APPENDIX D

Resumes and Qualifications of Technical Working Group Members

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CURRICULUM VITAE

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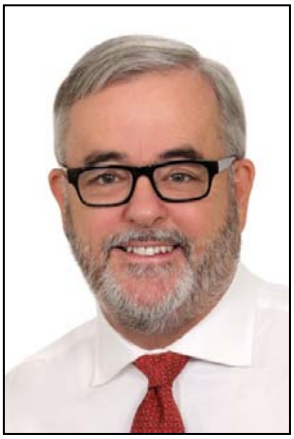

Anthony Brown

he/his/him
Principal Hydrologist

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Disciplines

Hydrology, Hydrogeology, Water Resources, Water Quality, Water Supply, Drinking Water Treatment, Contaminant Source Identification, Contaminant Fate and Transport, Soil and Groundwater Remediation, Environmental Liability Management, Legal and Regulatory Strategy.

Education

M.Sc. Engineering Hydrology, Imperial College London, 1989
D.I.C. Postgraduate diploma in Civil Engineering, Imperial College London, 1988
B.A. Geography, King's College London, 1985

Professional Experience

Anthony is a versatile and proficient professional with over 30 years of experience in hydrology, hydrogeology, water resources, water quality, fate and transport of contaminants, groundwater remediation, regulatory strategy, water resources evaluation, and water supply engineering.

Anthony has conducted and managed numerous groundwater resources projects, including:

- resource evaluation, development, and management
- water balance, storage capacity and safe yield analysis
- water rights disputes and adjudication
- marginal groundwater development (e.g., brackish water)
- aquifer storage and recovery (ASR)
- indirect potable reuse (IPR).

He has also implemented hundreds of hazardous waste site investigations, including sites with multiple potentially responsible parties (PRPs), complex hydrogeology and fate and transport, fractured rock, multiple contaminants, and co-mingled plumes. This work has included detailed Remedial Investigation (RI) or Phase II characterization studies, groundwater flow and solute

transport modeling, Preliminary Endangerment Assessments, Human Health Risk Assessments, and remedial feasibility studies (FS), remedial system design and implementation. Anthony has been involved in the design, testing, and permitting of drinking water treatment systems for impaired (contaminated) water sources.

Anthony has provided expert services to many prominent water and environmental law firms, the Attorneys General of California, New Jersey, Pennsylvania, Maryland, Ohio, North Carolina, and Puerto Rico, several County District Attorneys, and numerous City Attorneys' Offices.

Through his work for water utilities impacted by gasoline constituents (e.g. MTBE), chlorinated solvents (e.g. PCE, TCE), solvent stabilizers (e.g. 1,4-dioxane), soil fumigants (e.g. 1,2,3-TCP), chlorofluorocarbons (e.g. Freon 11, 12 and 113), perfluorinated compounds (i.e., PFAS), the rocket propellants perchlorate and NDMA, and hexavalent chromium, arsenic and other metals, Anthony has become a recognized expert in the fate, transport, and remediation of these compounds, and the protection of source waters from contamination by such recalcitrant chemicals.

Amongst other technical areas of expertise, he has also provided expert advice related to:

- groundwater resource development
- groundwater basin management
- California Sustainable Groundwater Management Act (SGMA)
- water rights and the development of physical solutions
- groundwater discharges and the Clean Water Act
- compliance with the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) and National Contingency Plan (NCP)
- cleanup under the Resource Conservation and Recovery Act (RCRA)
- the environmental impact of oil field contaminants and their mitigation
- source identification and mitigation of bacteria and fecal contamination in coastal waters
- source identification and persistence of microplastics in coastal waters.

Through his extensive experience on "high-profile" projects, Anthony has developed an excellent working relationship with private and public sector clients, Federal, State, and local elected officials and government agency staff, the legal community, professional organizations, non-profit environmental organizations, and his colleagues in the environmental and water resources professions.

Anthony has also testified before the U.S. Senate and briefed White House staff, federal, State, and local elected officials and regulators, independent commissions, professional groups,

academic institutions, and the news media (including CBS 60 Minutes, National Public Radio [NPR] and local newspapers) on groundwater issues.

Beyond his US experience, Anthony has worked on projects in the United Kingdom, Ireland, Canada, Mexico, Costa Rica, Columbia, Ecuador, Yemen, Egypt, and Nepal.

