor Code sections 1725.5 and 1771.1, the Vendor must be registered with the Department of Industrial Relations ("DIR"). Vendor shall maintain registration for the duration of the project. This project may also be subject to compliance monitoring and enforcement by the Department of Industrial Relations. It shall be Vendor's sole responsibility to comply with all applicable registration and labor compliance requirements, including the submission of payroll records directly to the DIR.

Section 3.3 By its signature hereunder, Vendor certifies that it is aware of the provisions of Section 3700 of the California Labor Code which require every employer to be insured against liability for Worker's Compensation or to undertake self-insurance in accordance with the provisions of that Code, and agrees to comply with such provisions before commencing the performance of the Services.

SECTION IV - WARRANTY

Section 4.1 In performing services under this Agreement, Vendor shall observe and abide by the terms and conditions of all applicable laws, regulations, ordinances, or other rules of the United States, of the State of California, or any political subdivisions thereof, or of any other duly constituted public authority or agency including but not limited to MNWD.

Section 4.2 Vendor's services will be performed in accordance with generally accepted professional practices and principles and in a manner consistent with the level of care and skill ordinarily exercised by members of the profession currently practicing under similar conditions.

Section 4.3 Nothing in this Warranty or in the Agreement shall be construed to limits the rights and remedies available to MNWD at law or in equity, including, but not limited to, Code of Civil Procedure Section 337.15.

SECTION V - INSURANCE AND INDEMNIFICATION

Section 5.1 General/Automobile Liability Insurance. Vendor and each of its subcontractors shall maintain throughout the term of this Agreement a general liability policy of insurance for bodily injury and/or death, personal injury and property damage claims which may arise from or in connection with the performance of the work under this Agreement by Vendor and its subcontractors, and each of their agents, representatives, or employees. Such public liability and property damage insurance (which shall cover claims, injury, death, loss or damage or accidents from the use or operation of any automobiles, trucks and/or other mobile or stationary equipment, whether owned, non-owned or hired) shall be comprehensive in form and shall be on a "per occurrence" basis in a minimum amount of One Million Dollars ($2,000,000) per occurrence and an annual aggregate limit in a minimum amount at least twice the per occurrence limit specified in this section.

All insurance provided under this Section shall name MNWD and its' directors, officers, employees and representatives as additional insureds under each such policy ("additional insureds") and an additional insured endorsement shall be provided in form acceptable to MNWD.

Section 5.2 Worker's Compensation. By its signature hereunder, Vendor certifies that it is aware of the provisions of Section 3700 of the California Labor Code which requires every employer to be insured against liability for workers' compensation or to undertake self-insurance in accordance with the provisions of that code, and that Vendor will comply with such provisions before commencing the performance of work under this Agreement. Vendor shall maintain throughout the term of this Agreement workers' compensation insurance with limits no less than the statutory limits, and Employer's Liability insurance with limits no less than One Million Dollars ($1,000,000) per accident and per disease for their employees and shall file with the MNWD the certificate required by Labor Code Section 3700. The workers compensation/Employer's Liability insurance shall be endorsed with a waiver of subrogation in favor of MNWD and its' directors, officers, employees and representatives.

Section 5.3 Requirements of All Policies. All policies of insurance required under this Section 4 shall be from insurance providers who are either admitted or licensed to do business in California, or are Surplus Lines Carriers authorized to do business in California, and who have financial size and ratings of no less than A-, Class XII, and in either case are otherwise acceptable to MNWD. All such policies shall include a provision and executed endorsement for

thirty (30) days prior written notice by certified mail, return receipt requested, to MNWD of any cancellation or material alteration of such insurance. Vendor shall provide original certificates and endorsements for all such insurance on forms approved by MNWD in conformity with all requirements of this Agreement prior to commencement of any work or professional services. The policies required hereunder shall be endorsed to include contractual liability.

In the case of additional insured provisions, any insurance afforded the additional insureds by this Agreement is primary insurance as to the additional insureds. Any insurance or self-insurance maintained by the additional insureds shall be excess of the Vendor's (and its subcontractor's) insurance, and shall not contribute to such insurance.

Section 5.4 Indemnity.

(a) To the fullest extent permitted by law, Vendor shall defend (with counsel reasonably approved by MNWD), indemnify and hold MNWD, and its officials, officers, employees, agents and designated volunteers free and harmless from any and all claims, demands, causes of action, suits, actions, proceedings, costs, expenses, liability, judgments, awards, decrees, settlements, loss, damage or injury of any kind, in law or equity, to property or persons, including wrongful death, (collectively, "Claims') in any manner arising out of, pertaining to, or incident to any alleged acts, errors or omissions, or willful misconduct of Vendor, its officials, officers, employees, subcontractors, consultants or agents in connection with the performance of the Vendor's services, the Project or this Agreement, including without limitation the payment of all consequential damages, expert witness fees and attorneys' fees and other related costs and expenses, including but not limited to legal costs and expenses incurred by the in connection with any Claim or in enforcing the indemnity herein provided. Notwithstanding the foregoing, to the extent Vendor's services are subject to Civil Code Section 2782.8, the above indemnity shall be limited, to the extent required by Civil Code Section 2782.8, to claims that allegedly arise out of, pertain to, or relate to the negligence, recklessness, or willful misconduct of the Vendor.

(b) In any and all claims against the indemnified Parties by any employee of the Vendor, any subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, the indemnification obligation shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for the Vendor, or any subcontractor, or other person under workers' compensation acts, disability benefit acts, or other employee acts.

(c) Vendor's obligations pursuant to this Section shall survive the expiration or termination of this Agreement and/or the performance or completion of any or all services and work provided under this Agreement. This indemnity obligation shall apply to all liability regardless of whether any insurance is applicable, and the policy limits of any insurance shall not act as a limitation upon the indemnification, and amounts related thereto, to be provided by Vendor hereunder.

SECTION VI – TERM

The term of this Agreement shall commence upon the Effective Date and shall remain in effect through **August 31, 2021** unless otherwise terminated by either Party pursuant to Section VI herein.

SECTION VII - TERMINATION OR ABANDONMENT

This Agreement may be terminated in whole or in part in writing by MNWD provided that no such termination may be affected unless the Vendor is given not less than ten (10) calendar day's written notice (deliver by certified mail, return receipt requested) of intent to terminate. Additionally, MNWD may suspend performance by Vendor of any or all services listed in the Scope of Work under this Agreement by providing written notice to Vendor at least five (5) working days prior to the date on which MNWD wishes to suspend; provided, upon receipt of such notice, Vendor shall immediately suspend any work or services hereunder, unless otherwise instructed by MNWD in such notice.

Vendor shall not perform further work under this Agreement after the effective date of suspension until receipt of written notice from MNWD to resume performance. MNWD and Vendor agree that in the event MNWD suspends or terminates performance by Vendor for any cause other than the intentional or negligent error or omission of Vendor, Vendor shall be entitled to payment of compensation incurred prior to the effective date of the suspension or termination, as determined under SECTION II of this Agreement.

SECTION VIII - GENERAL

Section 8.1 This Agreement represents the entire understanding of MNWD and Vendor as to those matters contained herein. No prior oral or written understanding shall be of any force or effect with respect to those matters covered hereunder. This Agreement may not be amended, modified or altered except in writing, signed by the Parties. This Agreement shall not be construed against the Party preparing it, but shall be construed as if both Parties prepared it.

Section 8.2 Vendor represents that it is aware of no facts or circumstances which would impair its ability to provide fair and unbiased advice to MNWD in the course of performing the services hereunder, or which would impact its objectivity in performing such services hereunder.

Section 8.3 Books, documents, papers, accounting records, and other evidence pertaining to costs incurred under this Agreement shall be maintained by Vendor and made available at all reasonable times during the contract period and for four (4) years from the date of final payment under this Agreement for inspection by MNWD.

Section 8.4 Any notice required or permitted to be given hereunder if not otherwise specified herein may be given or delivered by depositing the same in the United States Post Office, registered or certified, postage prepaid, or by personal service a hand delivery, and addressed to:

MNWD:
Moulton Niguel Water District
P.O. Box 30203
Laguna Niguel, CA 92607
Attn: Director of Engineering

VENDOR:
ADS Corp.
15201 Springdale Street
Huntington Beach, CA 92649
Attn: Heather McPherson

Section 8.5 California law shall govern the interpretation of this Agreement. In the event of any legal action to enforce or interpret this Agreement, the sole and exclusive venue shall be a court of competent jurisdiction located in Orange County, California, and the Parties hereto agree to and do hereby submit to the jurisdiction of such court, notwithstanding Code of Civil Procedure 394.

Section 8.6 In the event an action is commenced by either Party to enforce its rights or obligations arising from this Agreement, the prevailing Party in such action, in addition to any other relief and recovery awarded by the court, shall be entitled to recover all costs and expenses, including court costs, plus a reasonable amount for attorney's fees.

Section 8.7 If any section of this Agreement or provision of this Agreement as applied to either Party or to any circumstance shall be adjudged by a court of competent jurisdiction to be void or unenforceable for any reason, the same shall in no way affect (to the maximum extent permissible by law) any other provision of this Agreement, the application of any such provision under circumstances different from those adjudicated by the court, or the validity or enforceability of this Agreement as a whole.

Section 8.8 It is expressly understood and agreed that Vendor is an independent contractor and not an employee of MNWD while engaged in carrying out this Agreement. Vendor warrants that it will not represent, at any time or in any manner, that Vendor is an employee or agent of MNWD. Vendor shall have no authority to, and shall not, incur any debt, obligation or liability on behalf of MNWD.

Section 8.9 The person signing this Agreement on behalf of each Party hereto represents he/she has authority to sign on behalf of, respectively, MNWD or Vendor.

Section 8.10 This Agreement and all of the terms, conditions, and provisions hereof shall inure to the benefit of and be binding upon the Parties hereto, and their respective successors and assigns; provided, however, that no assignment of this Agreement or any interest herein shall be made by Vendor without prior written consent of MNWD.

Section 8.11 This Agreement may be executed in counterparts, each of which shall be deemed an original.

MOULTON NIGUEL WATER DISTRICT:	**ADS Corp.:**
By: _____	By: _____ (Authorized Representative of Vendor)
Printed Name: _____	Printed Name: _____
Title: _____	Title: _____
Dated: _____	Dated: _____

Exhibit A
Scope of Work

A. Scope of Services

Over our 45+ year history, ADS has perfected sewer flow monitoring, from small pipes to large trunk. ADS completely understands the work to be accomplished and we will present to you our detailed description how ADS will deliver high quality and accurate data from start to finish.

The process for delivering high quality involves Comprehensive Field Services, the Industry's Best Flow Monitoring Technology, Wireless Data Collection, Frequent Data Review/Analysis and utilization of the Best Staff from a Local Office (Huntington Beach, CA).

Crew Availability

ADS has more offices, more staff members, and more equipment than any other firm in our business segment. ADS will mobilize crews from our local office in Huntington Beach, CA, which is less than a 30-minute drive from the District. Because of our ISO9001 procedures and standardized field training curriculum, staff from our West Region offices (Seattle, Hayward, and San Diego) can be brought in to install monitors if needed to meet any schedule, and it will be of the same quality as our local staff.

Task 1.0– Kick-Off Meeting

Effective communication is one of the most important factors to be an efficient and effective partner, and having a successful relationship with the District from start to finish. Our work will be done in a collaborative manner as we place great importance on listening to input from the District staff, reviewing past flow monitoring projects, and complete understanding of the project objectives. Because our team is centered in Huntington Beach, we are able to maximize communication and be available with the District staff. The District's staff will have direct and open lines of communications with the entire ADS team for the entirety of this project.

Task 2.0 – District Workshops and monthly updates

Paul Mitchell P.E. will attend the two workshops to be held at the District's office or via virtual meeting at times to be determined during the monitoring period. Project updates will be submitted to the District monthly. The District will be updated on any unusual hydraulic events that are observed by ADS during the study period that may be of interest.

Task 3.0 – Site Investigations

Twenty-one (21) locations from the previous 2019/20 study have been selected to be monitored during this study with an option to add sites (likely up to 3). Site investigations will be done in the case of suspected site condition changes from previous study or if an alternative location is selected.

Task 3.1 – Supply Wireless Monitoring Equipment

Unlike our competition, where they would either purchase new flow/rain monitors, or rent them. As the manufacturer of our equipment, ADS has virtually an unlimited number of flow/rain monitors available to be deployed at a moment's notice which is a stark contrast to our competitors. ADS maintains a large inventory of our equipment in our Huntington Beach project office, where an inventory of spare monitors, parts, and sensors are maintained. ADS will provide all equipment and materials necessary to perform the assigned work for the entirety of the contract. Every monitor is checked prior to being deployed in the field and only ADS certified technician are allowed to repair our monitors and "green tag" them as ready to be installed. All ADS flow/rain monitors are installed to enable daily downloads of data from the flow meters remotely.

Task 3.2 – Flow Meter Site Installations

Installation of the flow monitoring equipment will begin when directed by the District. ADS flow sensors are typically installed in the lines incoming to the monitored manhole to capture the best hydraulics. The monitor and sensor cables will be secured to the manhole walls and/or steps in order to allow ready access by ADS personnel and to minimize chances that debris and/or surcharging would cause the monitor or sensor ring to be dislodged in high flows. ADS will utilize an ultrasonic depth sensor as the primary depth sensor and a secondary pressure depth sensor for redundancy and surcharge conditions. The Doppler velocity sensor will be installed at the center point of the base of

the pipe unless siltation requires us to adjust the location. ADS field crews will perform initial site confirmation during the installation process; the confirmation dataset is then forwarded to the Data Manager per our ISO 9001 procedures to evaluate the site hydraulics vs what the flow monitor is actually reading. The last step is to install an antenna and establish wireless connection.

Task 3.3 – Rain Gauge Installations

Installation of the wireless rainfall monitoring equipment will begin once the site reports and locations have been approved by District. ADS will certify the accuracy of all gauges at the time of installation by performing a confirmation per our IS9001 procedures. Gauges will be installed in areas that do not obstruct or shadow rainfall from the gauge such as roofs, tree canopies, or other structures above the gauge. Gauges will be installed where vandalism and tampering are minimized. Rain Gauges will be level and plumb. Installation records will be used to document site conditions, gauge setup and configuration with site photos. Site reports will be neatly organized in a binder demonstrating the equipment is installed properly and calibrated.

Task 4.0 – Comprehensive Field Services

Comprehensive Field Service means that the District can be assured that ADS will take care of every aspect of maintaining the high performance of the flow monitoring network.

Data Analysis is a critical to the of success of any flow/depth monitoring project. Having a trained Data Analyst review the flow/depth /rain monitoring dataset and be able to interpolate any hydraulic changes is imperative. Internal procedures are in place to escalate flagged data to the Data Manager, Field Crews, and the Project Engineer and immediately come up with a plan to rectify any problems that may arise.

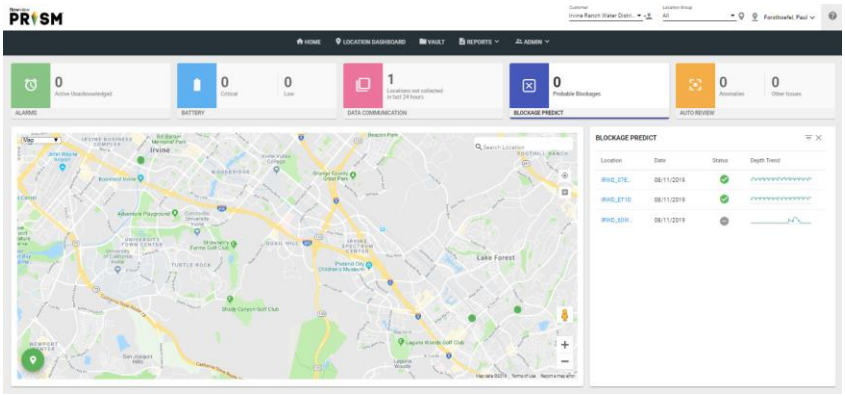
Local field crews based out of our Huntington Beach, CA office will mobilize quickly to resolve any issues that the Data Analyst has identified as well as perform regular maintenance.

ADS leverages the latest technology to effectively manage complex flow monitoring projects. Field service is directed through a server-based work order management system readily accessible to all ADS team members. Field crews are dispatched and routed in real-time using iPads. All field work is recorded on a “Daily Form” using a tablet, or on paper. These Daily Forms provide snapshots of all the field work performed on each site in a workday. Also, due to the nature of this business, all crew members are fully trained in confined space entry. Confined Space Entry (CSE) forms are REQUIRED for all maintenance in which “manned entry” is required.

Task 4.1 – Confirmations, Data Analysis and Data Finalization

The data analyst will perform a review of the collected data using FlowView Prism and/or Profile software on a regular basis to ensure that all sites are reviewed at least two times per week. ADS data analysts will review all individual monitor data in relation to upstream and downstream monitor locations, should they exist, to ensure the net flows between monitors are consistent and to make sure the overall system flow quantities balance. After the review, the analyst will coordinate with the Project Manager and/or Field Manager to direct the field crews to perform any required maintenance or repairs, as necessary, to allow for accurate and repeatable data. A trained Data Analyst will analyze and finalize data. The data analyst will be directly calculated flow using the continuity equation from recorded depth and average velocity data. The analyst will also utilize scatter plots (depths vs. velocity readings) both to verify monitor accuracy. Flow balancing of upstream and downstream sites will be completed in data finalization process.

Task 5.0 – Innovative Approach - Web Based Data Delivery and Reporting



ADS is proposing to utilize our web-based data delivery service product, FlowView Prism, our revolutionary new web-based software product that provides critical insight for managing your collection system. ADS will provide access to our FlowView Prism website for the entirety of the project. All flow/rain meter data will be transmitted to FlowView Prism on a daily schedule. The District's staff also has the ability to "collect" flow monitor data with a push of a button from multiple FlowView Prism screens. All pertinent field documentation will be uploaded to the FlowView Prism "Vault" for project personnel to access anytime.

For more detailed information on FlowView Prism tool see Appendix A

Task 5.1 – Innovative Approach - Rain Dependent Inflow & Infiltration (RDI/I) Analysis

Technical analysis of the flow data will be conducted using ADS' award winning Sliicer™ software. This unique and powerful analysis tool was used to analyze MNWD data from last season.

Sli/icer RDI/I Analysis. For each of the monitoring locations, ADS will provide Sli/icer.com analysis. The analysis will characterize the average dry weather flow conditions and Rain Dependent Inflow/Infiltration (RDII) calculations for all significant wet weather events and provide an assessment of hydraulic performance under such conditions. The results of dry weather and wet weather performance will be plotted on maps of the sewer sheds to make it easier to understand where RDII originates. The Sliicer.com section of the Report will include the following items:

- **Dry Weather Analysis** – A characterization of the conditions observed during weekday and weekend periods of the flow monitoring period during dry weather periods, excluding periods of extended system recovery to previous rain events. Summarized as a graphical time-series hydrograph of the average diurnal flow quantities for weekday and weekend dry weather periods.
- **Dry Weather Flow Summary** – A table of the Average Dry Day Flow (ADDF) estimates. The table includes the average flow quantities that characterize the average dry weather diurnal conditions at each flow monitoring location during weekday and weekend portions of the flow monitoring period.
- **Wet Weather Analysis** – A characterization of the conditions observed during specific wet weather events observed during the flow monitoring period, summarized as a time-series hydrograph comparing observed flow quantities to average diurnal flow quantities for corresponding weekday and weekend dry weather periods.
- **Wet Weather Summary** – A characterization of the peak Rain Dependent Inflow/Infiltration (RDII) conditions observed during the maximum rain event of the flow monitoring period and also RDII totals during other observed system stressing storm events. Summarized as the maximum RDII rate observed during the flow monitoring period and also total volumes of RDII during other evaluated storm events.
- **Wet Weather Normalization/ Prioritization** – A column chart of the determined RDII for each flow monitoring location for each evaluated storm event. Column chart provides a prioritized ranking based on net RDII normalized by rainfall and by acreage, or normalized per linear foot of sewer per inch of rain when linear footage information is provided to ADS.
- **Hydraulic Performance Evaluation** – A narrative interpretation of hydraulic performance recorded at each flow monitoring location as determined using a scattergraph of flow depth and velocity data. The scattergraph

interpretation shall evaluate the presence of backwater and any surcharged flows observed during average dry weather and maximum wet weather conditions observed during the flow monitoring period.

B. Flow Monitoring Devices

Area Velocity Wireless Flow Monitor

ADS is proposing the ADS Triton+ Wireless Flow Meter. The Triton+ is a multiple technology monitor that is flexible enough to collect data from almost every available sensor technology that is used in wastewater applications today.

Although Intrinsic Safety is not a requirement of the RFP, the ADS Triton+ Flow meter has been certified under IECEx (International Electrotechnical Commission Explosion Proof) Intrinsic Safety (IS) standards for use in Zone 0/Class I, Div. 1, Groups C&D rated hazardous areas.

The five multiple technology sensor options available in the Triton+ includes a the Long Range Depth Sensor, a Peak Combo Sensor, a Surface Combo Sensor, Ultrasonic Depth Sensor, and our newest sensor, the AV Gated Sensor. This array of monitoring technologies provides a fit-for-purpose monitoring platform for all of the District's needs with one monitor. Below is an overview of each sensor measurements.

Triton+ Sensor Name	Primary Depth	Secondary Depth	Velocity	Wetted Sensor	Sensor Location	Monitoring Locations
AV Gated	Uplooking Ultrasonic	Pressure Sensor	Gated Velocity	Yes	In-Pipe	Sites greater than 3" depth
Surface Velocity Combo Sensor	Downlooking Ultrasonic	Pressure Sensor Surcharge	Surface Velocity	Only in Surcharge	In-Pipe	Fast shallow flow, low flow, debris, hard to access (heavy traffic)
Peak Combo Sensor	Uplooking Ultrasonic	Pressure Sensor	Peak Velocity	Yes	In-Pipe	Every Site except <.5" depth and fast velocity
Down Looking Ultrasonic Depth Only	Downlooking Ultrasonic	N/A	N/A	No	In-Pipe	Used in conjunction with a Peak Combo Sensor, Fast shallow flow, shallow flow, debris, redundant depth
Long Range Depth Sensor	Downlooking Ultrasonic	N/A	N/A	Capacitance when submerged	In Manhole	SSO Monitoring, wet-wells, cleaning hotspots,

ADS AV Gated Sensor installed at the pipe invert. The AV Gated Sensor includes three types of sensor technologies (best in flows deeper than 5 inches):

- *Gated Velocity:* Works by measuring flow velocity at multiple discrete points, allowing the sensor to better characterize the velocity distribution and best measure average velocity. The returning reflected signal is processed using a digital signal processor, from which average velocity is calculated.
- *Up-Looking Ultrasonic Depth:* Uses ultrasound waves from two independent transceivers to measure the distance from the sensor upward toward the flow surface; applying the speed of sound in the water and the temperature measured by the sensor to calculate depth.
- *Pressure Depth:* Uses a piezo-resistive crystal to determine the difference between hydrostatic and atmospheric pressure. The pressure sensor is temperature compensated and vented to the atmosphere through a desiccant filled breather tube.

ADS Peak Combo Sensor *(model CS4)* installed at the pipe invert. The Peak Combo Sensor includes three types of sensor technologies:

- *Continuous Wave Peak Doppler Velocity:* Uses ultrasound waves reflected off particles to measure Doppler frequency shift which correlates to peak velocity.
- *Up-Looking Ultrasonic Depth:* Uses ultrasound waves from two independent transceivers to measure the distance from the sensor upward toward the flow surface; applying the speed of sound in the water and the temperature measured by the sensor to calculate depth.
- *Pressure Depth:* Uses a piezo-resistive crystal to determine the difference between hydrostatic and atmospheric pressure. The pressure sensor is temperature compensated and vented to the atmosphere through a desiccant filled breather tube.

One of the reasons ADS technology is selected to conduct so many flow monitoring projects is that the ***drift-free ultrasonic technology is the primary depth measurement***, while the pressure depth technology is used for redundancy and for measuring surcharge depth. Because both depths are measured in the same cross section of flow, ADS monitors are able to automatically calibrate the pressure sensor to the ***zero-drift ultrasonic depth sensor, and this calibration is automatically performed on a daily basis.***

The continuous wave Peak Doppler algorithms (used in the ADS TRITON+ monitor) offer better accuracy, repeatability and precision. Peak Doppler technology registers the highest velocity particles regardless of signal strength (nearness to sensor). This allows the sensor to find the same peak flow (typically near the upper centerline of the flow cross section) regardless of size or distribution of particles in the flow at any given time; resulting in a very precise (repeatable) and verifiable velocity value. Not only does this provide increased accuracy for Rain Dependent Inflow and Infiltration (RDI/I) performance and modeling purposes, but the high degree of precision also enables the data to tell a detailed story about the hydraulic behavior (e.g. mild backwater starting at a certain depth, shifting sediment levels, the presence of a hydraulic jump or waves during part of the day, etc.).

