Agreement for Professional Services
Mission Springs Water District
66575 Second Street
Desert Hot Springs, CA 92240
Telephone 760-329-6448 – FAX 760-329-2482

For your protection, make sure that you read and understand all provisions before signing. The terms on pages 2 - 5 are incorporated in this document and will constitute a part of the agreement between the parties when signed.

TO: **Kyle Groundwater, Inc.**
309 E. Jefferson Avenue
Pomona, CA 91767

DATE: July 27, 2022

TITLE: **Develop a Well Rehabilitation Prioritization Program**

The undersigned Consultant agrees to furnish the following:

All Work/Services per the attached Exhibit A – Proposal, and in accordance with Exhibit B - Schedule as provided by Kyle Groundwater, Inc. and Exhibit C – Term, Early Termination & Notice

Contract price $: Not to Exceed $73,206.00

Term: **One (1) year from the effective Agreement DATE above**

Instructions: Sign and return via email. Upon acceptance by Mission Springs Water District, a copy will be signed by its authorized representative(s) and promptly returned to you. Insert the names of your authorized representative(s) below.

Accepted:	Consultant:
Mission Springs Water District	Kyle Groundwater, Inc. (Business Name)
By: _____	By: _____ 27-Jul-22
Arden Wallum	Russell Kyle
Title General Manager	Title President
Other authorized representative(s):	Other authorized representative(s):
Brian Macy	Kimberly Makar, PG
Assistant General Manager	CFO
Danny Friend	
Director of Operations	

Consultant agrees with the Mission Springs Water District that:

a. When the law establishes a professional standard of care for Consultant's services, to the fullest extent permitted by law, Consultant will immediately defend, indemnify and hold harmless Mission Springs Water District, its directors, officers, employees, and authorized volunteers from all claims and demands of all persons that arise out of, pertain to, or relate to the Consultant's negligence, recklessness, or willful misconduct in the performance (or actual or alleged non-performance) of the work under this agreement. Consultant shall defend itself against any and all liabilities, claims, losses, damages, and costs arising out of or alleged to arise out of Consultant's performance or non-performance of the work hereunder and shall not tender such claims to Mission Springs Water District nor to its directors, officers, employees, or authorized volunteers, for defense or indemnity.

b. Other than in the performance of professional services, to the fullest extent permitted by law, Consultant will immediately defend, indemnify and hold harmless Mission Springs Water District, its directors, officers, employees and authorized volunteers from all claims and demands of all persons arising out the performance of the work or furnishing of materials; including but not limited to, claims by the Consultant or Consultant's employees for damages to persons or property except for the sole negligence or willful misconduct or active negligence of Mission Springs Water District, its directors, officers, employees, or authorized volunteers.

c. By his/her signature hereunder, Consultant certifies that he/she 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 Consultant will comply with such provisions before commencing the performance of the professional services under this agreement. Consultant and sub-consultants will keep workers' compensation insurance for their employees in effect during all work covered by this agreement.

d. Consultant will file with Mission Springs Water District, before beginning professional services, a certificate of insurance satisfactory to Mission Springs Water District evidencing professional liability coverage of not less than $1,000,000 per claim and $2,000,000 annual aggregate, that coverage shall not be cancelled except with notice to Mission Springs Water District. Coverage is to be placed with a carrier with an A.M. Best rating of no less than A-: VII, or equivalent, or as otherwise approved by Mission Springs Water District. The retroactive date (if any) is to be no later than the effective date of this agreement. Consultant shall maintain such coverage continuously for a period of at least five (5) years after the completion of the contract work. Consultant shall purchase a five-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. In the event that the Consultant employs other consultants (sub-consultants) as part of the work 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.

e. Consultant will file with Mission Springs Water District, before beginning professional services, certificates of insurance (Acord Form 25 or equivalent) satisfactory to Mission Springs Water District evidencing

Coverage – Coverage for commercial general liability and automobile liability insurance shall be at least as broad as the following:

1. Insurance Services Office (ISO) Commercial General Liability Coverage (Occurrence Form CG 0001)

2. Insurance Services Office (ISO) Business Auto Coverage (Form CA 0001), covering Symbol 1 (any auto)

Limit – The consultant shall maintain limits no less than the following:

General liability - coverage of not less than two million ($2,000,000) per occurrence or the full per occurrence limits of the policies available, whichever is greater for bodily injury, personal injury and property damage; ($4,000,000 general and products-completed operations aggregate (if used)).

1. Auto liability - One million dollars $1,000,000 for bodily injury and property damage each accident limit.

2. Workers' compensation (statutory limits) and employer's liability ($1,000,000) (if applicable).

Required Provisions –

- The general liability coverage shall give Mission Springs Water District, its directors, officers, employees (collectively the District), and authorized volunteers insured status (via ISO endorsement at least as broad as CG 2010 1185 or **both** CG 20 10 plus CG 20 37 if a later edition is used) specifically naming the Mission Springs Water District, its directors, officers, employees, or authorized volunteers; or using the language that states "as required by written contract."

- The general liability coverage is to state or be endorsed (with as broad as ISO endorsement CG 20 01 04 13) to state "such insurance shall be primary and any insurance, self-insurance or other coverage maintained by Mission Springs Water District, its directors, officers, employees, or authorized volunteers shall not contribute to it".

- Coverage is to be placed with a carrier with an A.M. Best rating of no less than A-: VII, or equivalent, or as otherwise approved by Mission Springs Water District.

- The coverage shall contain no special limitations on the scope of protection afforded to Mission Springs Water District, its directors, officers, employees, or authorized volunteers.

- In the event that the Consultant employs other consultants (sub-consultants) as part of the work 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.

f. If any of the required coverages expire during the term of this agreement, the Consultant shall deliver the renewal certificate(s) to Mission Springs Water District at least ten (10) days prior to the expiration date.

g. Consultant shall not accept direction or orders from any person other than the General Manager or the person(s) whose name(s) is (are) inserted on Page 1 as "other Authorized Representative(s)."

h. Payment, unless otherwise specified on Page 1, is to be within thirty (30) days after acceptance by Mission Springs Water District.

i. Professional permits required by governmental authorities will be obtained at Consultant's expense, and Consultant will comply with applicable local, state, and federal regulations and statutes including but not limited to Cal/OSHA requirements.

j. Any change in the scope of the professional services to be done, method of performance, nature of materials or price thereof, or to any other matter materially affecting the performance or nature of the professional services will not be paid for or accepted unless such change, addition or deletion is approved in advance, in writing by a supplemental agreement executed by Mission Springs Water District. Consultant's "Authorized Representative(s)" has (have) the authority to execute such written change for Consultant.

k. Unless otherwise agreed upon in writing, all reports, documents, or other written material, including any documents, images, photographs, video files, or other media created or developed by Consultant as part of the services required hereunder ("Written Products") shall be considered to be "works made for hire", and all Written Products and any and all intellectual property rights arising from their creation, including, but not limited to, all copyrights and all other proprietary rights, shall be and remain the property of Mission Springs Water District without restriction or limitation upon their use, duplication or dissemination by Mission Springs Water District, except as otherwise provided herein. Consultant shall not obtain or attempt to obtain copyright protection as to any of the Written Products.

l. Consultant hereby assigns to Mission Springs Water District all ownership and any and all intellectual property rights to the Written Products that are not otherwise vested in Mission Springs Water District pursuant to section above.

m. Consultant shall not disclose, publish, or authorize others to disclose or publish, design data, drawings, specifications, reports, or other information pertaining to the projects assigned to the Consultant by the Mission Springs Water District or other information to which the Consultant has had access during the term of this Agreement without the prior written approval of an Authorized Representative during the term of this Agreement. Consultant's covenant under this section shall survive the termination of this Agreement.

n. Consultant shall maintain complete and accurate records with respect to sales, costs, expenses, receipts, and other such information required by the Mission Springs Water District or the Authorized Representative. The Consultant shall maintain adequate records on services provided in sufficient detail to permit an evaluation of service. All such records shall be maintained in accordance with generally accepted accounting principles and shall be clearly identified and readily accessible. At all times during regular business hours, Consultant shall provide access to such books and records to the Authorized Representative or his or her designees and shall give the Authorized Representative or his or her designees the right to examine and audit such books and records and to make transcripts as necessary, and shall allow inspection of all work, data, documents, proceedings, and activities related to this Agreement.

o. This Agreement is personal to the Consultant. Any attempt to assign or subcontract any right or obligation hereunder by the Consultant shall be void unless approved in writing in advance by the Authorized Representative. Consultant's services pursuant to this Agreement shall be provided by the representative or directly under the supervision of the representative and Consultant shall not assign another to supervise the Consultant's performance of this Agreement without the prior written approval of the Mission Springs Water District, by and through the Authorized Representative.

p. Consultant shall not maintain, commit, or permit the maintenance or commission of any nuisance in connection with the performance of services under this Agreement.

q. Consultant agrees to be familiar with and comply with all applicable federal, state, and local conflict of Interest laws, including, but not limited to, the Political Reform Act (California Government Code Sections 81000, et seq.) and California Government Code Section 1090. During the term of this Agreement, Consultant shall retain the right to perform similar services for other clients, but Consultant and its officers, employees, associates, and subcontractors shall not, without the prior written approval of the Authorized Representative, perform work for another person or entity for whom Consultant is not currently performing work that would require Consultant or one of its officers, employees, associates or subcontractors to abstain from a decision under this Agreement pursuant to a conflict-of-interest statute.

r. A waiver by the Mission Springs Water District of any breach of any term, covenant, or condition contained in this Agreement shall not be deemed to be a waiver of any subsequent breach of the same or any other term, covenant, or condition contained in this Agreement whether of the same or different character.

s. The Consultant shall commence, carry on, and complete all required tasks with all practicable dispatch, in a sound, economical, and efficient manner in accordance with all applicable laws and generally accepted industry standards.

t. No Third-Party Beneficiaries. The Mission Springs Water District shall not be obligated or liable under this Agreement to any party other than the Consultant.

u. In no event shall the making by the Mission Springs Water District of any payment to the Consultant constitute or be construed as a waiver by the Mission Springs Water District of any breach of covenant, or any default which may then exist, on the part of the Consultant, and the making of any such payment by the Mission Springs Water District while any such breach or default shall exist shall in no way impair or

prejudice any right or remedy available to the Mission Springs Water District with regard to such breach or default.

v. If any legal action is necessary to enforce any provision of this Agreement or for damages by reason of an alleged breach of any provisions of this Agreement, the prevailing Party shall be entitled to receive from the losing Party all costs and expenses in such amount as the courts may determine to be reasonable. In awarding the cost of litigation, the court shall not be bound by any court fee schedule, but shall, if it is in the interest of justice to do so, award the full amount of costs, expenses, and attorneys' and experts' fees paid or incurred in good faith.

w. In the performance of the work required by this Agreement, Consultant shall abide by and conform with and to any and all applicable laws of the United States and the State of California, and with the local County and Municipal Code, ordinances, regulations and policies.

x. If any part, term, or provision of this Agreement shall be held illegal, unenforceable, or in conflict with any law of a federal, state, or local government having jurisdiction over this Agreement, the validity of the remaining portions or provisions shall not be affected by such holding.

y. The terms of this Agreement shall be interpreted according to the laws of the State of California. Should litigation occur, venue shall be the Superior Court of Riverside County, California.

z. This Agreement represents the entire Agreement between the Mission Springs Water District and Consultant with respect to the subject matter hereto and supersedes all prior oral or written negotiations, representations, or agreements. No verbal agreement or implied covenant shall be held to vary the provisions of this Agreement. This Agreement shall bind and inure to the benefit of the parties to this Agreement and any subsequent successors and assigns. In the event of any inconsistency between the provisions of this Agreement and Consultant's proposal or Quote, and Exhibits hereto, the provisions of this Agreement shall control.

aa. Precedence of Exhibits. All documents referenced as exhibits in this Agreement are hereby incorporated in this Agreement. In the event of any material discrepancy between the express provisions of this Agreement and the provisions of any document incorporated herein by reference, the provisions of this Agreement shall prevail.

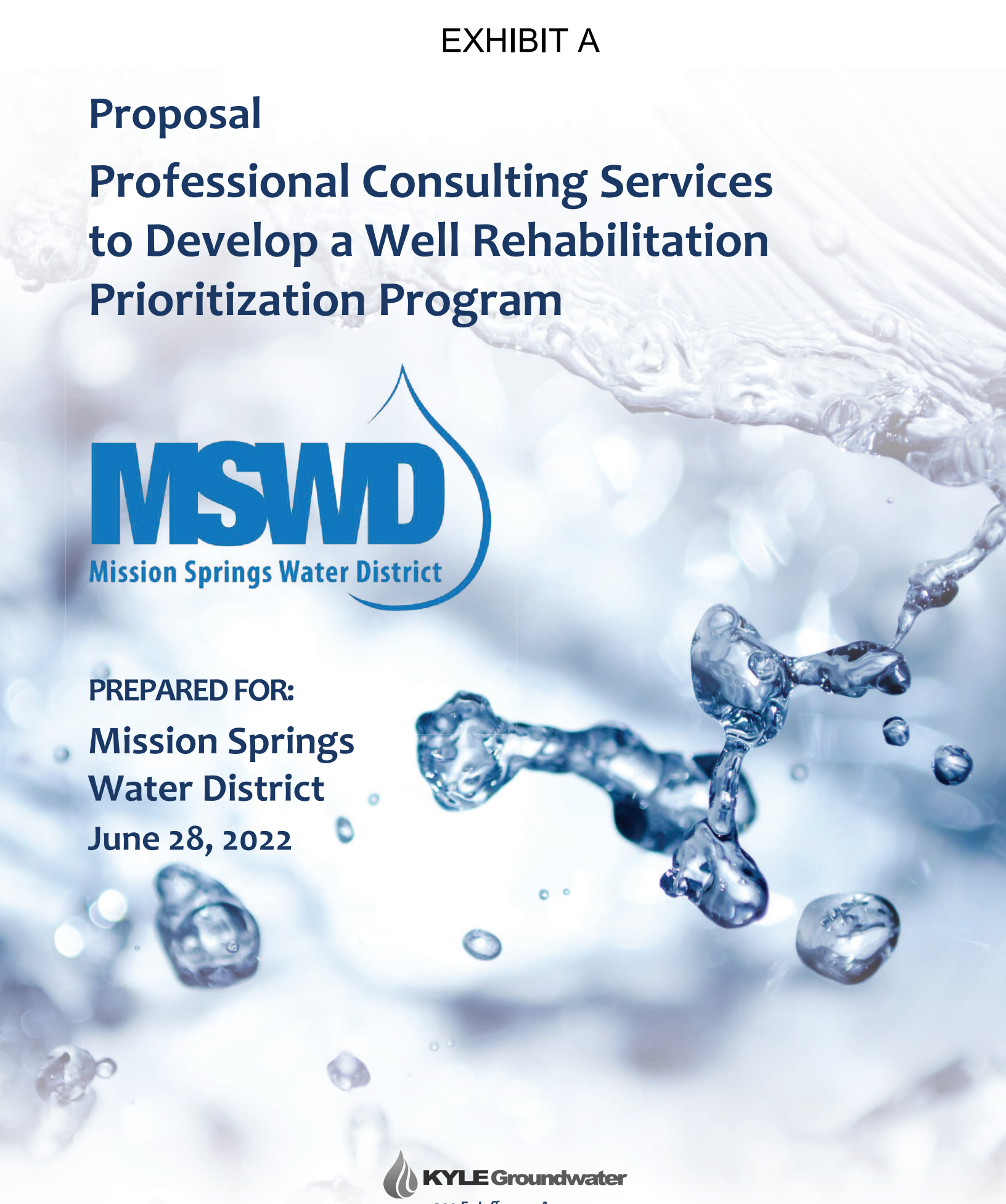
bb. Consultant will act hereunder as an independent contractor. This agreement shall not and is not intended to constitute Consultant as an agent, servant, or employee of the Mission Springs Water District and shall not and is not intended to create the relationship of partnership, joint venture or association between the Mission Springs Water District and Consultant.

cc. Each of the signatories herein hereby represents that he or she has the authority to execute the Agreement on behalf of his or her contracting party.

EXHIBIT A

Proposal

Professional Consulting Services to Develop a Well Rehabilitation Prioritization Program



MSWD
Mission Springs Water District

PREPARED FOR:

Mission Springs Water District

June 28, 2022

KYLE Groundwater
309 E. Jefferson Avenue
Pomona, CA 91767 | 626-379-7569
www.kylegroundwater.com

June 28, 2022

Mr. Brian Macy, PE
Engineering Manager
Mission Springs Water District
66575 Second Street
Desert Hot Springs, CA 92240

Re: Proposal to Provide Professional Consulting Services to Develop a Well Rehabilitation Prioritization Program

Dear Mr. Macy:

KYLE Groundwater, Inc. (KGI) is pleased to provide Mission Springs Water District (MSWD) with this proposal to provide professional consulting services to develop a well rehabilitation prioritization program. This proposal is in response to the Request for Proposal issued on June 1, 2022.

We offer a group of highly qualified personnel with a deep understanding of well diagnostics, rehabilitation processes, and requirements. Our PIC has designed and installed more than 150 water supply wells located throughout California and Mexico, has a thorough understanding of the hydrogeology governing groundwater flow to water wells. Within the past three years alone he has served as project manager for the evaluation and/or rehabilitation of more than 25 wells for a variety of public and private clients. Additionally, he has recently completed a large-scale well rehabilitation prioritization study for Palmdale Water District, and is embarking on a similar project for the City of Santa Clara. We have chosen DRP Engineering, Inc. (DRP) as our subconsultant to assist with engineering related task, as we have a long history of working together on numerous water supply projects in California, allowing for an efficient, integrated, and effective team.

As principal-in-charge (PIC) for this project, I can pledge that we are submitting this proposal as a statement of our commitment to provide the experienced leadership and expertise necessary to ensure a successful project for MSWD. It is our mission to surpass project goals and exceed our clients' expectations by applying innovative thinking to develop optimal technical solutions. Our general methodology is to combine our years of hard-earned experience with a scientifically based approach to produce a quality work product.

If you have any questions or require additional information, please feel free to call me at 626-379-7569. We appreciate the opportunity to begin a mutually beneficial working relationship with Mission Springs Water District, and encourage you to call our references to confirm the caliber of our team.

Sincerely,

Russell Kyle, PG, CHG
President / Principal Hydrogeologist

KYLE Groundwater, Inc.
309 E. Jefferson Avenue
Pomona, CA 91767
(626) 379-7569

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Appendix A. Resumes

KYLE GROUNDWATER, INC.