U.S. Senate Testimony and Briefings for Elected Officials

- Testimony before the U.S. Senate Committee on Environment and Public Works on "the Appropriate Role of States and the Federal Government in Protecting Groundwater", on April 18, 2018.
- Briefing for White House Officials and the Council on Environmental Quality on "the Impact of MTBE on Water Resources of the United States", in October 1997.
- Briefing for U.S. Senators Feinstein and Boxer on "MTBE Contamination of the City of Santa Monica Water Supply", in October 1997.
- Briefing for Assistant Administrators and other leadership at the US Environmental Protection Agency (EPA) on "the Impact of MTBE on Water Resources of the United States", in October 1997.
- Briefing of State Senator Sheila Kuehl, several Assembly members, leadership at the California Environmental Protection Agency (CalEPA) and State Water Resources Control Board (SWRCB) on "MTBE Contamination of the City of Santa Monica Water Supply", in 1997-1998

Anthony has also briefed the following on the impact of fuel oxygenates, chlorinated solvents, rocket propellants, metals, oil field activities, and bacteria on water quality:

- USEPA staff (Region IX)
- State Senators and Assembly Members
- State regulators
- Local officials (Mayors, council and board members, City attorneys, etc.)
- Independent Commissions
- Professional bodies (ABA, ACS, ACWA, AEHS, AGWA, NGWA, GRA, etc.)
- Academic institutions and many other organizations
- Media outlets (NPR, CBS 60 Minutes, local TV stations)

Expert Consulting and Witness Services

Anthony is a respected, credible, and highly effective expert witness. He has testified at trial (blue text) on 14 occasions, including three times in Federal court. Anthony is currently scheduled to testify in another five trials during the next 18 months. Overall, he has been retained as an expert in over 80 matters related to water rights, water resources management,

and water pollution (including representing hundreds of parties in multi-district litigation [MDL]). Anthony has provided deposition testimony (red text) on 40 occasions and these depositions have lasted from one to 32 days in length.

Active:

- Multiple water utility plaintiffs vs. Fluorotelomer defendants et al. (Trial sites in Phase 2 of multi-district litigation [MDL] for impact on water supplies by PFAS) – US District Court, District of South Carolina (discovery)
- State of Wisconsin vs. Johnson Controls Inc. and Tyco Fire Products et al. (PFAS contamination of soil, sediment, surface water, groundwater, and drinking water from a fire training facility in northern Wisconsin) – Wisconsin Superior Court (expert report, deposition scheduled)
- Kern River Water Association vs. Sandridge Partners (Dispute over the transfer and beneficial use of groundwater in the San Joaquin Valley) - California Superior Court, Kern County (discovery)
- Separate matters for several (5+) confidential State clients vs. 3M et al. (Contamination of natural resources [soil, surface water, groundwater, State-owned lands] by Per- and Polyfluoroalkyl substances [PFAS]) – Various State Superior Courts (various stages ranging from discovery through settlement, including expert reports for two states so far)
- Environmental NGO vs. Confidential California County et al (Public trust action related to discharges of groundwater that support stream flows and ecological habitat) – California Superior Court (discovery)
- 12909 Cordary LLC vs. Hussein Berry, Excaliber Fuels, et al (MTBE and benzene contamination associated with a gasoline service station extending beneath an apartment complex) - California Superior Court, Orange County (expert report, trial scheduled)
- Separate matters for numerous municipal and county water utilities and water management districts vs. DuPont er al. (Impact of PFAS on water supplies) – Various State Superior Courts (discovery)
- Confidential California City vs. Confidential Defendant (Impact of releases of perchlorate, chlorinated solvents, 1,2,3-trichlorpropane [TCP], and PFAS at an aerospace facility on municipal water supply wells) – California Superior Court, Los Angeles County (discovery)
- Confidential Alabama community vs. Major landfill owner/operator (Soil, sediment, surface water, groundwater, and drinking water contamination associated with an active landfill) – Alabama Superior Court
- Landowner group vs. Confidential county water district (Pending adjudication of groundwater rights in several groundwater subbasins in Central California) – California Superior Court (pre-discovery)
- Andorra vs. Fabricure et al (Contamination of groundwater and soil gas beneath a large apartment complex associated with releases at an adjacent dry cleaners) – US District Court, Central District of California (discovery)