The Surface Combo Sensor (CS5v), this revolutionary sensor featuring four technologies, non-contacting surface velocity, ultrasonic depth, surcharge continuous wave velocity, and redundant pressure depth. This sensor is mounted in the pipe crown to ensure depth and velocity is measured within the same cross section of the pipe. The Surface Combo Sensor is ideal for permanent locations and at locations that are steep that exhibit shallow/fast hydraulics and sites with excessive debris.

Rain Gauge(s)

The ADS RainAlert III rain gauge assembly can be deployed as a stand-alone unit or part of a comprehensive monitoring network, the enclosure is suitable for ground-level, pole-mount or rooftop installation. ADS will utilize the TB6 model rain gauge, which we believe is the most accurate and reliable rain collection device in the market. The TB6 has an advanced finger filter which is less prone to clogging which is the biggest cause of rain collection failure.

C. Team

ADS will provide the District with a highly qualified and experienced project team with years of direct experience working for the surrounding communities. Our engineers, field personnel, data analysts, and support staff are experts in the field of flow/rainfall monitoring and associated Rain Dependent Inflow and Infiltration (RDI/I) analysis. The ADS team has over 110 years of flow monitoring experience and has successfully executed 100's of flow monitoring projects over the past 15+ years working together. Our team experience exceeds the requirements of this project and we are excited for this opportunity to provide our services.

Part of our project management risk assessment and minimization program ensures that project success does not hinge on the level of participation of any one individual. Rather, ADS ensures that each member of the team selected for this project is capable of performing their job independently and each has co-workers in the company who can step in and perform their job if for some unforeseen reason they are unavailable to do so. This is in stark contrast to our competitors where many of them are only one person that is keeping their flow monitoring business running. ADS is committed to maintaining the key personnel listed in this proposal throughout the term of this contract. ADS will fully staff this project with regular ADS employees with our field staff based out of our local Huntington Beach office.

ADS believes that the best way to ensure success of a flow monitoring project is to assign the most qualified personnel using the best available technology within a proven quality management system. This formula has worked for us time and time again, producing high quality data, which is delivered on time and exceeding our customers satisfaction. Our team is committed to open and timely communication with the District's representative(s), we can quickly adapt to changing conditions and the focused needs of the District and we strive for excellence with any project for which we are selected. It is our goal and desire to become your Trusted Advisor for projects such as this.

"Working with ADS, and with Paul Mitchell, was a pleasure. Paul ensured the on time delivery of high quality flow data every month and responded promptly to questions regarding to flow monitor performance."

- **Eric Fontenot P.E. Lead Modeler - DHI, Inc. City of Los Angeles, 96+ Monitors**

"Paul Mitchell's been great to work with. Very responsive and helpful"

- **Tori Yokoyama P.E. Modeler - RBF Engineers Port of Long Beach, 30+ Monitors**

ADS has assembled a team with many years of experience in performing sewer and storm flow monitoring on both small and large-scale projects in the Southern California Area.

A brief overview of the ADS key personnel assigned to the project and their roles are described below. The local ADS key personnel listed in this proposal will be fully supported by our National ADS support staff and specialists to provide the District with the very best experience.

Paul Mitchell, PE, Sr. Project Manager/Engineer. Paul has over 26 years of engineering and project management experience with an emphasis in wastewater collection systems, and environmental assessment/site remediation. Paul has been with ADS for over 16 years serving as Sr. Project Manager and Region Engineer. Paul's experience includes long and short term flow monitoring, model verification, capacity studies for siphons, pump stations, and RDI/I analysis. Paul has authored or co-authored many technical papers on flow monitoring, rain gauging, and RDI/I analysis at CWEA, PNCWA, and WEFTEC.

Paul is always available to answer your questions that you may have for the duration of this project. Paul has always been very responsive in; investigating, digging deep into the data, comparing historical data to current datasets, discussing with our project team to form a thoughtful and honest opinion. In summary, Paul is a seasoned project manager/engineer with specific expertise in sanitary sewer flow/rain studies and associated RDI/I Analysis.

Shay Koerber, Field Manager II. A key team member resource for the Project Manager is the ADS Field Manager, Shay Koerber. The ADS Field Manager is the keystone of field success for flow monitoring projects. ADS Field Managers are responsible for controlling the quality of all field work, including conducting audits of field work to assure that all ADS procedures and work instructions are followed, ensuring all project requirements related to field work are being met, and that field work is being performed within the set schedule. Shay is designated to be the on-call field service/safety representative for this project. Shay has 13 years' experience exclusively in wastewater systems that include such tasks as investigating sites for suitable monitoring, installing monitoring equipment according to site conditions, and review of data for completeness and accuracy. He is responsible for the direct supervision of field personnel and the development of their professional and technical expertise in field activities.

Jackie Crutcher, Sr. Data Manager. Jackie has over 31 years of experience all with ADS Environmental Services. She has experience and a demonstrated performance record spanning both field and corporate operations. She has conducted thousands of sewer flow monitoring studies, and evaluation projects involving infiltration/inflow determination, combined sewer overflow evaluations, capacity analyses, sewer system evaluation surveys. Her experience encompasses key project control disciplines in project scheduling and coordination, project management, analysis, data collection, and final report preparation. Data management responsibilities also include coordinating work assignments and schedules for a group of data analysts, conducting data reviews, data audits, quality control and assisting with training of analysis team members.

Schedule

ADS will install monitors and rain gauges prior to monitoring start date of October 1, 2020. Following is the proposed project schedule based on the flow monitoring period of October 1, 2020 to May 2, 2021.

	Week Number from NTP (Sept 14)	1	2	3	4	5	6	7	8	9	10	11	12					31	32	33	34	35	36	37	38	39	40
	Number of Monthss to Notice to Proceed				1				2				3	4	5	6	7				8						
Line Item																											
1	**Project Management**																										
2	**Flow / Rainfall Monitoring**																										
	Equipment Installation, Calibration, Site Documents																										
	Flow / Rainfall Monitoring October 1 - May 2																										
	Equipment Removal																										
3	**Project Reports**																										
	Live 24/7 raw data access via FlowView Prism online																										
	WorkShop Meetings																										
	Flow / Rainfall Monitoring Report																										
	RDI/I Analysis																										
	Draft Report Deliverable (May 19)																										
	Final Report Deliverable (June 18)																										

Exhibit B
Schedule of Charges

Phase	Description: Flow Monitor Study (21 Flow Monitors and 7 Rain Gauges- 7 Months)	Cost
Mobilization	Mobilization of crews and equipment	
Flow Monitoring	Installation, data collection, monitor maintenance for twenty-one (21) flow monitors and seven (7) rain gauges for seven (7) months.	
Web-Hosting	Site set-up in FlowView Prism and hosting for seven (7) months	
Data Analysis and Final Report	Data analysis and preparation of a final RDII report	
Total Project Cost*:	**Twenty-one (21) monitors and seven (7) rain gauges, seven (7) months**	**$240,198.00**
	Optional Additional Flow Monitoring	
Option to add monitors	**Option to add additional monitors to the above seven (7) month study.**	**$8,300.00/monitor**

*Pricing Assumptions: Any applicable Federal, state, or local taxes are not included; No prevailing wages or W/MBE requirements; Standard traffic control requirements assumed (traffic cones); Payment terms net 30 days.

moulton niguel water district

STAFF REPORT

TO: **Board of Directors** **MEETING DATE: August 31, 2020**

FROM: **Matt Collings, Assistant General Manager**
Alex Thomas, Principal Engineer

SUBJECT: **Cooperative Services Agreement for Salt and Nutrient Management Plan**

SUMMARY:

Issue: Board action is required for the Cooperative Services Agreement for Salt and Nutrient Management Plan.

Recommendation: It is recommended that the Board of Directors approve the Cooperative Services Agreement for Salt and Nutrient Management Plan (Cooperative Agreement); and authorize the General Manager or Assistant General Manager to execute the agreement.

Fiscal Impact: The cost allocation to the District under the Cooperative Agreement for Fiscal Year 2020-21 is $28,362. This cost is included in the total San Juan Basin Authority assessment budget of $116,743, which is included in the Fiscal Year 2020-21 Operating Budget.

Reviewed by Legal: Yes

Background:

The California State Water Resources Control Board (SWRCB) is the State authority that issues Master Recycled Water permits allowing recycled water purveyors to provide recycled water for public use. The South Orange County Wastewater Authority (SOCWA) is the Master Recycled Water permit holder for its member agencies. In 2009, the SWRCB issued the Recycled Water Policy (Policy), which

recognized that some groundwater basins contain salts and nutrients that exceed water quality objectives established within Basin Water Quality Control Plans. The Policy requires agencies that provide recycled water to areas with viable groundwater basins to develop regional Salt and Nutrient Management Plans (SNMPs). The Policy also requires an approved SNMP as a condition to the Master Recycled Water permit renewal.

In 2014, MNWD, in partnership with SOCWA and its member agencies, developed and submitted a SNMP to the San Diego Regional Water Quality Control Board. In 2018, the Policy was revised and prescribed additional requirements for the SNMP. SOCWA and its member agencies are currently in the process of revising the SNMP to ensure compliance with the current Policy objectives.

The SNMP identified the South Orange County recycled water agencies that would receive regulatory coverage under the SNMP, including: City of San Juan Capistrano (CSJC), Moulton Niguel Water District (MNWD), Santa Margarita Water District (SMWD), and Trabuco Canyon Water District (TCWD).

The SNMP also identified a detailed implementation plan and schedule for water quality monitoring to improve the existing salt and nutrient monitoring efforts in the San Juan Creek Watershed. In 2015, the San Juan Basin Authority (SJBA) assumed responsibility for implementation of the water quality monitoring program at the request of MNWD, SMWD, and CSJC. Currently, the costs associated with the water quality monitoring program have been paid for exclusively by the SJBA member agencies.

Over the last year, staff from SJBA and the four agencies covered under the SNMP negotiated a cooperative agreement to fund the water quality monitoring program. This proposed Cooperative Agreement includes TCWD, which is not a member agency of SJBA.

The SJBA Board of Directors approved the Cooperative Agreement on August 12, 2020.

Discussion:

The Cooperative Agreement allocates costs associated with the water quality monitoring program proportionally based on each agency's annual volume of recycled water served to customers within the San Juan Creek Watershed. The cost allocation to MNWD for Fiscal Year 2020-21 is $28,362, which is 17.4-percent of the total annual monitoring budget of $163,000. A breakdown of the proposed cost allocations for Fiscal Year 2020-21 is provided in the letter from SJBA to SNMP participants attached as Exhibit B.

Each year, the scope and budget of the monitoring program for the upcoming fiscal year will be developed by staff from the cooperating agencies. The Cooperative Agreement has a term of 5 years.

SJBA member agencies will pay their respective SNMP water quality monitoring cost allocations through their annual SJBA assessments. TCWD will be invoiced separately for its contribution.

The implementation of the Cooperative Agreement ensures the appropriate fiscal contribution from all agencies receiving the benefit of regulatory coverage by the SNMP. Staff recommends that the Board approve the Cooperative Agreement.

Attachments:

1. Exhibit A – Cooperative Services Agreement for Salt and Nutrient Management Plan
2. Exhibit B – Letter from SJBA to SNMP Participants

COOPERATIVE SERVICES AGREEMENT

FOR SALT AND NUTRIENT MANAGEMENT PLAN

THIS COOPERATIVE SERVICES AGREEMENT FOR SALT AND NUTRIENT MANAGEMENT PLAN ("Agreement") is entered into as of the 11th day of August, 2020, by and between SAN JUAN BASIN AUTHORITY, a joint powers authority duly organized and existing under the laws of the State of California ("SJBA"), SANTA MARGARITA WATER DISTRICT, a California Water District duly organized and existing under the laws of the State of California ("SMWD"), MOULTON NIGUEL WATER DISTRICT, a California Water District duly organized and existing under the laws of the State of California ("MNWD"), TRABUCO CANYON WATER DISTRICT, a California Water District duly organized and existing under the laws of the State of California ("TCWD"), and the CITY OF SAN JUAN CAPISTRANO, a municipality duly organized and existing under and by virtue of the laws of the State of California ("CITY"). SJBA, SMWD, MNWD, TCWD, and CITY are referred to herein individually as a "Party" and collectively as the "Parties."

R E C I T A L S:

A. In 2009, the California State Water Resources Control Board adopted its Policy for Water Quality Control for Recycled Water ("Recycled Water Policy"). The Recycled Water Policy was amended in 2013 and 2018. The Recycled Water Policy provides goals for recycled water use in California, guidance for use of recycled water that considers protection of water quality, criteria for streamlined permitting of recycled water projects, and requirements for monitoring recycled water for constituents of emerging concern. The San Diego Regional Water Quality Board ("Regional Board") has developed Proposed Guidelines for Salinity/Nutrient Management Planning in the San Diego Region (9) ("Region 9 SNMP Guidelines"). Among other requirements, the Recycled Water Policy requires the development of salt and nutrient management plans ("SNMP") for groundwater basins throughout California, including San Juan Basin, on or before May 14, 2014.

B. The South Orange County Wastewater Authority, a joint powers authority ("SOCWA"), prepared and submitted a Salt and Nutrient Management Plan (SNMP) for the Aliso Creek, San Juan Creek, and Portions of Other Basins ("SOCWA SNMP"), which includes the SNMP for the San Juan Basin, to the Regional Board. The SOCWA SNMP identified a detailed implementation plan and schedule, which included as an initial step, the development and implementation of a monitoring and data collection work plan to enhance the existing salt and nutrient monitoring efforts in the San Juan Creek Watershed (the "Monitoring Program").

C. In 2015, the SJBA assumed responsibility for the development and implementation of the Monitoring Program, in coordination with its own existing ongoing groundwater monitoring program used to comply with its Diversion and Use of Water Permit No. 21074.

D. This Agreement is entered into and for the purpose of memorializing the Parties' agreement to cooperate and share in the cost of the implementation of the Monitoring Program.

NOW, THEREFORE, in consideration of the preceding recitals and the mutual covenants hereinafter contained, the parties agree as follows:

1. Effective Date of Agreement. This Agreement shall be effective upon the signing hereof by all Parties hereto, and shall be deemed effective as of October 1, 2020 ("Effective Date").

2. Implementation of Monitoring Program. The Parties agree that the work to be performed to implement the Monitoring Program shall be according to the SNMP Monitoring and Data Collection Program Work Plan Addendum to the 2014 Salt and Nutrient Management Plan, attached hereto as Exhibit A (the "Work Plan"), as well as any subsequent Addendum to the SNMP.

3. Responsibilities of All Parties. The Parties will perform the monitoring services identified and as assigned in the section entitled "Cooperator Data Collection Protocols" of the Work Plan and report the data obtained from such monitoring services to the SJBA as specified in the Work Plan. Each year, prior to January 1, SJBA will notify the individual Parties of the specific work to be performed by them during that calendar year, including any changes to the work from the prior year. Further, the Parties agree to report the data obtained from the monitoring services identified in the "Cooperator Data Collection Protocols" section of the Work Plan for the preceding calendar year to the SJBA no later than March 31 of the following year. To the extent that the reporting periods identified in the Work Plan differ from the March 31st deadline identified in the immediately preceding sentence, the Parties agree to be bound to the March 31st deadline. If any Party fails to report the data obtained for the preceding calendar year to the SJBA on or before March 31 of the following year, the annual report of data from SJBA to SOCWA will clearly indicate that data was not provided by that Party.

4. Responsibilities of the SJBA. The Parties agree that the SJBA is responsible for the following:

(a) Implementation and Oversight. The SJBA shall be responsible, in its sole discretion, for overseeing and coordinating the activities necessary to complete the Work Plan and implement the Monitoring Program, as may be revised from time to time due to revisions required by the Parties or the Regional Board. The Parties shall meet annually, by March 1, to determine what activities are necessary and prudent to complete the Work Plan and implement the Monitoring Program for the following calendar year, including, but not limited to, engaging competent consultants and/or contractors.

(b) Budget for Work. On or before March 1st of each year in which this Agreement is in place, the SJBA shall prepare and provide to the Parties a draft annual budget for the costs of the Work Plan and implementation of the Monitoring Program for the 18-month period beginning the subsequent January 1 and ending June 30 of the following year (18 months later). On or before May 1, each Party shall provide written approval of its proportionate reimbursement of the total cost of implementing the SNMP during the relevant 18-month period. The total cost shall include, but not be limited to the costs of, consultant contracts, field work, reporting of results, administration, maintenance of monitoring wells, and special studies associated with the SNMP, as described in the Work Plan and associated budget. It is expected that field work and related activities will be completed during a calendar year, but costs are expected to be expended over an 18-month period to allow for reporting of results after the calendar year has ended. Each 18-month period will overlap in that the six month period of time following the end of a calendar year during which reporting of results of the field work conducted in the previous calendar year will occur at the same time as the field work conducted during first six months of the new 18 month period. Therefore, expenses will be accounted through two fiscal years for each 18-month period of SNMP

implementation. Any unexpended funds from one fiscal year will be credited to the Parties for the following fiscal year of SNMP implementation.

(c) Invoice the Parties. Parties will be invoiced on a fiscal year basis (July 1 through June 30). On or about September 30 of each year in which this Agreement is in place, the SJBA shall prepare, pursuant to the terms of this Agreement as set forth below, invoices to each of the Parties for that Party's annual fiscal year contribution ("Cost Allocation"). Each of the SMWD, MNWD, TCWD, and CITY agree to pay the invoice within thirty (30) days of receipt.

(d) Responsibility for Data and Reporting to the Regional Board. The SJBA shall be responsible for providing SOCWA with the monitoring and other data collected as part of the Work Plan and/or implementation of the Monitoring Program. In turn, SOCWA is responsible for reporting and providing the data to the Regional Board. If any Party fails to perform its work duties or provide its assigned data to SJBA as required, that portion of SJBA's annual report to SOCWA will be missing. SJBA shall note in the report that the non-performing Party did not provide the data required. The non-performing Party shall pay any and all penalties and/or extra costs associated with its data not being provided to SJBA. The non-performing Party shall be severally and fully responsible for its own compliance with SNMP requirements associated with its recycled water use. SJBA data will not be provided to the non-performing Party.

5. Allocated Reimbursement of SJBA Costs. Each fiscal year each of the SMWD, MNWD, TCWD, and CITY shall reimburse the SJBA its Cost Allocation of the cost incurred by SJBA to complete the Work Plan and implement the Monitoring Program during the subject fiscal year. The Cost Allocation of each of the SMWD, MNWD, TCWD, and CITY shall be calculated as follows:

(a) Intent of Cost Allocation Reimbursement. The Parties agree that the intent of the Cost Allocation is to equitably distribute the costs incurred by the SJBA to complete the Work Plan and implement the Monitoring Program among the other Parties in an amount equal to each Party's proportional share of the recycled water used or discharged outdoors in the Mission Viejo Hydrologic Area. The Mission Viejo Hydrologic Area, and its Sub Areas, are defined/identified by the Regional Board in its most recent "WATER QUALITY CONTROL PLAN FOR THE SAN DIEGO BASIN (9)" (Basin Plan).

(b) Cost Allocation. Each of the SMWD, MNWD, TCWD, and CITY shall reimburse the SJBA a percentage of the costs incurred by the SJBA to complete the Work Plan and implement the Monitoring Program. The percentage of the costs to be reimbursed by each of the SMWD, MNWD, TCWD, and CITY shall be known as the "Allocated Percentage" and shall be calculated as follows:

(c) The "Allocated Percentage" for each Party is the total amount of metered usage within the Mission Viejo Hydrologic Area from that Party's recycled water system in the immediately preceding calendar year as reported by SOCWA in its Annual Recycled Water Report ("Agency's Recycled Water Amount") divided by the total amount of metered usage within the Mission Viejo Hydrological Area from all of the Parties' recycled water systems as reported by SOCWA in its Annual Recycled Water Report ("Total Recycled Water Amount"). An example of this calculation is as follows:

Allocated Percentage = Agency's Recycled Water Amount / Total Recycled Water Amount

6. Calendar Year 2021. Notwithstanding the prior paragraphs regarding Cost Allocation, the Parties agree to negotiate in good faith reasonable Cost Allocations for Calendar Year 2021 SNMP implementation costs. All provisions shall be applied to subsequent Calendar Years.

7. Term. The term of this Agreement shall be for five (5) years from the Effective Date, unless earlier terminated as provided herein.

8. Termination. This Agreement shall only terminate upon the expiration of the Term or the unanimous consent of all Parties. Should the Parties agree to terminate this Agreement, each of the the SMWD, MNWD, TCWD, and CITY, unless otherwise agreed to by all Parties, shall be responsible for reimbursing the SJBA the full amount of its Cost Allocation.

9. Withdrawal by Individual Party. A Party may withdraw from this Agreement by providing all other Parties with written notice of that Party's election to withdraw. A Party's written notice of withdrawal must specify the date on which that Party will withdraw from this Agreement, which date shall be no sooner than ninety (90) days after that Party's service of the written notice of withdrawal. Should a Party withdraw from this Agreement, such Party, unless otherwise agreed to by all Parties, shall be responsible for reimbursing the SJBA the full amount of its Cost Allocation for the fiscal year in which the Party withdraws and report all data collected by that Party up to the effective date of withdrawal to the SJBA. Upon the effective date of said withdrawal, the withdrawing Party shall be responsible, at its sole cost and expense, for compliance with the SNMP requirements which will continue to apply to said Party. SJBA's annual report to SOCWA shall indicate any Parties that have withdrawn from this Agreement.

10. Assignment or Transfer. No Party shall assign, hypothecate, or transfer, either directly or by operation of law, this Agreement or any interest herein without the prior written approval of all of the Parties to this Agreement, which approval shall not be unreasonably withheld, as well as the prior written agreement of the proposed assignee to be bound by this Agreement. Any attempt to assign, hypothecate, or transfer, either directly or by operation of law, without said prior written approvals shall be null and void, and any assignees, hypothecates or transferees shall acquire no right or interest by reason of such attempted assignment, hypothecation or transfer.

11. Notices. Any notices, requests or approvals given under this Agreement may be personally delivered or deposited with the United States Postal Service for mailing, postage prepaid, registered or certified mail, return receipt requested to the following address:

SJBA
San Juan Basin Authority
26111 Antonio Parkway
Rancho Santa Margarita, CA 92688
Attn: Administrator

SMWD
Santa Margarita Water District
26111 Antonio Parkway
Rancho Santa Margarita, CA 92688
Attn: General Manager

MNWD
Moulton Niguel Water District
26161 Gordon Road
Laguna Hills, CA 92653
Attn: General Manager

TCWD
Trabuco Canyon Water District
32003 Dove Canyon Drive
Trabuco Canyon, CA 92679
Attn: General Manager

CITY
City of San Juan Capistrano
32400 Paseo Adelanto
San Juan Capistrano, CA 92675
Attn: City Manager

Any Party may change its address for notice by giving written notice thereof to the other Parties.

12. Entire Agreement. This Agreement contains the entire Agreement of the Parties with respect to the subject matter hereof, and supersedes all prior negotiations, understandings or agreements. This Agreement may only be modified by a writing signed by all Parties.

13. Amendment; Modification. No supplement, modification, or amendment of this Agreement shall be binding unless executed in writing and signed by all Parties.

14. Governing Law. This Agreement shall be governed by the laws of the State of California. Venue shall be in Orange County.

15. Construction; References; Captions. Since the Parties or their agents have participated fully in the preparation of this Agreement, the language of this Agreement shall be construed simply, according to its fair meaning, and not strictly for or against any Party. Any term referencing time, days or period for performance shall be deemed calendar days and not work days. All references to a Party or the Parties include all elected officials, officers, personnel, employees, agents, and volunteers except as otherwise specified in this Agreement. The captions of the various sections of this Agreement are for convenience and ease of reference only, and do not define, limit, augment, or describe the scope, content, or intent of this Agreement.

16. Time of Essence. Time is of the essence for each and every provision of this Agreement.

17. Waiver. No waiver of any default shall constitute a waiver of any other default or breach, whether of the same or other covenant or condition. No waiver, benefit, privilege, or service voluntarily given or performed by a Party shall give the other Parties any contractual rights by custom, estoppel, or otherwise.

18. No Third-Party Beneficiaries. There are no intended third party beneficiaries of any right or obligation assumed by the Parties.

19. Invalidity; Severability. If any portion of this Agreement is declared invalid, illegal, or otherwise unenforceable by a court of competent jurisdiction, the remaining provisions shall continue in full force and effect.

20. Authority to Enter Agreement. Each Party warrants that the individuals who have signed this Agreement have the legal power, right, and authority to make this Agreement and bind each respective Party.

21. Disputes. If a dispute arises between the Parties relating to this Agreement (a "Dispute"), the Parties agree to use the following procedure prior to pursuing other legal remedies:

(a) A meeting among the Parties shall promptly be held in Orange County, California. Attendees representing each of the Parties shall be senior staff members of each of the Parties who can recommend that each of the Parties' Board of Directors approve any proposed resolution. The representatives of the Parties will attempt in good faith to negotiate a resolution of the dispute.

22. Counterparts/Duplicate Originals. Two or more duplicate originals of this Agreement may be signed by all the Parties hereto, each of which shall be an original but all of which together shall constitute one and the same instrument.