Company Name: *KYLE Groundwater, Inc.*
Contact Person: *Russell Kyle, President*
Email Address: *russell.kyle@kylegroundwater.com*
Phone Number: *626-379-7569*
Office Address: *309 E. Jefferson Avenue*
Pomona, CA 91767
Website: *www.kylegroundwater.com*

KYLE Groundwater, Inc. (KGI) is a California Corporation located in Pomona. Our company was founded in early 2018 by Mr. Russell Kyle in response to demand for experienced and innovative hydrogeological solutions from our Southern California clients. Since that time, we have established a large local client base of water agencies and purveyors, and are continuing to grow. We have a reputation of approaching each of our projects with fresh eyes and providing a superior and customized work product. Mr. Kyle, a Professional Geologist and Certified California Hydrogeologist, holds the philosophy that an honest, well-thought-out, innovative, and scientifically based approach coupled with a high-quality work product, leads to successful projects. The number and variety of successful projects over the course of his career is testament to that fact. Over the course of his career, Mr. Kyle has provided hydrogeologic design, construction, and inspection services for over 150 new water supply wells and has successfully evaluated and rehabilitated dozens of wells to stabilize structural abnormalities, recover lost production and improve poor water quality. Services offered by KGI include, but are not limited to:

Water Wells
- Siting
- Feasibility Studies
- Design
- Technical Plans & Specifications
- Construction Management
- Inspection
- Peer Review

Permitting Support
- Water Supply Studies
- Source Assessments (DWSAP)
- Domestic Water Supply Permit
- NPDES
- Control Zone Compliance
- Setback Compliance

Groundwater Basin Studies
- Regional Studies
- Groundwater Quality Characterization
- Perennial Yield Estimates
- Artificial Recharge Feasibility
- Well Field Optimization
- Groundwater Protection
- Well Maintenance Programs

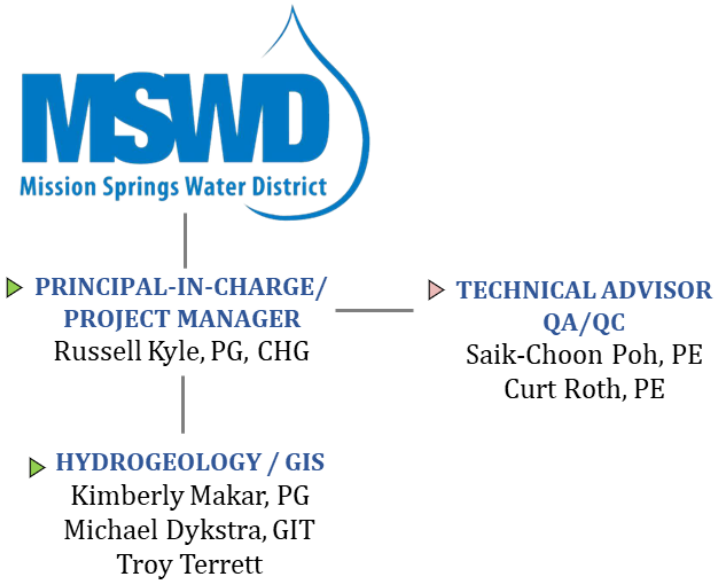
Groundwater Exploration
- Exploratory Drilling
- Test Wells
- Monitoring Wells
- Depth-Specific Sampling
- Well Canvassing

Well Rehabilitation and Redevelopment
- Well Condition Assessment
- Well Efficiency Testing
- Down-Hole Video Interpretation
- Flow Profiling
- Water Quality Assessment
- Mechanical and Chemical Treatment
- Well Modification
- Well Repair
- Liner Design
- Technical Plans & Specifications
- Construction Management
- Inspection

II. PERSONNEL

This section outlines the qualifications and responsibilities of our team's key members. Bringing more than 25 years' experience in water resources planning, development, and protection, our Principal-in-Charge (PIC) and Project Manager (PM), Mr. Russell Kyle, will coordinate directly with MSWD and other team members throughout the course of any given phase of the project. Mr. Kyle has successfully completed many high-profile groundwater resource projects within southern California and within the past 5 years alone has been responsible for the design of more than 25 water supply wells, and assessment, rehabilitation, and redevelopment of more than 40 wells. He has recent experience with successfully completing a regional-scale well rehabilitation prioritization project for Palmdale Water District, and was the PM and lead during execution of similar projects for the Long Beach Water Department and City of Riverside. Mr. Curt Roth of DRP Engineering will serve along with Mr. Saik-Choon Poh as technical advisor and QA/QC review. All work will be conducted by or under the direct supervision of a California Professional Geologist (PG), Certified Hydrogeologist (CHG), and/or Professional Engineer (PE).

Each member of our project team is identified in the organizational chart below, along with their respective roles for this project. Brief biographical sketches follow and selected resumes for key personnel are provided in Appendix A. Additional resumes can be provided upon request. Each key member of our team will be available for the duration of any given project and will not be reassigned without prior written approval from MSWD. All work will be under the direct supervision of a California Professional Geologist or Certified Hydrogeologist.



RUSSELL KYLE, PG, CHG (KYLE GROUNDWATER, INC.)

PRINCIPAL HYDROGEOLOGIST / PROJECT MANAGER

Licenses and Certifications: Professional Geologist, No. 7648, Certified Hydrogeologist, No. 822

Mr. Kyle has 25 years' experience with a wide variety of groundwater resource related projects for public and private clients within the western United States, Mexico, and Africa, with a focus on groundwater resources development in Southern California. The scope of his technical experience includes groundwater basin evaluations, water supply studies, well siting investigations, artificial recharge feasibility evaluations, well field condition assessments, well rehabilitation, desalination feedwater supply studies, and geophysical surveys. Over the course

of his career, he has been responsible for siting and installation of more than 150 water supply wells and 70 monitoring wells and exploratory borings, including management of field inspectors, coordination with drilling contractors and regulatory agencies, permitting, well design, and construction management. He has completed more than 36 high-profile well assessment, rehabilitation, and redevelopment projects within Southern California within the past 5 years. He is currently working on permitting, design, and inspection of 10 municipal water well installation projects and is providing construction management and inspection during construction of a new potable water supply well for the City of Tustin. Mr. Kyle is active within the water resources community as past-Chair to the AWWA CA-NV Water Well Technology Committee and as a voting member of the AWWA National Well Standards Committee. He is currently serving on three (3) expert technical advisory panels assisting with development of the most recent updates to the California Department of Water Resources Well Standards.

KIMBERLY MAKAR, GIT (KYLE GROUNDWATER, INC.)

HYDROGEOLOGY / GIS / INSPECTION

Licenses and Certifications: Professional Geologist, No. 10044

Ms. Makar is a professional geologist with ten years of experience in the water resource and mining industries. She began her career as a manager of the dewatering program at an open-pit copper mine in Nevada, for which she was responsible for developing and executing multi-million-dollar groundwater dewatering programs. Since 2014 she has been providing professional consulting services to the water resources industry in Southern California with an emphasis on new well installation and well rehabilitation. Ms. Makar served as field inspector during a number of recent well construction and rehabilitation projects for agencies such as California Water Service Company, South Montebello Irrigation District, Long Beach Water Department, Three Valleys Municipal Water District, Gage Canal Company, Palmdale Water District, Golden State Water Company, City of Tustin, and City of Hemet, and leads our permitting efforts during planning and construction of municipal water supply wells.

MICHAEL DYKSTRA (KYLE GROUNDWATER, INC.)

HYDROGEOLOGY / INSPECTION

Licenses and Certifications: Geologist-in-Training

Mr. Dykstra has 10 years' experience in the Southern California housing construction industry, where he worked closely with project managers to ensure projects were completed properly and in a timely manner. He received a Bachelor of Science degree in Geology from California State Polytechnic University – Pomona in 2017 and is currently seeking a Master of Science degree in the same subject. Since January 2020, Mr. Dykstra has been providing professional consulting services and support to the water resources industry in California, which includes field inspection for new water supply wells and well rehabilitations, and hydrogeologic support for groundwater quality studies, permitting, well siting, and design. He served as lead field inspector for the construction of new water supply wells for California Water Service Company, Montebello Land and Water Company, Lake Arrowhead Community Services District, and City of Tustin, and well rehabilitations for Long Beach Water District, Palmdale Water District, Gage Canal Company, Three-Valleys Municipal Water District, and City of Hemet.

JERRY BURNS (KYLE GROUNDWATER, INC.)

HYDROGEOLOGY / INSPECTION

Mr. Burns received a Bachelor of Science degree in Environmental Geology from California State Polytechnic University, San Bernardino and is pursuing a Master of Environmental Science degree from the University of Oklahoma. Since January 2022, Mr. Burns has been providing field inspection for new water supply wells and well rehabilitations, and hydrogeologic support for groundwater quality studies, permitting, well siting, and design. He is currently providing inspection services for City of Tustin, City of Hemet, and Desert Water Agency.

SAIK-CHOON POH, PE (DRP ENGINEERING, INC.)

TECHNICAL ADVISOR

Mr. Poh is a registered engineer in the State of California (Registration No. C 69223), specializing in environmental and civil engineering. He is experienced in production wells, water pipeline, and groundwater treatment facility projects. Mr. Poh has served as a senior manager in the water industry for 18 years and has successfully managed and led project teams that have developed and delivered a wide range of projects from feasibility studies, master plans, predesigns, detailed designs and services during construction on a variety of projects.

CURTIS ROTH, PE (DRP ENGINEERING, INC.)

TECHNICAL ADVISOR

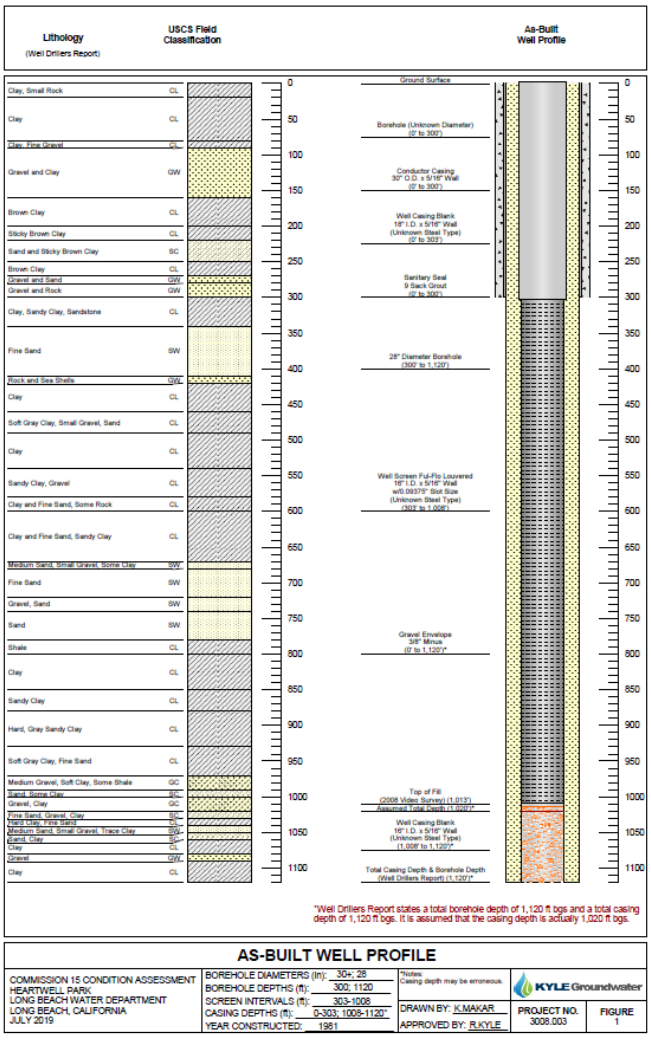
Mr. Roth brings 23 years of experience in environmental and civil engineering. He is experienced in water, storm water, recycled water, and wastewater conveyance as well as all aspects of water and storm water treatment. Mr. Roth adds tremendous experience designing, constructing, and operating new and innovative systems for the treatment of water, and has extensive design and institutional knowledge regarding treatment, water mains, sewers, and sewer lift stations.

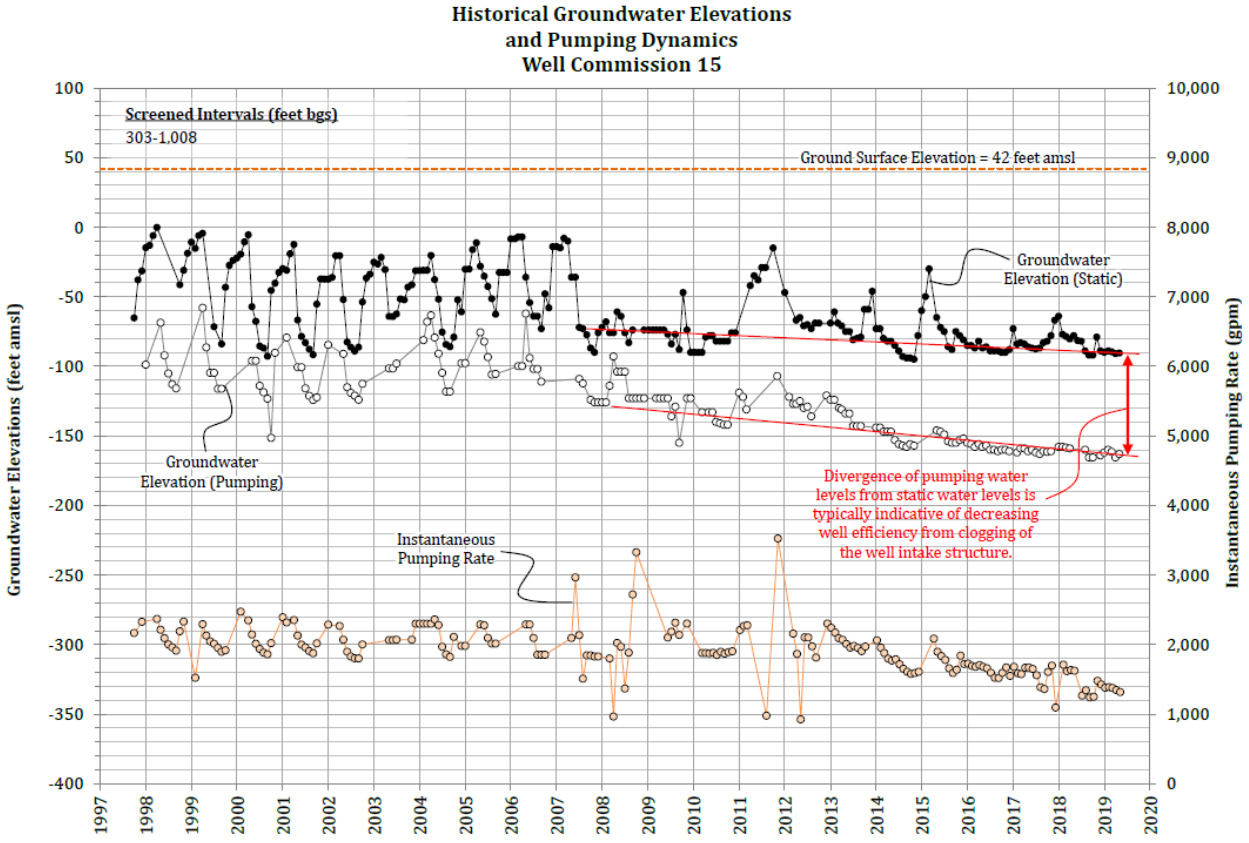
III. UNDERSTANDING OF THE PROJECT

Mission Springs Water District (MSWD) meets the water demand of its approximately 13,500 service connections entirely through use of pumped groundwater. The MSWD service area encompasses approximately 135 square miles, including the City of Desert Hot Springs, a portion of the City of Palm Springs, and ten smaller communities in Riverside County, including North Palm Springs, West Palm Springs, and Palm Springs Crest. The MSWD water supply and distribution system includes three separate systems with the largest of the three systems serving the community of Desert Hot Springs, the surrounding communities of West Garnet, and North Palm Springs. The two smaller systems, Palm Springs Crest System and West Palm Springs Village System, are located approximately five miles west of Desert Hot Springs. Groundwater pumped from MSWD's thirteen active wells is primarily produced from the Mission Creek subbasin via eight water supply wells, and to a lesser extent, from the Indio subbasin via three active wells, and from San Gorgonio Pass subbasin via two active wells. The MSWD wellfield ranges in age from 1958 through the present, with an average age of approximately 36 years.

It is our understanding that MSWD's primary goal for this project is to manage maintenance of local water supply sources, and retain water independence. This planning document will guide MSWD in decision making for future well maintenance and well replacement projects designed to optimize and maintain production capacity. It will identify those wells that are in most need of rehabilitation and that stand the best chance for success at the lowest cost. It will also identify wells that should be operated to failure while planning for replacement.

Our systematic approach to well rehabilitation prioritization planning on a regional level is based on sound scientific principles and have been honed through years of experience with similar projects. The first step is to acquire all available well data from which to develop comprehensive histories for each well and pump, including tabular and graphical summaries of construction details, operational details, and historical performance dynamics. Additionally, it is critically important to meet with MSWD's experienced operations personnel to query first-hand operational information that may not be available in written form. This is likely to include operational concerns such as sand or gravel production, air entrainment, breaking of suction, evidence of biofouling or encrustation on pumping components, structural issues, and past well rehabilitation efforts and results.



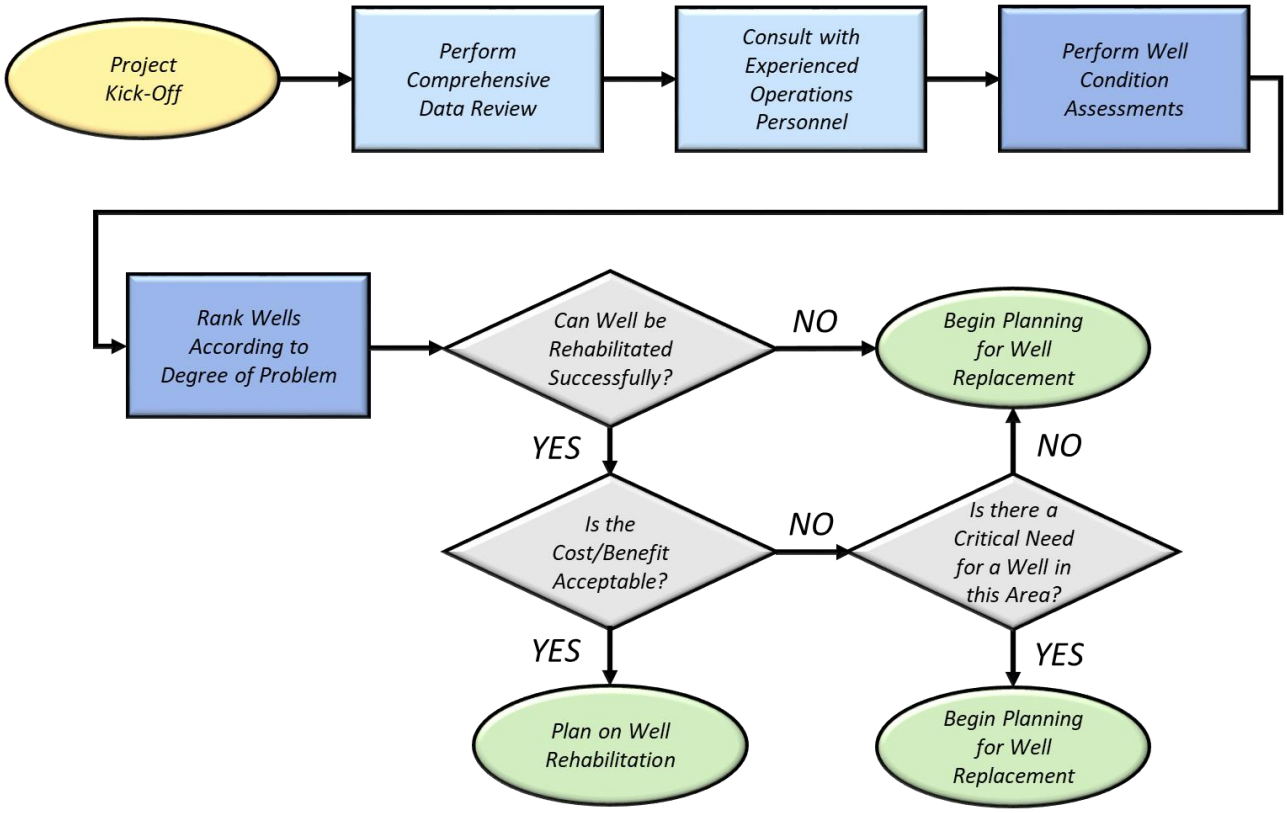


Condition assessments will then be prepared for each well based on the available information, primarily including visual information from historical downhole video surveys, and an evaluation of historical trends in well production parameters, including instantaneous pumping rate, specific capacity, and power consumption. The remaining useful life of each well will be estimated based on age, design, materials of construction, groundwater quality, pumping dynamics, and operational protocols. Pumping dynamics will be evaluated in the context of regional static and pumping groundwater elevations to identify causes of production loss and/or water level decline, as applicable. The three primary causes of declining well production are typically as follows:

1. Wells that exhibit stable static water levels, declining pumping water levels, and declining specific capacity are likely impacted by local degradation effects (i.e., well clogging, etc.).
2. Wells that exhibit declining static and pumping groundwater levels are likely impacted by regional groundwater level decline.
3. Wells that exhibit stable water levels and specific capacity, but declining production and/or increasing power consumption may be experiencing pump-related issues.