- Confidential Southern California City vs. Confidential Defendant (Impact of releases of perchlorate, 1,2,3-TCP, and solvents at an aerospace research and testing facility on municipal water supply wells) – California Superior Court, Los Angeles County (discovery)
- Confidential State client vs. Paint Manufacturer (Restoration of soil, sediment, groundwater, and surface water contaminated by discharges at a former paint manufacturing facility) – US District Court (discovery)
- Grimmway and Bolthouse Farms vs. numerous water right holders (water rights adjudication in the Cuyama Valley) – California Superior Court, Los Angeles County (discovery, expert reports, deposition, trial scheduled)
- Mobile Baykeeper vs. Alabama Power (Contamination of groundwater and surface water by coal combustion residual [CCRs] placed in a coal ash lagoon) – US District Court, Southern District of Alabama (discovery)
- Lanier Parkway Associates vs. Hercules Chemical (Ashland) (the impact of benzene and chlorobenzene contamination from a chemical facility on an adjacent commercial property) – Superior Court of Glynn County, Georgia (expert affidavit)
- College Park East vs. Midway City Sanitary District et al (groundwater contamination by chlorinated solvents at a former dry cleaner) - US District Court, Central District of California (discovery)
- Mojave Pistachios et al vs. Indian Wells Valley Groundwater Authority (IWVGA) (challenge to the Groundwater Sustainability Plan [GSP] and associated pumping fees in a groundwater basin in eastern Kern County) – California Superior Court, Kern County (discovery)
- James J. Kim vs. L. Tarnol et al (chlorinated solvent contamination at a former dry cleaner in Glendale) – California Superior Court, Los Angeles County (discovery, expert affidavit)
- Oxnard Pleasant Valley Landowner Group v. Fox Canyon Groundwater Management Agency (water rights dispute) – California Superior Court, Los Angeles County (discovery)
- Stoll vs. Ewing et al (chlorinated solvent contamination at a former dry cleaner in Pleasanton) - US District Court, Northern District of California (discovery)
- San Luis Obispo Coastkeeper et al vs. Santa Maria Valley Water Conservation District et al (dispute over surface water flows to enhance steelhead habitat in the Santa Maria River watershed, Santa Barbara County) – US District Court, Central District of California (discovery)
- Mojave Pistachios vs. Indian Wells Valley Water District (IWVWD) et al (water rights dispute in eastern Kern County between agricultural interests and public water purveyors) – California Superior Court, Kern County (discovery)
- Santa Barbara Channel-keeper et al vs. City of San Buenaventura et al (adjudication of surface water and groundwater rights in the Ventura River watershed, Ventura County) – California Superior Court, Los Angeles (expert report, deposition)
- Commonwealth of Pennsylvania vs. ExxonMobil, et al (State-wide assessment of impact and damages associated with MTBE and TBA releases) – US Federal Court, Southern District of New York (expert reports, deposition [22 days])

- State of Maryland vs. ExxonMobil et al (State-wide assessment of impact and damages associated with MTBE and TBA releases in Maryland) – US Federal Court, Southern District of New York (discovery)
- Steinbeck Winery et al vs. City of Paso Robles et al (Quiet title action brought by a group of wineries against the public water agencies to adjudicate water rights) - California Superior Court, San Jose (deposition, Phase 2 and Phase 3 trial testimony, Phase 4 pending)
- Various individuals vs. San Luis Obispo County et al (Trichloroethene [TCE] contamination in groundwater and water supply wells in a community adjacent to a County-operated airport) – California Superior Court, San Luis Obispo (litigation stayed)
- Commonwealth of Puerto Rico vs. Shell Oil Co., et al (Island-wide assessment of impact and damages associated with MTBE and TBA releases in Puerto Rico) – US Federal Court, Southern District of New York (expert reports, deposition [10 days])
- New Jersey Department of Environmental Protection (NJDEP) vs. Sunoco et al (State-wide assessment of impact and damages associated with MTBE and TBA releases in New Jersey) – US Federal Court, Southern District of New York (expert reports, deposition [17 days], hearing testimony)
- Orange County Water District (OCWD) vs. Sabic Innovative Plastics et al (Chlorinated solvent, 1,4-dioxane and perchlorate contamination of groundwater resources from various sites in Orange County, California) – California Superior Court, Orange County (expert reports, deposition [32 days], trial testimony)
- City of Modesto vs. Vulcan Chemical et al (perchloroethylene [PCE] releases from numerous dry cleaners contaminating drinking water wells and groundwater resources) – California Superior Court, San Francisco (expert reports, deposition [25 days], trial testimony [twice])

Past:

- Town of Ayer, MA vs. 3M et al. (Trial site in Phase 1 of MDL for over 200 cases related to the impact on water supplies by PFAS) – US District Court, District of South Carolina (expert report, deposition, $13 B settlement)
- City of Lincoln vs. Placer County (CERCLA cost recovery action for contamination at a former landfill) – US District Court, Eastern District of California (expert report, deposition, settled)
- TC Rich et al vs. Shaikh et al (chlorinated solvent contamination at a former small batch chemical distributor in Los Angeles) - US District Court, Central District of California (expert report, deposition, settled)
- City of Stuart, FL vs. 3M et al. (Trial site in Phase 1 of MDL for over 200 cases related to the impact on water supplies by PFAS) – US District Court, District of South Carolina (expert report, deposition, $13 B settlement)
- Las Posas Valley Water Rights Coalition et al vs. Fox Canyon Groundwater Management Agency et al (adjudication of water rights in the Las Posas Groundwater Basin, Ventura County) – California Superior Court, Santa Barbara County (expert reports, deposition, Phase 2

and Phase 3 trial testimony, favorable final statement of decision in which my expert reports were cited 33 times as a basis for the decision)