IN WITNESS WHEREOF, the parties have caused this agreement to be signed as of the date first above written.

San Juan Basin Authority

By:_____

Name: _____

Title: _____

APPROVED AS TO FORM:

_____

David C. Palmer, General Counsel

[Signatures Continue on Following Page]

Santa Margarita Water District

By:_____

Name:_____

Title: _____

APPROVED AS TO FORM:

By:_____

Name:_____

Title:_____

Moulton Niguel Water District

By:_____

Name:_____

Title: _____

APPROVED AS TO FORM:

By:_____

Name:_____

Title:_____

[Signatures Continue on Following Page]

Trabuco Canyon Water District

By:_____

Name:_____

Title: _____

APPROVED AS TO FORM:

By:_____

Name:_____

Title:_____

City of San Juan Capistrano

By:_____

Name:_____

Title: _____

APPROVED AS TO FORM:

By:_____

Name:_____

Title:_____

EXHIBIT “A”

SNMP Monitoring and Data Collection Program Work Plan
Addendum to the 2014 Salt and Nutrient Management Plan

SNMP Monitoring and Data Collection Program Work Plan

Addendum to the 2014 Salt and Nutrient Management Plan

Introduction and Background

The South Orange County Wastewater Authority (SOCWA) submitted its *Salt and Nutrient Management Plan for the South Orange County Aliso Creek, San Juan Creek, and Portions of Other Basins*[1] (SNMP) to the California Regional Water Quality Control Board, San Diego Region (Regional Board) in July 2014. The 2014 SNMP identified a detailed implementation plan and schedule, which included as an initial step, the development and implementation of a monitoring and data collection program work plan to improve the existing salt and nutrient monitoring efforts in the San Juan Creek Watershed.

In 2015, the San Juan Basin Authority (SJBA) assumed responsibility for the development and implementation of the monitoring program. This work plan was developed in coordination with the following agencies, who provided detailed information regarding their current and future monitoring efforts, recycled water reuse practices, and other essential data necessary for building a successful SNMP Monitoring and Data Collection Program:

- The City of San Juan Capistrano (CSJC), SJBA member agency
- Moulton Niguel Water District (MNWD), SJBA member agency
- Orange County Public Works (OCPW)
- Santa Margarita Water District (SCWD), SJBA member agency
- SOCWA
- Trabuco Canyon Water District (TCWD)

The following work plan for the SNMP Monitoring and Data Collection Program will be implemented by the SJBA, in coordination with the OCPW, SOCWA, and TCWD.

SNMP Monitoring and Data Collection Program Objectives and Goals

The primary objective of the SNMP Monitoring and Data Collection Program is to collect the information required to: (1) evaluate "current" groundwater quality, (2) project future changes in groundwater quality, (3) determine the impact of recycled water reuse on current and future groundwater quality, and (4) determine if current or future groundwater quality exceeds the groundwater quality objectives established in the Water Quality Control Plan for the San Diego

[1] HDR and Wildermuth Environmental Inc., 2014. *Salt and Nutrient Management Plan for the South Orange County Aliso Creek, San Juan Creek, and Portions of Other Basins*. Prepared for the South Orange County Wastewater Authority, July 2014.

Basin[2] (Basin Plan). Pursuant to the 2014 SNMP, these evaluations will need to be performed every five years.

The data needed to perform these evaluations includes recycled water reuse volumes, locations, and quality; groundwater quality, levels, and production; storm and non-storm surface water quality and flow; land use and outdoor irrigation practices; and agency water supply plans and source water quality. The majority of this information is readily available from the water supply and recycled water agencies as this information is pertinent to planning and management within their services areas. There are significant data gaps related to field measurements of surface and groundwater quality, particularly in the upper reaches of the San Juan Creek Watershed where the resources are limited and do not represent a significant source of water supply. There are some data collection efforts related to groundwater and surface water throughout the San Juan Creek Watershed, but in most cases the sampling efforts do not include all of the water quality parameters of interest to the SNMP Monitoring and Data Collection Program.

The goal in developing the monitoring program is to use the monitoring efforts currently being conducted throughout the watershed and supplement those efforts with new monitoring, only where necessary, to address the SNMP. The agencies engaged in groundwater and/or surface water monitoring efforts include the CSJC, OCPW, MNWD, SJBA, the South Coast Water District (SCWD), SMWD, and TCWD. Additionally, there are private entities that collect limited data from their own groundwater wells. The development of the SNMP Monitoring and Data Collection Program involved extensive coordination with these agencies.

SNMP Monitoring and Data Collection Program Design

The San Juan Creek Watershed is divided into nine hydrologic sub areas (HSAs), each with its own set of numerical groundwater quality objectives as shown below and defined in Table 3-3 of the Basin Plan. The Watershed, HSAs, and the current and future recycled water reuse areas – by agency – are shown in Figure 1.

[2] California Regional Water Quality Control Board, San Diego Region, 2011.

Basin Plan Groundwater Quality Objectives for the San Juan Creek Watershed HSAs

Ground Water	Constituent (mg/L or as noted)												
	Total Dissolved Solids	Chloride	Sulfate	Sodium	Nitrate as N	Iron	Manganese	MBAS	Boron	Odor	Turbidity (NTU)	Color Units	Fluoride
Mission Viejo Hydrologic Area (HA 901.2)													
Oso	1,200	400	500	60	45	0.3	0.05	0.5	0.75	none	5	15	1.0
Upper Trabuco	500	250	250	60	45	0.3	0.05	0.5	0.75	none	5	15	1.0
Middle Trabuco	750	375	375	60	45	0.3	0.05	0.5	0.75	none	5	15	1.0
Gobernadora	1,200	400	500	60	45	0.3	0.05	0.5	0.75	none	5	15	1.0
Upper San Juan	500	250	250	60	45	0.3	0.05	0.5	0.75	none	5	15	1.0
Middle San Juan	750	375	375	60	45	0.3	0.05	0.5	0.75	none	5	15	1.0
Lower San Juan	1,200	400	500	60	45	0.3	0.05	0.5	0.75	none	5	15	1.0
Ortega	1,100	375	450	60	45	0.3	0.05	0.5	0.75	none	5	15	1.0

HA: Hydrologic Area

To evaluate "current" groundwater quality conditions and trends over time, and to project changes in the future, field measurements of groundwater and surface water quality will be needed in each of the nine HSAs. Both surface and groundwater quality sampling are required to understand the relationship between surface and groundwater quality and their respective source waters (e.g. stormwater runoff, urban runoff, etc.). For the SNMP, the groundwater quality parameters of interest are total dissolved solids (TDS), total inorganic nitrogen (TIN), and those parameters with a numerical groundwater quality objective defined in the Basin Plan, as shown above. Additionally, water quality parameters that can be used in a source water fingerprinting analysis, such as Piper or Stiff diagrams, are required. Table 1a lists the water quality parameters that will be tested for all groundwater samples collected for the SNMP Monitoring and Data Collection Program.[3] The surface water quality parameters of interest are

[3] Note that the Recycled Water Policy states that monitoring is required for "constituents of emerging concern" or CECs. Per email communication with San Diego Regional Board staff, monitoring for CECs is only required in areas where recycled water is being used for groundwater recharge. It is not required in areas where recycled water is being used for irrigation. CEC monitoring can be added in the future if the SJBA pursues a recycled water recharge program.

TDS, TIN, and the parameters that will be used in a source water fingerprinting analyses. Table 1b lists the water quality parameters that will be tested for all the surface water samples collected for the SNMP Monitoring and Data Collection Program.

Within each HSA, monitoring sites were selected to characterize the water quality in both the upgradient and downgradient ends of the HSA, and where possible, to characterize how water quality changes, if at all, in areas downstream of large recycled water reuse areas. Figure 2 is a map of the San Juan Creek Watershed and the proposed sites that will provide data for the SNMP. The map contains the following features:

- The nine HSA boundaries: Oso, Upper Trabuco, Middle Trabuco, Gobernadora (which includes both Gobernadora and Chiquita canyons), Bell Canyon, Upper San Juan, Middle San Juan, Ortega, and Lower San Juan.[4]
- Current and future proposed areas where recycled water is/will be applied for irrigation.
- Groundwater monitoring sites—symbolized as circles and color-coded by monitoring entity. The 15 sites shown as green circles are the proposed new field-monitoring program sites. The remaining 30 sites are monitored by cooperating agencies.
- In-stream surface water monitoring sites—symbolized as green triangles. All 16 in-stream monitoring sites shown are proposed for inclusion in a field monitoring program.[5]
- Urban runoff and/or stormwater capture facilities—symbolized as squares and color-coded by monitoring entity.
- Recycled water/urban runoff storage reservoirs—symbolized as diamonds and color-coded by monitoring entity. Water stored at these reservoirs can contain recycled water from multiple treatment plants and/or urban runoff sources and represent the quality of water served for outdoor irrigation.
- Water reclamation facilities—symbolized as purple pentagons—from which tertiary treated recycled water is either directly delivered to customers or sent to non-potable storage reservoirs.

Table 2 lists all of the groundwater monitoring sites that will be included in the SNMP and contains the site name and location (as latitude/longitude coordinates), well type, owner, whether it will be part of the new field monitoring program or the cooperative data collection program, and the monitoring frequency.

[4] Note that the portions of the Upper Trabuco and Upper San Juan HSAs are not included in the map. These areas are predominantly rugged areas of the Santa Ana Mountains and are undeveloped with the exception of a few areas with low-density urban, recreational, commercial, or industrial activities. These areas are not impacted by recycled water.

[5] The OCPW is currently in the process of developing a surface water monitoring program for its MS4 Permit program. Once the OCPW's program is developed, the proposed SNMP surface water monitoring sites may be slightly altered to avoid overlap with the OCPW program and to ensure field monitoring is not being duplicated.

Table 3 lists all the surface water monitoring sites that will be included in the SNMP and contains the site name and location, site type (e.g. in-stream, urban runoff capture facility, etc.), surface water body, site owner (if applicable), whether it will be part of the new field monitoring program or the cooperative data collection program, and the monitoring frequency.

The monitoring sites that are identified as part of the cooperative data collection program in Tables 2 and 3 will be sampled at the monitoring frequencies employed by the monitoring entities, with a few exceptions where the SJBA has requested that the monitoring site owner to increase their current monitoring frequency to support the SNMP.

During the first two years of the program, all new field program groundwater and surface water monitoring sites will be sampled on a quarterly frequency. The purpose of quarterly sampling will be to determine the seasonal variability in water quality. If after the first two years of monitoring the results show little seasonable variability, the sampling frequency should be reduced. Similarly, monitoring sites (surface and groundwater) that are not meaningfully contributing to the understanding of water quality can be eliminated from the program. There may also be reasons to add new sites or to change monitoring frequencies at certain locations. For all these reasons, the SNMP Monitoring and Data Collection Program will be evaluated and modified on an annual basis.

Field Data Collection Protocols

Of the 15 groundwater wells in the field monitoring program, six are monitoring wells with small-diameter PVC casings, and nine are agricultural or domestic production wells. Each well type will require a different methodology to collect samples for water quality testing: the monitoring wells will be sampled using a low-flow pump and the production wells will be sampled from taps installed on the discharge pipe, prior to any chlorination or diversion to storage tanks. Table 4 summarizes the well type, casing size, well depth, well screen, and sampling method to be used for each of the 15 wells in the new field monitoring program. Groundwater-level measurements will be collected and recorded at all monitoring sites.

Surface water samples from the 16 new field sites will be collected in-stream using polyethylene dippers.

Standard operating procedures (SOPs) for each groundwater and surface water sampling methodology are included as attachments to this addendum. The SOPs cover methodology basics, the use of field meters to test field parameters, sample collection, and equipment decontamination procedures. Also attached are the standard field forms that will be used to record field observations during the collection of each sample.

At the end of each day of field sampling, the groundwater and/or surface water samples will be delivered to a California ELAP certified laboratory to be analyzed for the water quality parameters listed in Tables 1a and 1b, respectively.

All field and laboratory data will be reviewed and checked for Quality Assurance and Quality Control (QA/QC) and stored in a project database.

Cooperator Data Collection Protocols

The cooperating agencies (CSJC, MNWD, SJBA, SMWD, and TCWD) will be monitoring their sites at the frequencies listed in Tables 2 and 3. These datasets will be compiled by the SJBA on a semi-annual basis. Additionally, the following datasets will be compiled annually from the CSJC, MNWD, SMWD, and TCWD:

- Updated maps of recycled water reuse areas
- Total non-potable water supply served, by source type (e.g. recycled water, urban runoff, and groundwater)
- Total potable water supply served, by source type, and source water quality data

The following datasets will be collected, as needed, to perform updated analyses of ambient water quality per the five-year schedule in the 2014 SNMP:

- storm and non-storm flow data from the USGS and OCPW
- land use maps

All cooperative data sets will be checked for QA/QC and stored in a project database.

Reporting

In accordance with the 2014 SNMP, an Annual Report will be submitted to the Regional Board containing the following information:

- A summary of the annual field and cooperative monitoring and data collection efforts, including maps and tables.
- A database containing all of the field and cooperative groundwater and surface water data sets.
- Updated maps of current and future recycled water reuse areas.
- A summary of changes to the monitoring program for the following year, if any.

Schedule

The SNMP Monitoring and Data Collection Program will be implemented beginning September 2016. The first annual report, covering September 2016 through December 2017, will be submitted to the Regional Board by June 30, 2018.

Enclosures

Figures 1 and 2, Tables 1 – 4

Standard Operating Procedure for Low-Flow Purge Sampling

Standard Operating Procedure for Sampling Agriculture and Domestic Wells

Standard Operating Procedure for Surface Water Quality Sampling

Field Data Sheet for Groundwater Sample Collection

Field Data Sheet for Surface Water Sample Collection

Table 1a
Water Quality Parameters Required for the SNMP Groundwater Monitoring and Data Collection Program

Water Quality Parameters to Analyze	Purpose
Alkalinity, Total (including bicarbonate, carbonate, hydroxide)	Source Water Quality Fingerprinting
Boron	Comparison with Basin Plan Objectives
Calcium	Source Water Quality Fingerprinting
Chloride	Comparison with Basin Plan Objectives and Source Water Quality Fingerprinting
Color	Comparison with Basin Plan Objectives
Fluoride	Comparison with Basin Plan Objectives
Iron	Comparison with Basin Plan Objectives
MBAS	Comparison with Basin Plan Objectives
Magnesium	Source Water Quality Fingerprinting
Manganese	Comparison with Basin Plan Objectives
Odor	Comparison with Basin Plan Objectives
Total Inorganic Nitrogen (including nitrate-N, nitrite-N, and ammonia-N)	Salt and Nutirent Loading Analyses; Comparison with Basin Plan Objectives
Potassium	Source Water Quality Fingerprinting
Sodium	Comparison with Basin Plan Objectives and Source Water Quality Fingerprinting
Sulfate	Source Water Quality Fingerprinting
TDS	Salt and Nutirent Loading Analyses; Comparison with Basin Plan Objectives
Turbidity	Comparison with Basin Plan Objectives

Table 1b

Water Quality Parameters Required for the SNMP Surface Water Monitoring and Data Collection Program

Surface Water Quality Parameters to Analyze	Purpose
Alkalinity, Total (including bicarbonate, carbonate, hydroxide)	Source Water Quality Fingerprinting
Calcium	Source Water Quality Fingerprinting
Chloride	Source Water Quality Fingerprinting
Magnesium	Source Water Quality Fingerprinting
Total Inorganic Nitrogen (including nitrate-N, nitrite-N, and ammonia-N)	Salt and Nutirent Loading Analyses
Potassium	Source Water Quality Fingerprinting
Sodium	Source Water Quality Fingerprinting
Sulfate	Source Water Quality Fingerprinting
TDS	Salt and Nutirent Loading Analyses

Table 2
Groundwater Monitoring Sites for the San Juan Creek Watershed
SNMP Monitoring and Data Collection Program

Monitoring Site Name and Location	Well Type	Well Owner	Latitude [WGS 84[	Longitude [WGS 84]	Included in SNMP as Field or Cooperative Data Collection Site?	Monitoring Frequency
Oso Hydrologic Sub Area						
Oso - GW1	Monitoring	City of Laguna Niguel	33.56115	-117.67650	Field	Quarterly
Oso - GW4	Monitoring	City of Laguna Niguel	33.55302	-117.67503	Field	Quarterly
Rosenbaum 1	Monitoring	CSJC	33.52996	-117.67214	Cooperative	Quarterly
Upper/Middle Trabuco Hydrologic Sub Area						
Trabuco Creek Wells Facility	Production	TCWD	33.65982	-117.58618	Cooperative	Only when in operation
Middle Trabuco Hydrologic Sub Area						
Arroyo-Trabuco Creek Sump	Production	SMWD	33.58335	-117.63663	Cooperative	Quarterly
North Open Space	Production	CSJC	33.52735	-117.67124	Cooperative	Monthly, when in operation
Gobernadora Hydrologic Sub Area (Includes Gobernadora and Chiquita Canyons)						
Chiquita DH-2	Monitoring	None	33.52976	-117.60964	Field	Quarterly
Chiquita DH-21	Monitoring	None	33.55590	-117.61200	Field	Quarterly
Gobernadora DH-2	Monitoring	SMWD	33.52550	-117.59177	Field	Quarterly
Gobernadora DH-17	Monitoring	SMWD	33.55383	-117.58831	Field	Quarterly
Bell Canyon Hydrologic Sub Area						
Lower MW	Monitoring	TCWD	33.62009	-117.56497	Cooperative	Quarterly
Audubon	Production	Audubon Society	33.63470	-117.55507	Field	Quarterly
Upper MW	Monitoring	TCWD	33.64632	-117.56496	Cooperative	Quarterly

Table 2
Groundwater Monitoring Sites for the San Juan Creek Watershed
SNMP Monitoring and Data Collection Program

Monitoring Site Name and Location	Well Type	Well Owner	Latitude [WGS 84[	Longitude [WGS 84]	Included in SNMP as Field or Cooperative Data Collection Site?	Monitoring Frequency
Upper San Juan Hydrologic Sub Area						
RMV 29 (Nichols Well)	Production	RMV	33.52290	-117.55796	Cooperative	Quarterly
RMV 9 Domestic	Production	RMV	33.52473	-117.55757	Field	Quarterly
Middle San Juan Hydrologic Sub Area						
RMV 12	Production	RMV	33.51563	-117.56852	Field	Quarterly
RMV 25	Production	RMV	33.52213	-117.59982	Field	Quarterly
RMV 27	Production	RMV	33.51648	-117.57937	Field	Quarterly
RMV 28	Production	RMV	33.52707	-117.60850	Field	Quarterly
RMV 6 (Ogleby Norton)	Production	RMV	33.51579	-117.58355	Field	Quarterly
RMV 7	Production	RMV	33.51715	-117.58682	Field	Quarterly
Ortega Hydrologic Sub Area						
RMV 5D	Production	RMV	33.52403	-117.61523	Field	Quarterly
CVWD #5A	Production	CSJC	33.50610	-117.64452	Cooperative	Monthly, when in production
SJBA MW-06	Monitoring	SJBA	33.50692	-117.64249	Cooperative	Semi-Annual
South Cooks	Production	CSJC	33.50074	-117.65155	Cooperative	Monthly, when in production
Tirador	Production	CSJC	33.49797	-117.65609	Cooperative	Monthly, when in production

Table 2
Groundwater Monitoring Sites for the San Juan Creek Watershed
SNMP Monitoring and Data Collection Program

Monitoring Site Name and Location	Well Type	Well Owner	Latitude [WGS 84[	Longitude [WGS 84]	Included in SNMP as Field or Cooperative Data Collection Site?	Monitoring Frequency
Lower San Juan Hydrologic Sub Area						
CVWD-1	Production	CSJC	33.48980	-117.66920	Cooperative	Monthly, when in production
Dance Hall	Production	CSJC	33.49196	-117.66543	Cooperative	Monthly, when in production
Kinoshita	Production	CSJC	33.48712	-117.67234	Cooperative	Monthly, when in production
SJBA-2	Production	CSJC	33.48912	-117.66850	Cooperative	Monthly, when in production
SJBA-4	Production	CSJC	33.48804	-117.66774	Cooperative	Monthly, when in production
Mission Street	Production	CSJC	33.50354	-117.66581	Cooperative	Quarterly
SJBA MW-01S	Monitoring	SJBA	33.46864	-117.67819	Cooperative	Semi-Annual
SJBA MW-02	Monitoring	SJBA	33.48168	-117.67829	Cooperative	Semi-Annual
SJBA MW-04	Monitoring	SJBA	33.50066	-117.65168	Cooperative	Semi-Annual
SJBA MW-05	Monitoring	SJBA	33.50454	-117.64664	Cooperative	Semi-Annual
SJBA MW-07	Monitoring	SJBA	33.49837	-117.66553	Cooperative	Semi-Annual
SJBA MW-08	Monitoring	SJBA	33.51456	-117.66974	Cooperative	Semi-Annual
Creekside	Production	SCWD	33.47480	-117.68000	Cooperative	Monthly, when in production
Stonehill	Production	SCWD	33.47272	-117.67902	Cooperative	Monthly, when in production
SCWD MW-1D	Monitoring	SCWD	33.47277	-117.67946	Cooperative	Semi-Annual
SCWD MW-1S	Monitoring	SCWD	33.47274	-117.67947	Cooperative	Semi-Annual
SCWD MW-2D	Monitoring	SCWD	33.47522	-117.68015	Cooperative	Semi-Annual
SCWD MW-2S	Monitoring	SCWD	33.47522	-117.68015	Cooperative	Semi-Annual
SCWD MW-3	Monitoring	SCWD	33.47786	-117.67917	Cooperative	Semi-Annual
SCWD MW-4D	Monitoring	SCWD	33.46755	-117.68111	Cooperative	Semi-Annual
SCWD MW-4S	Monitoring	SCWD	33.46755	-117.68111	Cooperative	Semi-Annual

Table 3
Surface Water Monitoring Sites for the San Juan Creek Watershed SNMP Monitoring and Data Collection Program

Monitoring Site Name and Location	Surface Water Monitoring Site Type	Surface Water Body	Site Owner (if applicable)	Latitude [WGS 84[	Longitude [WGS 84]	Include in SNMP as Field or Cooperative Data Collection Site?	Proposed Monitoring Frequency
Oso Hydrologic Sub Area							
Oso Barrier	Urban Runoff Collection Facility	Oso Creek	SMWD	33.583136	-117.665579	Cooperative	Quarterly
Oso-01	In-Stream Surface Water	Oso Creek	n/a	33.540506	-117.67528	Field	Quarterly
Upper Oso Reservoir	Recycled Water and Urban Runoff Storage Reservoir	n/a	SMWD	33.661132	-117.627168	Cooperative	Quarterly
Upper Trabuco Hydrologic Sub Area							
UT-01	In-Stream Surface Water	Arroyo Trabuco	n/a	33.674348	-117.544851	Field	Quarterly
Middle Trabuco Hydrologic Sub Area							
MT-01	In-Stream Surface Water	Arroyo Trabuco	n/a	33.65970	-117.58554	Field	Quarterly
MT-02	In-Stream Surface Water	Arroyo Trabuco	n/a	33.58382	-117.63663	Field	Quarterly
MT-03 (TC1)	In-Stream Surface Water	Arroyo Trabuco	n/a	33.53703	-117.66410	Field	Quarterly
Gobernadora Hydrologic Sub Area (Includes Gobernadora and Chiquita Canyons)							
CH-01	In-Stream Surface Water	Canada Chiquita	n/a	33.56119	-117.61504	Field	Quarterly
CH-02	In-Stream Surface Water	Canada Chiquita	n/a	33.53549	-117.61083	Field	Quarterly
Gobernadora Multi-Purpose Basin	Urban Runoff/Stormwater Collection Facility	Canada Gobernadora	SMWD	33.55658	-117.58763	Cooperative	Quarterly
Portola Reservoir	Recycled Water and Urban Runoff Storage Reservoir	Canada Gobernadora	SMWD	33.63319	-117.58296	Cooperative	Quarterly
Bell Canyon Hydrologic Sub Area							
BC-01	In-Stream Surface Water	Bell Canyon Creek	n/a	33.63596	-117.55523	Field	Quarterly
BC-02	In-Stream Surface Water	Bell Canyon Creek	n/a	33.53868	-117.55812	Field	Quarterly
Dove Lake[1]	Recycled Water and Urban Runoff Reuse	n/a	TCWD	33.63879	-117.56878	Cooperative	Quarterly

Table 3
Surface Water Monitoring Sites for the San Juan Creek Watershed SNMP Monitoring and Data Collection Program