The process by which the wells are prioritized is summarized by the decision matrix shown on the following page. The condition of each well will be ranked relative to other wells based on a variety of criteria that will be assigned a raw criteria score and criteria weighting factor. The product of individual criteria scores and their respective weighting factors will result in a total weighted score and an overall ranking as to well condition. Those wells considered to be in the worst condition and with the greatest risk of structural failure would be ranked higher than wells in relatively good condition.

The wells will then be evaluated and ranked as to the probability of successful rehabilitation efforts and whether or not the benefit of rehabilitation outweighs the cost and risk. The probability of success will be based on many factors, including the degree of clogging, how long the condition has remained unchecked, suitability of the well design and condition to rehabilitation efforts, the degree of complexity and expense, and whether or not prior rehabilitation events have been successful. Those wells ranked higher on this list will be the wells most in need of rehabilitation that have the greatest probability of success at the least cost. A final consideration will be the importance of any particular well within the system, as determined by MSWD, such as a well that serves as critical supply to a treatment plant and/or particular system or pressure zone. In these cases, wells ranked lower on the final ranked list may take precedence over other wells when considering plans for rehabilitation.



A subset of wells will ultimately be identified as having limited remaining useful service life, significant structural issues, and/or for which well rehabilitation efforts would be impossible or prohibitively expensive. In these cases, the recommendation would be to run the well to failure and proactively plan for replacement.

Each and every well is different, requires specialized care, and will respond differently to the various processes utilized during rehabilitation and redevelopment, and each well will undoubtedly present unforeseen complications during execution of the work. As such, well rehabilitation specifications should be tailored to each well on a case by case basis. We recognize however that there are major tasks that are generally included in the majority of well rehabilitation activities. These tasks will be included within our technical specifications with the intent that each task should be selected and refined to complement any particular well following a careful condition assessment.

Our typical recommended program of rehabilitation and redevelopment includes the following sequence of tasks that have been designed to effectively disperse mechanical and chemical energy throughout the well screen and

near-well zone. These tasks may require modification based on the specific condition of each well. In order to loosen and dislodge materials within the gravel envelope and near-well zone, a mechanical brushing procedure may be recommended. The brushes would consist of spirally-wound nylon, polypropylene or polyethylene bristles mounted on a 6-inch minimum diameter weighted core. It is recommended that the weighted brushes be attached to the sand line of a rig equipped with a variable-speed rotating arm capable of a minimum 6-foot continuous revolution (i.e., 12-feet of vertical movement) and 10 strokes per minute, thus providing a minimum of 120 feet of vertical movement per minute.

Following brushing, and as needed, a program of pre-development may be recommended. This process uses focused intake pumping apparatus to open the gravel envelope and near-well zone in such a way as to allow effective penetration of chemicals.

Following pre-development, a two-phase chemical cleaning program is typically employed, including application of chemical dispersant to further open up the gravel envelope and near-well zone, followed by chemical cleaning through use of acids and/or surfactants. All chemicals are applied to the well screen by injection into a surge block while simultaneously distributing the chemical.

After an appropriate amount of contact time for the chemical, a program of redevelopment should be undertaken, and would consist of two phases. Phase I, or initial redevelopment, will consist of focused-intake pumping through a 10-foot-long double surge block. This method has proven to be more effective than the more typical airlift development as high rates of continuous flow (i.e., 300 to 900 gpm) can be achieved through a 10-foot-long double surge block, while simultaneously swabbing. Phase II, or final redevelopment, would consist of pumping and surging the well using a test pump and motor, with the goal of maximizing instantaneous production and specific capacity, and minimizing sand production.

SCOPE OF SERVICES

1.0 Project Management and Quality Control

The KGI team will prepare for and attend a kickoff meeting with MSWD personnel to discuss the proposed scope of work. The primary objective of the project kick-off meeting will be to meet face-to-face with key members of the project team to make sure that the intent, objectives, tasks, budgets, schedules, milestones, deliverables, and data needs are properly understood and addressed. The kick-off meeting also introduces and identifies those individuals responsible for implementing each part of the work and provides a forum for discussion of critical-path tasks, and how those tasks can be efficiently executed. A Project Management Plan will be presented at the

meeting and will include a baseline project schedule, contact information, budget table, and sample invoice. Pertinent members of the project team will attend up to nine (9) monthly project progress meetings, as necessary, throughout the duration of the project. Meeting agendas will be prepared for all project meetings and meeting minutes will be provided to MSWD within five (5) working days. Monthly project progress reports will be submitted with all invoices, including a discussion of task progress, anticipated issues, and project schedule.

Sound hydrogeological and engineering criteria will be used throughout administration of the project and all data, calculations, conclusions, and interpretations will be vetted through a rigorous multi-level QA/QC process. Our project manager and applicable team members will identify problems as they arise and will provide timely recommendations regarding an appropriate response. Essential factors which determine the success of any given project include scope, schedule, and budget. We will effectively manage these three fundamental factors to bring the project to a successful conclusion both on schedule and within budget. Comment spreadsheets will be provided with each deliverable as a means of tracking comments received and actions taken.

2.0 Data Acquisition & Analysis

KGI will acquire and review readily available well and pump data, reports, published literature, and models pertaining to MSWD's well field, including location of facilities, details of well construction, static and pumping groundwater levels, instantaneous pumping rates, specific capacity data, historical plant efficiency tests, flowmeter surveys, groundwater quality data, and existing well pump curves. Details of prior well modification, repair, and rehabilitation efforts will also be reviewed. Historical video surveys will be reviewed in an effort to directly evaluate any biological and/or chemical processes that may be occurring, and any structural issues that may be present. Additionally, KGI will meet with and interview MSWD's experienced operations personnel to query first-hand operational information such as sand or gravel production, air entrainment, breaking of suction, evidence of biofouling or encrustation on pumping components, structural issues, and undocumented well rehabilitation/repair efforts and results.

KGI will review all data in the context of developing operational and condition assessments for each well from which detailed well histories and baseline summaries will be developed. These well histories will be presented to MSWD for review and comment prior to proceeding with preparing the well rehabilitation prioritization plan.

3.0 Well Rehabilitation Prioritization Plan & Recommendations

KGI will utilize information and conclusions from the data review in Task 2.0 to assess, prioritize and rank the wells according to the methodology described herein. The plan will include all data collected presented in tabular and graphical formats (e.g., historical charts and well as-built drawings), condition assessments for each well, a description of the ranking and prioritization process (including justification of scoring and weighting), ranked priority lists, and a summary of rehabilitation methods and planning level costs pertinent to MSWD's well field. Ranking lists will be designed to be updatable by MSWD personnel as conditions change (i.e., wells are rehabilitated and/or replaced). The plan will also include a review of current MSWD well design standards in the context of well efficiency and longevity and provide comments and recommendations.

KGI will submit three (3) bound copies and an electronic (i.e., PDF) copy of the prioritization plan at the 50%, 70% and 90% DRAFT stage for review and comment. Workshops will be held at the MSWD offices following submittal of each draft report to field questions and address comments before moving forward with subsequent versions. Upon incorporation of comments, three (3) bound copies of the FINAL plan will be provided along

with native and PDF formats. Following submittal of the final plan, KGI will conduct a workshop for MSWD personnel to provide training on future update and refinement of the plan.

4.0 Well Rehabilitation Technical Specifications

KGI will prepare a comprehensive set of technical specifications for common well rehabilitation, redevelopment, testing, and maintenance procedures. It is proposed that these specifications will be presented in a modular fashion such that a bid-ready set of specifications can readily be assembled and combined with front-end documentation with minimal modification. Typical items to be included in the technical specifications will include the following:

- Pump removal and inspection
- Diagnostics
  - Efficiency testing
  - Pre-rehabilitation video surveys
  - CITM surveys
  - Depth-specific water quality sampling
  - Sidewall sampling and analysis
- Well casing repair
  - Patches
  - Liners
- Mechanical cleaning
  - Brushing
  - Jetting
  - Percussive
  - Bailing/airlifting
- Chemical cleaning
  - Surfactants and dispersants
  - Acids
  - Application methods
- Well redevelopment
  - Pre-development (prior to chemical cleaning)
  - Initial redevelopment by swabbing and pumping
  - Final redevelopment by pumping and surging
- Aquifer testing
  - Step drawdown test
  - Constant rate drawdown test
  - Recovery test
  - Flowmeter survey
- Post-rehabilitation downhole video surveys
- Well disinfection
- Repair and reinstallation of pump
- Startup testing

KGI will submit three (3) bound copies and an electronic (i.e., PDF) copy of both the 70% and 90% DRAFT versions of the plans and specifications to MSWD for review and comment. Workshops will be held at the MSWD offices following submittal of each draft report to field questions and address comments before moving forward with subsequent versions. Upon incorporation of comments, three (3) bound copies of the FINAL technical specifications will be provided along with native and PDF formats.

5.0 Bid Support Services

KGI will prepare technical plans and specifications for rehabilitation, redevelopment, and testing of the three (3) top ranked production wells, assist MSWD with modification of front-end contractual documents, prepare detailed bid schedules with specific line items showing units and unit quantities for the work, and will assemble the completed bid package and ready it for bidding. Engineer's estimates of construction costs will be prepared based on recent winning bids and materials costs for similar work within the Southern California area. Critical items to be included in the technical specifications typically include the following:

- Site requirements (i.e., preparation, noise monitoring and mitigation, dust control, waste disposal, BMPs, power, lighting, construction water source, security, sanitation facilities, staging, parking, and traffic control)
- Regulatory and permitting requirements
- Discharge requirements
- Hydrogeologic conditions
- Mobilization, demobilization, site preparation, preservation, and site restoration
- Equipment, materials, and records to be furnished by the contractor
- Pump removal, assessment, and storage procedures
- Preliminary diagnostic procedures (i.e., video and EMT-24 surveys)
- Well rehabilitation procedures (mechanical and chemical)
- Well redevelopment procedures (pre-, initial, and final)
- Aquifer testing
- Post-rehabilitation downhole video surveys
- Well disinfection
- Pump repair, modification, and reinstallation

KGI will submit a 100% DRAFT version of the bid package to MSWD for review and comment in electronic format. Upon incorporation of comments, a FINAL bid-ready version of the technical specifications will be provided to MSWD in native and PDF formats, including professional stamps and signatures.

Upon entering the bid phase, KGI will prepare for and attend a pre-bid meeting with MSWD and prospective drilling contractors to discuss key points within the technical plans and specifications, and to answer questions regarding site conditions, staging, preliminary well design, schedule and other hydrogeologic or contractual matters. During the bidding process, KGI will respond to bidder's questions and prepare bid addenda as necessary (assumes up to three [3] RFIs and addenda). Once the bidding process is complete, KGI will assist MSWD with bid evaluation and will provide recommendations regarding award. Upon request, and agreement on scope and fee, KGI will provide technical support throughout the duration the construction phase of well rehabilitation.

6.0 Baseline Testing Services (Optional)

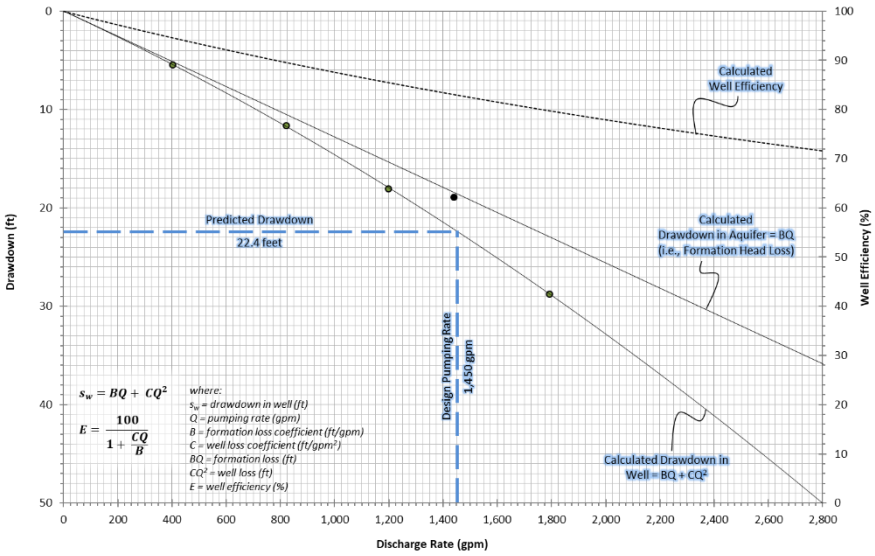
KGI will provide optional services to conduct testing and data analysis (as described in the RFP) for up to six (6) wells identified by KGI and MSWD within the 90% well rehabilitation prioritization plan. The purpose of this testing is to determine baseline well and pump efficiency from which gauge the success of any given well and/or pump rehabilitation event.

Well Efficiency

Well efficiency is a metric from which to judge well performance as measured by the ratio of actual specific capacity to theoretical specific capacity, and can be calculated by determining two components of head loss during pumping, 1) aquifer loss, and 2) well loss. The discovery by Henri Darcy in 1886 that groundwater flow within an aquifer is

laminar and that head loss varies by the first power of the flow velocity and discharge rate allows for calculation of head losses within an aquifer during pumping at any given flow rate. Head loss from turbulent flow as groundwater moves through the gravel envelope and well screen openings is referred to as well loss and varies by the square of the velocity (i.e., discharge rate). Combining these terms results in the equation for total drawdown within an aquifer as follows: $S_w = BQ + CQ^2$, where S_w is total drawdown within the well, BQ is the head loss from laminar flow within the aquifer, and CQ^2 is head loss from turbulent flow within the well intake structure. In order to calculate the aquifer and well loss coefficients, it is necessary to measure predictable drawdown trends in the well at differing pumping rates, as is accomplished through step drawdown aquifer testing. As such, it should be noted that the 1-hour test cycle stipulated in the RFP will not provide sufficient data from which to calculate well efficiency, and a test of approximately 2 to 3 hours will be needed. However, the goal of conducting three well tests in one working day is still acheivable.

Pump Efficiency



The overall pumping plant efficiency (OPE) is a measure of the efficiency of all pump components at the design pumping rate and total dynamic head. This parameter, sometimes referred to as wire-to-water, is calculated from the ratio of water horsepower to input horsepower. Water horsepower is the horsepower required to pump water against a specified head at 100% OPE. Input horsepower is calculated from data collected during efficiency testing. KGI will review existing pump efficiency test reports and, as necessary, can conduct OPE testing in conjunction with the well efficiency testing described above. This will require collection of an additional subset of data, including system pressures and power usage, from which OPE can be calculated for each of the step of the well efficiency testing described above.

Analysis and Reporting

KGI will provide field inspection and direction during testing and will provide the field equipment outlined in the RFP. We assume that the six (6) wells will be tested over a period of two (2) working days and that MSWD will install the Rossum centrifugal sand tester (provided by KGI), and provide all necessary pumping equipment (i.e., flow control valves and system pressure meters), needed for testing. All data will be collected by KGI and recorded on standard field forms. Following testing, KGI will provide a brief letter report summarizing the work and presenting the calculated well and pump efficiency baselines.

Recommended Additional Services

Based on the data summary presented in the RFP, video survey reports are not available for all wells. If this is the case, we would recommend performing downhole video surveys for those wells. Further, it would be prudent to conduct EMT-24 surveys at the time of the video surveys such that an assessment of casing integrity can be made. These services can be provided upon request.

IV. REFERENCES

We encourage MSWD to contact any of our references listed within this proposal to verify our technical expertise and project delivery capabilities. However, The following we believe the following five (5) references speak to our experience with well condition assessment and diagnostics.

Mr. Scott L. Rogers, PE *Engineering Manager* *Palmdale Water District* *srogers@palmdalewater.org* *661-456-5319*	• Development of Well Rehabilitation Prioritization Program. • Siting and Preliminary Design of Well No. 36. • Permitting, Design, and CMI for Well No. 36. • Repair and Rehabilitation of Well No. 7A. • Source Capacity Assessment of Well No. 4A.
Ms. Dian Tanuwidjaja, PhD, PE *Senior Civil Engineer* *Long Beach Water Department* *dian.tanuwidjaja@lbwater.org* *562-570-2357*	• Collection Main and New Well Site Study. • Rehabilitation and Redevelopment of Wells WIL-1A and CTZ-9A. • On-Call Hydrogeological Services – 2021 and 2022. • Drilling of Wells Alamitos 9A and Alamitos 14. • Drilling of Wells COM-23A, DOR-1, DOR-2 and CTZ-8A. • Rehabilitation of Wells COM-15 and COM-18. • Miscellaneous Permitting and Well Diagnostics.
Mr. Travis Holyoak *Water/Waste Water Superintendent* *City of Hemet* *tholyoak@hemetca.gov* *951-765-3710*	• Drilling of Well 10A. • Drilling and Testing Gibbel Park Monitoring Well • Rehabilitation of Well No. 2A. • Rehabilitation of Well No. 12.
Mr. Ryan Molhoek, PE *Senior Engineer* *Desert Water Agency* *rmolhoek@dwa.org* *760-323-4971 x.148*	• Rehabilitation and Redevelopment of Well No. 23. • Condition Assessment for Well Nos. 44 and 45. • Feasibility of Return to Service: Well Nos. 44 and 45.
Ms. Catherine Cerri *General Manager* *Lake Arrowhead Community Services District* *ccerri@lakearrowheadcsd.com* *(909) 336-7102*	• Diagnostics and Water Quality Mitigation for Well No. 2. • Drilling and Construction of the Blue Jay Well. • Miscellaneous Well Siting and Diagnostics.