- City of Sioux Falls, SD vs. 3M et al. (Trial site in Phase 1 of MDL for over 200 cases related to the impact on water supplies by PFAS) – US District Court, District of South Carolina (expert report, deposition, $13 B settlement)
- City of Fresno vs. Shell Chemical et al (1,2,3-TCP contamination of groundwater resources and water supply wells) – California Superior Court (settled)
- Goleta Water District vs. Slippery Rock Ranch (water rights dispute in central California between an avocado ranch adjacent to an adjudicated groundwater basin) – California Superior Court, Santa Barbara (expert reports, deposition, settled)
- Friends of Riverside Airport vs. Department of the Army et al (CERCLA cost recovery action for poly-chlorinated biphenyl [PCB] contamination at a former wastewater treatment plant in Riverside, California) US District Court, Central District of California (expert report, deposition, case dismissed on summary judgment)
- City of Corona vs. Dow Chemical et al (1,2,3-TCP contamination of groundwater resources and water supply wells) – US District Court, Southern District of California (settled)
- Black Warrior Riverkeeper et al vs. Drummond Coal (acid mine drainage from a former coal mine impacting a tributary of the Black Warrior River, Alabama) – US Federal Court, Middle District of Alabama, Birmingham (expert report, deposition, settled)
- City of Riverside vs. Goodrich et al (perchlorate contamination of groundwater resources and water supply wells) - California Superior Court (expert declaration, deposition)
- Bakman Water Company vs. Dow Chemical et al (1,2,3-TCP contamination of groundwater resources and water supply wells) – US District Court, Central District of California (settled)
- Borrego Water District (water rights dispute and physical solution) – California Superior Court, San Diego (stipulated adjudication)
- Charleston Waterkeeper and South Carolina Coastal Conservation League vs. Frontier Logistics (lawsuit over polyethylene nurdle pollution in and around Charleston Harbor) - US District Court, Charleston District of South Carolina (expert report, settled)
- City of Arcadia vs. Dow Chemical et al (1,2,3-TCP contamination of groundwater resources and water supply wells) – US District Court, Central District of California (expert report, settled)
- City of Upland vs. Dow Chemical et al (1,2,3-TCP contamination of groundwater resources and water supply wells) – US District Court, Central District of California (expert report, settled)
- San Miguel Electric Cooperative vs. Peeler Ranch (contamination of soil, surface water and groundwater beneath a ranch from a lignite mine and coal-fired power plant) – Texas Superior Court, 218th District (expert report, deposition, hearing testimony, settled)
- Sunnyslope Water Company vs. Dow Chemical et al (1,2,3-TCP contamination of groundwater resources and water supply wells) – US Federal Court, Southern District of California (expert report, settled)

- City of Hemet vs. Dow Chemical et al (1,2,3-TCP contamination of groundwater resources and water supply wells) – US Federal Court, Southern District of California (expert report, settled)
- Sierra Club et al vs. Dominion Energy (contamination of groundwater and surface water resources by coal combustion residuals [CCRs] from ash ponds) – US Federal Court, Eastern District of Virginia (expert report, deposition, trial testimony)
- Sunny Slope Water Company vs. Dow Chemical et al (1,2,3-TCP contamination of groundwater resources and water supply wells) – California Superior Court, Los Angeles County (settled)
- Greenfield et al vs. Ametek Aerospace et al (solvent contamination in groundwater beneath three mobile home parks) – US Federal Court, Southern District of California, San Diego (expert report, deposition, settled)
- Golden State Water Company vs. Dow Chemical et al (1,2,3-TCP contamination of groundwater resources and water supply wells in Nipomo and Claremont) – US Federal Court, Southern District of California (expert report, settled)
- National Association for the Advancement of Colored People (NAACP) vs. Duke Energy (coal ash contamination of groundwater, sediments, and surface waters at the Belews Creek coal-fired power plant) – US Federal Court, Middle District of North Carolina (expert report, settled)
- City of Atwater vs. Shell Chemical et al (1,2,3-TCP contamination of groundwater resources and water supply wells) – California Superior Court (expert report, deposition, trial testimony)
- State of Vermont vs. ExxonMobil et al (State-wide assessment of impact and damages associated with MTBE and TBA releases in Vermont) – US Federal Court, Southern District of New York (settled)
- Trujillo et al vs. Ametek Aerospace et al (solvent contamination in groundwater beneath an elementary school) – US Federal Court, Southern District of California, San Diego (expert report, deposition, settled)
- Roanoke River Basin Association vs. Duke Energy (coal ash contamination of groundwater, sediments, and surface waters at two coal-fired power plants: Mayo and Roxboro) – US Federal Court, Middle District of North Carolina (expert report, deposition, settled)
- OCWD vs. Unocal et al (MTBE and TBA contamination of groundwater resources from service station sites in Orange County, California) – US Federal Court, Southern District of New York (expert reports, deposition [12 days], settled)
- State of North Carolina vs. Duke Energy (administrative hearing related to coal ash contamination at six power plants) – North Carolina Superior Court (settled)
- City of Clovis vs. Dow Chemical et al (1,2,3-TCP contamination of groundwater resources and water supply wells) – California Superior Court (expert report, deposition, trial testimony)
- San Juan Hills Golf Course vs. City of San Juan Capistrano et al (suit filed over groundwater pumping in the San Juan Basin) – California Superior Court, Orange County (settled)
- City of Tulare vs. Dow Chemical et al (1,2,3-TCP contamination of groundwater resources and water supply wells) – California Superior Court (settled)