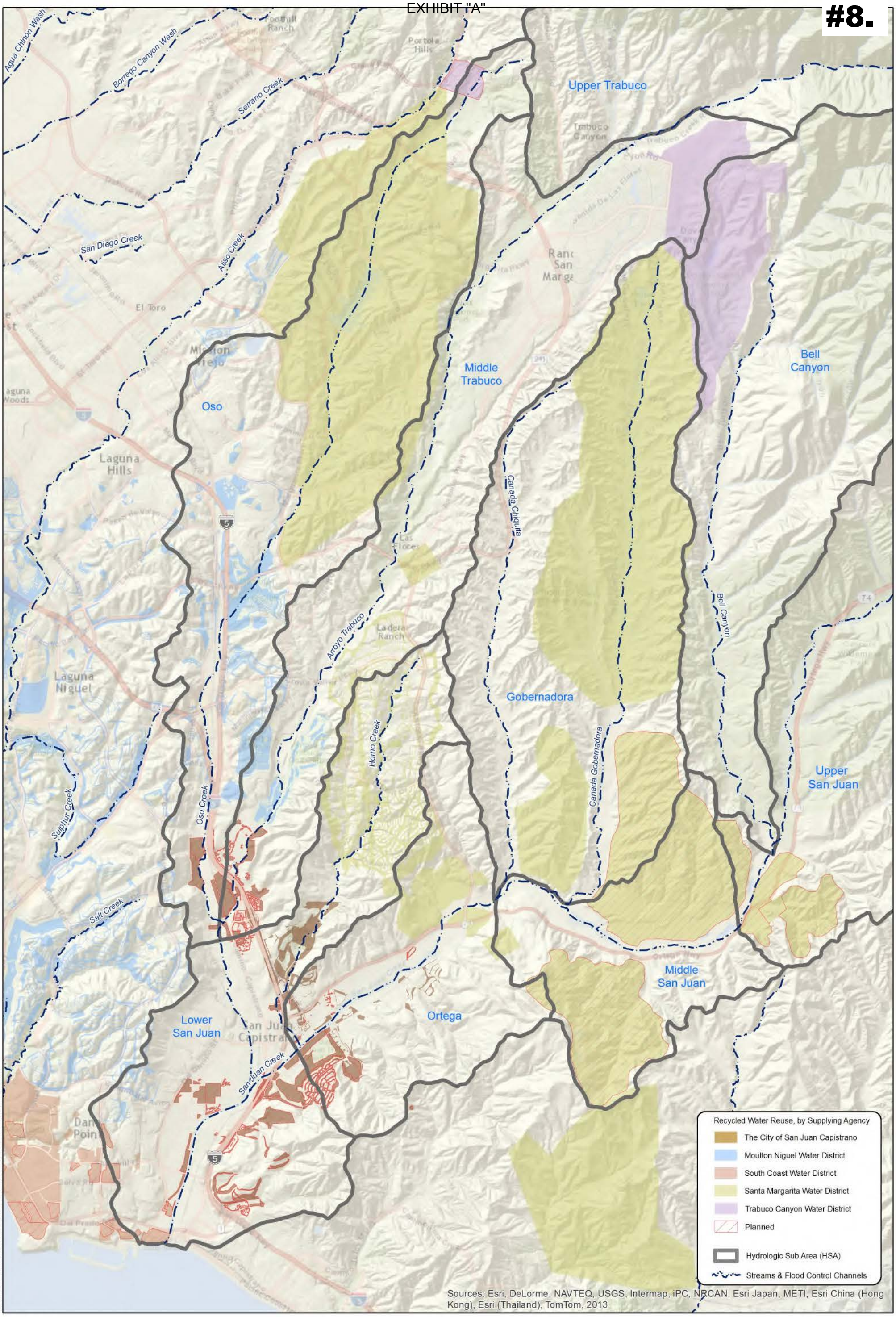
Monitoring Site Name and Location	Surface Water Monitoring Site Type	Surface Water Body	Site Owner (if applicable)	Latitude [WGS 84[	Longitude [WGS 84]	Include in SNMP as Field or Cooperative Data Collection Site?	Proposed Monitoring Frequency
Upper San Juan Hydrologic Sub Area							
USJ-01	In-Stream Surface Water	San Juan Creek	n/a	33.57345	-117.54157	Field	Quarterly
USJ-02	In-Stream Surface Water	San Juan Creek	n/a	33.53755	-117.55226	Field	Quarterly
USJ-03	In-Stream Surface Water	San Juan Creek	n/a	33.52564	-117.55867	Field	Quarterly
Ortega Hydrologic Sub Area							
ORT-01 (PMS-Control)	In-Stream Surface Water	San Juan Creek	n/a	33.51937	-117.62471	Field	Quarterly
Lower San Juan Hydrologic Sub Area							
Horno Barrier	Urban Runoff Collection Facility	Horno Creek	SMWD	33.53123	-117.64775	Cooperative	Monthly
LSJ-01 (TC@Ramos)	In-Stream Surface Water	Arroyo Trabuco	n/a	33.50162	-117.66742	Field	Quarterly
LSJ-02 (PMS-1)	In-Stream Surface Water	San Juan Creek	n/a	33.49507	-117.65869	Field	Quarterly
LSJ-03	In-Stream Surface Water	San Juan Creek	n/a	33.47537	-117.67886	Field	Quarterly

[1] A sampling location near Dove Lake, which provides a representative sample of recycled water used for irrigation purposes, will be collected at a non-potable distribution point.

Table 4

Groundwater Monitoring Sites Well Construction Details and Sampling Methods
SNMP Monitoring and Data Collection Program

Monitoring Site Name and Location	Well Type	Casing Size [in]	Screen depth [ft]	Total Depth [ft]	Sample Method?
Oso Hydrologic Sub Area					
Oso - GW1	Monitoring	2" PVC	12-35	36	Low-flow
Oso - GW4	Monitoring	2" PVC	6-30	31	Low-flow
Gobernadora Hydrologic Sub Area (Includes Gobernadora and Chiquita Canyons)					
Chiquita DH-2	Monitoring	2	50-80	80	Low-flow
Chiquita DH-21	Monitoring	2	60-90	90	Low-flow
Gobernadora DH-2	Monitoring	2	40-70	70	Low-flow
Gobernadora DH-17	Monitoring	2	30-65	65	Low-flow
Bell Canyon Hydrologic Sub Area					
Audubon	Production	*unk.*	*unk.*	*unk.*	Purge
Upper San Juan Hydrologic Sub Area					
RMV 9 Domestic	Production	16	30-90	98	Purge
Middle San Juan Hydrologic Sub Area					
RMV 12	Production	24	30-96	110	Purge
RMV 25	Production	*n/a*	*n/a*	*n/a*	Purge
RMV 27	Production	*n/a*	60-96	100	Purge
RMV 28	Production	*n/a*	42-92	102	Purge
RMV 6 (Ogleby Norton)	Production	18	30-90	92	Purge
RMV 7	Production	16	18-90	90	Purge
Ortega Hydrologic Sub Area					
RMV 5D	Production	16	30-70	90	Purge



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WEI
WILDERMUTH ENVIRONMENTAL, INC.

Author: LBB
Date: 20160721

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0 1 Miles

Salt and Nutrient Management Plan:
Monitoring and Data Collection Program
for the San Juan Creek Watershed

Recycled Water Reuse Areas
Existing (2015) and Planned

Figure 1

#8.

Upper Trabuco
Middle Trabuco
Gobernadora
Bell Canyon
Upper San Juan
Lower San Juan
Middle San Juan
Ortega
Oso
Rancho Santa Margarita
Lake Forest
El Toro
Mission Viejo
Laguna Woods
Laguna Hills
Laguna Niguel
Portola Hills
Trabuco
Flores
Horno Creek
Borrego Canyon Wash
Serrano Creek
San Diego Creek
Aliso Creek
Arroyo Trabuco
Canada Chiquita
Canada Gobernadora
Bell Canyon
Sulphur Creek
Salado Arroyo
Salt Creek
San Juan Creek
Upper Oso Reservoir
Trabuco Creek Wells Facility
MT-01
UT-02
UT-01
Robinson Ranch WRP
Upper MW
Dove Lake
BC-01
Audubon MW
Portola Reservoir
Lower MW
Oso Creek WRP
Oso Barrier
Arroyo-Trabuco Creek Sump
MT-02
Plant 3A AWT
Oso-GW1
Oso-GW4
Oso-01
MT-03 (TC1)
Rosenbaum 1
North Open Space(NOS)
Horno Barrier
SJBA MW-08
CH-01
Chiquita DH-21
Gobernadora Multi-Purpose Basin
Gobernadora DH-17
Chiquita WRP
CH-02
Chiquita DH-2
Gobernadora DH-2
RMV 5D
RMV 28
RMV 25
RMV 23A
RMV 18
RMV 27
RMV 12
ORT-01 (PMS Control)
RMV 29 (Nichols Well)
USJ-03
RMV 9 Lower
RMV 9 Domestic
Nichols Institute WRP
BC-02
USJ-02
USJ-01
SJBA MW-06
CVWD #5A
SJBA MW-05
SJBA MW-04
South Cooks
Tirador
LSJ-02 (PMS-1)
Mission Street
LSJ-01 (TC@Ramos)
SJBA MW-07
Capistrano
Dance Hall
CVWD-1
SJBA-2
SJBA-4
Kinoshita
SJBA MW-02
SCWD MW-3
SCWD MW-2D
Creekside
LSJ-03
Stonehill
SCWD MW-1S
SCWD MW-1D
SCWD MW-4S
SJBA MW-01S
JB Latham WWTP
SCWD MW-4D

Groundwater Sampling Location (by monitoring entity)
- SJBA-SNMP Field Program
- City of San Juan Capistrano
- Rancho Mission Viejo
- Santa Margarita Water District
- SJBA
- South Coast Water District
- Trabuco Canyon Water District

In-Stream Surface Water Sampling Location (by monitoring entity)
- SJBA-SNMP Field Program

Urban Runoff and Storm Water Capture Facility (by monitoring entity)
- Santa Margarita Water District
- Trabuco Canyon Water District

Recycled Water/Urban Runoff Reuse Source (by monitoring entity)
- Santa Margarita Water District

Hydrologic Sub Area (HSA)
Water Reclamation Facilities
Recycled Water Reuse
- Current
- Planned

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WEI Wildermuth Environmental, Inc.

Author: LBB
Date: 20160614

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0 2,000 4,000 Feet
0 0.5 1 Miles

Salt and Nutrient Management Plan: Monitoring and Data Collection Program for the San Juan Creek Watershed

Monitoring and Data Collection Program
Proposed Monitoring Locations

Figure 2

Scope and Application

This procedure is designed to assist in collecting representative groundwater samples from monitoring wells using the low-flow (minimal drawdown) purge method. The groundwater samples will be collected using methods modeled after industry standards (Puls, and Barcelona, 1996; ASTM D 6771 - 02).

The field sampler's objective is to purge and sample the well so that the water that is discharged from the pump, and subsequently collected, is representative of the formation water from the aquifer's identified zone of interest.

The wells are sampled with portable bladder (squeeze-type) pumps. If dedicated pumps are not installed in the monitoring wells, each well should be assigned a dedicated bladder and appropriate length of discharge/air tubing that is only used at that well.

Each well should be flow tested to determine and document the specific well's optimum flow rate that would result in achieving a minimal drawdown of the initial depth to water within the drawdown parameters detailed below. Once established, this rate will be reproduced for each subsequent sampling event. If a significant change in water level occurs at a monitoring site between events, it may be necessary to reestablish the optimum flow rate at each sampling event.

Initial Pump Flow Test Procedures

If possible, the optimum flow rate for each well will be established during well development or redevelopment, or in advance of the actual sampling event. The monitoring well must be gauged for depth to water prior to the installation of the portable pump and before pumping of any water from the well. The measurement will be documented on a field data sheet.

After pump deployment and confirmation that the depth to water has returned to its original level, the bladder pump should be started at a discharge rate between 0.5 to 1.0 liters per minute without an in-line flow cell connected. The water level in the well casing must be monitored continuously for any change from the original measurement. If significant drawdown is observed, the pump's flow rate should be incrementally reduced until the drawdown ceases and stabilizes. Total drawdown from the initial depth to water should not exceed 25 percent of the distance between pump inlet location and the top of the well screen (for example, if a well has a 10-foot screen zone and the pump inlet is located mid-screen, the maximum drawdown should be 1.25 feet). In any case, the water level in the well should not be lowered below the top of the screen/intake zone of the well. In cases of wells with partially penetrating screens, the distance interval is taken to be between the pump inlet and the depth to water. All control settings are to be documented on the field data sheet specific to that particular well's ID and will be utilized for subsequent purging and sampling events.

Should it be determined that a specific well is incapable of maintaining a sustainable yield of at least 100 milliliters per minute without continuing depth to water drawdown, it will be identified as a problematic well, and alternative methods should be explored.

Method Summary

Prior to the initiation of purging a well, the depth to water will be measured and documented. The properly decontaminated portable pump will then be slowly lowered into the well until its inlet is properly positioned within the saturated screened interval or halfway between the depth to water and the bottom of the screen (for partially penetrating screens) and then started utilizing its previously documented control settings. Its flow rate will be confirmed by volumetric discharge measurement. If necessary, any minor modifications to the control settings to achieve the well's optimum flow rate will be documented on the field data sheet.

When the optimum pump flow rate has been established and the depth to water drawdown has stabilized within the required range, begin taking field measurements for pH, temperature, electrical conductivity (EC), and turbidity. All water chemistry field measurements will be documented on the field data sheet. Measurements should be taken every three to five minutes until stabilization has been achieved. Stabilization is achieved after all parameters have stabilized for three consecutive readings. Three consecutive measurements indicating stability should be within:

Parameter	Stabilization Criteria
Temperature	± 3% of reading (minimum of ± 0.2° C)
pH	± 0.2 pH units, minimum
Electrical Conductivity (EC)	± 3% of reading
Turbidity	± 10% NTU

Equipment

- Portable bladder pump, bladders, and sufficient lengths of air/liquid discharge tubing (each well should be assigned a dedicated bladder and appropriate length of discharge/air tubing that is only used at that well)
- Pump controller and air source set to operate the pump
- Sample containers, cooler, ice, and Chain-of-Custody (CoC) form.
- Field water-quality meter(s)
- A water level measurement device (water level sounder is preferable)
- Field data sheets
- 5 gallon bucket(s) for containerizing purge water if it can't be disposed of on-site
- 300-500 milliliter graduated cylinder
- Wristwatch with second hand or stopwatch
- Sufficient cleaning and decontamination supplies

Preparation of Sampling Equipment

- Acquire sample containers, cooler with ice, CoC for samples and other equipment. Organize sample containers into plastic zip-lock bags and check to make sure there are no problems with the sample containers (cracked caps, broken seals, etc.). Do not fill out container labels with well information until you are on-site to collect a sample.
- Calibrate all field instruments at the start of each day's deployment per the instrument manufacturer's instruction. Record calibration data on the field instruments' calibration documentation forms.
- Be sure to print and bring along plenty of copies of the field documentation forms.
- Prepare decontamination equipment and decontaminate the sampling equipment (portable pump and water level sounder).

Sampling Procedures

1. Perform a general site survey prior to site entry in accordance with the health and safety practices. Take note of pertinent information on the field sheet.

2. Note the well condition and activity in the vicinity of the well.

3. Properly decontaminate the portable pump and/or water level probe.

4. Measure the depth to water from the assigned reference point and record the measurement (and the reference point name) on the field data sheet. Remove the water level measurement device.

5. Connect the appropriate lengths of air and discharge tubing to set the pump at the desired level within the well's screened interval. Ensure that the air supply tubing is properly connected to the pump's air fitting and not to the pump discharge. Install the portable pump slowly and carefully.

6. Reinstall the water level measurement device, and lock the device in place so that the level can be monitored during purging and sampling.

7. Connect the compressed air source's airline to the pump controller's "AIR IN" connection (if utilizing a gas-engine operated compressor, locate the compressor at least 25 feet downwind from the wellhead).

8. Connect the pump controller "AIR OUT" air-line to the bladder pump's air supply fitting.

9. Start the air supply to the pump. Set the pump controller settings to the documented interval settings for the specific well. It is advisable that the air supply pressure be started at 40 to 50 pounds per square inch (PSI) initially and then raised in increments as the pump's discharge line becomes filled. This is especially important for deeper pump depths.

10. Confirm the final flow rate is equal to or just below the well's established optimum flow rate. Modify as necessary (documenting any required modifications).

11. Monitor the water level and confirm that the drawdown has stabilized within the well's allowable limits.

12. Begin taking field measurements for pH, temperature, electrical conductivity (EC), and turbidity. All water chemistry field measurements will be documented on the field data sheet. Measurements should be taken every three to five minutes until stabilization has been achieved. Also read and record water quality field measurements every three to five minutes until all parameters have stabilized within their allowable ranges for at least three consecutive measurements. When stabilization has been achieved, sample collection may begin.

13. Sample Collection:

    a. While holding the sample container at the base, remove plastic seal around the cap before attempting to open the container. Remove the cap with your free hand, exercising care not to touch the edge or bottom of the cap or the top or neck of the container. Avoid breathing on the cap or container. Hold the cap in one hand during the entire container filling operation; do no lay it down.

    b. If sampling VOCs, note any source of VOCs around the well, such as exhaust sources, on the field data sheet. For VOC sample containers, no head space (air bubbles) should remain in the sample container. If necessary, reduce the discharge rate of the pump for filling the sample containers. Return to the optimal flow rate after VOC containers are filled.

    c. All other sampling containers are to be filled to the "fill line," leaving enough air space in the container to allow for mixing by shaking in the lab. The cap should be carefully replaced.

    d. Place samples on ice in a cooler as soon as possible. Keep samples cold (4 degrees Celsius) until delivered to the laboratory. Transport samples to an approved laboratory within 24 hours or according to the analyte holding times, whichever is shorter.

    e. A Chain-of-Custody form shall be filled out for each cooler, and a copy shall be retained for project records. If VOCs are being sampled, be sure to indicate on the Chain-of-Custody if travel blanks are included and should be analyzed by the laboratory.

14. When all sample containers have been filled, make a final measurement of the well's depth to water, and record the measurement on the field data sheet. Remove the portable water level measurement device from the well.

15. Disconnect the controller air supply to the pump and remove the pump from the well.

16. Properly discard purged water.

17. Decontaminate all equipment and carefully prepare the dedicated bladders and tubbing for storage.

18. At the end of each day, post-calibrate all field instruments, and record the measurements on the "Field Calibration Documentation Form."

Reagents

Decontamination solutions are used for this SOP. Refer to the solution SDS for safety information and do not handle solutions that you have not been trained to handle.

Records

Scan copies of all completed field data sheets and provide them to the project manager per standard procedures. The original sheets should be kept in the project binder until the subsequent sampling event has been completed.

References

ASTM Guideline D6771-02. July 2002. Standard Practice for Low-Flow Purging and Sampling for Wells and Devices Used for Ground-Water Quality Investigations.

Barcelona, M.J. and R.W. Puls. 1996. Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures. U.S. EPA Superfund Groundwater Issue, EPA/504/S-95/504.

Scope and Application

This procedure is designed to assist field technicians in taking representative groundwater samples from privately owned, active agricultural and domestic wells. Ideally, groundwater samples should be collected per the EPA's SOP for the Standard/Well-Volume Method which dictates that a minimum of three casing volumes of water should be purged from a well prior to beginning water quality sampling procedures. However, for some wells there may not be enough data available to determine if and when a sufficient volume of water has been purged from a well. For example, the total depth and diameter is often not available for older wells. Or, the field technician may be in a situation where there is no control over how long the well has been pumping or will remain on. This modified procedure is designed to help the field technician collect the best possible sample in the absence of the information typically used to determine that sufficient water has been purged from the well casing.

Method Summary

There are two general situations encountered when sampling agricultural, or domestic wells; (a) water pumps from the well into a pressure tank, or (b) water pumps from the well directly into a pipeline system. This SOP provides procedures for each situation.

Wells that feed into a pressure tank typically cycle on and off for short periods of time. The well is triggered on when the pressure in the tank drops below a specified level. The pumping cycles can be as short as 1 minute to longer than 10 minutes, and the cycle is typically not long enough to purge three casing volumes of water. Fortunately, the wells are typically cycling on and off throughout the day, so it is unlikely that the sample collected will contain stagnant casing water.

Whenever possible, contact the well owner in advance, or speak to a property manager on site, to determine when the well is typically on so you can arrange to collect the sample after the well has been running for at least an hour or so. If no one is available to provide this information, you can still rely on parameter stabilization to indicate that it is okay to collect your sample. The length of the pumping cycle will determine how often to collect parameters to determine stabilization. Once the pump cycle length has been determined, you can begin the sampling procedure.

Wells that feed directly into a pipeline system deliver water directly to the end use, such as an irrigation system, instead of a storage container. Thus, it is easier to measure for parameter stabilization and collect samples because the well is running continuously (compared to the short cycles typical in wells hooked into pressure tanks). However, if the well is not on when you arrive at the sampling site a sample cannot be collected until permission is obtained from the well owner to power up the well. Whenever possible, contact the well owner in advance, or speak to a property manager on site, to determine when the well is typically on so you can arrange to collect the sample after the well has been running for at least an hour or so. If no one is available to grant permission to turn on the well, try returning to the site another day. The wells are generally running in the early morning hours, so that is the best time to make a return attempt to sample the well.

Equipment

- Sample containers, cooler, ice, and Chain-of-Custody (CoC) form.
- Nitrile or latex-type gloves
- Water quality field meter(s)
- Water level probe
- Field documentation forms
- Fittings and spigots
- Well stocked tool box
- Sufficient cleaning and decontamination supplies for fittings, spigots, and water level sounders

Preparation for Field Sampling

- Acquire sample containers, cooler with ice, CoC for samples and other equipment. Organize sample containers into plastic zip-lock bags and check to make sure there are no problems with the sample containers (cracked caps, broken seals, etc.). Do not fill out container labels with well information until you are on-site to collect a sample.
- Calibrate all field instruments at the start of each day's deployment per the instrument manufacturer's instructions. Record calibration data on field instruments' calibration documentation forms.
- Be sure to print and bring along plenty of copies of the field documentation forms. Blank field forms are included as an attachment to this document.
- Prepare decontamination equipment and decontaminate the sampling equipment (portable pump and water level sounder).

Sampling Procedures

1. Nitrile or latex-type gloves should be worn at all times while handling all fittings, spigots, and sampling containers. New gloves should be worn at each sampling site. The water level probe and all fittings and spigots will be decontaminated after each site.
2. Determine your sampling location and attach sampling spigot, if necessary. Sampling points must be on the well pump side of any storage container such as a water tank or reservoir. Remove any aerators, strainers, hose attachments, mixing type faucets, and purification devices from the tap.
3. Label all containers. Sample containers must be kept clean and free from contamination before and after collecting the sample. They should not be opened prior to collecting the sample.
4. Prior to the initiation of well sampling a water level will be measured and documented, if possible. Record the well activity (static, pumping, or recovering) at the time of measurement and the activity of any other wells in close proximity to the well being sampled. (Note: a water level is generally considered to be "recovering" until the water level is rising by less than 0.05 feet [1/2"] per minute).
5. Flush the sampling port for at least 10 seconds before beginning parameter stabilization and sampling procedures.
6. Begin water quality field parameter stabilization procedure (and water level measurements, if possible). All data will be documented on the field work documentation forms. Stabilization is

achieved after all parameters have stabilized for three consecutive readings. Three consecutive measurements indicating stability should be within:

Parameter	Stabilization Criteria
Temperature	± 3% of reading (minimum of ± 0.2° C)
pH	± 0.2 pH units, minimum
Electrical Conductivity (EC)	± 3% of reading
Turbidity	± 10% NTU

a. If the well feeds into a pressure tank and the pumping cycle is less than six minutes, water quality parameters should be observed during the last minute of each pumping cycle until parameter stabilization is demonstrated across three to five pumping cycles.

b. If the well feeds into a pressure tank and the pumping cycle is longer than six minutes, the water quality parameters will be measured every three to five minutes until stabilization is achieved. Continue stabilization over multiple cycles if necessary.

c. If the well feeds directly into a pipeline and is pumping continuously measure parameters every three to five minutes.

d. If the parameters are not stabilizing, contact the project manager.

7. Sample Collection:

a. Reduce the tap flow rate before taking the sample. The flow rate should be low enough to ensure that no splashing occurs as the container is filled.

b. At a well that has short cycles, it may take multiple pumping cycles to fill the entire set of sample containers. It should be noted on the field form if multiple pump cycles were needed to fill the containers.

c. Collect the samples in the following order: volatile organic compounds, semi-volatile organic compounds/pesticides, inorganics, other unfiltered samples, filtered samples.

d. While holding the sample container at the base, remove plastic seal around cap before attempting to open the container. If the cap is found to be loose or cracked, if it contains no seal, if the seal pulls away from the cap, if the container appears dirty, or if there are any other conditions which places the quality of the container in doubt, the container is to be rejected and a proper container used. (All containers should be checked prior to going in the field.)

e. Remove the cap with the free hand, exercising care not to touch the edge or the bottom of the cap or the top or neck of container. Prevent breathing on the cap or container.

f. Hold the cap in one hand during the entire container filling operation; do no lay it down.

g. Note any source of VOCs around the well, such as exhaust sources, on the sample collection form.

h. For VOC sample containers, no head space (air bubbles) should remain in the sample container.

i. All other sampling containers are to be filled to the "fill line" leaving enough air space in the container to allow for mixing by shaking in the lab. The cap is carefully replaced.

j. Place samples on ice in a cooler as soon as possible. Keep samples cold (4 deg. C) until delivered to the lab. Transport samples to an approved water quality laboratory within 24 hours.