V. LIST OF REPRESENTATIVE PROJECTS

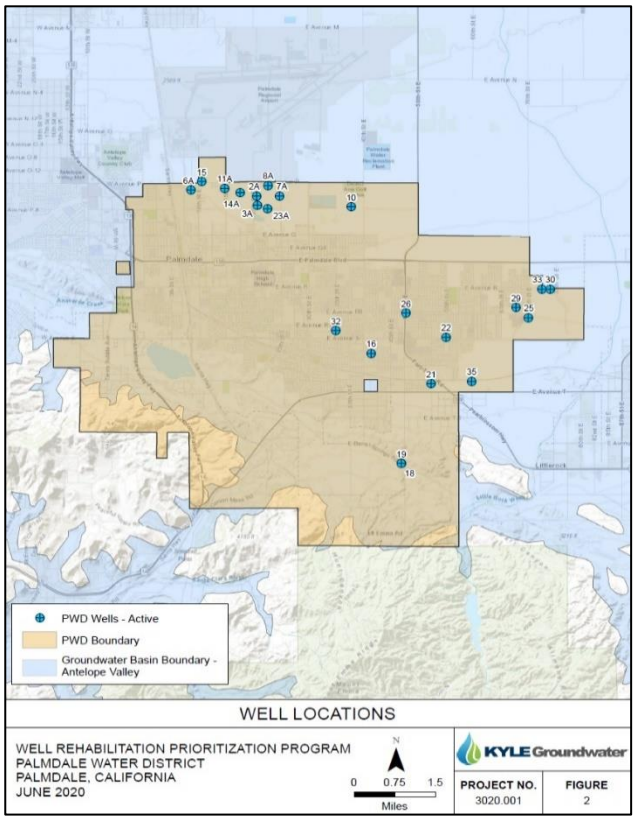
Our team members have the experience and expertise necessary to deliver the highly specialized hydrogeological and engineering services needed for this project. The following pages include a selection of reference projects that demonstrate a proven track record with recent project-relevant experience. Key members of our team outlined in this proposal held significant roles within these reference projects. The client references listed in this section can attest to the quality of our services, delivery capability, and our level of ownership. In addition to the projects presented on the following one-page project summaries, key members of our project team were also instrumental in the following well rehabilitation projects completed within the past four (4) years. This experience highlights the depth of knowledge and expertise held by our team with respect to well rehabilitation and redevelopment.

Well Rehabilitation Experience Within the Past Four Years (25 Wells)

California Water Service Company	DOM 219-02
California Water Service Company	DOM 272-01
City of Banning	Well C-6
City of Banning	Well M-10
City of Hemet	Well 2A
City of Hemet	Well 12
Desert Water Agency	Well 23
Desert Water Agency	Well 44
Desert Water Agency	Well 45
Gage Canal Company	Well 26-1
Gage Canal Company	Well 46-1R
Indio Water Authority	Well U
Indio Water Authority	Well 3B
Lake Arrowhead Community Services District	Well 2A
Long Beach Water Department	Well Wilson 1A
Long Beach Water Department	Well Citizens 9
Long Beach Water Department	Well Wise 1A
Long Beach Water Department	Well Commission 15
Long Beach Water Department	Well Commission 18
Long Beach Water Department	Well Commission 21
Long Beach Water Department	Well Development 9
Olam Farms	Well 7B
Olam Farms	Well 14
Palmdale Water District	Well 7A
Palmdale Water District	Well 4A
Riverside Public Utilities	Styles Well
Riverside Public Utilities	Van Buren Well 2
Soboba Band of Luiseno Indians	Well DW-5
Suburban Water Systems	Plant 409
Three Valleys Municipal Water District	Well 1

PALMDALE WATER DISTRICT
WELL REHABILITATION PRIORITIZATION PROGRAM

Location:	Palmdale, CA
Personnel:	Russell Kyle, Project Manager/Hydrogeologist Kimberly Makar, GIS/Hydrogeologic Support Michael Dykstra, Hydrogeologic Support
Client:	Palmdale Water District
	Scott Rogers, PE
	srogers@palmdalewater.org
	661-456-1020
Completion Date:	Ongoing
Total Cost:	$140,000



Palmdale Water District (PWD) meets the water demand of its almost 28,000 service connections through a combination of treated surface water from the State Water Project (SWP), and groundwater pumped from water supply wells. PWD's twenty two (22) active groundwater production wells account for approximately 40 percent of water supplied to its customers, the majority of which is pumped directly into the distribution system following disinfection. PWD's primary goal for this project is to prepare a roadmap to maximize local water supply sources and reduce reliance on costly imported water. This planning document will guide PWD in decision making for future well maintenance and well replacement projects designed to optimize and maintain production capacity. It will identify those wells that are in most need of rehabilitation and that offer the best chance for success at the lowest cost. It will also identify wells that should be operated to failure while planning for replacement.

KGI developed a rehabilitation and replacement prioritization plan for the PWD well field, consisting of the previously mentioned 22 active groundwater production wells. This project involved a thorough evaluation and ranking of each well as to overall condition, rehabilitation feasibility and estimated remaining well life. Additional components of the project included development of modular technical specifications for well rehabilitation, and rehabilitation of up to three wells, including technical specifications and bid support.

LONG BEACH WATER DEPARTMENT
REHABILITATION OF WELLS CITIZENS 9 AND WILSON 1A

Location:	Long Beach, CA
Personnel:	Russell Kyle, Project Manager/Hydrogeologist Kimberly Makar, Field Inspection Michael Dykstra, Field Inspection
Client:	Long Beach Water Department
	Wendy Chen, PE
	wendy.chen@lbwater.org
	562-570-2324
Completion Date:	Est. ~December 2020
Total Cost:	$219,500

In an effort to increase local water supply reliability, the Long Beach Water Department (LBWD) is seeking to optimize local water supply sources and maintain a production well field capacity of 32,692 acre-feet per year (AFY) through the year 2032. This requires ongoing rehabilitation of existing wells to increase production from existing sources of supply, and construction of several new groundwater wells.

Rehabilitation of Wells Wilson 1A and Citizens 9 is part of the ongoing effort to maintain and optimize the capacity of local resources. The KGI team was tasked with resident engineering, and providing full-time construction management and inspection services. This included development of a well rehabilitation and redevelopment plan, evaluation of the existing pump and motor, and electrical and site upgrades.

Both wells have been successfully rehabilitated and redeveloped with dramatic increases in both instantaneous pumping rate and specific capacity. Well Citizens 9 has increased from a historical low pumping rate of 166 gpm to approximately 1,000 gpm, an 500% increase. Likewise, the specific capacity of the well at those pumping rates has increased by 400% from approximately 2 gpm/foot to 10 gpm/foot.

LONG BEACH WATER DEPARTMENT

REHABILITATION OF WELLS COMMISSION 15 AND COMMISSION 18

Location:	Long Beach, CA
Personnel:	Russell Kyle, Project Manager/Hydrogeologist Kimberly Makar, Field Inspection Michael Dykstra, Field Inspection Jerry Burns, Field Inspection
Client:	Long Beach Water Department
	Kyle Knoke
	kyle.knoke@lbwater.org
	562-570-2322
Completion Date:	Est. ~October 2023
Total Cost:	$699,200

In an effort to increase local water supply reliability, the Long Beach Water Department (LBWD) is seeking to optimize local water supply sources and maintain a production well field capacity of 32,692 acre-feet per year (AFY) through the year 2032. This requires ongoing rehabilitation of existing wells to increase production from existing sources of supply, and construction of several new groundwater wells.

Rehabilitation of Wells Commission 15 and Commission 18 is part of the ongoing effort to maintain and optimize the capacity of local resources. KGI has developed a well rehabilitation and redevelopment plan for the wells, and is currently providing full-time construction management and inspection services.

Rehabilitation of Commission 18 included pre-development, a two-phase chemical treatment process, redevelopment by focused intake pumping, and final development by pumping and surging. Early data suggest that the well capacity has been increased from 631 gpm to in excess of 2,000 gpm, with a corresponding increase in specific capacity from 9 gpm/foot to 18 gpm/foot.

Screened intervals 690 ft and 800 ft BEFORE chemical treatment.

Screened intervals 690 ft and 800 ft AFTER chemical treatment.

CALIFORNIA WATER SERVICE COMPANY

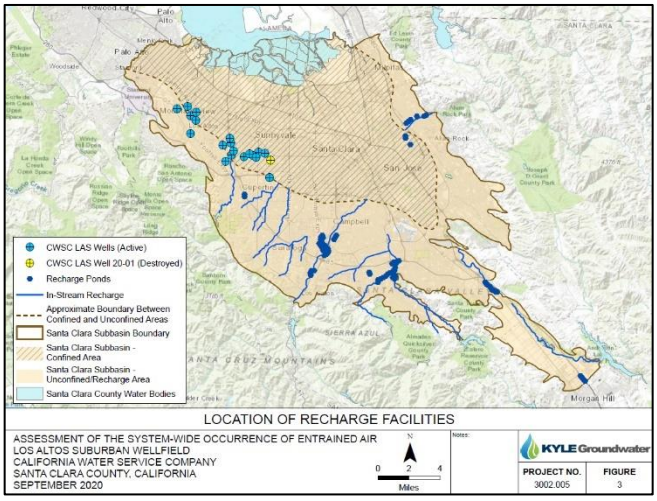
WELL AND WELL FIELD EVALUATION – SUNNYVALE, CALIFORNIA

Location:	Sunnyvale, California
Personnel:	Russell Kyle, Project Manager/Hydrogeologist Kimberly Makar, Permitting/GIS Michael Dykstra, Hydrogeological Support
Client:	California Water Service Company
	Julie Huynh
	jhuynh@calwater.com
	408-367-8394
Completion Date:	January 2021
Total Cost:	$22,200

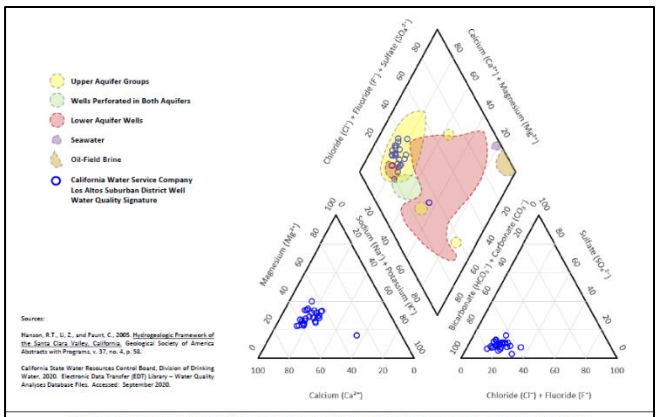
KGI has an on-call as-needed professional services contract with California Water Service Company (CWSC) to address task orders throughout the State. Recent projects have included a regional evaluation of entrained air within the Los Altos Suburban (LAS) District wellfield in Santa Clara County, and preparation of a Preliminary Design Report (PDR) for a proposed replacement well in Sunnyvale, California.

Entrained air can result in customer complaints due to aesthetic concerns, water quality problems, inefficient pumping, and possible damage to pumping components from cavitation. KGI was asked to assess the possible sources of this entrained air. The source of entrained air was found to be unrelated to well design and the result of rapid artificial recharge within close proximity to the wells. This was confirmed through an evaluation of the concentrations of dissolved air within each well, and a comparison of general water quality characteristics of the groundwater that was found consistent to that of imported water used for recharge.

Multiple recommendations were presented to CWSC for possible measures that can be employed to mitigate entrained air, including wellhead treatment, and altering the flow profile within individual wells.



LOCATION OF RECHARGE FACILITIES



PIPER DIAGRAM SHOWING WATER QUALITY TYPES IN SANTA CLARA VALLEY

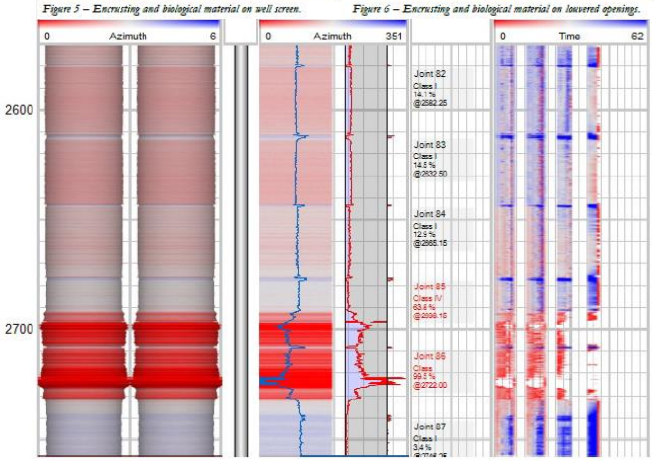
DESERT WATER AGENCY
WELL NOS. 44 AND 45 CONDITION ASSESSMENTS

Location:	Palm Springs, CA
Personnel:	Russell Kyle, Project Manager/Hydrogeologist Kimberly Makar, Field Inspection/Hydrogeologic Support Michael Dykstra, Field Inspection/Hydrogeologic Support
Client:	Desert Water Agency
	Ryan Molhoek, PE
	rmolhoek@dwa.org
	760-912-5511
Completion Date:	Ongoing
Total Cost:	$101,200

Desert Water Agency (DWA) Well Nos. 44 and 45, both of which were drilled and constructed in 2005, never equipped, and have remained capped and idle since that time. DWA contacted KGI to assess the wells and evaluate the feasibility of bringing one or both of the wells into service. A phased approach was recommended, whereby each phase was designed to provide early identification of critical issues that could curtail consideration of one or both of the wells from further investigation. Each phase becomes increasingly intrusive and complex as the viability of the wells becomes more evident. The three phases included: 1) a preliminary assessment of the current physical condition and viability of each well, 2) an estimate of pumping capacity and groundwater quality through use of focused intake pumping, and 3) implementation of a full-scale program of well rehabilitation and redevelopment.

Figure 5 – Encrusting and biological material on well screen.

Figure 6 – Encrusting and biological material on louvered openings.



KGI completed the condition assessments, which included downhole video surveys to determine the degree of corrosion, mineral encrustation, and/or bacterial activity that may be present. Electromagnetic casing inspection surveys were conducted to evaluate the degree of metal loss and structural integrity of the well casing and screen, and identify any areas of significant concern that may have required repair. Construction logistics were considered for each site, along with the feasibility of permitting each of the wells for operation with the California State Water Resources Control Board. Phase I of this work has been completed and both wells were determined to be viable for further evaluation. KGI has been contracted to perform the Phase II well capacity and water quality testing and is subcontracting the pump work associated with this evaluation.

GAGE CANAL COMPANY

REHABILITATION AND REDEVELOPMENT OF WELL 46-1R

Location:	San Bernardino, CA
Personnel:	Russell Kyle, Project Manager/Hydrogeologist Kimberly Makar, Field Inspection/Hydrogeologic Support Michael Dykstra, Field Inspection/Hydrogeologic Support
Client:	Gage Canal Company
	Benjamin Alms
	balms@gagecanal.com
	951-780-1333
Completion Date:	October 2020
Total Cost:	$148,900

KGI performed a condition assessment of a privately owned water supply well that provides water to a group of public and private water purveyors. This condition assessment was performed in response to excess sand production from the well that was causing fouling of an adjacent treatment plant. A customized program of redevelopment was developed with the goal of mitigating sand production without well modification.

KGI provided field inspection services and subcontracted a local pump company to provide contractor services during rehabilitation and redevelopment of Well 46-1R. The work included mechanical cleaning of the well casing and screen, pre-development pumping, and mild chemical treatment using a polymer dispersant. A critical part of the process was vigorous redevelopment using the focused intake pumping method.

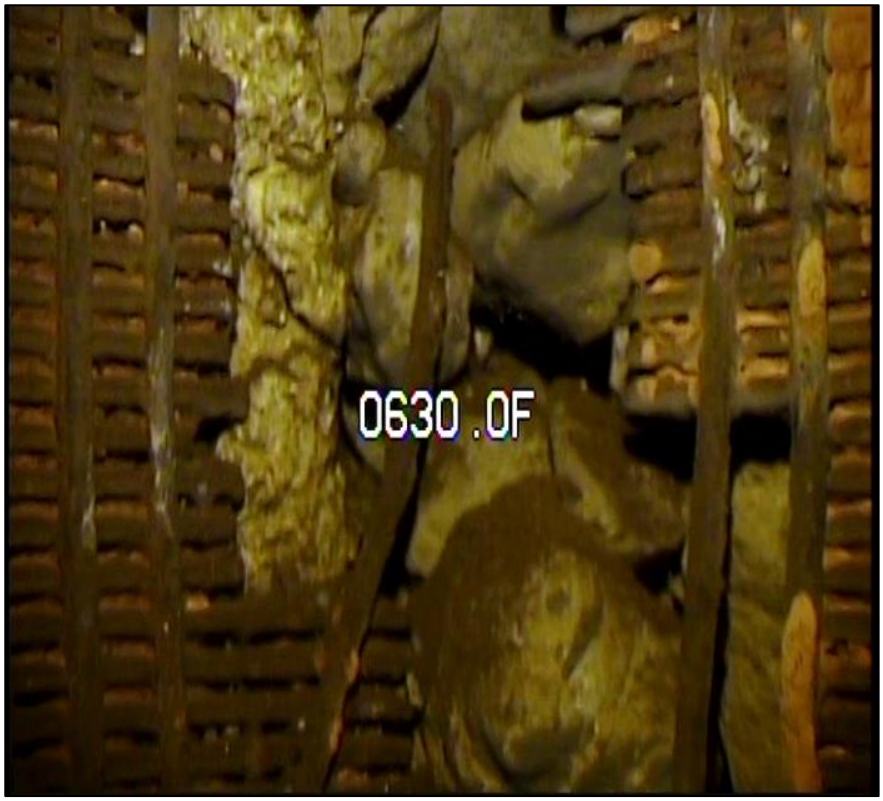
Recommendations were made regarding pump design and retrofit, including the addition of a perforated extended suction pipe to be fitted to the pump intake.

Ultimately, redevelopment was deemed a success, eliminating sand production and increasing the specific capacity of the well to values greater than when the well was originally constructed in 2007.

PALMDALE WATER DISTRICT
REHABILITATION OF WELL 7A

Location:	Palmdale, CA
Personnel:	Russell Kyle, Project Manager/Hydrogeologist Kimberly Makar, Field Inspection Michael Dykstra, Field Inspection
Client:	Palmdale Water District
	Scott Rogers, PE
	srogers@palmdalewater.org
	661-456-1020
Completion Date:	September 2021
Total Fee:	$38,000

The Palmdale Water District (PWD) discovered severe structural issues within Well No. 7A during pump maintenance and requested KGI to evaluate the condition of the well and provide recommendations as to possible actions that could be undertaken to extend the remaining life of the well. Following downhole video and CITM surveys of the well, the wire-wrap well screen was observed to be in relatively poor condition, exhibiting some heavily corroded rods, and appearing moderately to heavily clogged with corrosion byproducts and bacterial growth. A large vertical rupture was evident within the well screen along with several other holes and structural abnormalities. KGI recommended installation of a well liner, gravel envelope, and annular seal, followed by vigorous well redevelopment in an effort to provide additional operational life and enable advanced planning for an ultimate well replacement. KGI is currently providing construction management and inspection services during installation of the liner.