- State of California vs. Columbia Casualty Company et al (perchlorate and solvent contamination at the Stringfellow Acid Waste disposal pits in Glen Avon) – California Superior Court (expert report, settled)
- City of Delano vs. Crop Production Services (CPS) et al (Nitrate contamination of water supply wells) - California Superior Court (settled)
- Laborers' International Union of North America Local Union No. 783 v. Santa Margarita Water District et al. (Review of the groundwater hydrology of the Cadiz project, San Bernardino County) - California Superior Court, Orange County (independent expert report, settled)
- Southern California Water Company vs. Aerojet General Corp. (TCE, perchlorate and NDMA contamination of drinking water supplies in Rancho Cordova, California) – California Superior Court, Sacramento District (expert report, deposition, settled)
- The City of Stockton Redevelopment Agency (RDA) vs. Conoco-Phillips et al (petroleum hydrocarbon contamination at former oil terminals) – California Superior Court (deposition, settled)
- PK Investments vs. Barry Avenue Plating (hexavalent chromium and solvent contamination of soil and groundwater) - California Superior Court, Los Angeles District (deposition, settled)
- City of Santa Monica, California vs. Shell et al (MTBE contamination of drinking water supplies) – California Superior Court, Orange County District (expert report, deposition, settled)
- State of California vs. Joint Underwriters (perchlorate and solvent contamination at the Stringfellow Acid Waste disposal pits in Glen Avon) – California Superior Court (expert report, deposition, settled)
- Community of Broad Creek, North Carolina vs. BP Amoco et al (MTBE, benzene and 1,2-DCA contamination of private water supply wells) – North Carolina Superior Court (deposition, settled)
- South Tahoe Public Utility District, California vs. ARCO et al (MTBE contamination of drinking water supplies) - California Superior Court, San Francisco (expert report, deposition [13 days], trial testimony)
- Private well owners in 18 reformulated gasoline (RFG) states vs. various oil companies (class action related to MTBE) - US Federal Court, New York District (deposition, class certification hearing)
- Individual plaintiffs vs. Lockheed Corporation (TCE and perchlorate contamination of drinking water supplies in Redlands, California) – California Superior Court, Los Angeles District (deposition, settled)
- City of Norwalk vs. Five Point U-Serve et al (1.2-DCA contamination of a municipal drinking water well) – California Superior Court (deposition, case dismissed)
- Forest City Corp. vs. Prudential Real Estate (PCE contamination of soil and groundwater) – California Superior Court, Los Angeles District (deposition, trial testimony)

- Huhtamaki vs. Ameripride (chlorinated solvent contamination at a commercial dry cleaner/ laundry facility) – California Superior Court, Sacramento District (expert report, deposition, settled)
- Consolidated Electrical Distributors (CED) vs. Hebdon Electronics et al (chlorinated solvent contamination in fractured granite) - California Superior Court, North San Diego District (expert report, deposition, trial testimony)
- Southern California Water Company vs. various parties (water rights petition and adjudication for the American River, Sacramento, California) – State Water Resources Control Board, Sacramento
- The City of Santa Monica, California vs. ExxonMobil Corporation (MTBE contamination of drinking water supplies) – California Superior Court (designated, settled, retained as consultant to both parties for remedy implementation)
- The town of Glenville, California vs. various parties (MTBE contamination of drinking water supplies in Kern County, California) - California Superior Court (designated, settled)
- Great Oaks Water Company vs. Chevron and Tosco (MTBE contamination of drinking water supplies in San Jose, California) - California Superior Court (designated, settled)
- Orange County District Attorney's Office vs. ARCO et al (Underground Storage Tank [UST] violations, and MTBE contamination of soil and groundwater) - California Superior Court (designated, settled)
- Cambria Community Services District (CCSD) vs. Chevron et al (MTBE impact to drinking water supplies) in San Luis Obispo County, California - California Superior Court (designated, settled)
- Los Osos Community Services District (CCSD) vs. Chevron et al (MTBE impact to drinking water supplies) in San Luis Obispo County, California - California Superior Court (designated, settled)
- The town of East Alton, Illinois vs. various parties (MTBE contamination of drinking water supplies) – Illinois Superior Court, Jefferson County (designated, settled)
- The City of Dinuba vs. Tosco et al (MTBE contamination of groundwater resources) - California Superior Court (expert report, settled during deposition)
- Stella Stephens vs. Bazz-Houston et al (chlorinated solvent contamination at an active metal finishing facility in Garden Grove, California) - California Superior Court (designated, settled)
- Communities for a Better Environment (CBE) vs. Chrome Crankshaft (hexavalent chromium and TCE contamination beneath a chrome plating facility and adjacent school) - California Superior Court (designated, settled)
- California Attorney General's Office vs. Unocal (Natural Resource Damage Assessment [NRDA] at a former oil field in the central coast of California) - California Superior Court (designated, settled)
- Phillips Petroleum Corporation vs. private property owner (contamination from a former oil well in Signal Hill, California) - California Superior Court (designated, settled)
- Mobil Oil Corporation vs. private property owner (contamination from a former bulk fuel plant in the Bay Delta area) – California Superior Court (designated, settled)