8. A Chain of Custody form shall be filled out for each cooler and a copy retained for project records. Be sure to indicate on the Chain of Custody that travel blanks are included and should be analyzed by the lab.

9. At the end of each day, post calibrate all field instruments and record the measurements on the "Field Calibration Documentation Form".

Reagents

Decontamination solutions are used for this SOP. Refer to the solution SDS for safety information and do not handle solutions that you have not been trained to handle.

Records

Scan copies of all completed field data sheets and provide them to the project manager per standard procedures. The original sheets should be kept in the project binder until the subsequent sampling event has been completed.

References

U.S. Environmental Protection Agency, Region 9, Standard Operating Procedure for the Standard/Well-Volume Method for Collecting a Ground-Water Sample from Monitoring Wells for Site Characterization, http://www.epa.gov/region09/qa/pdfs/finalgwsamp_sop.pdf

Scope and Application

This procedure is applicable to the collection of representative grab samples from surface waters. Surface water quality sampling involves determining sampling locations, measurement of the water chemistry using a field water quality meter and collection of surface water samples for laboratory analysis.

Method Summary

Collecting a representative grab-sample from stream flow will be accomplished through the use of a polyethylene sample dipper. Field water quality parameters are measured and recorded, and the representative sample is collected and submitted to a laboratory for analyses.

Equipment

- Polyethylene dipper (beaker on long handle).
- Sample containers, cooler, ice, and Chain-of-Custody (CoC) form.
- Water quality field meter(s)
- Global positioning system (GPS) unit
- Digital camera
- Incrementally marked depth rod
- Clipboard, blank field data sheets, waterproof pens
- Duffel bag/backpack for equipment
- Decontamination solution/equipment:
- Personal floatation device (life preserver), if the water is rapidly flowing or if using a boat.
- Waterproof gloves (appropriate for chemicals)
- Waterproof boots and/or waders
- Protective eyewear
- Apparel appropriate to the climate
- Drinking water
- Sunscreen lotion, bug spray, umbrella

Personnel and Safety

Safety should be the number one consideration when determining the number of staff necessary for sampling. If the stream has rapid flow, or the bank of the stream could be compromised, a minimum of two persons are required. One person will stay out of the channel (on the banks) to provide assistance in case of accident or emergency. Additional safety measures shall be utilized such as personal floatation device.

Preparation for Field Sampling

- Acquire sample containers, cooler with ice, CoC for samples and other equipment. Set up coolers with ice as recommended by the laboratory. Organize sample containers into plastic zip-lock bags and check to make sure there are no problems with the sample containers (cracked caps, broken seals, etc.). Do not fill out container labels with site information until you are on-site to collect a sample.

- Calibrate all field instruments at the start of each day's deployment per the instrument manufacturer's instructions. Record calibration data on field instruments' calibration documentation forms.

- Be sure to print and bring along plenty of copies of the field documentation forms. Blank field forms are included as an attachment to this document.

- Prepare decontamination equipment and decontaminate the sampling equipment.

Sampling Procedures

Choosing a Sample Location

The general areas for surface water sampling will have been selected as part of the project setup, but the exact location of the sample collection will be selected based on field conditions.

Stream-specific criteria for selecting a sampling location include:

(1) select the largest flowing channel if the stream is braided at the sample location;

(2) there should be minimal natural and man-made obstructions in the channel, the stream should be free flowing and unrestricted by obstructions upstream or downstream, which might cause flow diversion or flow backup;

(3) stream depth is adequate for immersion of the sample equipment: and

(4) there are no eddies or still water. Turbulent water should also be avoided, if possible.

Once chosen, the sample location should be documented in notes/diagrams, and coordinates should be measured using a GPS unit and recorded on the field data sheets.

Sample Collection

1. Prior to starting sample collection at each site, decontaminate the sample dipper and any other equipment that will enter the water body. Remove visible dirt from equipment with a nylon brush and rinse with appropriate solutions.

2. Perform a general site survey prior to entry in accordance with the project-specific Health and Safety Plan.

3. If wading into the stream to collect the sample and it is rapidly flowing, wear a personal floatation device.

4. Find the deepest point of the flowing portion of the stream. If branches enter the water, sample upstream of them. If the stream is not safe to enter, use the sample dipper to collect a sample as close to the deepest point in the stream as possible from the bank or safe location.

5. Measure and record the stream depth at the sampling location on the field data sheet, if safe to do so.

6. Rinse the field sampling equipment in the native water. This helps to equilibrate the equipment to the sample environment and ensure that all cleaning-solution residue has been removed (USGS, 2015).

7. At the sampling location, use the field water quality meter to measure the following parameters, as determined by the project Sampling and Analysis Plan. Field parameters typically include: temperature, pH, conductivity, and turbidity.

    a. Measure and record water quality parameters up to three times, three to five minutes apart, to determine stability over time. Stability is defined as consecutive measurements that are within the following criteria:

Parameter	Stabilization Criteria
Temperature	± 3% of reading (minimum of ± 0.2° C)
pH	± 0.2 pH units, minimum
Electrical Conductivity (EC)	± 3% of reading
Turbidity	± 10% NTU

    b. Note whether the field water quality parameters were stable or not, and begin sampling (described below).
    c. Measure the field water quality parameters immediately following the completion of sampling.
    d. Record all field water quality data on the field data sheet.

8. If wading in the stream, stand upstream of stream sediments that were disturbed during entry. Face upstream and collect the sample upstream of you and any other persons or objects.

9. Use the sample dipper to collect native water and carefully transfer the sample to the laboratory sample containers. Containers that do not contain preservatives can be used to directly collect samples from the stream.

10. Fill sample containers to the fill line or as instructed by the lab, being careful not to overtop the containers, which can spill and dilute the preservatives. Tighten the sample container lids and label the sample containers with the location name/ID, the date and time of sample collection, and any other required information. Place the filled sample containers in the cooler with ice per the laboratory instructions. Note any potential contamination sources such as nearby exhaust sources, trash in the stream etc. on the field data sheet.

11. Decontaminate the sample dipper and other equipment, and protect it from contamination using a sealable plastic bags with clear sealing strip between sites.

Reagents

Decontamination solutions are used for this SOP. Refer to the solution SDS for safety information and do not handle solutions that you have not been trained to handle.

Records

Scan copies of all completed field data sheets and provide them to the project manager per standard procedures. The original sheets should be kept in the project binder until the subsequent sampling event has been completed.

References

U.S Geological Survey (USGS). 2015. *National Field Manual of the Collection of Water-Quality Data.* Book 9, Handbooks for Water-Resources Investigations. USGS, October 2015.

Enclosure

Field Data Sheet for Groundwater Sample Collection

#8.

EXHIBIT "A"

Groundwater Monitoring Program Water Quality Sampling Sheet

PROJECT **WELL** **WELL ID** 1206511

DATE _____ **FIELD PERSONNEL** _____

SAMPLING ORGANIZATION_____

REFERENCE POINT TYPE _____ **ELEVATION**____ **DEPTH TO TOP**_____**BOTTOM OF SCREEN**
INTAKE AT (FT. BELOW RP) **LENGTH OF TUBING + PUMP INTAKE**
PURGING DEVICE-PUMP TYPE: **PUMP MODEL**_
BLADDER VOLUME_____**mL**___ **TUBING VOLUME**_____**mL**__ **TOTAL SYSTEM VOLUME**_____**ml**____
OPTIMAL FLOW RATE _____**mL/min** **OPTIMAL SETTINGS** **(Recommend 100 psi)**

SETTINGS USED AT SAMPLE TIME:

Flow (mL/min)_____ **Pressure (psi)**_____ **Refill (sec)**_____ **Discharge (sec)**_____

CLOCK TIME (24 HR)	WATER DEPTH (SWL)	TEMP C	SPECIFIC CONDUCT. ms/cm	PH	Turbidity NTU	Comments (flow or pressure change, observations, etc.)

SAMPLE TIME _____

PSI @ START_____ **PSI @ FINISH**_____ **ML PURGED**_____

NOTES: _____

Enclosure

Field Data Sheet for Surface Water Sample Collection

EXHIBIT "A"

Surface Water Quality Sampling Field Data Sheet

SAN JUAN SNMP MONITORING PROGRAM

SITE INFORMATION

Site ID:	Sampling Method:
Sampling Date: Arrival Time:	Decontamination of Equipment: ☐ Yes ☐ No
Sampler:	Current Weather Conditions: ☐ Dry ☐ Wet
Agency Escort Name:	Photos Taken: ☐ Upstream ☐ Downstream
Site Access Restrictions:	Site Sketch: ☐ Yes ☐ No
Site Coordinates [WGS 84]:	WQ Meter: Serial #

SURFACE WATER SAMPLE

Sample ID	Laboratory Name:
Sample Time: ☐ AM ☐ PM	Sample Group:
Sample Depth: ☐ Feet ☐ Inches	CoC ID:
Stream Conditions: ☐ Flowing ☐ Dry	Sample Duplicate: ☐ Yes ☐ No

PHYSICAL SAMPLING LOCATION NOTES

GPS [WGS84] if different:	Turbidity: ☐ Yes ☐ No ☐ Photo
Braided Channel: ☐ Yes ☐ No Notes:	Natural/Manmade Obstructions: Notes: ☐ Photo
Floating Debris: ☐ Yes ☐ No Notes:	Sheen: ☐ Yes ☐ No ☐ Photo
Water Color:	Still Water/Eddies: ☐ Yes ☐ No ☐ Photo
Clarity:	Other

WATER QUALITY FIELD PARAMETERS

Time (24 hr)	pH (SU):	Temp (units)	Electrical Conductivity (units)	Turbidity (units)

SAMPLE ANALYTICAL PARAMETERS – BOTTLEWARE/PRESERVATION

Test	Bottle Quantity - Type	Preservative Information	Sample Collected
@ANIONS28, @ANIONS48	1 - 125ml poly	None	☐
Turbidity	1 - 125ml poly	None	☐
Apparent Color, Odor at 60 C (TON)	1 - 1L amber glass	None	☐
Fluoride	1 - 250 ml poly	None	☐
Ammonia Nitrogen	1 - 250ml poly	0.5 ml H2SO4 (50%)	☐
Alkalinity in CaCO3 units	1 - 250ml poly	None	☐
Boron Total ICAP, Calcium Total ICAP, Iron Total ICAP, Magnesium Total ICAP, Manganese Total ICAP/MS, Potassium Total ICAP, Sodium Total ICAP	1 - 500ml acid poly	2ml HNO3 (18%)	☐
Surfactants	1 - 500ml poly	None	☐
Total Dissolved Solid (TDS)	1 - 500ml poly	None	☐

COMMENTS/OBSERVATIONS

Sampler Signature:

SAN JUAN BASIN AUTHORITY

26111 Antonio Parkway • Rancho Santa Margarita, CA 92688 (949) 459-6400 FAX (949) 459-6463

Date: July 30, 2020

To: Fernando Paludi, Trabuco Canyon Water District (TCWD)
Matt Collings, Moulton Niguel Water District (MNWD)
Steve May, City of San Juan Capistrano (CSJC)
Dan Ferons, Santa Margarita Water District (SMWD)

From: Norris Brandt, SJBA Administrator

Subject: South Orange County Salt and Nutrient Management Plan (SNMP)
Cooperative Agreement – Watershed Monitoring

The purpose of this memo is to transmit to your agency the final version of the "COOPERATIVE SERVICES AGREEMENT FOR SALT AND NUTRIENT MANAGEMENT PLAN," ready for approval by your Council/Board at its earliest opportunity.

On October 15, 1997, the South Orange County Wastewater Authority (SOCWA, as successor to SOCRA) was issued Order No. 97-52 by the Regional Board. Order No. 97-52 contains the waste discharge and water recycling requirements for all SOCWA member agencies, except South Coast Water District. As a result, SOCWA has taken the lead in development and implementation of the SNMP

When the SNMP was submitted to the San Diego Regional Water Quality Control Board (Regional Board) in 2014, it identified the South Orange County recycled water agencies that would receive regulatory coverage under SNMP requirements in the California Recycled Water Policy. They include TCWD, CSJC, MNWD, and SMWD. Around 2015, the four agencies informally agreed to cooperatively move forward on the implementation of the SNMP monitoring program, and that a formal cooperative agreement would memorialize it at a later date.

SJBA is administering the monitoring program because three of the four agencies are SJBA members and SJBA is already performing extensive watershed monitoring for other purposes. This arrangement eliminates duplication of efforts and results in savings for the SNMP partners.

Over the last year, the four agencies and SJBA have negotiated the formal cooperative agreement mentioned above. Attached is the final version of the Cooperative Agreement for review and approval by your Council/Board. The parties have reviewed it and believe it describes a fair method for allocating the costs of the monitoring program. The

agreement calls for proportioning SNMP monitoring-related costs based on annual recycled water sales and allows for some in-kind service contributions to minimize combined agency cash contributions.

As for administrative costs, the three SJBA member agencies (CSJC, MNWD, SMWD) will pay approximately 24.5% of all SJBA administration costs through their annual assessments. For Fiscal Year 2020/21, Trabuco Canyon Water District, not currently an SJBA member, will pay a smaller portion (2%) of only the administration costs that are related to the SNMP.

SJBA member agencies pay their respective allocations through their annual SJBA assessments. TCWD will be invoiced separately for its total contribution.

The table below identifies how SNMP costs are being allocated for FY 2020/21. It is anticipated that on August 11, 2020, the SJBA Board will approve an updated FY 2020/21 General Budget that reflects these allocations.

	SMWD	MNWD	CSJC	TCWD
Recycled Water Use (AF)	5,364	137	553	600
Proportion of Total Use (%)	68.0%	17.4%	7.0%	7.6%
Cost Allocation ($)	$110,840	$28,362	$11,410	$12,388
			TCWD Portion of SJBA Admin Costs	$4,800
			Total TCWD FY 2020/21 Contribution	$17,188

We incorporated in the agreement an annual Cooperator group review of scope and budget in advance of the work to promote consensus among the parties, prior to work commencing on the respective monitoring work. Each party is then responsible for providing (by May 1 each year) written approval of the upcoming fiscal year budget, which funds the monitoring for the second half of the current calendar year and the first half of the subsequent calendar year. The SJBA members have already approved the budget for FY 2020/21.

In the case of TCWD, with the agreement effective date of October 1, 2020, approval of the agreement signifies approval of the Fiscal Year 2020/21 budget which funds both the second half of Calendar Year 2020 and the first half of Calendar Year 2021.

Attached is a timeline showing the various implementation steps for an example calendar year (2021). The SNMP monitoring program and guidance from the Regional Board call for a calendar year (CY) monitoring and reporting cycle. Interestingly, to facilitate this requirement, the entire process to plan, approve, and implement monitoring, and report results to the Regional Board actually spans almost 30 months.

Please submit the "Cooperative Services Agreement for Salt and Nutrient Management Plan" to your Board/Council for approval at your earliest convenience, preferably in August 2020. Once approved, please send a "wet signature" copy to me for our records. Once we have collected all the counter signatures, I will send a scanned version of the conformed agreement to you for your records.

Please feel free to call me at 949.293.6236 or email me at norris.brandt@sjbauthority.com with any questions or suggestions.

Sincerely,

Norris Brandt, PE
Administrator
San Juan Basin Authority

Attachments:

1. Final "Cooperative Services Agreement for Salt and Nutrient Management Plan"
2. FY 2020/21 SNMP Budget
3. Model Schedule and Milestones for Calendar Year 2021 Monitoring

COOPERATIVE SERVICES AGREEMENT

FOR SALT AND NUTRIENT MANAGEMENT PLAN

THIS COOPERATIVE SERVICES AGREEMENT FOR SALT AND NUTRIENT MANAGEMENT PLAN ("Agreement") is entered into as of the 11th day of August, 2020, by and between SAN JUAN BASIN AUTHORITY, a joint powers authority duly organized and existing under the laws of the State of California ("SJBA"), SANTA MARGARITA WATER DISTRICT, a California Water District duly organized and existing under the laws of the State of California ("SMWD"), MOULTON NIGUEL WATER DISTRICT, a California Water District duly organized and existing under the laws of the State of California ("MNWD"), TRABUCO CANYON WATER DISTRICT, a California Water District duly organized and existing under the laws of the State of California ("TCWD"), and the CITY OF SAN JUAN CAPISTRANO, a municipality duly organized and existing under and by virtue of the laws of the State of California ("CITY"). SJBA, SMWD, MNWD, TCWD, and CITY are referred to herein individually as a "Party" and collectively as the "Parties."

R E C I T A L S:

A. In 2009, the California State Water Resources Control Board adopted its Policy for Water Quality Control for Recycled Water ("Recycled Water Policy"). The Recycled Water Policy was amended in 2013 and 2018. The Recycled Water Policy provides goals for recycled water use in California, guidance for use of recycled water that considers protection of water quality, criteria for streamlined permitting of recycled water projects, and requirements for monitoring recycled water for constituents of emerging concern. The San Diego Regional Water Quality Board ("Regional Board") has developed Proposed Guidelines for Salinity/Nutrient Management Planning in the San Diego Region (9) ("Region 9 SNMP Guidelines"). Among other requirements, the Recycled Water Policy requires the development of salt and nutrient management plans ("SNMP") for groundwater basins throughout California, including San Juan Basin, on or before May 14, 2014.

B. The South Orange County Wastewater Authority, a joint powers authority ("SOCWA"), prepared and submitted a Salt and Nutrient Management Plan (SNMP) for the Aliso Creek, San Juan Creek, and Portions of Other Basins ("SOCWA SNMP"), which includes the SNMP for the San Juan Basin, to the Regional Board. The SOCWA SNMP identified a detailed implementation plan and schedule, which included as an initial step, the development and implementation of a monitoring and data collection work plan to enhance the existing salt and nutrient monitoring efforts in the San Juan Creek Watershed (the "Monitoring Program").

C. In 2015, the SJBA assumed responsibility for the development and implementation of the Monitoring Program, in coordination with its own existing ongoing groundwater monitoring program used to comply with its Diversion and Use of Water Permit No. 21074.

D. This Agreement is entered into and for the purpose of memorializing the Parties' agreement to cooperate and share in the cost of the implementation of the Monitoring Program.

NOW, THEREFORE, in consideration of the preceding recitals and the mutual covenants hereinafter contained, the parties agree as follows:

1. Effective Date of Agreement. This Agreement shall be effective upon the signing hereof by all Parties hereto, and shall be deemed effective as of October 1, 2020 ("Effective Date").

2. Implementation of Monitoring Program. The Parties agree that the work to be performed to implement the Monitoring Program shall be according to the SNMP Monitoring and Data Collection Program Work Plan Addendum to the 2014 Salt and Nutrient Management Plan, attached hereto as Exhibit A (the "Work Plan"), as well as any subsequent Addendum to the SNMP.

3. Responsibilities of All Parties. The Parties will perform the monitoring services identified and as assigned in the section entitled "Cooperator Data Collection Protocols" of the Work Plan and report the data obtained from such monitoring services to the SJBA as specified in the Work Plan. Each year, prior to January 1, SJBA will notify the individual Parties of the specific work to be performed by them during that calendar year, including any changes to the work from the prior year. Further, the Parties agree to report the data obtained from the monitoring services identified in the "Cooperator Data Collection Protocols" section of the Work Plan for the preceding calendar year to the SJBA no later than March 31 of the following year. To the extent that the reporting periods identified in the Work Plan differ from the March 31st deadline identified in the immediately preceding sentence, the Parties agree to be bound to the March 31st deadline. If any Party fails to report the data obtained for the preceding calendar year to the SJBA on or before March 31 of the following year, the annual report of data from SJBA to SOCWA will clearly indicate that data was not provided by that Party.

4. Responsibilities of the SJBA. The Parties agree that the SJBA is responsible for the following:

(a) Implementation and Oversight. The SJBA shall be responsible, in its sole discretion, for overseeing and coordinating the activities necessary to complete the Work Plan and implement the Monitoring Program, as may be revised from time to time due to revisions required by the Parties or the Regional Board. The Parties shall meet annually, by March 1, to determine what activities are necessary and prudent to complete the Work Plan and implement the Monitoring Program for the following calendar year, including, but not limited to, engaging competent consultants and/or contractors.

(b) Budget for Work. On or before March 1st of each year in which this Agreement is in place, the SJBA shall prepare and provide to the Parties a draft annual budget for the costs of the Work Plan and implementation of the Monitoring Program for the 18-month period beginning the subsequent January 1 and ending June 30 of the following year (18 months later). On or before May 1, each Party shall provide written approval of its proportionate reimbursement of the total cost of implementing the SNMP during the relevant 18-month period. The total cost shall include, but not be limited to the costs of, consultant contracts, field work, reporting of results, administration, maintenance of monitoring wells, and special studies associated with the SNMP, as described in the Work Plan and associated budget. It is expected that field work and related activities will be completed during a calendar yet, but costs are expected to be expended over an 18-month period to allow for reporting of results after the calendar year has ended. Each 18-month period will overlap in that the six month period of time following the end of a calendar year during which reporting of results of the field work conducted in the previous calendar year will occur at the same time as the field work conducted during first six months of the new 18 month period. Therefore, expenses will be accounted through two fiscal years for each 18-month period of SNMP

implementation. Any unexpended funds from one fiscal year will be credited to the Parties for the following fiscal year of SNMP implementation.

(c) Invoice the Parties. Parties will be invoiced on a fiscal year basis (July 1 through June 30). On or about September 30 of each year in which this Agreement is in place, the SJBA shall prepare, pursuant to the terms of this Agreement as set forth below, invoices to each of the Parties for that Party's annual fiscal year contribution ("Cost Allocation"). Each of the SMWD, MNWD, TCWD, and CITY agree to pay the invoice within thirty (30) days of receipt.

(d) Responsibility for Data and Reporting to the Regional Board. The SJBA shall be responsible for providing SOCWA with the monitoring and other data collected as part of the Work Plan and/or implementation of the Monitoring Program. In turn, SOCWA is responsible for reporting and providing the data to the Regional Board. If any Party fails to perform its work duties or provide its assigned data to SJBA as required, that portion of SJBA's annual report to SOCWA will be missing. SJBA shall note in the report that the non-performing Party did not provide the data required. The non-performing Party shall pay any and all penalties and/or extra costs associated with its data not being provided to SJBA. The non-performing Party shall be severally and fully responsible for its own compliance with SNMP requirements associated with its recycled water use. SJBA data will not be provided to the non-performing Party.

5. Allocated Reimbursement of SJBA Costs. Each fiscal year each of the SMWD, MNWD, TCWD, and CITY shall reimburse the SJBA its Cost Allocation of the cost incurred by SJBA to complete the Work Plan and implement the Monitoring Program during the subject fiscal year. The Cost Allocation of each of the SMWD, MNWD, TCWD, and CITY shall be calculated as follows:

(a) Intent of Cost Allocation Reimbursement. The Parties agree that the intent of the Cost Allocation is to equitably distribute the costs incurred by the SJBA to complete the Work Plan and implement the Monitoring Program among the other Parties in an amount equal to each Party's proportional share of the recycled water used or discharged outdoors in the Mission Viejo Hydrologic Area. The Mission Viejo Hydrologic Area, and its Sub Areas, are defined/identified by the Regional Board in its most recent "WATER QUALITY CONTROL PLAN FOR THE SAN DIEGO BASIN (9)" (Basin Plan).

(b) Cost Allocation. Each of the SMWD, MNWD, TCWD, and CITY shall reimburse the SJBA a percentage of the costs incurred by the SJBA to complete the Work Plan and implement the Monitoring Program. The percentage of the costs to be reimbursed by each of the SMWD, MNWD, TCWD, and CITY shall be known as the "Allocated Percentage" and shall be calculated as follows:

(c) The "Allocated Percentage" for each Party is the total amount of metered usage within the Mission Viejo Hydrologic Area from that Party's recycled water system in the immediately preceding calendar year as reported by SOCWA in its Annual Recycled Water Report ("Agency's Recycled Water Amount") divided by the total amount of metered usage within the Mission Viejo Hydrological Area from all of the Parties' recycled water systems as reported by SOCWA in its Annual Recycled Water Report ("Total Recycled Water Amount"). An example of this calculation is as follows:

Allocated Percentage = Agency's Recycled Water Amount / Total Recycled Water Amount

6. Calendar Year 2020. Notwithstanding the prior paragraphs regarding Cost Allocation, the Parties agree to negotiate in good faith reasonable Cost Allocations for Calendar Year 2020 SNMP implementation costs. All provisions shall be applied to subsequent Calendar Years.

7. Term. The term of this Agreement shall be for five (5) years from the Effective Date, unless earlier terminated as provided herein.

8. Termination. This Agreement shall only terminate upon the expiration of the Term or the unanimous consent of all Parties. Should the Parties agree to terminate this Agreement, each of the the SMWD, MNWD, TCWD, and CITY, unless otherwise agreed to by all Parties, shall be responsible for reimbursing the SJBA the full amount of its Cost Allocation.