CITY OF RIVERSIDE PUBLIC UTILITIES
WELL CONDITION ASSESSMENTS AND PEER REVIEW

Location:	Riverside, CA
Personnel:	Russell Kyle, Project Manager/Hydrogeologist Kimberly Makar, Hydrogeologic Support
Client:	City of Riverside Public Utilities
	Leo Ferrando
	Lferrando@riversideca.gov
	951-826-5694
Completion Date:	December 2018
Total Fee:	$25,200

KGI has recently performed well condition assessments and developed well rehabilitation recommendations for four (4) production wells for the City of Riverside Public Utilities (RPU). The well condition assessments included review of historical data, including multiple downhole video surveys, static and pumping groundwater levels, instantaneous pumping rates, specific capacity, and sand production. The data were analyzed to effectively evaluate the current condition of the two wells. Based on the findings and conclusions of the well condition assessments, a mild to moderate programs of well rehabilitation and redevelopment were recommended for two wells, while it was recommended to leave the third well alone due to severe structural issues.

One of the wells was found to be producing appreciable quantities of sand and gravel material which subsequently eroded holes within the pump column piping. Recommendations were provided to help assess the problem and modifications to the pump were recommended to mitigate sand production.

Additionally, KGI has provided professional peer review and served as RPU's representative during siting and design of a new municipal water supply well in San Bernardino. Two pilot boreholes have been drilled and tested to determine a location and design adequate to meet water quality standards and production capacity. KGI has borehole lithology, geophysical borehole survey logs, isolated aquifer zone testing results, and well design recommendations provided by another consultant. Recommendations have been made regarding an appropriate well design that serves the best interest of RPU while minimizing capital cost.

INDIO WATER AUTHORITY

CONDITION ASSESSMENTS AND REHABILITATION OF WELLS U AND 3B

Location:	Indio, CA
Personnel:	Russell Kyle, Project Manager Kimberly Makar, Field Inspection/Hydrogeology
Client:	Indio Water Authority
	Miguel Peña
	mpena@indio.org
	760-625-1852
Completion Date:	March 2019
Total Cost:	$52,500

Indio Water Authority Wells U and 3B had been idle for several years due to elevated levels of hexavalent chromium. Putting the wells back into service required well condition assessments and development of plans for rehabilitation and redevelopment. Additionally, KGI were asked to evaluate the depth-specific occurrence of hexavalent chromium and assess the feasibility of well modification as a mitigation measure should the California MCL of 10 µg/L for hexavalent chromium be reinstated at some future date.

Each well was assessed and aggressive rehabilitation programs were recommended due to severe clogging of the well screens from bacterial activity and mineral encrustation. Each rehabilitation program included mechanical cleaning by high-pressure water jetting, a two-phase chemical treatment process, well redevelopment by swabbing and airlifting, and pumping and surging, and post-rehabilitation aquifer testing. Depth-specific water quality at Well U was assessed using downhole flowmeter surveys to develop a flow profile for the well in combination with depth-specific water sampling. Depth-specific water quality at Well 3B was assessed through use of flow profiling and inflatable packers. Despite significant project constraints, both wells were successfully rehabilitated and placed back into service with significant increases in specific capacity and instantaneous production.

VI. BILLING SCHEDULE AND HOURLY RATES

We pride ourselves on providing innovative hydrogeological and engineering solutions to our clients and are confident we can provide MSWD with a successful well rehabilitation prioritization project that will result in a valuable planning document for years to come. Our cost proposal is inclusive of all anticipated costs, includes a work plan with a breakdown of labor by project task, and is presented on the following page. The following rate schedule serves as the basis for our cost proposal.

Labor Classification	Hourly Rate
Technical Advisor	$195
Principal Hydrogeologist	$195
Principal Engineer	$165
Project Hydrogeologist	$145
Staff Hydrogeologist	$135
GIS Technician	$120
Clerical	$80

Non-Labor Charges:

Mileage = $0.585 per mile (i.e., the allowable IRS rate)

Field visit (day) = $30

Field visit (overnight) = $150

Transducer rental = $25 per day

Rates subject to change effective January 1, 2023.

MISSION SPRINGS WATER DISTRICT

Cost Proposal to Provide Professional Consulting Services to Develop a Well Rehabilitation Prioritization Program

		Principal Hydrogeologist	Project Hydrogeologist	Staff Hydrogeologist	GIS Technician	Field Inspector	Clerical	Technical Advisor	Principal Engineer	Labor	Direct Costs	Total Cost
	Hourly Rate:	$195	$145	$135	$120	$105	$80	$195	$165			
1.0	**PROJECT MANAGEMENT AND QUALITY CONTROL**											
1.1	Prepare for and attend project kick-off meeting and up to nine (9) progress meetings.	40	20					8	4	$ 12,920	$ 1,236	$ 14,156
1.2	Provide for project management, including monthly progress reports and QA/QC.	24	12	12				8	4	$ 10,260	$ -	$ 10,260
2.0	**DATA ACQUISITION AND ANALYSIS**											
2.1	Acquire and review available well and pump data, interview operations personnel, prepare well histories for 13 wells.	16	24	24	12			4	8	$ 13,380	$ 124	$ 13,504
3.0	**WELL REHABILITATION PRIORITIZATION PLAN**											
3.1	Prepare well rehabilitation prioritization plan (assumes 50%, 70%, 90% Draft and 100% Final).	24	40	48	20		8	8	8	$ 22,880	$ 400	$ 23,280
3.2	Prepare for and conduct three (3) workshops at MSWD for each draft report.	18		9						$ 4,725	$ 371	$ 5,096
4.0	**WELL REHABILITATION TECHNICAL SPECIFICATIONS**											
4.1	Prepare well rehabilitation specifications (assumes 50%, 70%, 90% Draft and 100% Final).	40	60	60	16		8			$ 27,160	$ 400	$ 27,560
4.2	Prepare for and conduct three (3) workshops at MSWD for each draft specification.	18		9						$ 4,725	$ 371	$ 5,096
5.0	**BID SUPPORT SERVICES**											
5.1	Assemble technical specifications for rehabilitation of three (3) wells.	20	24	24	12		4			$ 12,380	$ 200	$ 12,580
5.2	Provide assistance during bidding, including attendance at pre-bid meeting, response to RFIs and RFCs, preparation of addenda, and recommendations of award.	12	16							$ 4,660	$ 124	$ 4,784
	TOTAL HOURS AND COST (NON-OPTIONAL):	***212***	***196***	***186***	***60***		***20***	***28***	***24***	***$ 113,090***	***$ 3,226***	***$ 116,316***
6.0	**BASELINE TESTING SERVICES (OPTIONAL)**											
6.1	Conduct baseline well and pump efficiency testing and analysis, and prepare brief letter report.	12		16		24				$ 7,020	$ 871	$ 7,891
	TOTAL COST (OPTIONAL):	***12***		***16***		***24***				***$ 7,020***	***$ 871***	***$ 7,891***
	TOTAL HOURS AND COST:	***224***	***196***	***202***	***60***	***24***	***20***	***28***	***24***	***$ 120,110***	***$ 4,097***	***$ 124,207***

KYLE Groundwater, Inc.

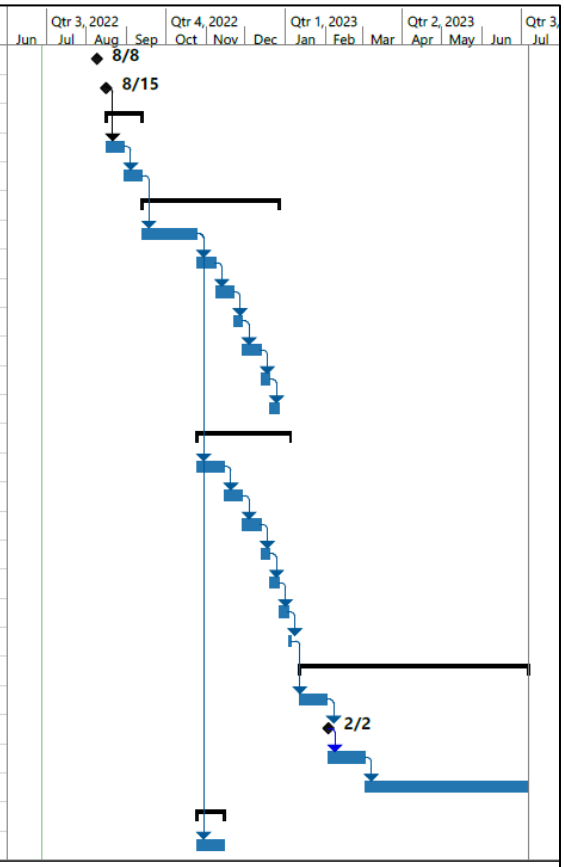
DRP Engineering, Inc.

VII. SCHEDULE

We have developed a realistic project schedule based on our team's experience in delivering projects of a similar type and scope, the scope of work identified in the RFP, and a contract award date in July 2022. Our intimate knowledge of the well assessment and prioritization process allows our team to identify critical-path items and reduce the length of time required for a project of this nature.

Preliminary Project Schedule
Professional Consulting Services
to Develop a Well Rehabilitation Prioritization Program

ID	Task Name	Duration	Start	Finish
1	Contract Award	1 day	Mon 8/8/22	Mon 8/8/22
2	Project Kick-Off Meeting	1 day	Mon 8/15/22	Mon 8/15/22
3	**Task 2 - Data Analysis and Acquisition**	**20 days**	**Tue 8/16/22**	**Mon 9/12/22**
4	Acquire and Review Data	10 days	Tue 8/16/22	Mon 8/29/22
5	Prepare Well Histories	10 days	Tue 8/30/22	Mon 9/12/22
6	**Task 3 - Well Rehabilitation Prioritization Plan**	**75 days**	**Tue 9/13/22**	**Mon 12/26/22**
7	Prepare 50% Plan	30 days	Tue 9/13/22	Mon 10/24/22
8	MSWD Review	10 days	Tue 10/25/22	Mon 11/7/22
9	Prepare 70% Plan	10 days	Tue 11/8/22	Mon 11/21/22
10	MSWD Review	5 days	Tue 11/22/22	Mon 11/28/22
11	Prepare 90% Plan	10 days	Tue 11/29/22	Mon 12/12/22
12	MSWD Review	5 days	Tue 12/13/22	Mon 12/19/22
13	Prepare Final Plan	5 days	Tue 12/20/22	Mon 12/26/22
14	**Task 4 - Plans and Technical Specifications**	**52 days**	**Tue 10/25/22**	**Wed 1/4/23**
15	Prepare 50% Specifications	15 days	Tue 10/25/22	Mon 11/14/22
16	MSWD Review	10 days	Tue 11/15/22	Mon 11/28/22
17	Prepare 70% Specifications	10 days	Tue 11/29/22	Mon 12/12/22
18	MSWD Review	5 days	Tue 12/13/22	Mon 12/19/22
19	Prepare 90% Specifications	5 days	Tue 12/20/22	Mon 12/26/22
20	MSWD Review	5 days	Tue 12/27/22	Mon 1/2/23
21	Prepare Final Specifications	2 days	Tue 1/3/23	Wed 1/4/23
22	**Task 5 - Bid Support Services**	**126 days**	**Thu 1/12/23**	**Thu 7/6/23**
23	Assemble Technical Specifications	15 days	Thu 1/12/23	Wed 2/1/23
24	Pre-Bid Meeting	1 day	Thu 2/2/23	Thu 2/2/23
25	Bid Period	20 days	Fri 2/3/23	Thu 3/2/23
26	Technical Support (Upon Request)	90 days	Fri 3/3/23	Thu 7/6/23
27	**Task 6 - Baseline Testing (Optional)**	**15 days**	**Tue 10/25/22**	**Mon 11/14/22**
28	Baseline Testing of 6 Wells	15 days	Tue 10/25/22	Mon 11/14/22



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Appendix A

Resumes

KYLE Groundwater

RUSSELL KYLE, PG, CHG

TITLE
President / Principal Hydrogeologist

REGISTRATIONS/ CERTIFICATIONS
Registered Professional Geologist, California No. 7648

Certified Hydrogeologist, California No. 822

EDUCATION
MS, Environmental Hydrogeology, California State University – Los Angeles, 2006

BS, Geology, California Polytechnic University – Pomona, 1996

PROFESSIONAL AFFILIATIONS
American Water Works Association – past Chair of CA/NV Water Well Technology Committee

Voting Member of the American Water Works Association National Well Standards Committee

Mr. Kyle has 24 years of experience with a wide variety of groundwater resource related projects for public and private clients within the western United States, Mexico, and Africa, with a focus on groundwater resources development in Southern California. The scope of his technical experience includes groundwater basin evaluations, water supply studies, well siting investigations, artificial recharge feasibility evaluations, well field condition assessments, well rehabilitation, desalination feedwater supply studies, and geophysical surveys. Over the course of his career he has been responsible for installation of more than 150 water supply wells and 70 monitoring wells and exploratory borings, including management of a team of field inspectors, coordination with drilling contractors and regulatory agencies, well design, and construction management. Recent notable projects include installation of potable water supply wells for California Water Service Company, South Montebello Irrigation District, Montebello Land and Water Company, and development of well rehabilitation, replacement, prioritization plans for the Long Beach Water Department, California Water Service Company, City of Riverside, and Palmdale Water District. He is also active within the water resources community and is currently a member and past Chair to the AWWA CA-NV Water Well Technology Committee, and as a voting member of the AWWA National Well Standards Committee. Mr. Kyle is also serving on multiple Technical Action Committees working to develop the new California Department of Water Resources water well standards.

EXPERIENCE

NEW WELL INSTALLATION

Collection Main and New Well Site Study – Long Beach Water Department – Long Beach, California. The Long Beach Water Department (LBWD) currently owns and operates 28 groundwater supply wells located throughout the city, in addition to a new well currently being equipped, and a second well recently constructed. LBWD's goal is to optimize local water supply sources and maintain a production well field with suitable capacity through the year 2032. Mr. Kyle is serving as Principal-in-Charge for a well siting study to evaluate areas favorable for installation of new production wells within the Central and West Coast Basins, and within relative proximity to the existing collection main pipeline. Buffers around sites of environmental concern, existing wells, and active hazardous liquid pipelines were used to eliminate possible areas for a new potable well. Potential sites were identified within areas that did not fall within those buffers and were within a one-mile radius of the collection main pipeline. The sites were ranked based upon a scientific approach and weighted decision matrix and an evaluation of how each potential well site will impact the collection main system.

Alamitos Wells 14 and 9A – Long Beach Water Department – Long Beach, California. Mr. Kyle is serving as project manager for this critical project which includes permitting, design, construction management, and inspection of two (2) new well installations, and destruction of four (4) existing wells. Components of the project include above-ground and below-ground infrastructure, parking lot design, traffic control plans, and new and modified SCADA service. Perliminary design and permitting have been completed and the project has been successfully bid.

2021 New Well Project – Long Beach Water Department – Long Beach, California. Mr. Kyle is serving as technical lead for this critical project which includes permitting, design, construction management, and inspection of four (4) new well installations, and destruction of two (2) existing wells. Components of the project include above-ground and below-ground infrastructure, traffic control plans, and new and modified SCADA service. Preliminary design and permitting have been completed.

Dominguez District Well 300-01 – California Water Service Company - Compton, California. Mr. Kyle provided an hydrogeological services in support of a new well installation in Compton, including a feasibility assessment of the proposed well site. Specific project support tasks include preparation of a risk assessment and preliminary design report, and preparation of DWSAP documents. Construction management and inspection services were provided during installation of the well which was completed June 2020. The well has successfully been installed with no water quality issues.

Well No. 36 – Palmdale Water District – Palmdale, California. Mr. Kyle is providing hydrogeological support services during siting and installation of a new water supply well in the Antelope Valley. Mr. Kyle is providing permitting support, feasibility assessment, preliminary and final design, and construction management and inspection. The project is expected to enter the construction phase mid-2022.

Well No. 15 – Montebello Land & Water Company – Montebello, California. Mr. Kyle is providing hydrogeological support services during siting and installation of a new water supply well in the Montebello Forebay area of the Central Basin. Mr. Kyle provided permitting support, an assessment of the proposed well site, developed detailed technical specifications for drilling and construction, and provided construction management, inspection, and regulatory compliance services.

Well No. 8 – South Montebello Irrigation District – Montebello, California. Mr. Kyle was the technical lead for a new well installation to be located adjacent to the Rio Hondo Spreading Basins within the Montebello Forebay area of the Central Basin. Mr. Kyle provided an assessment of the proposed well site, including anticipated well capacity and groundwater quality, preliminary design, construction logistics, and identification of construction constraints and required permits. Specific project support tasks include preparation of technical plans and specifications, CEQA, NPDES permitting, application for the Domestic Water Supply Permit Amendment, and preparation of DWSAP documents. Bid support, construction management and inspection services were also provided and the well installation was successfully completed in May 2020.

Design and Installation of City of Banning Well C-8 – City of Banning – Banning, California. The City of Banning is seeking to install a new municipal water supply well to increase groundwater production capacity to meet future demands. Mr. Kyle has conducted a water supply feasibility study, a well site assessment and ranking, and a preliminary design assessment, including a well field interference analysis, anticipated well capacity and groundwater quality, construction logistics, and identification of construction constraints and required permits, and an assessment of an existing inactive well for return to service. Next steps include permitting, finalization of technical specifications, bidding, construction management, inspection, and final design.

Blue Jay Well – Lake Arrowhead Community Services District – Blue Jay, California. Mr. Kyle is providing hydrogeological support services during siting and installation of a new hard-rock water supply well in the San Bernardino Mountains. Mr. Kyle provided permitting support, an assessment of the proposed well site and preliminary design, developed detailed technical specifications for drilling and construction, and provided construction management and inspection.

New Grand Well – City of San Jacinto, California. Mr. Kyle is providing hydrogeological support services during siting and installation of a new water supply well for the City of San Jacinto. The scope of work includes permitting support, preliminary and final design, and construction management and inspection. The project is expected to enter the construction phase mid-2022.

Dominguez District Well 301-01 – California Water Service Company – Long Beach, California. Mr. Kyle provided hydrogeological support for a planned well in Long Beach, including a feasibility assessment of the proposed well site. Specific project support tasks included preparation a preliminary design report, site feasibility assessment, and DWSAP documents. A risk assessment and professional opinion were prepared in response to concerns from the State Water Resources Control Board and the well has been cleared for the construction phase.