- Mobil Oil Corporation vs. terminal operator (contamination from a former bulk fuel plant in Monterey area) – California Superior Court (designated, settled)

General Project Experience

Anthony has acted as the Principal in Charge, Project Manager (PM), Quality Assurance (QA) Manager and/or Principal Review for the following ongoing or recently completed projects:

Current Water Resources Projects

- Analysis of the transfer and beneficial use of groundwater within a defined watershed and groundwater sustainability agency (GSA) - Sandridge Partners
- Assessment of groundwater discharges that support stream flows and aquatic habitat in northern California – Confidential Client
- Evaluation of Hydrologic Conditions, Safe Yield, and Management Actions in the Cuyama Basin – Confidential Client
- Evaluation of groundwater conditions, including groundwater in storage and safe yield, and management actions in a basin subject to SGMA – Confidential Client
- Assessment of Water Source Reliability, Both Yield and Quality, for a Large Water Supply Project in South Florida – Confidential Client
- Analysis of Basin Hydrology, Recharge, Water Budgets, and Inter-Basin Flows in the Mojave River Basin – Confidential Client
- Review of the Effect of Releases from a Reservoir on Surface Water Flows Intended to Enhance California Steelhead Habitat, and the Potential Impact on Groundwater Recharge – City of Santa Maria, Golden State Water Company
- Evaluation of the Effects of Aquifer Connectivity and Well Bore Leakage on Saltwater Intrusion in the Upper Salinas Basin – Confidential Client
- An Investigation of the Hydrology of Perennial Spring in the Mojave Desert, as it Relates to Potential Impact from a Groundwater Resource Development Project - Three Valleys Municipal Water District
- Consulting Support Related to the Implementation of SGMA in the Pleasant Valley and Oxnard Plain Groundwater Basins, Pleasant Valley County Water District, Guadalasca Mutual Water Company.
- Consulting Support for a Surface Water and Groundwater Rights Dispute in the Ventura River Watershed – Group of Confidential Landowners
- Support Related to a New Car Manufacturing Plant in Huntsville, Alabama, and potential impact on habitat for an endangered species of fish – Center for Biological Diversity
- Review of the Groundwater Monitoring, Management, and Mitigation Plan (GMMMP) for the Cadiz Water Conservation Project – Three Valleys Municipal Water District
- Groundwater Consulting Support to an Agricultural Business in southeast Kern County Located within a Partially Adjudicated Basin – SunSelect

- Strategic Groundwater Consulting Support to a Large Golf Resort Located in a Desert Groundwater Basin Subject to Critical Overdraft under SGMA – Rams Hill GC
- Assessment of Water Resources at Oil Fields Throughout California and the Development of Produced Waters as an Alternate Water Supply – California Resources Corporation (CRC)
- Support Related to SGMA, Possible Adjudication, and Overall Groundwater Management Strategy for a Municipality in Southern California – Confidential Municipal Client
- Consulting Support for a Groundwater Rights Adjudication in the Las Posas Groundwater Basin, Ventura County – Group of Large Landowners
- Support Related to SGMA, Salinity Management, Alternate Water Sources, and Overall Groundwater Management Strategy for a Grower in the Bay-Delta – Wonderful Orchards
- Evaluation of the Feasibility of Using Brackish Groundwater and Oilfield Produced Water as an Alternate Water Supply for a Basin in Critical Overdraft – Northwest Kern Brackish and Oilfield (BOF) Water Study Group
- Support Related to SGMA, Possible Adjudication, and Overall Groundwater Management Strategy for a Large Water District in the Central Valley – Confidential Water District Client
- Water Rights Dispute Between a Water District and an Avocado Ranch in Central California – Slippery Rock Ranch
- Evaluation of the Feasibility of Using Brackish Groundwater as an Alternate Water Supply for a Closed Desert Basin in Critical Overdraft – Indian Wells Valley Brackish Water Study Group
- Development of a Plan for an Adjudication of Water Rights in a Desert Basin and the Principles of a Groundwater Management Plan (i.e., Physical Solution) – Confidential Water District Client
- Support Related to SGMA for Water Districts on the West Side of Kern County, Including the Creation of Defined Groundwater Management Areas – Westside District Water Authority
- Support to Agricultural Interests in the "White Areas" in Madera County with Respect to the Implementation of the California Sustainable Groundwater Management ACT (SGMA) – Madera County Farm Bureau
- Evaluation of Water Supply Options, Including New Water Supply Wells, for a Major Oilfield in West Fresno County – CRC
- Development of a Water Budget for a Baseline Period, and Evaluation of Native Safe Yield, Annual Operating Safe Yield, Historical Pumping, and Conditions of Overdraft as Part of a Water Rights Dispute in the Central Coast of California – City of Paso Robles
- Design and Permitting of an Aquifer Storage and Recovery (ASR) Project for Indirect Potable Reuse (IPR) of Tertiary Treated Municipal and Industrial Wastewater – City of Fresno
- Assessment of Increased Pumping at a Data Center and the Impact on Nearby Municipal Water Supply Wells in Charleston, South Carolina – Southern Environmental Law Center (SELC)
- Litigation Support and Development of Groundwater Management Approaches as an Alternative to Compliance with the Sustainable Groundwater Management Act – Confidential Water District Client, Southern California