9. Withdrawal by Individual Party. A Party may withdraw from this Agreement by providing all other Parties with written notice of that Party's election to withdraw. A Party's written notice of withdrawal must specify the date on which that Party will withdraw from this Agreement, which date shall be no sooner than ninety (90) days after that Party's service of the written notice of withdrawal. Should a Party withdraw from this Agreement, such Party, unless otherwise agreed to by all Parties, shall be responsible for reimbursing the SJBA the full amount of its Cost Allocation for the fiscal year in which the Party withdraws and report all data collected by that Party up to the effective date of withdrawal to the SJBA. Upon the effective date of said withdrawal, the withdrawing Party shall be responsible, at its sole cost and expense, for compliance with the SNMP requirements which will continue to apply to said Party. SJBA's annual report to SOCWA shall indicate any Parties that have withdrawn from this Agreement.

10. Assignment or Transfer. No Party shall assign, hypothecate, or transfer, either directly or by operation of law, this Agreement or any interest herein without the prior written approval of all of the Parties to this Agreement, which approval shall not be unreasonably withheld, as well as the prior written agreement of the proposed assignee to be bound by this Agreement. Any attempt to assign, hypothecate, or transfer, either directly or by operation of law, without said prior written approvals shall be null and void, and any assignees, hypothecates or transferees shall acquire no right or interest by reason of such attempted assignment, hypothecation or transfer.

11. Notices. Any notices, requests or approvals given under this Agreement may be personally delivered or deposited with the United States Postal Service for mailing, postage prepaid, registered or certified mail, return receipt requested to the following address:

SJBA
San Juan Basin Authority
26111 Antonio Parkway
Rancho Santa Margarita, CA 92688
Attn: Administrator

SMWD
Santa Margarita Water District
26111 Antonio Parkway
Rancho Santa Margarita, CA 92688
Attn: General Manager

MNWD
Moulton Niguel Water District
27500 La Paz Road
Laguna Niguel, CA 92677
Attn: General Manager

TCWD
Trabuco Canyon Water District
32003 Dove Canyon Drive
Trabuco Canyon, CA 92679
Attn: General Manager

CITY
City of San Juan Capistrano
32400 Paseo Adelanto
San Juan Capistrano, CA 92675
Attn: City Manager

Any Party may change its address for notice by giving written notice thereof to the other Parties.

12. Entire Agreement. This Agreement contains the entire Agreement of the Parties with respect to the subject matter hereof, and supersedes all prior negotiations, understandings or agreements. This Agreement may only be modified by a writing signed by all Parties.

13. Amendment; Modification. No supplement, modification, or amendment of this Agreement shall be binding unless executed in writing and signed by all Parties.

14. Governing Law. This Agreement shall be governed by the laws of the State of California. Venue shall be in Orange County.

15. Construction; References; Captions. Since the Parties or their agents have participated fully in the preparation of this Agreement, the language of this Agreement shall be construed simply, according to its fair meaning, and not strictly for or against any Party. Any term referencing time, days or period for performance shall be deemed calendar days and not work days. All references to a Party or the Parties include all elected officials, officers, personnel, employees, agents, and volunteers except as otherwise specified in this Agreement. The captions of the various sections of this Agreement are for convenience and ease of reference only, and do not define, limit, augment, or describe the scope, content, or intent of this Agreement.

16. Time of Essence. Time is of the essence for each and every provision of this Agreement.

17. Waiver. No waiver of any default shall constitute a waiver of any other default or breach, whether of the same or other covenant or condition. No waiver, benefit, privilege, or service voluntarily given or performed by a Party shall give the other Parties any contractual rights by custom, estoppel, or otherwise.

18. No Third-Party Beneficiaries. There are no intended third party beneficiaries of any right or obligation assumed by the Parties.

19. Invalidity; Severability. If any portion of this Agreement is declared invalid, illegal, or otherwise unenforceable by a court of competent jurisdiction, the remaining provisions shall continue in full force and effect.

20. Authority to Enter Agreement. Each Party warrants that the individuals who have signed this Agreement have the legal power, right, and authority to make this Agreement and bind each respective Party.

21. Disputes. If a dispute arises between the Parties relating to this Agreement (a "Dispute"), the Parties agree to use the following procedure prior to pursuing other legal remedies:

(a) A meeting among the Parties shall promptly be held in Orange County, California. Attendees representing each of the Parties shall be senior staff members of each of the Parties who can recommend that each of the Parties' Board of Directors approve any proposed resolution. The representatives of the Parties will attempt in good faith to negotiate a resolution of the dispute.

22. Counterparts/Duplicate Originals. Two or more duplicate originals of this Agreement may be signed by all the Parties hereto, each of which shall be an original but all of which together shall constitute one and the same instrument.

IN WITNESS WHEREOF, the parties have caused this agreement to be signed as of the date first above written.

San Juan Basin Authority

By:_____
Name: _____
Title: _____

APPROVED AS TO FORM:

_____
David C. Palmer, General Counsel

[Signatures Continue on Following Page]

Santa Margarita Water District

By:_____
Name:_____
Title: _____

APPROVED AS TO FORM:

By:_____
[Name & Title: _____]

Moulton Niguel Water District

By:_____
Name:_____
Title: _____

APPROVED AS TO FORM:

By:_____
[Name & Title: _____]

Trabuco Canyon Water District

By:_____
Name:_____
Title: _____

APPROVED AS TO FORM:

By:_____
[Name & Title: _____]

[Signatures Continue on Following Page]

City of San Juan Capistrano

By:_____
Name:_____
Title: _____

APPROVED AS TO FORM:

By:_____
[Name & Title: _____]

EXHIBIT “A”

SNMP Monitoring and Data Collection Program Work Plan
Addendum to the 2014 Salt and Nutrient Management Plan

SNMP Monitoring and Data Collection Program Work Plan

Addendum to the 2014 Salt and Nutrient Management Plan

Introduction and Background

The South Orange County Wastewater Authority (SOCWA) submitted its *Salt and Nutrient Management Plan for the South Orange County Aliso Creek, San Juan Creek, and Portions of Other Basins*[1] (SNMP) to the California Regional Water Quality Control Board, San Diego Region (Regional Board) in July 2014. The 2014 SNMP identified a detailed implementation plan and schedule, which included as an initial step, the development and implementation of a monitoring and data collection program work plan to improve the existing salt and nutrient monitoring efforts in the San Juan Creek Watershed.

In 2015, the San Juan Basin Authority (SJBA) assumed responsibility for the development and implementation of the monitoring program. This work plan was developed in coordination with the following agencies, who provided detailed information regarding their current and future monitoring efforts, recycled water reuse practices, and other essential data necessary for building a successful SNMP Monitoring and Data Collection Program:

- The City of San Juan Capistrano (CSJC), SJBA member agency
- Moulton Niguel Water District (MNWD), SJBA member agency
- Orange County Public Works (OCPW)
- Santa Margarita Water District (SCWD), SJBA member agency
- SOCWA
- Trabuco Canyon Water District (TCWD)

The following work plan for the SNMP Monitoring and Data Collection Program will be implemented by the SJBA, in coordination with the OCPW, SOCWA, and TCWD.

SNMP Monitoring and Data Collection Program Objectives and Goals

The primary objective of the SNMP Monitoring and Data Collection Program is to collect the information required to: (1) evaluate "current" groundwater quality, (2) project future changes in groundwater quality, (3) determine the impact of recycled water reuse on current and future groundwater quality, and (4) determine if current or future groundwater quality exceeds the groundwater quality objectives established in the Water Quality Control Plan for the San Diego

[1] HDR and Wildermuth Environmental Inc., 2014. *Salt and Nutrient Management Plan for the South Orange County Aliso Creek, San Juan Creek, and Portions of Other Basins*. Prepared for the South Orange County Wastewater Authority, July 2014.

Basin[2] (Basin Plan). Pursuant to the 2014 SNMP, these evaluations will need to be performed every five years.

The data needed to perform these evaluations includes recycled water reuse volumes, locations, and quality; groundwater quality, levels, and production; storm and non-storm surface water quality and flow; land use and outdoor irrigation practices; and agency water supply plans and source water quality. The majority of this information is readily available from the water supply and recycled water agencies as this information is pertinent to planning and management within their services areas. There are significant data gaps related to field measurements of surface and groundwater quality, particularly in the upper reaches of the San Juan Creek Watershed where the resources are limited and do not represent a significant source of water supply. There are some data collection efforts related to groundwater and surface water throughout the San Juan Creek Watershed, but in most cases the sampling efforts do not include all of the water quality parameters of interest to the SNMP Monitoring and Data Collection Program.

The goal in developing the monitoring program is to use the monitoring efforts currently being conducted throughout the watershed and supplement those efforts with new monitoring, only where necessary, to address the SNMP. The agencies engaged in groundwater and/or surface water monitoring efforts include the CSJC, OCPW, MNWD, SJBA, the South Coast Water District (SCWD), SMWD, and TCWD. Additionally, there are private entities that collect limited data from their own groundwater wells. The development of the SNMP Monitoring and Data Collection Program involved extensive coordination with these agencies.

SNMP Monitoring and Data Collection Program Design

The San Juan Creek Watershed is divided into nine hydrologic sub areas (HSAs), each with its own set of numerical groundwater quality objectives as shown below and defined in Table 3-3 of the Basin Plan. The Watershed, HSAs, and the current and future recycled water reuse areas – by agency – are shown in Figure 1.

[2] California Regional Water Quality Control Board, San Diego Region, 2011.

Basin Plan Groundwater Quality Objectives for the San Juan Creek Watershed HSAs

Ground Water	Constituent (mg/L or as noted)												
	Total Dissolved Solids	Chloride	Sulfate	Sodium	Nitrate as N	Iron	Manganese	MBAS	Boron	Odor	Turbidity (NTU)	Color Units	Fluoride
Mission Viejo Hydrologic Area (HA 901.2)													
Oso	1,200	400	500	60	45	0.3	0.05	0.5	0.75	none	5	15	1.0
Upper Trabuco	500	250	250	60	45	0.3	0.05	0.5	0.75	none	5	15	1.0
Middle Trabuco	750	375	375	60	45	0.3	0.05	0.5	0.75	none	5	15	1.0
Gobernadora	1,200	400	500	60	45	0.3	0.05	0.5	0.75	none	5	15	1.0
Upper San Juan	500	250	250	60	45	0.3	0.05	0.5	0.75	none	5	15	1.0
Middle San Juan	750	375	375	60	45	0.3	0.05	0.5	0.75	none	5	15	1.0
Lower San Juan	1,200	400	500	60	45	0.3	0.05	0.5	0.75	none	5	15	1.0
Ortega	1,100	375	450	60	45	0.3	0.05	0.5	0.75	none	5	15	1.0

HA: Hydrologic Area

To evaluate "current" groundwater quality conditions and trends over time, and to project changes in the future, field measurements of groundwater and surface water quality will be needed in each of the nine HSAs. Both surface and groundwater quality sampling are required to understand the relationship between surface and groundwater quality and their respective source waters (e.g. stormwater runoff, urban runoff, etc.). For the SNMP, the groundwater quality parameters of interest are total dissolved solids (TDS), total inorganic nitrogen (TIN), and those parameters with a numerical groundwater quality objective defined in the Basin Plan, as shown above. Additionally, water quality parameters that can be used in a source water fingerprinting analysis, such as Piper or Stiff diagrams, are required. Table 1a lists the water quality parameters that will be tested for all groundwater samples collected for the SNMP Monitoring and Data Collection Program.[3] The surface water quality parameters of interest are

[3] Note that the Recycled Water Policy states that monitoring is required for "constituents of emerging concern" or CECs. Per email communication with San Diego Regional Board staff, monitoring for CECs is only required in areas where recycled water is being used for groundwater recharge. It is not required in areas where recycled water is being used for irrigation. CEC monitoring can be added in the future if the SJBA pursues a recycled water recharge program.

TDS, TIN, and the parameters that will be used in a source water fingerprinting analyses. Table 1b lists the water quality parameters that will be tested for all the surface water samples collected for the SNMP Monitoring and Data Collection Program.

Within each HSA, monitoring sites were selected to characterize the water quality in both the upgradient and downgradient ends of the HSA, and where possible, to characterize how water quality changes, if at all, in areas downstream of large recycled water reuse areas. Figure 2 is a map of the San Juan Creek Watershed and the proposed sites that will provide data for the SNMP. The map contains the following features:

- The nine HSA boundaries: Oso, Upper Trabuco, Middle Trabuco, Gobernadora (which includes both Gobernadora and Chiquita canyons), Bell Canyon, Upper San Juan, Middle San Juan, Ortega, and Lower San Juan.[4]
- Current and future proposed areas where recycled water is/will be applied for irrigation.
- Groundwater monitoring sites—symbolized as circles and color-coded by monitoring entity. The 15 sites shown as green circles are the proposed new field-monitoring program sites. The remaining 30 sites are monitored by cooperating agencies.
- In-stream surface water monitoring sites—symbolized as green triangles. All 16 in-stream monitoring sites shown are proposed for inclusion in a field monitoring program.[5]
- Urban runoff and/or stormwater capture facilities—symbolized as squares and color-coded by monitoring entity.
- Recycled water/urban runoff storage reservoirs—symbolized as diamonds and color-coded by monitoring entity. Water stored at these reservoirs can contain recycled water from multiple treatment plants and/or urban runoff sources and represent the quality of water served for outdoor irrigation.
- Water reclamation facilities—symbolized as purple pentagons—from which tertiary treated recycled water is either directly delivered to customers or sent to non-potable storage reservoirs.

Table 2 lists all of the groundwater monitoring sites that will be included in the SNMP and contains the site name and location (as latitude/longitude coordinates), well type, owner, whether it will be part of the new field monitoring program or the cooperative data collection program, and the monitoring frequency.

[4] Note that the portions of the Upper Trabuco and Upper San Juan HSAs are not included in the map. These areas are predominantly rugged areas of the Santa Ana Mountains and are undeveloped with the exception of a few areas with low-density urban, recreational, commercial, or industrial activities. These areas are not impacted by recycled water.

[5] The OCPW is currently in the process of developing a surface water monitoring program for its MS4 Permit program. Once the OCPW's program is developed, the proposed SNMP surface water monitoring sites may be slightly altered to avoid overlap with the OCPW program and to ensure field monitoring is not being duplicated.

Table 3 lists all the surface water monitoring sites that will be included in the SNMP and contains the site name and location, site type (e.g. in-stream, urban runoff capture facility, etc.), surface water body, site owner (if applicable), whether it will be part of the new field monitoring program or the cooperative data collection program, and the monitoring frequency.

The monitoring sites that are identified as part of the cooperative data collection program in Tables 2 and 3 will be sampled at the monitoring frequencies employed by the monitoring entities, with a few exceptions where the SJBA has requested that the monitoring site owner to increase their current monitoring frequency to support the SNMP.

During the first two years of the program, all new field program groundwater and surface water monitoring sites will be sampled on a quarterly frequency. The purpose of quarterly sampling will be to determine the seasonal variability in water quality. If after the first two years of monitoring the results show little seasonable variability, the sampling frequency should be reduced. Similarly, monitoring sites (surface and groundwater) that are not meaningfully contributing to the understanding of water quality can be eliminated from the program. There may also be reasons to add new sites or to change monitoring frequencies at certain locations. For all these reasons, the SNMP Monitoring and Data Collection Program will be evaluated and modified on an annual basis.

Field Data Collection Protocols

Of the 15 groundwater wells in the field monitoring program, six are monitoring wells with small-diameter PVC casings, and nine are agricultural or domestic production wells. Each well type will require a different methodology to collect samples for water quality testing: the monitoring wells will be sampled using a low-flow pump and the production wells will be sampled from taps installed on the discharge pipe, prior to any chlorination or diversion to storage tanks. Table 4 summarizes the well type, casing size, well depth, well screen, and sampling method to be used for each of the 15 wells in the new field monitoring program. Groundwater-level measurements will be collected and recorded at all monitoring sites.

Surface water samples from the 16 new field sites will be collected in-stream using polyethylene dippers.

Standard operating procedures (SOPs) for each groundwater and surface water sampling methodology are included as attachments to this addendum. The SOPs cover methodology basics, the use of field meters to test field parameters, sample collection, and equipment decontamination procedures. Also attached are the standard field forms that will be used to record field observations during the collection of each sample.

At the end of each day of field sampling, the groundwater and/or surface water samples will be delivered to a California ELAP certified laboratory to be analyzed for the water quality parameters listed in Tables 1a and 1b, respectively.

All field and laboratory data will be reviewed and checked for Quality Assurance and Quality Control (QA/QC) and stored in a project database.

Cooperator Data Collection Protocols

The cooperating agencies (CSJC, MNWD, SJBA, SMWD, and TCWD) will be monitoring their sites at the frequencies listed in Tables 2 and 3. These datasets will be compiled by the SJBA on a semi-annual basis. Additionally, the following datasets will be compiled annually from the CSJC, MNWD, SMWD, and TCWD:

- Updated maps of recycled water reuse areas
- Total non-potable water supply served, by source type (e.g. recycled water, urban runoff, and groundwater)
- Total potable water supply served, by source type, and source water quality data

The following datasets will be collected, as needed, to perform updated analyses of ambient water quality per the five-year schedule in the 2014 SNMP:

- storm and non-storm flow data from the USGS and OCPW
- land use maps

All cooperative data sets will be checked for QA/QC and stored in a project database.

Reporting

In accordance with the 2014 SNMP, an Annual Report will be submitted to the Regional Board containing the following information:

- A summary of the annual field and cooperative monitoring and data collection efforts, including maps and tables.
- A database containing all of the field and cooperative groundwater and surface water data sets.
- Updated maps of current and future recycled water reuse areas.
- A summary of changes to the monitoring program for the following year, if any.

Schedule

The SNMP Monitoring and Data Collection Program will be implemented beginning September 2016. The first annual report, covering September 2016 through December 2017, will be submitted to the Regional Board by June 30, 2018.

Enclosures

Figures 1 and 2, Tables 1 – 4

Standard Operating Procedure for Low-Flow Purge Sampling

Standard Operating Procedure for Sampling Agriculture and Domestic Wells

Standard Operating Procedure for Surface Water Quality Sampling

Field Data Sheet for Groundwater Sample Collection

Field Data Sheet for Surface Water Sample Collection

#8.

Table 1a
Water Quality Parameters Required for the SNMP Groundwater Monitoring and Data Collection Program

Water Quality Parameters to Analyze	Purpose
Alkalinity, Total (including bicarbonate, carbonate, hydroxide)	Source Water Quality Fingerprinting
Boron	Comparison with Basin Plan Objectives
Calcium	Source Water Quality Fingerprinting
Chloride	Comparison with Basin Plan Objectives and Source Water Quality Fingerprinting
Color	Comparison with Basin Plan Objectives
Fluoride	Comparison with Basin Plan Objectives
Iron	Comparison with Basin Plan Objectives
MBAS	Comparison with Basin Plan Objectives
Magnesium	Source Water Quality Fingerprinting
Manganese	Comparison with Basin Plan Objectives
Odor	Comparison with Basin Plan Objectives
Total Inorganic Nitrogen (including nitrate-N, nitrite-N, and ammonia-N)	Salt and Nutirent Loading Analyses; Comparison with Basin Plan Objectives
Potassium	Source Water Quality Fingerprinting
Sodium	Comparison with Basin Plan Objectives and Source Water Quality Fingerprinting
Sulfate	Source Water Quality Fingerprinting
TDS	Salt and Nutirent Loading Analyses; Comparison with Basin Plan Objectives
Turbidity	Comparison with Basin Plan Objectives

Table 1b

Water Quality Parameters Required for the SNMP Surface Water Monitoring and Data Collection Program

Surface Water Quality Parameters to Analyze	Purpose
Alkalinity, Total (including bicarbonate, carbonate, hydroxide)	Source Water Quality Fingerprinting
Calcium	Source Water Quality Fingerprinting
Chloride	Source Water Quality Fingerprinting
Magnesium	Source Water Quality Fingerprinting
Total Inorganic Nitrogen (including nitrate-N, nitrite-N, and ammonia-N)	Salt and Nutirent Loading Analyses
Potassium	Source Water Quality Fingerprinting
Sodium	Source Water Quality Fingerprinting
Sulfate	Source Water Quality Fingerprinting
TDS	Salt and Nutirent Loading Analyses

Table 2
Groundwater Monitoring Sites for the San Juan Creek Watershed
SNMP Monitoring and Data Collection Program

Monitoring Site Name and Location	Well Type	Well Owner	Latitude [WGS 84[	Longitude [WGS 84]	Included in SNMP as Field or Cooperative Data Collection Site?	Monitoring Frequency
Oso Hydrologic Sub Area						
Oso - GW1	Monitoring	City of Laguna Niguel	33.56115	-117.67650	Field	Quarterly
Oso - GW4	Monitoring	City of Laguna Niguel	33.55302	-117.67503	Field	Quarterly
Rosenbaum 1	Monitoring	CSJC	33.52996	-117.67214	Cooperative	Quarterly
Upper/Middle Trabuco Hydrologic Sub Area						
Trabuco Creek Wells Facility	Production	TCWD	33.65982	-117.58618	Cooperative	Only when in operation
Middle Trabuco Hydrologic Sub Area						
Arroyo-Trabuco Creek Sump	Production	SMWD	33.58335	-117.63663	Cooperative	Quarterly
North Open Space	Production	CSJC	33.52735	-117.67124	Cooperative	Monthly, when in operation
Gobernadora Hydrologic Sub Area (Includes Gobernadora and Chiquita Canyons)						
Chiquita DH-2	Monitoring	None	33.52976	-117.60964	Field	Quarterly
Chiquita DH-21	Monitoring	None	33.55590	-117.61200	Field	Quarterly
Gobernadora DH-2	Monitoring	SMWD	33.52550	-117.59177	Field	Quarterly
Gobernadora DH-17	Monitoring	SMWD	33.55383	-117.58831	Field	Quarterly
Bell Canyon Hydrologic Sub Area						
Lower MW	Monitoring	TCWD	33.62009	-117.56497	Cooperative	Quarterly
Audubon	Production	Audubon Society	33.63470	-117.55507	Field	Quarterly
Upper MW	Monitoring	TCWD	33.64632	-117.56496	Cooperative	Quarterly

Table 2
Groundwater Monitoring Sites for the San Juan Creek Watershed
SNMP Monitoring and Data Collection Program

Monitoring Site Name and Location	Well Type	Well Owner	Latitude [WGS 84[	Longitude [WGS 84]	Included in SNMP as Field or Cooperative Data Collection Site?	Monitoring Frequency
Upper San Juan Hydrologic Sub Area						
RMV 29 (Nichols Well)	Production	RMV	33.52290	-117.55796	Cooperative	Quarterly
RMV 9 Domestic	Production	RMV	33.52473	-117.55757	Field	Quarterly
Middle San Juan Hydrologic Sub Area						
RMV 12	Production	RMV	33.51563	-117.56852	Field	Quarterly
RMV 25	Production	RMV	33.52213	-117.59982	Field	Quarterly
RMV 27	Production	RMV	33.51648	-117.57937	Field	Quarterly
RMV 28	Production	RMV	33.52707	-117.60850	Field	Quarterly
RMV 6 (Ogleby Norton)	Production	RMV	33.51579	-117.58355	Field	Quarterly
RMV 7	Production	RMV	33.51715	-117.58682	Field	Quarterly
Ortega Hydrologic Sub Area						
RMV 5D	Production	RMV	33.52403	-117.61523	Field	Quarterly
CVWD #5A	Production	CSJC	33.50610	-117.64452	Cooperative	Monthly, when in production
SJBA MW-06	Monitoring	SJBA	33.50692	-117.64249	Cooperative	Semi-Annual
South Cooks	Production	CSJC	33.50074	-117.65155	Cooperative	Monthly, when in production
Tirador	Production	CSJC	33.49797	-117.65609	Cooperative	Monthly, when in production

Table 2
Groundwater Monitoring Sites for the San Juan Creek Watershed
SNMP Monitoring and Data Collection Program