West Coast Basin Well 1 – Long Beach Water Department – Long Beach, California. The Long Beach Water Department (LBWD) installed a new potable water supply well in the West Coast Basin. This well will be the only well within the system which will not be treated by the District's centralized water treatment facility, and as such, water quality was of paramount import. Mr. Kyle served as project manager to provide design, permitting, construction management, and inspection services during the project. The well was successfully competed despite significant logistical challenges and was tested at 2,000 gpm with a specific capacity of approximately 100 gpm/ft.

Beneta Replacement Well – City of Tustin – Tustin, California. Mr. Kyle is providing hydrogeological support services during installation of a new water supply well in Orange County. The scope of work includes permitting support, preliminary and final design, and construction management and inspection. The new well is currently under construction and is expected to be complete July-2022.

Dominguez District Well 216-02 – California Water Service Company - Carson, California. Mr. Kyle provided design and construction inspection services for a new high-capacity water supply well in Carson to augment the District's groundwater supply within the West Coast Basin. A professional opinion of risk to the well from nearby groundwater contaminants was performed to assist CWSC with permitting the well for operation. The permits were secured and the well has been successfully constructed with a specific capacity of approximately 150 gpm/ft at 2,000 gpm.

Replacement Well Commission 22A – Long Beach Water Department – Long Beach, California. The Long Beach Water Department (LBWD) owns and operates three wells adjacent to the San Gabriel River in El Dorado Park North. One of these wells, Commission 22, is structurally compromised due to corrosion of its mild steel wire-wrap well screen, resulting in the well being removed from service. LBWD plans on

legally destroying Commission 22 and replacing it with a new well, Commission 22A, in the general vicinity of the existing well. Mr. Kyle served as project manager to provide design, permitting, construction management, and inspection services.

East Los Angeles Well 62-02 – California Water Service Company - Commerce, California. Mr. Kyle provided design and construction inspection services for a new high-capacity water supply well in Commerce to augment the District's groundwater supply. Deep aquifer units in the area are impacted with various constituents of concern, including methane, ammonia, and sulfides, while the shallow aquifers are impacted by manganese and local industrial contaminants. The well has been successfully constructed within both aquifer regimes and plans are in place to temporarily backfill the lower well screen with the goal of treating groundwater from those aquifers at a future date.

Gibbel Park Well – City of Hemet – Hemet, California. The City of Hemet is seeking to increase local groundwater supply through installation of a new production well at Gibbel Park. Mr. Kyle provided project management, design, and inspection services during drilling of an exploratory borehole and installation of a nested monitoring well to evaluate depth-specific water quality. The area is subject to many groundwater quality issues, including elevated metals from upwelling of hot water through the area's many faults, and impacts from agricultural activity within the valley. Information gathered from the exploratory drilling and testing will be utilized to assess the feasibility of installing a production well at Gibbel Park, and as a basis of design.

Replacement Well 10A – City of Hemet – Hemet, California. The City of Hemet installed a replacement municipal well at the site of a recently abandoned well within a residential area. The well site is very small and offered numerous logistical problems, including close proximity to residences and sensitive noise receptors. Mr. Kyle served as project manager to provide well design, construction management, and inspection services during the project.

Plant 211 Well 3 – Suburban Water Systems - Whittier, California. Mr. Kyle was the technical lead for an exploratory drilling program in Whittier, California at the site of two abandoned wells. Mr. Kyle provided an assessment of the proposed well site as to its feasibility for a potable water well site, including anticipated well capacity and groundwater quality, preliminary design, construction logistics, and identification of construction constraints and required permits. A multiple completion monitoring well was subsequently installed to assess the aquifer systems and depth-specific groundwater quality prior to installing a potable water supply well.

Groundwater Supply Development – Nuevo Water Company - Nuevo, California. The City of Nuevo anticipates considerable growth over the next few decades. To maintain current production demand and provide system redundancy, Nuevo Water Company must add at least one more production well to their system. To that end, a well siting study was performed to locate areas with potentially suitable groundwater quality and yield. This study, along with the location of existing conveyance infrastructure, was utilized to identify several locations that may serve as suitable locations for future wells. Mr. Kyle also provided design and construction inspection services during installation of a test production well in an area contaminated with high total dissolved solids and nitrate.

LHUD Well 3 – Lost Hills Utility District - Wasco, California. Mr. Kyle provided hydrogeological services to evaluate the feasibility of installing a new municipal supply well which will serve as a source of groundwater with low arsenic concentrations. Mr. Kyle provided a hydrogeological assessment of the proposed well site and provided plans for construction of a multiple completion monitoring well. Data from the monitoring well will be used to evaluate hydrogeological conditions, evaluate project feasibility, and prepare a preliminary production well design.

Chino Basin Desalter Phase 3 Project – Chino Basin Desalter Authority - Chino Basin, California. Mr. Kyle provided project management, construction management, and technical support for siting, design, and installation of new groundwater supply wells in the Chino Basin. The purpose of the wells is to expand production of non-potable water as a source of feedwater to the Chino I and II Desalters, and to establish hydraulic control of the Chino Basin. Three wells were successfully installed in the Chino Creek area, near the Chino I Desalter. Additionally, two (2) wells were sited and constructed in the vicinity of the Chino II Desalter. Water level and water quality impacts from expansion of the desalter system were evaluated through groundwater modeling.

Preliminary Design of the Tustin Legacy Well – Irvine Ranch Water District – Tustin, California. Mr. Kyle prepared preliminary design and source water assessment documents for a new well to be located at the Tustin Legacy project in Tustin. Of particular concern are the numerous cleanup sites associated with the closed Marine Corps Air Station and the South Basin cleanup area, and naturally occurring contaminants of concern such as TDS, nitrate, color, and odor.

Siting of a New Municipal Water Supply Well in Whittier Narrows Area – Puente Basin Water Agency – Whittier, California. Puente Basin Water Agency owns groundwater pumping rights within the Central Basin and is seeking to construct one or more wells in the Whittier area. The goal is to produce potable groundwater from the Central Basin and convey it to the Puente Subbasin through an existing California Domestic Water Company transmission pipeline. Several potential sites have been identified as candidates for the new well and Mr. Kyle is tasked with assessing each site, quantifying the assessment through a decision matrix, ranking sites according to suitability, and assessing construction feasibility of the highest ranked sites.

Municipal Well Relocation Project – Hillwood Investment Properties - San Bernardino, California. Mr. Kyle was the technical project lead for a project involving relocation of two existing production wells to make room for construction of a large warehouse. This time-critical project involved constructing two new wells prior to destruction of the existing wells, all of which occurred under clear and immovable deadlines on the part of the developer. Mr. Kyle worked with the developer, the equipping engineer, the City of Riverside, the City's hydrogeologist, and the drilling contractor to accomplish this goal and provided technical specifications, bidding support, construction management, design, and inspection services. Both wells have been successfully constructed, developed, and tested at production rates of up to 5,500 gpm.

Regional Recharge and Recovery Project (R-Cubed) – Mojave Water Agency - Hesperia, California. The Mojave Water Agency was formed to manage ground water resources, and coordinate water producers in the high desert area, also receiving and

distributing State Water Project (SWP) water to various recharge facilities. The ultimate goal of the project was to recharge up to 40,000 acre-ft of SWP water through a system of extraction wells, monitoring wells, pumping stations, reservoirs, and conveyance pipelines. A preliminary hydrogeological feasibility assessment was conducted to assess groundwater level response to aquifer recharge, and to determine the optimal locations for extraction wells. Mr. Kyle was the lead project manager for the hydrogeological portions of the project, providing groundwater modeling support, well field interference evaluations, steel corrosion studies, and installation of six high capacity wells. All Phase 1 wells have been successfully completed and have been pumped at rates exceeding 4,000 gpm with specific capacities in excess of 140 gpm/ft.

Well No. 6 – Sativa Los Angeles County Water District – Compton, California. Mr. Kyle has provided technical support to the District prior to well installation, including design recommendations, preliminary source water assessment documents, CEQA documentation, and DDW permitting support.

La Bonita and Portola Park Municipal Wells – City of La Habra - La Habra, California. Mr. Kyle was the technical lead and construction manager during siting, design, and installation two (2) high capacity municipal water supply wells to augment the City's local water supply. Both wells were successfully constructed and are on-line and operational.

Construction of Well No. 10 – City of Norwalk – Norwalk, California. Mr. Kyle was the project manager and technical lead during installation of a high capacity municipal supply well for the City of Norwalk. The well was successfully completed in a problematic location despite difficult design considerations.

Construction of Well No. 12 – City of Santa Fe Springs – Santa Fe Springs, California. Mr. Kyle was the project manager and technical lead during installation of a high capacity municipal supply well for the City of Santa Fe Springs. He provided project management during permitting, preparation of preliminary design and bid package, construction management, and field inspection services. The well was successfully constructed with a recommended pumping rate of 2,000 gpm.

Construction of Dace Well No. 2 – Golden State Water Company – Norwalk, California. Mr. Kyle was the project manager and technical lead during installation of a municipal supply well which would serve as a replacement to nearby Dace Well No. 1, impacted by volatile organic compounds and requiring well head treatment. He provided project management during permitting, siting, preliminary and final design, bidding, construction management, and field inspection services. The well was successfully constructed without any groundwater quality issues.

Baseline Feeder Well Replacement Project – San Bernardino Valley Municipal Water District - San Bernardino, California. Mr. Kyle served as project manager during installation of two high capacity production wells to provide water for the Baseline Feeder Pipeline which serves West Valley Water District, the City of Rialto, and Riverside Highland Water Company. The scope of work included preparation of preliminary design, including oversight of a subsurface geophysical fault investigation, preparation of technical specifications, bidding support, and design and installation of the wells. Both

wells were successfully completed on schedule and within budget. The recommended pumping rates of the wells were 3,500 and 3,000 gpm with associated specific capacities of 70 and 54 gpm/ft.

Design and Construction of Well No. 9 – City of Torrance – Torrance, California. Mr. Kyle was technical lead during installation of a new municipal supply well for the City. The project included preliminary and final design, bidding, construction management, and inspection services during construction. The well was successfully completed with a recommended pumping rate of 3,000 gpm, in excess of the anticipated capacity.

Installation of Five (5) New Wells – Rancho California Water District - Temecula, California – Mr. Kyle was the project lead responsible for preliminary design and permitting of five (5) replacement production wells upon logistically difficult sites.

Design and Construction of High Capacity Well No. 1 – City of Bellflower – Bellflower, California. Mr. Kyle was technical lead providing professional hydrogeologic services during installation of a new municipal supply well for the City, the purpose of which was to replace several active wells identified for retirement by the Department of Drinking Water. The project included well siting, preliminary and final design, bidding, construction management, and inspection services during construction. The well was successfully completed with a recommended pumping rate of 3,500 gpm, with an associated specific capacity of 110 gpm/ft.

Installation of Two (2) Municipal Supply Wells – Highland Fairview – Moreno Valley, California. Mr. Kyle was technical lead providing hydrogeologic during installation of two (2) municipal water supply wells to support a new development in Moreno Valley. The project include assessment of existing wells, well siting, design, bidding, construction management, and inspection services during construction. The wells were successfully completed with a combined pumping capacity of 2,000 gpm.

Installation of Well Nos. 25 and 26 – Beaumont Cherry Valley Water District - Beaumont, California. Mr. Kyle was technical lead and project manager during installation of two (2) municipal water supply wells in Beaumont. The project included design, bidding, construction management, and inspection services. The wells were successfully completed within a historically low-producing hydrogeologic area with a combined pumping capacity of 4,300 gpm.

WELL ASSESSMENT & REHABILIATION

Development of a Well Maintenance Program – Long Beach Water Department – Long Beach, California. The objective of LBWD's well maintenance program was to develop a framework that would serve as a foundation for developing a more effective program for long-term operation, monitoring, and maintenance of wells such that local groundwater resources can be optimized, and utilized to the fullest. The primary recommendation to LBWD included development of a rigorous groundwater monitoring program to ensure that a standard methodology is employed for the collection of data and such that a solid baseline can be developed from which to make informed decisions regarding well maintenance. Critical components of this program would include a field monitoring protocol and data management plan (i.e., field monitoring procedures, quality assurance and control processes, data management, and development of a coherent

relational database). This database would form the basis for annual well performance audits, including well performance review and condition assessment, ultimately leading to an annual workshop of stakeholders at which operational and maintenance decisions would be made.

Development of a Rehabilitation Prioritization Plan – Palmdale Water District – Palmdale, California. Mr. Kyle developed a rehabilitation and replacement prioritization plan for the Palmdale Water District well field, consisting of 22 actively pumping wells. This project involved a thorough evaluation and ranking of each well as to rehabilitation feasibility and estimated remaining well life. Additional components of the project included development of modular technical specifications for well rehabilitation, and rehabilitation of up to three (3) wells, including technical specifications and bid support.

Rehabilitation and Redevelopment of Well 46-1R – Gage Canal Company – San Bernardino, California. Mr. Kyle performed a condition assessment of a water supply well in response to excess sand production causing fouling of an adjacent treatment plant. A custom program of redevelopment was developed with the goal of mitigating sand production. Ultimately, redevelopment was deemed a success, significantly reducing sand production and increasing the specific capacity of the well to values greater than when the well was originally constructed in 2007.

Rehabilitation and Redevelopment of Well No. 23 – Desert Water Authority – Palm Springs, California. Mr. Kyle performed a condition assessment and efficiency testing of a water supply well in response to reduced production and specific capacity. The data review revealed the well to be severely clogged and fouled with mineral encrustation and bacterial growth, and containing excessive fill material. A custom work plan was developed with the goal of rehabilitating the well before reinstallation of the pump.

Rehabilitation and Redevelopment of Well 7A – Palmdale Water District – Palmdale, California. Mr. Kyle performed a well performance and condition assessment of Well 7A in response to severe structural failure of the well screen. Detailed technical specifications were developed with the goal of installing a partial well liner, allowing the well to continue to operate while planning for replacement.

Rehabilitation of Citizens Well 9 and Wilson Well 1A – Long Beach Water Department – Long Beach, California. Mr. Kyle is serving as project manager to provide construction management, inspection, and engineering services during rehabilitation of two municipal water supply wells. The project includes physical and chemical cleaning of each well, redevelopment and testing, and retrofitting of the well pump, motor, and electrical.

Rehabilitation of Citizens Well 7A and Commission Well 20 – Long Beach Water Department – Long Beach, California. Mr. Kyle served as project manager provide construction management, inspection, and engineering services during rehabilitation of two municipal water supply wells. The project included physical and chemical cleaning of each well, redevelopment and testing, and retrofitting of the well pump, motor, and electrical. Rehabilitation of Well 20 was successful despite significant structural issues with the aging and corroded well casing and screen, and resulted in greater performance than when the well was constructed.

Well Assessments – City of Riverside Public Utilities (RPU) – Riverside, California. Mr. Kyle performed well condition assessments and developed well rehabilitation recommendations for four (4) production wells for RPU (Van Buren 1 and 2, the Stiles well, and Gage Well 46-1R). The well condition assessments included review of historical data, including multiple downhole video surveys, static and pumping groundwater levels, instantaneous pumping rates, specific capacity, and sand production. The data were analyzed to effectively evaluate the current condition of the three wells and develop programs for rehabilitation and redevelopment.

Plant 409 Well 3 Rehabilitation and Redevelopment – Suburban Water Systems – La Mirada, California. Mr. Kyle provided groundwater expertise to evaluate historical well data and develop a plan for rigorous well rehabilitation and redevelopment of an important water source in La Mirada, California. Results of the evaluation revealed that the efficiency of the pumping plant had declined significantly, likely due to clogging of the gravel envelope and near-well zone due to bacterial growth, poor design, and continuous operation of the well under high-drawdown conditions. Recommendations were provided regarding an appropriate course of action. A full rehabilitation and redevelopment program was developed, including mechanical and chemical cleaning, redevelopment, and testing. Well rehabilitation resulted in an increase in instantaneous pumping rate and well efficiency.

Wells W and Z – Indio Water Authority – Indio, California. Mr. Kyle an evaluation of Wells W and Z with the goal of assessing the feasibility of reducing hexavalent chromium concentrations below the California MCL through well modification rather than application of expensive water quality treatment. The work involved time-series, variable-flow, and depth-specific water quality and flow profile testing. Results suggested that well modification may result in a positive outcome which led to follow-on verification testing through use of inflatable pneumatic packers. This testing also indicated that favorable results could be achieved but further work was placed on hold due to revocation of the MCL.

Wells 3B and U – Indio Water Authority – Indio, California. Wells U and 3B had been out of service and idle for several years due to elevated hexavalent chromium. IWA decided to put the wells back in service when the 10 ug/L MCL was rescinded and Mr. Kyle was tasked with evaluating the wells and preparing a recommended course of action and associated work plan to rehabilitate and redevelop the wells. A plan for evaluating depth-specific water quality was also developed as it is the desire of IWA to evaluate the wells as to feasibility of improving water quality by well modification should the hexavalent chromium MCL be reinstated. Both wells have been successfully rehabilitated.

Well No. 9 Efficiency Testing – City of Torrance – Torrance, California. Mr. Kyle conducted well and pumping plant efficiency testing on a well which was exhibiting a decline in production capacity. Results of the testing revealed the pumping plant to be operating efficiently but a low well efficiency, likely due to clogging of the well intake structure, gravel envelope, and near-well zone. Recommendations were provided regarding an appropriate course of action.

Well No. 9 Rehabilitation and Redevelopment – City of Torrance – Torrance, California. Mr. Kyle conducted well and pumping plant efficiency testing on a well which

was exhibiting a decline in production capacity. Results of the testing revealed an efficiently operating pump but very low well efficiency, likely due to clogging of the well intake structure, gravel envelope, and near-well zone. A full rehabilitation and redevelopment program was developed, including mechanical and chemical cleaning, redevelopment, testing, and pump refurbishment, and is currently underway at the direction of Mr. Kyle. Well rehabilitation resulted in a doubling of well efficiency from 31% to 69% and a 33% increase in specific capacity.

Santa Maria Mira Flores Well No. 2 – Golden State Water Company – Santa Maria, California. Mr. Kyle performed a detailed assessment of a water supply well that developed several holes within the blank well casing adjacent to a coarse-grained aquifer. The purpose of the evaluation was to assess possible water quality changes in the well due to the casing holes, and to develop a cost effective plan for a long-lasting repair. The evaluation includes a review of well construction details, performance characteristics, hydrogeological conditions, historical groundwater quality, downhole video surveys, and CITM surveys. Ultimately, the recommendation was to leave the well in its current condition as the risk of damage through the repair process was too great.

Los Osos Rosina Well No. 1 – Golden State Water Company – Los Osos, California. Mr. Kyle is conducting a detailed assessment of a water supply well that has suffered from a sharp decline in specific capacity. The assessment includes an evaluation of well condition, historical performance data, water quality, and well and pump efficiency testing. The purpose of the assessment is to develop a well rehabilitation and redevelopment scope of work suitable for obtaining contractor cost estimates.

Lancaster Wells 1-01 and 1-03 Condition Assessment – California Water Service Company – Lancaster, California. Mr. Kyle performing a condition assessment for two water supply wells with the goal of developing a tailored well rehabilitation and retrofit program. The evaluation includes a review of well construction details, performance characteristics, hydrogeological conditions, and well and pumping plant efficiency testing.