- Groundwater Management Support to a Very Large Agribusiness with Over 170,000 Acres of Almonds, Pistachios, Mandarins, Pomegranates, and Grapes in the San Joaquin Valley - Wonderful Orchards
- Evaluation of Groundwater Conditions and Quality, and The Degree of Hydraulic Connection Between Groundwater Basins, as Part of a Water Rights Dispute in the Central Coast of California – City of Paso Robles
- Development of a Water Supply Well Drilling Ordinance and Valuation of Water Rights for a Confidential Municipality in Southern California
- Support for a Major Agricultural Interest with Holdings in Four Separate Groundwater Basins in Relation to the Implementation of SGMA – RTS Agribusiness
- Development of a New Water Supply Well Field, Including Compliance with California Division of Drinking Water (DDW) Policy 97-005 (Impaired Source Policy), and Evaluation of Groundwater Contamination at a Nearby Aerospace Facility – City of Torrance
- Evaluation of Aquifer Characteristics and Groundwater Conditions Related to the Reinjection of Oil Field Produced Water and Development of a Strategy to Obtain an Aquifer Exemption – Confidential Oil Company
- Development of a recycled water program (including possible aquifer storage and recovery [ASR]/salt-water intrusion program) using advanced treatment of a blend of brackish groundwater and urban storm-water – City of Santa Monica
- Membership of the Technical Advisory Committee (TAC) of a Cooperative Groundwater Group that will Become a Groundwater Sustainability Agency (GSA) – Indian Wells Valley
- Evaluation of Basin Hydrogeology, Groundwater Conditions, Water Quality, and Well Production in a Riparian Coastal Basin in Southern California – City of San Juan Capistrano
- Investigation and Development of Alternate Groundwater Supplies for an Agricultural Interest with Land Holdings in an Arid California Valley – Mojave Pistachios
- Development of a 50,000 acre-foot per year (AFY) ASR Project in the Eastern Portion of a Large Agricultural Valley in Southeast California – Confidential Client
- Review of the Groundwater Hydrology of the Cadiz Project – an independent expert report prepared for Orange County Superior Court in re: Laborers' International Union of North America Local Union No. 783 v. Santa Margarita Water District et al.

Petroleum Hydrocarbons

- Assessment of the Impact of MTBE/TBA Contamination of Water Resources in the State of Vermont, Including Contamination at Release Sites, Public Water Supply Wells, and Private Domestic Wells – State of Vermont
- Contamination of soil vapor and groundwater beneath an apartment complex associated with releases of oxygenated fuels and solvents at an active gasoline service station – Confidential Client

- Evaluation of Produced Water Management Options for Two Active Oil Fields in Southern California, including Treatment and Beneficial Use - CRC
- Assessment of the Impact of MTBE/TBA Contamination of Groundwater Resources in the State of Maryland, and Development of Costs to Address the Contamination at Release Sites, Public Water Supply Wells, and Private Domestic Wells – State of Maryland
- Investigation of Petroleum Hydrocarbon Contamination Related to Releases at a Pipeline that Crosses a Large Ranch in the Central Coast of California – Twin Oaks Ranch
- Assessment of Petroleum Contamination from a Large Pipeline Release that is Discharging to Two Streams and a Wetland in Belton, South Carolina – Southern Environmental Law Center (SELC)
- Evaluation of Contamination by Petroleum Hydrocarbons from a Pipeline Release at a Large Ranch/Winery in the Central Coast of California, and Development of a Conceptual Remedial Program and Costs to Implement – Santa Margarita Ranch, California
- Assessment of the Impact of MTBE/TBA Contamination of Groundwater Resources in the State of Pennsylvania, and Development of Costs to Address the Contamination at Release Sites, Public Water Supply Wells, and Private Domestic Wells – Commonwealth of Pennsylvania
- Investigation and Remediation of MTBE/TBA and Petroleum Hydrocarbon Contamination (using surfactant enhanced product recovery) at a Maintenance Facility in Hawthorne, California – Golden State Water Company
- Assessment of the Effectiveness of Site Investigation and Remediation Activities, Investigation of Off-Site Groundwater Contamination by MTBE/TBA, and Development of Remedial Programs (and Costs) at "Bellwether" Trial Sites - Orange County Water District
- Evaluation of Contaminant Conditions and Prior Site Investigation and Remediation Activity, Implementation of Off-site Investigations, and Development of Remedial Programs and Associated Costs to Address MTBE/TBA Contamination at Trial Sites in Puerto Rico – Commonwealth of Puerto Rico
- Assessment of Site Investigation and Remediation Activities, Investigation of Off-Site Groundwater MTBE/TBA Contamination, and Development of Remedial Programs (and Costs) at Trial Sites – New Jersey Department of Environmental Protection (NJDEP)
- Environmental Impact Report (EIR) and Baseline Environmental Assessment at a Proposed Oil Field Redevelopment Project, Southern Iraq - Confidential Client
- Development of a Remediation Approach and Costs for Soil and Groundwater Contamination at Two Former Petroleum Terminals – Stockton Redevelopment Agency
- Assessment of the Nature of Contamination and the Costs to Address this Contamination at a Former Municipal Landfill in San Diego County – Confidential Client
- Evaluation of Contaminant Sources, and the Fate and Transport of MTBE, 1,2-DCA and Benzene to Numerous Private Water Supply Wells in the Community of Broad Creek, North Carolina