Monitoring Site Name and Location	Well Type	Well Owner	Latitude [WGS 84[	Longitude [WGS 84]	Included in SNMP as Field or Cooperative Data Collection Site?	Monitoring Frequency
Lower San Juan Hydrologic Sub Area						
CVWD-1	Production	CSJC	33.48980	-117.66920	Cooperative	Monthly, when in production
Dance Hall	Production	CSJC	33.49196	-117.66543	Cooperative	Monthly, when in production
Kinoshita	Production	CSJC	33.48712	-117.67234	Cooperative	Monthly, when in production
SJBA-2	Production	CSJC	33.48912	-117.66850	Cooperative	Monthly, when in production
SJBA-4	Production	CSJC	33.48804	-117.66774	Cooperative	Monthly, when in production
Mission Street	Production	CSJC	33.50354	-117.66581	Cooperative	Quarterly
SJBA MW-01S	Monitoring	SJBA	33.46864	-117.67819	Cooperative	Semi-Annual
SJBA MW-02	Monitoring	SJBA	33.48168	-117.67829	Cooperative	Semi-Annual
SJBA MW-04	Monitoring	SJBA	33.50066	-117.65168	Cooperative	Semi-Annual
SJBA MW-05	Monitoring	SJBA	33.50454	-117.64664	Cooperative	Semi-Annual
SJBA MW-07	Monitoring	SJBA	33.49837	-117.66553	Cooperative	Semi-Annual
SJBA MW-08	Monitoring	SJBA	33.51456	-117.66974	Cooperative	Semi-Annual
Creekside	Production	SCWD	33.47480	-117.68000	Cooperative	Monthly, when in production
Stonehill	Production	SCWD	33.47272	-117.67902	Cooperative	Monthly, when in production
SCWD MW-1D	Monitoring	SCWD	33.47277	-117.67946	Cooperative	Semi-Annual
SCWD MW-1S	Monitoring	SCWD	33.47274	-117.67947	Cooperative	Semi-Annual
SCWD MW-2D	Monitoring	SCWD	33.47522	-117.68015	Cooperative	Semi-Annual
SCWD MW-2S	Monitoring	SCWD	33.47522	-117.68015	Cooperative	Semi-Annual
SCWD MW-3	Monitoring	SCWD	33.47786	-117.67917	Cooperative	Semi-Annual
SCWD MW-4D	Monitoring	SCWD	33.46755	-117.68111	Cooperative	Semi-Annual
SCWD MW-4S	Monitoring	SCWD	33.46755	-117.68111	Cooperative	Semi-Annual

Table 3
Surface Water Monitoring Sites for the San Juan Creek Watershed SNMP Monitoring and Data Collection Program

Monitoring Site Name and Location	Surface Water Monitoring Site Type	Surface Water Body	Site Owner (if applicable)	Latitude [WGS 84[	Longitude [WGS 84]	Include in SNMP as Field or Cooperative Data Collection Site?	Proposed Monitoring Frequency
Oso Hydrologic Sub Area							
Oso Barrier	Urban Runoff Collection Facility	Oso Creek	SMWD	33.583136	-117.665579	Cooperative	Quarterly
Oso-01	In-Stream Surface Water	Oso Creek	n/a	33.540506	-117.67528	Field	Quarterly
Upper Oso Reservoir	Recycled Water and Urban Runoff Storage Reservoir	n/a	SMWD	33.661132	-117.627168	Cooperative	Quarterly
Upper Trabuco Hydrologic Sub Area							
UT-01	In-Stream Surface Water	Arroyo Trabuco	n/a	33.674348	-117.544851	Field	Quarterly
Middle Trabuco Hydrologic Sub Area							
MT-01	In-Stream Surface Water	Arroyo Trabuco	n/a	33.65970	-117.58554	Field	Quarterly
MT-02	In-Stream Surface Water	Arroyo Trabuco	n/a	33.58382	-117.63663	Field	Quarterly
MT-03 (TC1)	In-Stream Surface Water	Arroyo Trabuco	n/a	33.53703	-117.66410	Field	Quarterly
Gobernadora Hydrologic Sub Area (Includes Gobernadora and Chiquita Canyons)							
CH-01	In-Stream Surface Water	Canada Chiquita	n/a	33.56119	-117.61504	Field	Quarterly
CH-02	In-Stream Surface Water	Canada Chiquita	n/a	33.53549	-117.61083	Field	Quarterly
Gobernadora Multi-Purpose Basin	Urban Runoff/Stormwater Collection Facility	Canada Gobernadora	SMWD	33.55658	-117.58763	Cooperative	Quarterly
Portola Reservoir	Recycled Water and Urban Runoff Storage Reservoir	Canada Gobernadora	SMWD	33.63319	-117.58296	Cooperative	Quarterly
Bell Canyon Hydrologic Sub Area							
BC-01	In-Stream Surface Water	Bell Canyon Creek	n/a	33.63596	-117.55523	Field	Quarterly
BC-02	In-Stream Surface Water	Bell Canyon Creek	n/a	33.53868	-117.55812	Field	Quarterly
Dove Lake[1]	Recycled Water and Urban Runoff Reuse	n/a	TCWD	33.63879	-117.56878	Cooperative	Quarterly

Table 3
Surface Water Monitoring Sites for the San Juan Creek Watershed SNMP Monitoring and Data Collection Program

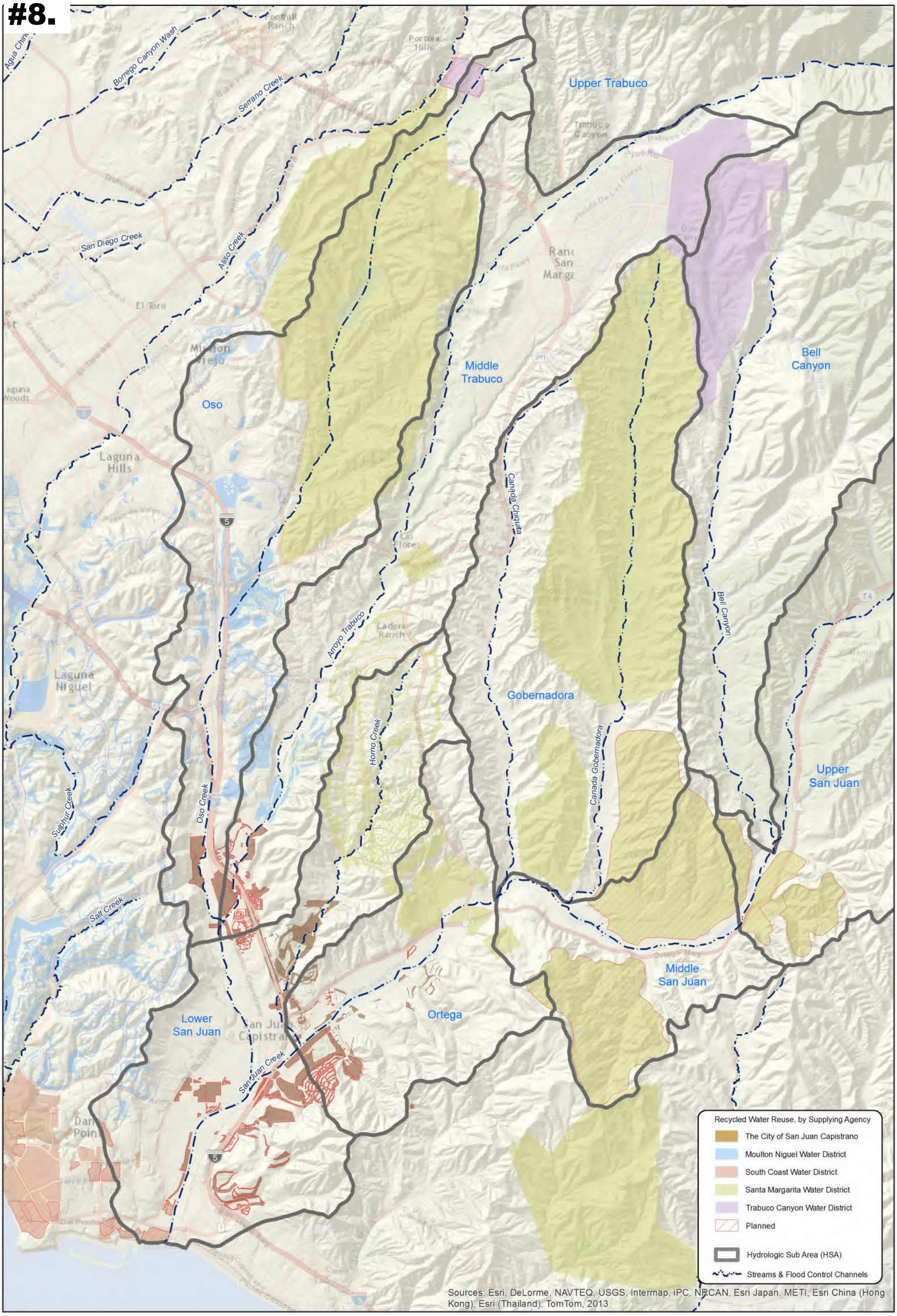
Monitoring Site Name and Location	Surface Water Monitoring Site Type	Surface Water Body	Site Owner (if applicable)	Latitude [WGS 84[	Longitude [WGS 84]	Include in SNMP as Field or Cooperative Data Collection Site?	Proposed Monitoring Frequency
Upper San Juan Hydrologic Sub Area							
USJ-01	In-Stream Surface Water	San Juan Creek	n/a	33.57345	-117.54157	Field	Quarterly
USJ-02	In-Stream Surface Water	San Juan Creek	n/a	33.53755	-117.55226	Field	Quarterly
USJ-03	In-Stream Surface Water	San Juan Creek	n/a	33.52564	-117.55867	Field	Quarterly
Ortega Hydrologic Sub Area							
ORT-01 (PMS-Control)	In-Stream Surface Water	San Juan Creek	n/a	33.51937	-117.62471	Field	Quarterly
Lower San Juan Hydrologic Sub Area							
Horno Barrier	Urban Runoff Collection Facility	Horno Creek	SMWD	33.53123	-117.64775	Cooperative	Monthly
LSJ-01 (TC@Ramos)	In-Stream Surface Water	Arroyo Trabuco	n/a	33.50162	-117.66742	Field	Quarterly
LSJ-02 (PMS-1)	In-Stream Surface Water	San Juan Creek	n/a	33.49507	-117.65869	Field	Quarterly
LSJ-03	In-Stream Surface Water	San Juan Creek	n/a	33.47537	-117.67886	Field	Quarterly

[1] A sampling location near Dove Lake, which provides a representative sample of recycled water used for irrigation purposes, will be collected at a non-potable distribution point.

Table 4

Groundwater Monitoring Sites Well Construction Details and Sampling Methods
SNMP Monitoring and Data Collection Program

Monitoring Site Name and Location	Well Type	Casing Size [in]	Screen depth [ft]	Total Depth [ft]	Sample Method?
Oso Hydrologic Sub Area					
Oso - GW1	Monitoring	2" PVC	12-35	36	Low-flow
Oso - GW4	Monitoring	2" PVC	6-30	31	Low-flow
Gobernadora Hydrologic Sub Area (Includes Gobernadora and Chiquita Canyons)					
Chiquita DH-2	Monitoring	2	50-80	80	Low-flow
Chiquita DH-21	Monitoring	2	60-90	90	Low-flow
Gobernadora DH-2	Monitoring	2	40-70	70	Low-flow
Gobernadora DH-17	Monitoring	2	30-65	65	Low-flow
Bell Canyon Hydrologic Sub Area					
Audubon	Production	*unk.*	*unk.*	*unk.*	Purge
Upper San Juan Hydrologic Sub Area					
RMV 9 Domestic	Production	16	30-90	98	Purge
Middle San Juan Hydrologic Sub Area					
RMV 12	Production	24	30-96	110	Purge
RMV 25	Production	*n/a*	*n/a*	*n/a*	Purge
RMV 27	Production	*n/a*	60-96	100	Purge
RMV 28	Production	*n/a*	42-92	102	Purge
RMV 6 (Ogleby Norton)	Production	18	30-90	92	Purge
RMV 7	Production	16	18-90	90	Purge
Ortega Hydrologic Sub Area					
RMV 5D	Production	16	30-70	90	Purge



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WILDERMUTH ENVIRONMENTAL, INC.

Author: LBB
Date: 20160721

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0 2,000 4,000 Feet
0 1 Miles

Salt and Nutrient Management Plan: Monitoring and Data Collection Program for the San Juan Creek Watershed

Recycled Water Reuse Areas

Existing (2015) and Planned

Figure 1

Upper Trabuco
Middle Trabuco
Gobernadora
Bell Canyon
Oso
Lake Forest
El Toro
Laguna Hills
Laguna Woods
Laguna Niguel
Portola Hills
Rancho Santa Margarita
Dove Canyon
Trabuco Canyon
Ladera Ranch
Upper San Juan
Lower San Juan
Ortega
Middle San Juan

Agua Chinon Wash
Borrego Canyon Wash
Sarrano Creek
San Diego Creek
Aliso Creek
Arroyo Trabuco
Bell Canyon
Canada Chiquita
Horno Creek
Canada Gobernadora
San Juan Creek
Sulphur Creek
Salt Creek
Salado Arroyo

Upper Oso Reservoir
Trabuco Creek Wells Facility
UT-01
MT-01
Robinson Ranch WRP
Upper MW
Dove Lake
BC-01
Audubon MW
Portola Reservoir
Lower MW
Oso Creek WRP
Oso Barrier
MT-02
Arroyo-Trabuco Creek Sump
Plant 3A AWT
USJ-01
Nichols Institute WRP
Oso-GW1
Oso-GW4
Oso-01
MT-03 (TC1)
Rosenbaum 1
North Open Space(NOS)
Horno Barrier
SJBA MW-08
CH-01
DH-21 (01-74-00)
Gobernadora Multi-Purpose Basin
DH-17 (01-75-00)
Chiquita WRP
CH-02
DH-2 (01-74-00)
RMV 28
DH-2 (01-75-00)
RMV 5D
RMV 25
ORT-01 (PMS Control)
RMV 7
RMV 27
RMV 12
RMV 6 (Ogleby Norton)
USJ-03
RMV 9 Domestic
RMV 29 (Nichols Well)
BC-02
USJ-02
SJBA MW-06
CVWD #5A
SJBA MW-05
Mission Street
LSJ-01 (TC@Ramos)
SJBA MW-07
SJBA MW-04
South Cooks
Tirador
LSJ-02 (PMS-1)
Dance Hall
CVWD-1
SJBA-2
SJBA-4
Kinoshita
SJBA MW-02
SCWD MW-3
SCWD MW-2S
LSJ-03
Creekside
SCWD MW-1S
Stonehill
SCWD MW-4S
SJBA MW-01S
JB Latham WWTP
SCWD MW-4D

Groundwater Sampling Location (by monitoring entity)
- SJBA-SNMP Field Program
- City of San Juan Capistrano
- Rancho Mission Viejo
- Santa Margarita Water District
- SJBA
- South Coast Water District
- Trabuco Creek Water District

In-Stream Surface Water Sampling Location (by monitoring entity)
- SJBA-SNMP Field Program

Urban Runoff and Storm Water Capture Facility (by monitoring entity)
- Santa Margarita Water District
- Trabuco Creek Water District

Recycled Water/Urban Runoff Reuse Source (by monitoring entity)
- Santa Margarita Water District

Hydrologic Sub Area (HSA)
Water Reclamation Facilities

Recycled Water Reuse
- Current
- Planned

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WEI Wildermuth Environmental, Inc.

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Date: 20160614

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0 2,000 4,000 Feet
0 0.5 1 Miles

San Juan Basin Authority
Salt and Nutrient Management Plan: Monitoring and Data Collection Program for the San Juan Creek Watershed

Monitoring and Data Collection Program
Proposed Monitoring Locations

Figure 2

#8.

Scope and Application

This procedure is designed to assist in collecting representative groundwater samples from monitoring wells using the low-flow (minimal drawdown) purge method. The groundwater samples will be collected using methods modeled after industry standards (Puls, and Barcelona, 1996; ASTM D 6771 - 02).

The field sampler's objective is to purge and sample the well so that the water that is discharged from the pump, and subsequently collected, is representative of the formation water from the aquifer's identified zone of interest.

The wells are sampled with portable bladder (squeeze-type) pumps. If dedicated pumps are not installed in the monitoring wells, each well should be assigned a dedicated bladder and appropriate length of discharge/air tubing that is only used at that well.

Each well should be flow tested to determine and document the specific well's optimum flow rate that would result in achieving a minimal drawdown of the initial depth to water within the drawdown parameters detailed below. Once established, this rate will be reproduced for each subsequent sampling event. If a significant change in water level occurs at a monitoring site between events, it may be necessary to reestablish the optimum flow rate at each sampling event.

Initial Pump Flow Test Procedures

If possible, the optimum flow rate for each well will be established during well development or redevelopment, or in advance of the actual sampling event. The monitoring well must be gauged for depth to water prior to the installation of the portable pump and before pumping of any water from the well. The measurement will be documented on a field data sheet.

After pump deployment and confirmation that the depth to water has returned to its original level, the bladder pump should be started at a discharge rate between 0.5 to 1.0 liters per minute without an in-line flow cell connected. The water level in the well casing must be monitored continuously for any change from the original measurement. If significant drawdown is observed, the pump's flow rate should be incrementally reduced until the drawdown ceases and stabilizes. Total drawdown from the initial depth to water should not exceed 25 percent of the distance between pump inlet location and the top of the well screen (for example, if a well has a 10-foot screen zone and the pump inlet is located mid-screen, the maximum drawdown should be 1.25 feet). In any case, the water level in the well should not be lowered below the top of the screen/intake zone of the well. In cases of wells with partially penetrating screens, the distance interval is taken to be between the pump inlet and the depth to water. All control settings are to be documented on the field data sheet specific to that particular well's ID and will be utilized for subsequent purging and sampling events.

Should it be determined that a specific well is incapable of maintaining a sustainable yield of at least 100 milliliters per minute without continuing depth to water drawdown, it will be identified as a problematic well, and alternative methods should be explored.

Method Summary

Prior to the initiation of purging a well, the depth to water will be measured and documented. The properly decontaminated portable pump will then be slowly lowered into the well until its inlet is properly positioned within the saturated screened interval or halfway between the depth to water and the bottom of the screen (for partially penetrating screens) and then started utilizing its previously documented control settings. Its flow rate will be confirmed by volumetric discharge measurement. If necessary, any minor modifications to the control settings to achieve the well's optimum flow rate will be documented on the field data sheet.

When the optimum pump flow rate has been established and the depth to water drawdown has stabilized within the required range, begin taking field measurements for pH, temperature, electrical conductivity (EC), and turbidity. All water chemistry field measurements will be documented on the field data sheet. Measurements should be taken every three to five minutes until stabilization has been achieved. Stabilization is achieved after all parameters have stabilized for three consecutive readings. Three consecutive measurements indicating stability should be within:

Parameter	Stabilization Criteria
Temperature	± 3% of reading (minimum of ± 0.2° C)
pH	± 0.2 pH units, minimum
Electrical Conductivity (EC)	± 3% of reading
Turbidity	± 10% NTU

Equipment

- Portable bladder pump, bladders, and sufficient lengths of air/liquid discharge tubing (each well should be assigned a dedicated bladder and appropriate length of discharge/air tubing that is only used at that well)
- Pump controller and air source set to operate the pump
- Sample containers, cooler, ice, and Chain-of-Custody (CoC) form.
- Field water-quality meter(s)
- A water level measurement device (water level sounder is preferable)
- Field data sheets
- 5 gallon bucket(s) for containerizing purge water if it can't be disposed of on-site
- 300-500 milliliter graduated cylinder
- Wristwatch with second hand or stopwatch
- Sufficient cleaning and decontamination supplies

Preparation of Sampling Equipment

- Acquire sample containers, cooler with ice, CoC for samples and other equipment. Organize sample containers into plastic zip-lock bags and check to make sure there are no problems with the sample containers (cracked caps, broken seals, etc.). Do not fill out container labels with well information until you are on-site to collect a sample.
- Calibrate all field instruments at the start of each day's deployment per the instrument manufacturer's instruction. Record calibration data on the field instruments' calibration documentation forms.
- Be sure to print and bring along plenty of copies of the field documentation forms.
- Prepare decontamination equipment and decontaminate the sampling equipment (portable pump and water level sounder).

Sampling Procedures

1. Perform a general site survey prior to site entry in accordance with the health and safety practices. Take note of pertinent information on the field sheet.

2. Note the well condition and activity in the vicinity of the well.

3. Properly decontaminate the portable pump and/or water level probe.

4. Measure the depth to water from the assigned reference point and record the measurement (and the reference point name) on the field data sheet. Remove the water level measurement device.

5. Connect the appropriate lengths of air and discharge tubing to set the pump at the desired level within the well's screened interval. Ensure that the air supply tubing is properly connected to the pump's air fitting and not to the pump discharge. Install the portable pump slowly and carefully.

6. Reinstall the water level measurement device, and lock the device in place so that the level can be monitored during purging and sampling.

7. Connect the compressed air source's airline to the pump controller's "AIR IN" connection (if utilizing a gas-engine operated compressor, locate the compressor at least 25 feet downwind from the wellhead).

8. Connect the pump controller "AIR OUT" air-line to the bladder pump's air supply fitting.

9. Start the air supply to the pump. Set the pump controller settings to the documented interval settings for the specific well. It is advisable that the air supply pressure be started at 40 to 50 pounds per square inch (PSI) initially and then raised in increments as the pump's discharge line becomes filled. This is especially important for deeper pump depths.

10. Confirm the final flow rate is equal to or just below the well's established optimum flow rate. Modify as necessary (documenting any required modifications).

11. Monitor the water level and confirm that the drawdown has stabilized within the well's allowable limits.

12. Begin taking field measurements for pH, temperature, electrical conductivity (EC), and turbidity. All water chemistry field measurements will be documented on the field data sheet. Measurements should be taken every three to five minutes until stabilization has been achieved. Also read and record water quality field measurements every three to five minutes until all parameters have stabilized within their allowable ranges for at least three consecutive measurements. When stabilization has been achieved, sample collection may begin.

13. Sample Collection:

    a. While holding the sample container at the base, remove plastic seal around the cap before attempting to open the container. Remove the cap with your free hand, exercising care not to touch the edge or bottom of the cap or the top or neck of the container. Avoid breathing on the cap or container. Hold the cap in one hand during the entire container filling operation; do no lay it down.

    b. If sampling VOCs, note any source of VOCs around the well, such as exhaust sources, on the field data sheet. For VOC sample containers, no head space (air bubbles) should remain in the sample container. If necessary, reduce the discharge rate of the pump for filling the sample containers. Return to the optimal flow rate after VOC containers are filled.

    c. All other sampling containers are to be filled to the "fill line," leaving enough air space in the container to allow for mixing by shaking in the lab. The cap should be carefully replaced.

    d. Place samples on ice in a cooler as soon as possible. Keep samples cold (4 degrees Celsius) until delivered to the laboratory. Transport samples to an approved laboratory within 24 hours or according to the analyte holding times, whichever is shorter.

    e. A Chain-of-Custody form shall be filled out for each cooler, and a copy shall be retained for project records. If VOCs are being sampled, be sure to indicate on the Chain-of-Custody if travel blanks are included and should be analyzed by the laboratory.

14. When all sample containers have been filled, make a final measurement of the well's depth to water, and record the measurement on the field data sheet. Remove the portable water level measurement device from the well.

15. Disconnect the controller air supply to the pump and remove the pump from the well.

16. Properly discard purged water.

17. Decontaminate all equipment and carefully prepare the dedicated bladders and tubbing for storage.

18. At the end of each day, post-calibrate all field instruments, and record the measurements on the "Field Calibration Documentation Form."

Reagents

Decontamination solutions are used for this SOP. Refer to the solution SDS for safety information and do not handle solutions that you have not been trained to handle.

Records

Scan copies of all completed field data sheets and provide them to the project manager per standard procedures. The original sheets should be kept in the project binder until the subsequent sampling event has been completed.

References

ASTM Guideline D6771-02. July 2002. Standard Practice for Low-Flow Purging and Sampling for Wells and Devices Used for Ground-Water Quality Investigations.

Barcelona, M.J. and R.W. Puls. 1996. Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures. U.S. EPA Superfund Groundwater Issue, EPA/504/S-95/504.

#8.

Scope and Application

This procedure is designed to assist field technicians in taking representative groundwater samples from privately owned, active agricultural and domestic wells. Ideally, groundwater samples should be collected per the EPA's SOP for the Standard/Well-Volume Method which dictates that a minimum of three casing volumes of water should be purged from a well prior to beginning water quality sampling procedures. However, for some wells there may not be enough data available to determine if and when a sufficient volume of water has been purged from a well. For example, the total depth and diameter is often not available for older wells. Or, the field technician may be in a situation where there is no control over how long the well has been pumping or will remain on. This modified procedure is designed to help the field technician collect the best possible sample in the absence of the information typically used to determine that sufficient water has been purged from the well casing.

Method Summary

There are two general situations encountered when sampling agricultural, or domestic wells; (a) water pumps from the well into a pressure tank, or (b) water pumps from the well directly into a pipeline system. This SOP provides procedures for each situation.

Wells that feed into a pressure tank typically cycle on and off for short periods of time. The well is triggered on when the pressure in the tank drops below a specified level. The pumping cycles can be as short as 1 minute to longer than 10 minutes, and the cycle is typically not long enough to purge three casing volumes of water. Fortunately, the wells are typically cycling on and off throughout the day, so it is unlikely that the sample collected will contain stagnant casing water.

Whenever possible, contact the well owner in advance, or speak to a property manager on site, to determine when the well is typically on so you can arrange to collect the sample after the well has been running for at least an hour or so. If no one is available to provide this information, you can still rely on parameter stabilization to indicate that it is okay to collect your sample. The length of the pumping cycle will determine how often to collect parameters to determine stabilization. Once the pump cycle length has been determined, you can begin the sampling procedure.