Downey Wells 2, 8, 11, 17, 18, and 29 Condition Assessment – City of Downey – Downey, California. Mr. Kyle performed condition assessments for three water supply wells and developed tailored well rehabilitation and retrofit programs. The evaluation included a review of well construction details, video surveys, performance characteristics, hydrogeological conditions, and well and pumping plant efficiency testing. Well rehabilitation consisted of mechanical and chemical cleaning followed by redevelopment and testing, for which field inspection was provided for three (3) of the wells. In particular, Well 11 responded well and demonstrated a significant increase in plant efficiency and an estimated annual electrical savings of $69,000 per year.

Rehabilitation and Redevelopment of Dominguez Well 294-01 – Carson, California. Mr. Kyle served as technical lead, providing project management and support during rehabilitation and redevelopment of a well that was to provide raw water to an onsite treatment plant. The well had sat idle for many years due to groundwater contamination and had lost significant production capacity. This time-critical project involved evaluation and development of a rehabilitation program, acquisition of contractor bids, coordination of schedule, and inspection during rehabilitation of the well.

Ultimately the well was returned to a production capacity in excess of the original capacity, on-time, and within budget.

Evaluation of the North Orange Well Field – Riverside Public Utilities - Riverside, California. Mr. Kyle provided an evaluation of the capacity of the City of Riverside's North Orange Well Field to support increased yield through well rehabilitation and installation of potable and non-potable wells. Conducted predictive modeling to estimate ground water level impacts to the City's existing wells and to optimize production operations.

Rehabilitation and Redevelopment of City of Lynwood Wells 11 and 19 – Lynwood, California. Provided consulting services and technical support to the City of Lynwood during evaluation, rehabilitation and redevelopment of two wells that were exhibiting a variety of issues, including structural failure, decreased yield, and entrained sand/gravel pack. Both wells were successfully redeveloped and are being placed back in to service.

Municipal Well Water Quality Evaluation – City of Santa Fe Springs, California. Mr. Kyle provided technical support to the City to evaluate a recently equipped municipal water supply well which was exhibiting changes in groundwater quality from when it was initially constructed. A program of field testing suggested passive vertical groundwater flow between aquifers and possible issues with sampling protocols.

Development of a Rehabilitation and Monitoring Program – Riverside Public Utilities - City of Riverside, California. Mr. Kyle provided project management and technical support for development of a rehabilitation program for the City of Riverside Public Utilities well field, consisting of 55 actively pumping wells. This project involved a thorough evaluation and ranking of each well as to rehabilitation feasibility and estimated remaining well life. An additional component of the project was an evaluation of the City's current monitoring network and protocols, and development of a ground water monitoring program.

Rehabilitation and Redevelopment of Municipal Supply Well 154 – Temecula, California. Mr. Kyle served as project lead, providing project management and technical support during evaluation, rehabilitation and redevelopment for a well that was drilled in the 1994 but was never equipped due to well yield being significantly lower than surrounding wells. A program of mechanical and chemical rehabilitation and redevelopment resulted in a doubling of the well yield and a dramatic increase in the specific capacity of the well despite significant declines in regional groundwater levels.

Rehabilitation and Redevelopment of Rialto Well 6 – West Valley Water District - Rialto, California. Provided project management, technical support, contractor coordination, and inspection services during evaluation, rehabilitation and redevelopment of a well contaminated with perchlorate. The purpose of the rehabilitation was to reduce problematic entrained sand to minimal levels such that the well could be provide a sediment-free source of feedwater to a fluidized bed reactor treatment plant. This project was challenging due to its time-critical nature and the need for water treatment prior to discharge.

Evaluation of Potential Impacts to Nearby Water Wells from Operation of Well Nos. 21 and 22 – Irvine Ranch Water District – Orange County, California. Irvine Ranch Water District (IRWD) Well Nos. 21 and 22, located in the City of Tustin, were constructed in 1992 but due to the prohibitive cost of treatment for elevated concentrations of total dissolved solids and nitrate, the wells were never equipped or utilized. As a result of increased growth in southern California since the time of drilling, and because of the need to increase its local water supply, IRWD decided to evaluate the production capability and water quality characteristics of the wells in order to assess the cost effectiveness of placing the wells into service. Rehabilitation and redevelopment of the wells took place from 2008 to 2009 and it was determined that the groundwater produced was unsuitable for potable use without treatment, resulting in construction of groundwater production, conveyance, and treatment facilities such that the impaired groundwater could be put to beneficial use. As a result of putting the wells into service, IRWD would be pumping above their allocated baseline pumping for the Orange County Basin and would potentially impact the production capacity and cost of production for nearby water purveyors. Mr. Kyle was tasked with identifying and quantifying these potential impacts from operation of the wells. This study included a validation and evaluation of existing OCWD groundwater flow model results, coordination with IRWD, OCWD, and impacted water purveyors, acquisition and review of data, interviewing of water operations staff, review and evaluation of current operating conditions for impacted wells, and analysis and determination of physical and financial impacts under numerous operational scenarios.

CONJUNCTIVE USE

Hydrogeologic Evaluation of Artificial Recharge Potential – Big Bear Area Regional Wastewater Authority - Big Bear Lake, California. The goal of this project was to evaluate the feasibility of recharging local aquifers within the San Bernardino Mountains with treated wastewater in an effort to conserve local resources. Mr. Kyle provided field oversight and coordination during drilling of exploratory boreholes and installation of monitoring wells, soil moisture instrumentation, weather instruments, etc. at two pilot-scale study areas. He also coordinated and conducted two pilot-scale recharge tests which included sulfur hexafluoride groundwater tracer studies to determine CDPH minimum residence time. Mr. Kyle conducted data analysis and was the primary author of a summary report.

Evaluation of Artificial Recharge Potential – Jurupa Community Services District - Chino Basin, California. Conducted an evaluation of artificial recharge potential in the central and eastern portion of Chino Basin. The purpose of the evaluation was to provide a means to offset increased pumping by identifying alternatives for improving recharge in existing facilities and possible sites for construction of new facilities.

Noble Creek Artificial Recharge Pilot Study and Monitoring – Beaumont Cherry Valley Water District - Beaumont, California. Field supervised the drilling, installation and instrumentation of several uncased boreholes and monitoring wells. The wells were used to track the progress of percolating recharge water through a 500 ft vadose zone during preliminary feasibility pilot testing and full-scale artificial recharge operations. Prepared a Ground Water Recharge Implementation and Monitoring Plan for the full

scale recharge facility and was responsible for quarterly monitoring and reporting during early active operation of the recharge basins.

Raymond Ground Water Basin Future Conjunctive Use and Ground Water Storage Plan – Raymond Basin Management Board - San Gabriel Valley, California. Evaluated the future ground water storage opportunities and management practices in the Raymond Basin. Prepared a technical memorandum presenting an analysis of current operational practices and strategies for future conjunctive use operations.

Mission and Bonsall Basins Artificial Recharge Program – San Diego County Water Authority, California. Performed field inspection for core drilling, ground water sampling, monitoring, well installation, pump testing, etc. to evaluate the geohydrology of the Mission and Bonsall Basins of the San Luis Rey River Watershed, San Diego County, to assess each basins ground water potential.

Aquifer Storage & Recovery Wells – Jurupa Community Services District - Jurupa Valley, California. Mr. Kyle provided project management during drilling and testing of 4 exploratory pilot boreholes to determine the feasibility of installing four (4) aquifer storage and recovery (ASR) wells in the eastern portion of the Chino Basin. The purpose of the ASR wells is to provide the opportunity to inject imported water to alleviate a significant local pumping depression. Two (2) ASR wells were subsequently installed with production capacities of up to 3,500 and 4,000 gpm and injection rates of approximately 2,000 gpm.

WATER RESOURCE MANAGEMENT

Well Field Condition Assessment – California Water Service Company - Los Angeles, California. Mr. Kyle was the project lead through an evaluation of an existing municipal well field. The purpose of the project was to evaluate the condition of existing facilities with the goal of determining maximum operational capacity with no negative impacts to ground water levels and quality. A plan was then developed to expand production facilities to maximize local resources and utilize all available groundwater rights.

Los Angeles Gateway Region Integrated Regional Water Management Plan – Los Angeles, California. Mr. Kyle provided ground water related analysis and support during stakeholder outreach, ground water quality characterization, development of management strategies, identification of projects, and preparation of IRWMP documents for a project spanning portions of the Central and West Coast Basins.

Baseline Ground Water Assessment / Hydrogeologic Evaluation of the Raymond Ground Water Basin – San Gabriel Valley, California. Mr. Kyle evaluated the geohydrology of the Raymond Basin, including aquifer properties, ground water storage, historical ground water levels, pumping, and ground water quality. Analyzed current ground water management practices. Performed a detailed analysis and prepared various technical memorandum's, and a comprehensive final report presenting the results, and detailed recommendations for improving ground water management practices for the future.

Raymond Ground Water Basin Ground Water Monitoring Plan – Raymond Basin Management Board - San Gabriel Valley, California. Assisted in the evaluation of current ground water monitoring and management practices in the Raymond Basin and prepared a technical memorandum presenting results and recommendations.

BASIN STUDIES

City of Victorville Southern California Logistics Airport Water System –Victorville, CA - Performed a detailed hydrogeologic evaluation of the Victorville area resulting in the recommendation of six areas for further exploration as potential ground water production well sites. The sites were evaluated with regard to potential for aquifer yield, natural ground water quality, potential for future ground water contamination, interference with other nearby wells, and logistical feasibility of location with respect to land ownership.

Baseline Ground Water Assessment / Hydrogeologic Evaluation of the Raymond Ground Water Basin – Raymond Basin Management Board - San Gabriel Valley, California. Evaluated the hydrogeology of the Raymond Basin, including aquifer properties, ground water storage, historical ground water levels, pumping, and ground water quality. Analyzed current ground water management practices. Performed a detailed analysis and prepared various technical memorandum's, and a comprehensive final report presenting the results, and detailed recommendations for improving ground water management practices for the future.

Hydrogeologic Evaluation of the College Park Development Area – SunCal Companies - Chino, California. Performed detailed hydrogeologic evaluation of five potential sites for high capacity ground water production wells. The sites were evaluated with regard to ground water quality and quantity, sources of potential contamination, interference with other nearby wells, and potential impact to nearby areas of land subsidence.

Re-evaluation of Maximum Perennial Yield – City of Big Bear Lake Department of Water and Power - Big Bear Lake, California. Developed a detailed hydrogeologic analysis of the Big Bear Lake watershed for the purpose of refining previous estimates of maximum perennial yield in the area and locating potential areas for additional ground water development. Included an evaluation of maximum perennial yield using the zero-net draft method and flownet analysis. As a result of the maximum perennial yield analysis, a comprehensive plan was developed for further drilling exploration and ground water development.

Large-Scale Pumping Test – San Diego County Water Authority - Oceanside, California. Conducted a large-scale pumping test to evaluate regionally characterize aquifers in the City of Oceanside and across the San Luis Rey River. Provided project management and technical support, and conducted analysis of data from multiple wells.

Box Springs Mutual Water Company – Moreno Valley, CA - Performed a water supply study in a hydrogeologically complex area of Moreno Valley with the goal of assessing the availability of groundwater to support a new water supply well.

DESALINATION

Oceanside Seawater Desalination Feasibility Study – Oceanside, California. Mr. Kyle was Project Manager for the latest phase of subsurface exploration to determine the feasibility of seawater desalination as an alternative source of potable water supply to a coastal community. The initial phases of the work included siting and installation of a nested monitoring well and test well to determine alluvial thickness, potential aquifer yield, and ground water quality. Subsequent phases included a one-year pumping test combined with pilot-scale RO test. The drilling portion of the final phase has been completed and consisted of seismic geophysical surveys, exploratory drilling utilizing the sonic drilling method, and nested monitoring well installation. The results of this phase provided the necessary data for siting of a vertical test well, and the groundwater quality data necessary to acquire a permit to discharge to the harbor. During the project, Mr. Kyle provided coordination with State, County, and local regulatory agencies, City departments, and subcontractors.

Seawater Desalination Supply Wells – Hacienda Resort - Baja California, Mexico. Provided project management, technical support, design services, and field inspection during a feasibility evaluation of the use of seawater as a source of feedwater to a reverse osmosis plant supporting a major resort. Favorable results from the feasibility evaluation ultimately led to successful siting and installation of one vertical seawater extraction well and two brine disposal wells.

Seawater Desalination Supply Wells – Vista Serena Resort - Baja California, Mexico. Provided project management, technical support, and field inspection for evaluation of the feasibility of using seawater as a source of feedwater to a reverse osmosis plant for a major beach resort east of Cabo San Lucas, Mexico. The feasibility evaluation included drilling of exploratory boreholes, installation and testing of a vertical test well, and installation of a monitoring well. Favorable results from the feasibility evaluation ultimately led to successful siting and installation of three vertical seawater extraction wells.

South Orange Coastal Ocean Desalination Project – Municipal Water District of Orange County - Dana Point, California. Provided technical support for a phased study into the feasibility of obtaining desalination feedwater supply from subsurface intakes at Doheny State Beach. Phase II work involved the design of a slant test well, an aquifer pumping test, ground water modeling, and water quality sampling and analyses. Provided coordination with laboratories, contractors, and state and county regulatory entities for major ground water and ocean water sampling events related to baseline water quality studies and NPDES permitting for ocean discharge events.

Chino Basin Desalter System Projects - Santa Ana Watershed Project Authority – Chino, California. Assisted in the development of a feasibility assessment for expansion of the Chino II Desalter. Acquired, managed, processed, and interpreted large amounts of hydrogeologic data. The purpose of the analysis was to predict potential pumping interference from a well field consisting of 25 wells. A separate analysis was also conducted to assess potential water quality changes in project and existing wells as a result of the project.

GEOPHYSICAL

Evaluation of Soil Thermal Conductivity – West Central Africa. Mr. Kyle provided support for a project in West Central Africa to determine soil thermal conductivities along a proposed oil pipeline from Chad to Cameroon. Involved in initial planning, site selection, and development of the project scope. Designed, constructed, and tested original geophysical field equipment and ultimately traveled to Africa to perform all necessary field work. Authored report summarizing findings and recommendations.

Geothermal Surveys – California and Minnesota. Conducted numerous aerial and subsurface geothermal surveys for the purpose of siting ground water production wells, determining leak locations within dams, and locating leachate leaks from landfill boundaries. Designed survey parameters and extents, performed field work, conducted analysis, and prepared reports documenting findings and recommendations.

Gravimetric Survey – Yucca Valley, CA. Performed a gravimetric survey for a major California water district. Responsible for project planning and acquisition, analysis, and interpretation of field data.

Ground Liquefaction Hazard Assessment – Client Confidential - Southern California. Provided technical review and direction of a complex statistical GIS-based model to assess the potential for earthquake induced ground motion due to liquefaction.

PUBLICATIONS AND PRESENTATIONS

- Development of a Regional Well Rehabilitation Prioritization Program. American Water Works Association CA-NV Section, Annual Fall Conference 2021. Virtual Conference. October 12, 2021.
- Implementation of Well Rehabilitation Prioritization Program and Case Study for Rehabilitation of PWD Well 7A. American Water Works Association CA-NV Section, Water Well Operation & Maintenance Webinar Webinar. June 3, 2021.
- Well Site Selection, Design, Construction Workshop. Presented to: California Water Service Company. Torrance, CA. February 24, 2020
- Well Rehabilitation Workshop. Presented to: City of Riverside Public Utilities. Riverside, CA. January 29, 2020.
- Well Site Selection, Design, Construction, and Rehabilitation Workshop. Presented to: City of Banning. Banning, CA. January 28, 2020.
- Well Site Selection, Design, Construction, and Rehabilitation Workshop. Presented to: Long Beach Water Department. Long Beach, CA. November 12, 2019.
- Lessons Learned in Water Well Rehabilitation and Redevelopment. American Water Works Association CA-NV Section, Annual Fall Conference 2019. San Diego, CA. October 22, 2019.
- Lessons Learned in Water Well Rehabilitation and Redevelopment. American Water Works Association CA-NV Section, Water Education Seminar. Orange, CA. August 21, 2019.
- Final Well Design Utilizing Borehole Data. American Water Works Association CA-NV Section, Water Well Construction Workshop. Campbell, CA. November 8, 2018.

- Final Well Design Utilizing Borehole Data. American Water Works Association CA-NV Section, Water Education Seminar. Orange, CA. August 22, 2018.
- Final Well Design Utilizing Borehole Data. American Water Works Association CA-NV Section, Water Well Construction Workshop. Lakewood, CA. April 12, 2018.
- Groundwater Workshop - Well Site Selection, Design, Construction, and Testing. American Water Works Association CA-NV Section. Rancho Cucamonga, CA. August 29, 2017.
- Mechanisms for Clogging of the Well Intake Structure. American Water Works Association CA-NV Section. Water Well Rehabilitation Workshop. Lakewood, CA. May 18, 2017.
- Operator's Role in Collection of Useful Well Data. American Water Works Association CA-NV Section, Annual Spring Conference 2017. Anaheim, CA. April 13, 2017.
- Vertical Flow in Wells. American Water Works Association CA-NV Section, Annual Fall Conference 2016. San Diego, CA. October 26, 2016.
- Final Well Design Utilizing Borehole Data. American Water Works Association CA-NV Section, Water Well Construction Workshop. Campbell, CA. November 18, 2015.
- Analysis and Evaluation of Aquifer Pumping Test Data – What Can We Learn and What is Relevant. American Water Works Association CA-NV Section. Las Vegas, NV. October 27, 2015.
- Water in the West – An Update on Water Supply Challenges Facing California. Rotary Club International. May 2015.
- Desalination Update for the West: What's New? What has Changed? Where is it Going? American Water Works Association CA-NV Section. San Diego and San Jose, CA. May 19 and May 21, 2015.
- Operator's Symposium. Development of a Regional Well Rehabilitation and Replacement Program. American Water Works Association CA-NV Section. Ontario, CA. March 17, 2015.
- Groundwater Workshop - Well Site Selection, Design, Construction, and Testing. American Water Works Association CA-NV Section. Rancho Cucamonga, CA. February 25, 2015.
- Development of a Regional Well Rehabilitation and Replacement Program. American Water Works Association CA-NV Section. Reno, NV. October 21, 2014.
- American Water Works Association CA-NV Section, Water Well Design Workshop. Rancho Cucamonga, CA. October 1, 2014.
- Well Plumbness and Alignment Measurement and Standards. 30th Annual Tri-State Seminar. Las Vegas, NV. September 25, 2014.
- Well Drilling and Borehole Sampling. American Water Works Association CA-NV Section, Water Well Design and Construction Workshop. Lakewood, CA. February 26, 2013.