Wells that feed directly into a pipeline system deliver water directly to the end use, such as an irrigation system, instead of a storage container. Thus, it is easier to measure for parameter stabilization and collect samples because the well is running continuously (compared to the short cycles typical in wells hooked into pressure tanks). However, if the well is not on when you arrive at the sampling site a sample cannot be collected until permission is obtained from the well owner to power up the well. Whenever possible, contact the well owner in advance, or speak to a property manager on site, to determine when the well is typically on so you can arrange to collect the sample after the well has been running for at least an hour or so. If no one is available to grant permission to turn on the well, try returning to the site another day. The wells are generally running in the early morning hours, so that is the best time to make a return attempt to sample the well.

Equipment

- Sample containers, cooler, ice, and Chain-of-Custody (CoC) form.
- Nitrile or latex-type gloves
- Water quality field meter(s)
- Water level probe
- Field documentation forms
- Fittings and spigots
- Well stocked tool box
- Sufficient cleaning and decontamination supplies for fittings, spigots, and water level sounders

Preparation for Field Sampling

- Acquire sample containers, cooler with ice, CoC for samples and other equipment. Organize sample containers into plastic zip-lock bags and check to make sure there are no problems with the sample containers (cracked caps, broken seals, etc.). Do not fill out container labels with well information until you are on-site to collect a sample.
- Calibrate all field instruments at the start of each day's deployment per the instrument manufacturer's instructions. Record calibration data on field instruments' calibration documentation forms.
- Be sure to print and bring along plenty of copies of the field documentation forms. Blank field forms are included as an attachment to this document.
- Prepare decontamination equipment and decontaminate the sampling equipment (portable pump and water level sounder).

Sampling Procedures

1. Nitrile or latex-type gloves should be worn at all times while handling all fittings, spigots, and sampling containers. New gloves should be worn at each sampling site. The water level probe and all fittings and spigots will be decontaminated after each site.
2. Determine your sampling location and attach sampling spigot, if necessary. Sampling points must be on the well pump side of any storage container such as a water tank or reservoir. Remove any aerators, strainers, hose attachments, mixing type faucets, and purification devices from the tap.
3. Label all containers. Sample containers must be kept clean and free from contamination before and after collecting the sample. They should not be opened prior to collecting the sample.
4. Prior to the initiation of well sampling a water level will be measured and documented, if possible. Record the well activity (static, pumping, or recovering) at the time of measurement and the activity of any other wells in close proximity to the well being sampled. (Note: a water level is generally considered to be "recovering" until the water level is rising by less than 0.05 feet [1/2"] per minute).
5. Flush the sampling port for at least 10 seconds before beginning parameter stabilization and sampling procedures.
6. Begin water quality field parameter stabilization procedure (and water level measurements, if possible). All data will be documented on the field work documentation forms. Stabilization is

achieved after all parameters have stabilized for three consecutive readings. Three consecutive measurements indicating stability should be within:

Parameter	Stabilization Criteria
Temperature	± 3% of reading (minimum of ± 0.2° C)
pH	± 0.2 pH units, minimum
Electrical Conductivity (EC)	± 3% of reading
Turbidity	± 10% NTU

a. If the well feeds into a pressure tank and the pumping cycle is less than six minutes, water quality parameters should be observed during the last minute of each pumping cycle until parameter stabilization is demonstrated across three to five pumping cycles.

b. If the well feeds into a pressure tank and the pumping cycle is longer than six minutes, the water quality parameters will be measured every three to five minutes until stabilization is achieved. Continue stabilization over multiple cycles if necessary.

c. If the well feeds directly into a pipeline and is pumping continuously measure parameters every three to five minutes.

d. If the parameters are not stabilizing, contact the project manager.

7. Sample Collection:

a. Reduce the tap flow rate before taking the sample. The flow rate should be low enough to ensure that no splashing occurs as the container is filled.

b. At a well that has short cycles, it may take multiple pumping cycles to fill the entire set of sample containers. It should be noted on the field form if multiple pump cycles were needed to fill the containers.

c. Collect the samples in the following order: volatile organic compounds, semi-volatile organic compounds/pesticides, inorganics, other unfiltered samples, filtered samples.

d. While holding the sample container at the base, remove plastic seal around cap before attempting to open the container. If the cap is found to be loose or cracked, if it contains no seal, if the seal pulls away from the cap, if the container appears dirty, or if there are any other conditions which places the quality of the container in doubt, the container is to be rejected and a proper container used. (All containers should be checked prior to going in the field.)

e. Remove the cap with the free hand, exercising care not to touch the edge or the bottom of the cap or the top or neck of container. Prevent breathing on the cap or container.

f. Hold the cap in one hand during the entire container filling operation; do no lay it down.

g. Note any source of VOCs around the well, such as exhaust sources, on the sample collection form.

h. For VOC sample containers, no head space (air bubbles) should remain in the sample container.

i. All other sampling containers are to be filled to the "fill line" leaving enough air space in the container to allow for mixing by shaking in the lab. The cap is carefully replaced.

j. Place samples on ice in a cooler as soon as possible. Keep samples cold (4 deg. C) until delivered to the lab. Transport samples to an approved water quality laboratory within 24 hours.

8. A Chain of Custody form shall be filled out for each cooler and a copy retained for project records. Be sure to indicate on the Chain of Custody that travel blanks are included and should be analyzed by the lab.

9. At the end of each day, post calibrate all field instruments and record the measurements on the "Field Calibration Documentation Form".

Reagents

Decontamination solutions are used for this SOP. Refer to the solution SDS for safety information and do not handle solutions that you have not been trained to handle.

Records

Scan copies of all completed field data sheets and provide them to the project manager per standard procedures. The original sheets should be kept in the project binder until the subsequent sampling event has been completed.

References

U.S. Environmental Protection Agency, Region 9, Standard Operating Procedure for the Standard/Well-Volume Method for Collecting a Ground-Water Sample from Monitoring Wells for Site Characterization, http://www.epa.gov/region09/qa/pdfs/finalgwsamp_sop.pdf

Scope and Application

This procedure is applicable to the collection of representative grab samples from surface waters. Surface water quality sampling involves determining sampling locations, measurement of the water chemistry using a field water quality meter and collection of surface water samples for laboratory analysis.

Method Summary

Collecting a representative grab-sample from stream flow will be accomplished through the use of a polyethylene sample dipper. Field water quality parameters are measured and recorded, and the representative sample is collected and submitted to a laboratory for analyses.

Equipment

- Polyethylene dipper (beaker on long handle).
- Sample containers, cooler, ice, and Chain-of-Custody (CoC) form.
- Water quality field meter(s)
- Global positioning system (GPS) unit
- Digital camera
- Incrementally marked depth rod
- Clipboard, blank field data sheets, waterproof pens
- Duffel bag/backpack for equipment
- Decontamination solution/equipment:
- Personal floatation device (life preserver), if the water is rapidly flowing or if using a boat.
- Waterproof gloves (appropriate for chemicals)
- Waterproof boots and/or waders
- Protective eyewear
- Apparel appropriate to the climate
- Drinking water
- Sunscreen lotion, bug spray, umbrella

Personnel and Safety

Safety should be the number one consideration when determining the number of staff necessary for sampling. If the stream has rapid flow, or the bank of the stream could be compromised, a minimum of two persons are required. One person will stay out of the channel (on the banks) to provide assistance in case of accident or emergency. Additional safety measures shall be utilized such as personal floatation device.

Preparation for Field Sampling

- Acquire sample containers, cooler with ice, CoC for samples and other equipment. Set up coolers with ice as recommended by the laboratory. Organize sample containers into plastic zip-lock bags and check to make sure there are no problems with the sample containers (cracked caps, broken seals, etc.). Do not fill out container labels with site information until you are on-site to collect a sample.

- Calibrate all field instruments at the start of each day's deployment per the instrument manufacturer's instructions. Record calibration data on field instruments' calibration documentation forms.

- Be sure to print and bring along plenty of copies of the field documentation forms. Blank field forms are included as an attachment to this document.

- Prepare decontamination equipment and decontaminate the sampling equipment.

Sampling Procedures

Choosing a Sample Location

The general areas for surface water sampling will have been selected as part of the project setup, but the exact location of the sample collection will be selected based on field conditions.

Stream-specific criteria for selecting a sampling location include:

(1) select the largest flowing channel if the stream is braided at the sample location;

(2) there should be minimal natural and man-made obstructions in the channel, the stream should be free flowing and unrestricted by obstructions upstream or downstream, which might cause flow diversion or flow backup;

(3) stream depth is adequate for immersion of the sample equipment: and

(4) there are no eddies or still water. Turbulent water should also be avoided, if possible.

Once chosen, the sample location should be documented in notes/diagrams, and coordinates should be measured using a GPS unit and recorded on the field data sheets.

Sample Collection

1. Prior to starting sample collection at each site, decontaminate the sample dipper and any other equipment that will enter the water body. Remove visible dirt from equipment with a nylon brush and rinse with appropriate solutions.

2. Perform a general site survey prior to entry in accordance with the project-specific Health and Safety Plan.

3. If wading into the stream to collect the sample and it is rapidly flowing, wear a personal floatation device.

4. Find the deepest point of the flowing portion of the stream. If branches enter the water, sample upstream of them. If the stream is not safe to enter, use the sample dipper to collect a sample as close to the deepest point in the stream as possible from the bank or safe location.

5. Measure and record the stream depth at the sampling location on the field data sheet, if safe to do so.

6. Rinse the field sampling equipment in the native water. This helps to equilibrate the equipment to the sample environment and ensure that all cleaning-solution residue has been removed (USGS, 2015).

7. At the sampling location, use the field water quality meter to measure the following parameters, as determined by the project Sampling and Analysis Plan. Field parameters typically include: temperature, pH, conductivity, and turbidity.

    a. Measure and record water quality parameters up to three times, three to five minutes apart, to determine stability over time. Stability is defined as consecutive measurements that are within the following criteria:

Parameter	Stabilization Criteria
Temperature	± 3% of reading (minimum of ± 0.2° C)
pH	± 0.2 pH units, minimum
Electrical Conductivity (EC)	± 3% of reading
Turbidity	± 10% NTU

    b. Note whether the field water quality parameters were stable or not, and begin sampling (described below).
    c. Measure the field water quality parameters immediately following the completion of sampling.
    d. Record all field water quality data on the field data sheet.

8. If wading in the stream, stand upstream of stream sediments that were disturbed during entry. Face upstream and collect the sample upstream of you and any other persons or objects.

9. Use the sample dipper to collect native water and carefully transfer the sample to the laboratory sample containers. Containers that do not contain preservatives can be used to directly collect samples from the stream.

10. Fill sample containers to the fill line or as instructed by the lab, being careful not to overtop the containers, which can spill and dilute the preservatives. Tighten the sample container lids and label the sample containers with the location name/ID, the date and time of sample collection, and any other required information. Place the filled sample containers in the cooler with ice per the laboratory instructions. Note any potential contamination sources such as nearby exhaust sources, trash in the stream etc. on the field data sheet.

11. Decontaminate the sample dipper and other equipment, and protect it from contamination using a sealable plastic bags with clear sealing strip between sites.

Reagents

Decontamination solutions are used for this SOP. Refer to the solution SDS for safety information and do not handle solutions that you have not been trained to handle.

Records

Scan copies of all completed field data sheets and provide them to the project manager per standard procedures. The original sheets should be kept in the project binder until the subsequent sampling event has been completed.

References

U.S Geological Survey (USGS). 2015. *National Field Manual of the Collection of Water-Quality Data.* Book 9, Handbooks for Water-Resources Investigations. USGS, October 2015.

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Enclosure

Field Data Sheet for Groundwater Sample Collection

Groundwater Monitoring Program Water Quality Sampling Sheet

PROJECT **WELL** **WELL ID** 1206511

DATE _____ **FIELD PERSONNEL** _____

SAMPLING ORGANIZATION_____

REFERENCE POINT TYPE _____ **ELEVATION**____ **DEPTH TO TOP**_____**BOTTOM OF SCREEN**
INTAKE AT (FT. BELOW RP) **LENGTH OF TUBING + PUMP INTAKE**
PURGING DEVICE-PUMP TYPE: **PUMP MODEL**_
BLADDER VOLUME_____**mL**___ **TUBING VOLUME**_____**mL**__ **TOTAL SYSTEM VOLUME**_____**ml**____
OPTIMAL FLOW RATE _____**mL/min** **OPTIMAL SETTINGS** **(Recommend 100 psi)**

SETTINGS USED AT SAMPLE TIME:

Flow (mL/min)_____ **Pressure (psi)**_____ **Refill (sec)**_____ **Discharge (sec)**_____

CLOCK TIME (24 HR)	WATER DEPTH (SWL)	TEMP C	SPECIFIC CONDUCT. ms/cm	PH	Turbidity NTU	Comments (flow or pressure change, observations, etc.)

SAMPLE TIME _____

PSI @ START_____ **PSI @ FINISH**_____ **ML PURGED**_____

NOTES: _____

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Enclosure

Field Data Sheet for Surface Water Sample Collection

Surface Water Quality Sampling Field Data Sheet
SAN JUAN SNMP MONITORING PROGRAM

SITE INFORMATION

Site ID:	Sampling Method:
Sampling Date: Arrival Time:	Decontamination of Equipment: ☐ Yes ☐ No
Sampler:	Current Weather Conditions: ☐ Dry ☐ Wet
Agency Escort Name:	Photos Taken: ☐ Upstream ☐ Downstream
Site Access Restrictions:	Site Sketch: ☐ Yes ☐ No
Site Coordinates [WGS 84]:	WQ Meter: Serial #

SURFACE WATER SAMPLE

Sample ID	Laboratory Name:
Sample Time: ☐ AM ☐ PM	Sample Group:
Sample Depth: ☐ Feet ☐ Inches	CoC ID:
Stream Conditions: ☐ Flowing ☐ Dry	Sample Duplicate: ☐ Yes ☐ No

PHYSICAL SAMPLING LOCATION NOTES

GPS [WGS84] if different:	Turbidity: ☐ Yes ☐ No	☐ Photo
Braided Channel: ☐ Yes ☐ No Notes:	Natural/Manmade Obstructions: Notes:	☐ Photo
Floating Debris: ☐ Yes ☐ No Notes:	Sheen: ☐ Yes ☐ No	☐ Photo
Water Color:	Still Water/Eddies: ☐ Yes ☐ No	☐ Photo
Clarity:	Other	

WATER QUALITY FIELD PARAMETERS

Time (24 hr)	pH (SU):	Temp (units)	Electrical Conductivity (units)	Turbidity (units)

SAMPLE ANALYTICAL PARAMETERS – BOTTLEWARE/PRESERVATION

Test	Bottle Quantity - Type	Preservative Information	Sample Collected
@ANIONS28, @ANIONS48	1 - 125ml poly	None	☐
Turbidity	1 - 125ml poly	None	☐
Apparent Color, Odor at 60 C (TON)	1 - 1L amber glass	None	☐
Fluoride	1 - 250 ml poly	None	☐
Ammonia Nitrogen	1 - 250ml poly	0.5 ml H2SO4 (50%)	☐
Alkalinity in CaCO3 units	1 - 250ml poly	None	☐
Boron Total ICAP, Calcium Total ICAP, Iron Total ICAP, Magnesium Total ICAP, Manganese Total ICAP/MS, Potassium Total ICAP, Sodium Total ICAP	1 - 500ml acid poly	2ml HNO3 (18%)	☐
Surfactants	1 - 500ml poly	None	☐
Total Dissolved Solid (TDS)	1 - 500ml poly	None	☐

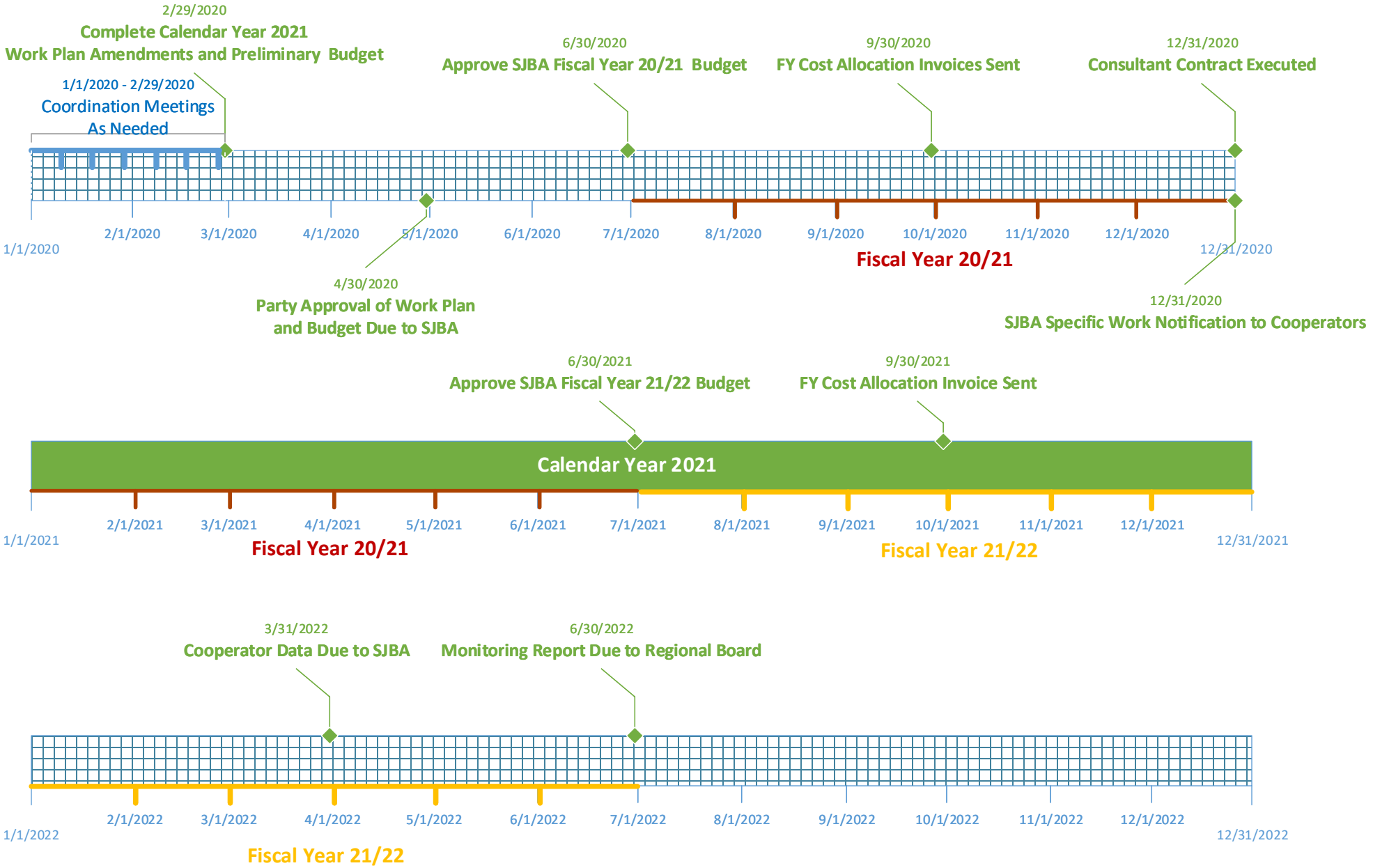
COMMENTS/OBSERVATIONS

Sampler Signature:

San Juan Basin Authority
Salt and Nutrient Management Plan (SNMP) Cooperative Agreement
FY 2020/21 SNMP Budget

Reflects Budget Approved by SJBA Board on: August 11, 2020

Item No.	G/L	Activity/Expense Name	Line Item Description	Approved FY 2020-21 Budget	Proposed Updated FY 2020-21 Budget	Increase/ (Decrease)	Participation %					Fiscal Year Contribution				
							City of SJC	MNWD	SMWD	SCWD	TCWD	City of SJC	MNWD	SMWD	SCWD	TCWD
SJBA Administration Costs (All Categories and Activities)																
A-1	9110	Administrative Services	Administrator (Brandt)	$ 110,000	$ 110,000	$ -	24.5%	24.5%	24.5%	24.5%	2.0%	$ 26,950	$ 26,950	$ 26,950	$ 26,950	$ 2,200
A-2	9110	Administrative Services	Administrative Assistance	$ 20,000	$ 20,000	$ -	24.5%	24.5%	24.5%	24.5%	2.0%	$ 4,900	$ 4,900	$ 4,900	$ 4,900	$ 400
A-3	9110	Financial Services	Accounting Services	$ 22,000	$ 22,000	$ -	24.5%	24.5%	24.5%	24.5%	2.0%	$ 5,390	$ 5,390	$ 5,390	$ 5,390	$ 440
A-4	9110	Audit Services	Annual audit	$ 9,000	$ 9,000	$ -	24.5%	24.5%	24.5%	24.5%	2.0%	$ 2,205	$ 2,205	$ 2,205	$ 2,205	$ 180
A-5	9110	Legal Services	General Counsel (Stradling)-Approved	$ 50,000	$ 50,000	$ -	24.5%	24.5%	24.5%	24.5%	2.0%	$ 12,250	$ 12,250	$ 12,250	$ 12,250	$ 1,000
A-6	9110	Legal Services	General Counsel (Stradling)-Reserve	$ -	$ -	$ -	24.5%	24.5%	24.5%	24.5%	2.0%	$ -	$ -	$ -	$ -	$ -
A-7	9110	Legal Services	Special Counsel (Evertz)	$ 10,000	$ 10,000	$ -	25.0%	25.0%	25.0%	25.0%	0.0%	$ 2,500	$ 2,500	$ 2,500	$ 2,500	$ -
A-8	9110	Secretarial Services	Board meeting recording secretary	$ 4,000	$ 4,000	$ -	24.5%	24.5%	24.5%	24.5%	2.0%	$ 980	$ 980	$ 980	$ 980	$ 80
A-9	9110	Arundo Retreatment/Maintenance	Followup to County work after grants expire	$ 10,000	$ 10,000	$ -	25.0%	25.0%	25.0%	25.0%	0.0%	$ 2,500	$ 2,500	$ 2,500	$ 2,500	$ -
A-10	9110	WQIP Flow-Ecology Study	SJBA consultant time/advice	$ 25,000	$ 25,000	$ -	24.5%	24.5%	24.5%	24.5%	2.0%	$ 6,125	$ 6,125	$ 6,125	$ 6,125	$ 500
A-11	9110	SOCWMA Cooperative Agreement	Annual participation fee	$ 11,500	$ 11,500	$ -	25.0%	25.0%	25.0%	25.0%	0.0%	$ 2,875	$ 2,875	$ 2,875	$ 2,875	$ -
			Subtotal	$ 271,500	$ 271,500	$ -						$ 66,675	$ 66,675	$ 66,675	$ 66,675	$ 4,800
Recycled Water Support Activities (SNMP-Related)																
B-5	9170	Basin Plan Amendment	Administrator (Brandt)	$ 3,000	$ 3,000	$ -	7.0%	17.4%	68.0%	0.0%	7.6%	$ 210	$ 522	$ 2,040	$ -	$ 228
B-6	9170	Basin Plan Amendment	Technical Consultation	$ 5,000	$ 5,000	$ -	7.0%	17.4%	68.0%	0.0%	7.6%	$ 350	$ 870	$ 3,400	$ -	$ 380
B-7	9170	Monitoring	General Counsel (Stradling)	$ 13,000	$ 13,000	$ -	7.0%	17.4%	68.0%	0.0%	7.6%	$ 910	$ 2,262	$ 8,840	$ -	$ 988
B-8	9170	Monitoring	Monitoring Well Reconnaissance	$ 5,000	$ 5,000	$ -	7.0%	17.4%	68.0%	0.0%	7.6%	$ 350	$ 870	$ 3,400	$ -	$ 380
B-9	9170	Monitoring	Proactive Monitoring Well Maintenance	$ 57,700	$ 40,000	$ (17,700)	7.0%	17.4%	68.0%	0.0%	7.6%	$ 2,800	$ 6,960	$ 27,200	$ -	$ 3,040
B-10	9170	Monitoring	2020 2nd Half SNMP Monitoring (WEI)	$ 59,000	$ 59,000	$ -	7.0%	17.4%	68.0%	0.0%	7.6%	$ 4,130	$ 10,266	$ 40,120	$ -	$ 4,484
B-11	9170	Monitoring	2021 1st Half SNMP Monitoring	$ 38,000	$ 38,000	$ -	7.0%	17.4%	68.0%	0.0%	7.6%	$ 2,660	$ 6,612	$ 25,840	$ -	$ 2,888
			Subtotal	$ 180,700	$ 163,000	$ (17,700)						$ 11,410	$ 28,362	$ 110,840	$ -	$ 12,388
							Total (SJBA Admin + SNMP)					**$ 78,085**	**$ 95,037**	**$ 177,515**	**$ 66,675**	**$ 17,188**



Example Schedule and Milestones for Calendar Year 2021 Monitoring

Note: All deadlines shown are the latest acceptable dates; tasks may proceed earlier

Revised : July 22, 2020

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