- Principles of Materials Selection for Well Casing and Screen. American Water Works Association CA-NV Section, Annual Fall Conference 2012. San Diego, CA. October 11, 2012.
- Subsurface Intake Systems – Case Studies for Seawater Desalination in Northern San Diego County. American Water Works Association CA-NV Section, Annual Fall Conference 2012. San Diego, CA. October 10, 2012.
- Elimination of Feedwater Pretreatment to Desalination Plants Using Subsurface Well Intake Systems - Applicability and Sustainability. Caribbean Desalination Association 2012 Conference & Exposition – "80 Years of Desalination Makes for One Happy Island." Aruba. June 20, 2012.
- Utilization of Subsurface Slant and Vertical Well Intake Systems for Desalination Feedw ater Supply. American Water Works Association CA-NV Section, Annual Fall Conference 2011. Reno, NV. October 20, 2011.
- Utilization of Subsurface Slant and Vertical Well Intake Systems for Desalination Feed Water Supplies. American Membrane Technology Association & South East Desalting Association 2011 Joint Conference & Exposition – "Membranes are the Solution". Miami Beach, FL. July 19, 2011.
- Use of Slant Wells for Desalination Feed Water Supply - Case Study - Dana Point, CA. Workshop Presentation to the American Membrane Technology Association 2009 Annual Conference & Exposition. Austin, TX. July 13, 2009.
- Feasibility of Artificial Recharge in the Vicinity of Baldwin Lake, Big Bear Valley, California. California State University, Los Angeles. Master's Thesis. March 2006.

KIMBERLY MAKAR, PG

PROJECT ROLE
Hydrogeology/
Field Inspection

REGISTRATIONS/ CERTIFICATIONS
Professional Geologist, California No. 10044

EDUCATION
Bachelor of Science, Geosciences, University of Arizona, 2011

Ms. Makar is a geologist with ten years of experience in the water resource and mining industries. She began her career as a manager of the dewatering program at an open-pit copper mine in Nevada, for which she was responsible for developing and executing multi-million-dollar groundwater dewatering programs. Since 2014 she has been providing professional consulting services to the water resources industry in Southern California with an emphasis on new well installation, well rehabilitation, and permitting.

SELECTED EXPERIENCE

Well No. 15 – Montebello Land and Water Company – Montebello, California. Ms. Makar provided field inspection for a new water supply well located in Montebello, within the Central Basin. She provided field inspection during pilot borehole drilling, well construction, well development, step-drawdown and constant rate aquifer tests, gyroscopic alignment survey, downhole video survey, and final well disinfection.

DOM 300-01 – California Water Service Company – Compton, California. Ms. Makar assisted on the production of the preliminary design report, construction logistics, preliminary design, and required permits. She also assisted on the preparation of the preliminary Drinking Water Source Assessment Program (DWSAP) documents. Ms. Makar provided field inspection during all construction phases of the project.

Well No. 8 – South Montebello Irrigation District – Montebello, California. Ms. Makar provided field inspection for a new water supply well located in South Montebello, within the Central Basin. She provided field inspection during well development, step-drawdown and constant rate aquifer tests, gyroscopic alignment survey, downhole video survey, and final well disinfection.

Rehabilitation of Citizens Well 9 and Wilson Well 1A – Long Beach Water Department – Long Beach, California. Ms. Makar is serving as lead inspector during rehabilitation of two municipal water supply wells. The project includes physical and chemical cleaning of each well, redevelopment and testing, and retrofitting of the well pump, motor, and electrical.

Permitting of Three Potential Well Sites – Long Beach Water Department – Long Beach, California. Ms. Makar served as the lead in completing permitting documents required for three potential new well sites for the Long Beach Water Department (LBWD). For all three sites, Ms. Makar completed preliminary Drinking Water Source Assessment Program (DWSAP) documents, horizontal distance setback tables, plot plans showing 50-foot increment radii up to 200 feet, and Domestic Water Supply Permit Amendment applications. Of the three sites, LBWD has chosen to move forward with the construction phase of two of the sites.

West Coast Basin Well 1 – Long Beach Water Department – Long Beach, California. Ms. Makar provided field inspection during the installation of a new potable water supply well located in the West Coast Basin.

Collection Main and New Well Site Study – Long Beach Water Department – Long Beach, California. The Long Beach Water Department (LBWD) currently owns and operates 28 groundwater supply wells located throughout the city, in addition to a new well currently being equipped, and a second well recently constructed. LBWD's goal is to optimize local water supply sources and maintain a production well field with suitable capacity through the year 2032. Ms. Makar provided technical support to identify and evaluate areas favorable for installation of new production wells within the Central and West Coast Basins, and within relative proximity to the existing collection main pipeline. Identified sites were ranked based upon a scientific approach and weighted decision matrix and an evaluation of how each potential well site will impact the collection main system.

MICHAEL DYKSTRA

PROJECT ROLE
Field Inspection/
Project Support

REGISTRATIONS/ CERTIFICATIONS
Geologist in Training,
California No. 177100

EDUCATION
Bachelor of Science, Geology, California State Polytechnic University - Pomona, 2017

Master of Science, Geology, California State Polytechnic University - Pomona, Est. Spring 2021

Mr. Dykstra has 10 years' experience in the Southern California housing construction industry, where he worked closely with project managers to ensure projects were completed properly and in a timely manner. He received a Bachelor of Science degree in Geology from California State Polytechnic University – Pomona in 2017 and is currently seeking a Master of Science degree in the same subject. Since January 2020, Mr. Dykstra has been providing professional consulting services and support to the water resources industry in California, which includes field inspection for new water supply wells and well rehabilitations, and hydrogeologic support for groundwater quality studies, permitting, well siting, and design.

SELECTED EXPERIENCE

DOM 300-01 – California Water Service Company – Compton, California. Mr. Dykstra performed field inspection during all phases of construction for a new water supply well in Compton, CA, which included lithologic logging during pilot hole drilling, geophysical surveys, zone testing, pilot borehole reaming, well construction, well development, aquifer pumping tests, downhole video survey, and final well disinfection.

Well No. 8 – South Montebello Irrigation District – Montebello, California. Mr. Dykstra provided field inspection for a new water supply well located in South Montebello, within the Central Basin. He provided field inspection during well development, step-drawdown and constant rate aquifer tests, gyroscopic alignment survey, downhole video survey, and final well disinfection.

Development of a Rehabilitation Prioritization Plan – Palmdale Water District – Palmdale, California. Mr. Dykstra assisted in the development of a rehabilitation and replacement prioritization plan for the Palmdale Water District well field, consisting of 22 actively pumping wells. This project involved a thorough evaluation and ranking of each well as to rehabilitation feasibility and estimated remaining well life. Additional components of the project included development of modular technical specifications for well rehabilitation, and rehabilitation of up to three (3) wells, including technical specifications and bid support.

Rehabilitation and Redevelopment of Well 46-1R – Gage Canal Company – San Bernardino, California. KGI performed a condition assessment of a water supply well in response to excess sand production causing fouling of an adjacent treatment plant. A custom program of redevelopment was developed with the goal of mitigating sand production. Mr. Dykstra performed field inspection during all phases of the rehabilitation and redevelopment of this well. Ultimately, redevelopment was deemed a success, significantly reducing sand production and increasing the specific capacity of the well to values greater than when the well was originally constructed in 2007.

Rehabilitation and Redevelopment of Well 7A – Palmdale Water District – Palmdale, California. KGI performed a well performance and condition assessment of Well 7A in response to severe structural failure of the well screen. Detailed technical specifications were developed with the goal of installing a partial well liner, allowing the well to continue to operate while planning for replacement. Mr. Dykstra is currently providing field inspection for the rehabilitation of Well 7A.

Saik-Choon Poh, PE | Project Manager

EDUCATION
M.Eng. Environmental and Water Quality Engineering, Massachusetts Institute of Technology

BS, Civil Engineering, Loyola Marymount University

REGISTRATION
PE Civil, CA, No. C69223

YEARS EXPERIENCE
15 years

CERTIFICATION
National Association of Sewer Service Companies (NASSCO) - PACP, MACP, LACP

BENEFIT TO CLIENT
- ✓ Extensive knowledge and familiarity with sewer pipeline construction and rehabilitation
- ✓ Experience interfacing between multiple agencies
- ✓ Engineering expertise in sewer rehabilitation

Saik-Choon Poh specializes in environmental and civil engineering. He is experienced in water, stormwater, and wastewater conveyance and treatment facilities. As a key member of project teams, he has been responsible for directing work and coordinating closely with clients, subcontractors, contractors, and staff in multiple offices.

Long Beach Water Department (LBWD) - S-1 Sewer Lift Station Rehabilitation Upgrade Project Manager for field assessment, engineering design, and construction management for this lift station rehabilitation project (2-3 MGD) consisting the field assessment of the existing odor control units, corrosion of electrical gear caused by H2S, VFDs & pump clogging and condition of Wet well (concrete degradation and lining) and Dry well. The engineering design included replacing/upgrading the odor control unit, wet well rehab, installation of new lining to the wet well and electrical gear.

Long Beach Water Department (LBWD) - S-12 Sewer Lift Station Rehabilitation Upgrade Project Manager for field assessment, engineering design, and construction management for this lift station rehabilitation project (3-5 MGD) consisting the replacement of the existing odor control units, Corrosion of Electrical Gear caused by H2S, VFDs & pump clogging, rehabilitation of Wet well (concrete repair and lining) and repair existing dry wet, and new FOG system.

Long Beach Water Department - S-18 Sewer Lift Station Rehabilitation Upgrade DRP provided project management, field assessment and engineering/CAD design support services for S-18 Sewer Lift Station rehabilitation project (1-3 MGD).

Long Beach Water Department - North Long Beach Sewer Improvement Project Phase 1 and Phase 2 Project Manager/ Resident Engineer for the design and construction management services for the rehabilitation of approximately 19,600 linear of existing sewer lines.

Long Beach Water Department (LBWD) - Orange Avenue/Del Amo Blvd/ Walnut Ave Street Sewer Upgrade Resident Engineer for the project which consisted of approximately 1,019 LF of 12-inch sewer to be upsized to a 15-inch sewer along Walnut Avenue between Market Street and Jackson Street (located in a built-out, high-density residential/commercial area) the installation of a 10-inch double barrel HDPE siphon with steel casings, and the rehabilitation of nine (9) brick manholes.

Long Beach Water Department (LBWD) - Orange Avenue/7th Street Sewer Upgrade Deputy Project Manager/Resident Engineer for the design and performed construction management services for the construction of approximately 1,300 linear feet of 12- inch Extra Strength VCP within 7th Street and 1,775 linear feet of 30-inch Extra Strength VCP within Orange Avenue.

Long Beach Water Department (LBWD) - Prototype Seawater Desalination Testing Facility Construction Project Resident Engineer for the construction of a prototype facility to test an innovative two-pass, two-stage nanofiltration process for seawater desalination. In addition, this project included the installation of approximately 2,000 feet of influent and effluent piping. Responsibilities included submittal review; coordination with the contractor, designer, and local agencies; review of change order requests; providing responses to requests for information (RFIs); inspecting the construction site; and coordination with the client.

Golden State Water Company - Pipeline Replacement Projects, Southern California Mr. Poh acted as the Project Engineer for various pipeline replacement projects within the Capital Improvement Program (CIP), including approximately 20,000 linear feet of water main located throughout the Client's water system. Responsibilities included supervision of a team of engineers and designers to prepare design drawings; conducting utility research and field verifying locations; and performing hydraulic analysis of water systems.

Curt Roth, PE | Project Manager

EDUCATION

MS, Environmental Engineering, University of California Berkeley

BS, Civil Engineering, Loyola Marymount University

REGISTRATION

PE Civil, CA, No. C61087

YEARS EXPERIENCE

20 years

BENEFIT TO CLIENT

- ✓ Engineering expertise in conveyance pipelines
- ✓ Specialized expertise in designing, constructing and operating Pilot treatment facilities
- ✓ Experience interfacing between multiple agencies
- ✓ Extensive knowledge and familiarity with stormwater treatment

AVAILABILITY

Curt will be available upon award of contract

Curt specializes in environmental and civil engineering. He is experienced in water, storm water, recycled water and wastewater conveyance as well as all aspects of water and storm water treatment. Mr. Roth adds tremendous experience designing, constructing and operating new and innovative systems for the treatment of water.

Long Beach Water Department (LBWD) - On-Call Engineering Design Services for Water Main Replacement Program Curt is the Project Manager providing as needed engineering design services for the replacement of water mains as part of the LBWD Capital Improvement Program. Curt provides general project management, technical review of designs, and coordination with the LBWD staff.

Golden State Water Company - Capital Improvement Program Region 2 and 3 Curt acted as the Project Manager for various pipeline replacement projects within the Capital Improvement Program (CIP), including approximately 20,000 linear feet of 12-inch, 8-inch, and 6-inch water main located throughout the Client's water system in Southern California. Involvement included the design of fifty water main replacement projects, four backwash drain lines, four wellhead designs, and two well treatment systems within a period of 12 months. Also provided a technical support role on several other facility upgrade designs and planning studies.

Long Beach Water Department - S-18 Sewer Lift Station Rehabilitation Upgrade DRP provided project management, field assessment and engineering/CAD design support services for S-18 Sewer Lift Station rehabilitation project (1-3 MGD).

City of Los Angeles, Bureau of Sanitation - Integrated Resources Plan for the City of Los Angeles Curt was the wastewater treatment task lead for the facility plan portion of the Integrated Resources Plan.

Los Angeles Department of Water and Power - Onsite Recycled Water Retrofit Program Curt was the Project Engineer for multiple recycled water retrofit design projects within the overall LADWP program. Curt's responsibilities included site evaluation, assisting with system shut downs, producing drawings for submission to Department of Public Health, and technical assistance and coordination for client meetings.

Metropolitan Water Districts of Southern California (MWD) - Distribution System Infrastructure Protection Program for Western San Bernardino County Region Curt was the lead Project Engineer (subcontractor to prime consultant) for the completion of the Preliminary Design Report for DSIPP for Western San Bernardino County. Curt provided technical review of site conditions; provided recommendations of solutions; assisted with the development of project costs; assisted with the hydraulic analysis of site runoff and stream flows and assisted with drawing and report development.

Los Angeles Department of Public Works, Watershed Management Division - Sun Valley Park Project Lead design engineer for Sun Valley Park Project which consisted of the design of an underground stormwater infiltration basin, small storm drain collection system, collection inlets, monitoring system, and several structural BMPs (swirl concentrators and media filters) for the removal of solids, trash, oil, and certain other constituents of concern, including heavy metals.

Los Angeles County Department of Public Works, Watershed Management Division - Dominguez Gap and DeForest Park Wetlands Project Lead design engineer and project manager for Dominguez Gap and DeForest Park Wetlands for the LACDPW Watershed Management Division and the City of Long Beach, Parks Department.

EXHIBIT B

Table 1

MISSION SPRINGS WATER DISTRICT
Revised Cost Proposal to Provide Professional Consulting Services to Develop a Well Rehabilitation Prioritization Program

		Principal Hydrogeologist	Project Hydrogeologist	Staff Hydrogeologist	GIS Technician	Field Inspector	Clerical	Technical Advisor	Principal Engineer	Labor	Direct Costs	Total Cost
	Hourly Rate:	$195	$145	$135	$120	$105	$80	$195	$165			
1.0	**PROJECT MANAGEMENT AND QUALITY CONTROL**											
1.1	Prepare for and attend project kick-off meeting and up to six (6) progress meetings.	28	16					8	8	$ 10,660	$ 742	$ 11,402
1.2	Provide for project management, including monthly progress reports and QA/QC.	24	12	12				8	4	$ 10,260	$ -	$ 10,260
2.0	**DATA ACQUISITION AND ANALYSIS**											
2.1	Acquire and review available well and pump data, interview operations personnel, prepare well histories for 13 wells.	16	24	24	12			4	8	$ 13,380	$ 124	$ 13,504
3.0	**WELL REHABILITATION PRIORITIZATION PLAN**											
3.1	Prepare well rehabilitation prioritization plan (assumes 50%, 70%, 90% Draft and 100% Final).	24	40	48	20		8	8	8	$ 22,880	$ 400	$ 23,280
3.2	Prepare for and conduct three (3) workshops at MSWD for each draft report.	18		9						$ 4,725	$ 371	$ 5,096
4.0	**TECHNICAL SUPPORT SERVICES**											
4.1	Provide technical assistance to MSWD for Wells 22, 34, and 35, and with regard to water lube and water flush pump applications.	12	12	12	8			8	8	$ 9,540	$ 124	$ 9,664
	TOTAL HOURS AND COST:	***122***	***104***	***105***	***40***		***8***	***36***	***36***	***$ 71,445***	***$ 1,761***	***$ 73,206***

KYLE Groundwater, Inc.

DRP Engineering, Inc.

EXHIBIT C

Term, Early Termination & Notice

Develop a Well Rehabilitation Prioritization Program

A. Term of Agreement

This professional services agreement shall be effective upon approval by the parties thereof and shall expire upon (1) one year from the effective Agreement DATE therein. This contract also terminates and replaces any previous agreements between the Mission Springs Water District and Kyle Groundwater, Inc. for Develop a Well Rehabilitation Prioritization Program in force prior to the effective date of this agreement.

B. Early Termination of Agreement

This agreement may be terminated at any time upon a thirty (30) day written notice from either party, and without fault or claim for damages by either party.

C. Notice

All correspondence and Notices will be sent to the following addresses as noted below for Mission Springs Water District and Kyle Groundwater, Inc.

OWNER

Attn: Chad Finch
Mission Springs Water District
66575 Second Street
Desert Hot Springs, CA 92240

CONSULTANT

Attn: Russell Kyle
Kyle Groundwater, Inc.
309 E. Jefferson Avenue
Pomona, CA 91767

AMENDMENT TO
Contract for Professional Services
Mission Springs Water District
66575 Second Street
Desert Hot Springs, CA 92240
Telephone 760-329-6448 – FAX 760-329-2482

TO: Kyle Groundwater, Inc.
309 E. Jefferson Avenue
Pomona, CA 91767

DATE: July 27, 2023

PROJECT DIR#: N/A

FIRST AMENDMENT TO CONTRACT AGREEMENT

1. This amendment (the "Amendment") is hereby made by Mission Springs Water District and **Kyle Groundwater, Inc.** parties to an agreement for **Develop a Well Rehabilitation Prioritization Program** (the "Agreement"), dated **July 27, 2022**.

2. In exchange for the promises herein and other good and valuable consideration, the sufficiency of which both parties acknowledged, it is mutually agreed by and between the undersigned contracting parties that the Agreement is amended as follows:

   The Contract Amendment will increase the term of the Contract Agreement from one (1) year to two (2) years. The Contract will expire July 27, 2024.

3. Except as set forth in this Amendment, the Agreement is unchanged and shall continue in full force and effect in accordance with its terms. If there is conflict between this Amendment and the Agreement the terms of this amendment will prevail.

Instructions: Sign and return via email. Upon acceptance by Mission Springs Water District, an executed copy will be returned to you for your records. Insert the names of your authorized representative(s) below.

Accepted:

Mission Springs Water District

By: _____
Brian Macy

Title Assistant General Manager

Other authorized representative(s):

Danny Friend
Director of Operations

Chad Finch
Water Production Supervisor

Consultant:

Kyle Groundwater, Inc.
(Business Name)

By: _____
Russell Kyle

Title President

Other authorized representative(s):