- Assessment of the Effectiveness of Site Investigation and Remediation Activities to Address MTBE/TBA/Benzene Contamination at ARCO and Thrifty Service Stations Throughout Orange County, California - Orange County District Attorney's Office
- Evaluation of Contaminant Sources, Fate, Transport, and Impact of MTBE and TBA to Public Water Supplies, and the Costs to Treat these Contaminants, in the town of East Alton, Illinois
- Court Appointed Consultant to Develop Site Investigation Programs for MTBE/TBA/Benzene Contamination at 35 Thrifty Service Stations in Orange County
- Impact and Mitigation of Oil Field Contaminants at the Belmont Learning Center – Los Angeles Unified School District (LAUSD) - Belmont Commission
- Investigation, PRP Identification, Remediation and Restoration of Municipal Well Fields Impacted by MTBE Contamination – City of Santa Monica (Charnock Well Field), South Lake Tahoe Public Utility District (STPUD), Santa Clara Valley Water District (SCVWD), Great Oaks Water Company
- Oversight of Oil Company Investigation and Remediation Programs in Honolulu Harbor, Hawaii – US Environmental Protection Agency (USEPA)
- Assessment of Oil Field Contaminants in Relation to High Incidences of Leukemia and non-Hodgkins Lymphoma at a High School in Southern California – Confidential Client
- Evaluation of Fuel Releases and Their Impact upon Groundwater Resources at Service Stations, Bulk Plants, Fuel Terminals and Refineries Throughout California – Confidential Client
- Complete Restoration of Municipal Water Supply Wells Contaminated with MTBE – City of Santa Monica (Arcadia Well Field) and ExxonMobil Corporation
- Preliminary Environmental Assessment (PEA) at the Hull Middle School - located on a former oil field and landfill - Torrance Unified School District (TUSD), California
- Oversight of Investigation and Remediation Activities for a MTBE Release at a Service Station and the Potential Impact on a City's Water Distribution System – City of Oxnard, California
- Investigation of MTBE Contamination of Water Supply Wells and Other Petroleum Hydrocarbon Contamination at a Marine Fueling Depot on Catalina Island – Southern California Edison
- Impact of MTBE Releases at Service Stations and a Bulk Fuel Terminal on Drinking Water Wells and Groundwater Resources - City of Dinuba, California
- Oversight of a Court-ordered MTBE/TBA Plume Delineation Program at Gasoline Service Stations in Orange County, California – OCDA, California
- Oversight and Investigation of Remediation of MTBE Contamination Impacting Drinking Water Supplies in the Towns of Cambria and Los Osos/Baywood Park, California – Cambria Community Services District (CCSD), Los Osos Community Services district (LOCSD), Cal-cities Water Company
- Assessment of the Impact of an MTBE Release on Water Supply Wells, Sewers, and a Wastewater Treatment Plant – City of Morro Bay, California

- Investigation and Remediation of an MTBE Release in the Immediate Vicinity of a Drinking Water Supply Well - City of Cerritos, California
- Assessment of the Impact of Petroleum Hydrocarbon Contamination from a Wolverine Pipeline Release in Jackson, Michigan – Private Property Owner
- Investigation of Fuel Oil LNAPL and Hexavalent Chromium Contamination at a Former Clay Products Manufacturing Facility in Fremont, California – Mission Clay Products
- Assessment of the Impact of MTBE Releases on Water Supply Wells, and Oversight of Responsible Party (RP) Investigation and Remediation Activities - Soquel Creek Water District, California
- MTBE Contamination of Private Drinking Water Supplies and Development of Water Supply Treatment and Replacement Alternatives – Glenville, California
- Assessment of the Impact of MTBE on Drinking Water Supply Wells in Santa Clara County, California – Great Oaks Water Company (GOWC)
- Assessment of Data Gaps and Research Needs Regarding MTBE Impact to Water Resources – UK Environment Agency
- Investigation and Mitigation of the Impact of Oil Field Contaminants on a Large Apartment Complex in Marina del Rey, Los Angeles, California – Confidential Client
- Investigation and Remediation of Methane and Hydrogen Sulfide as Part of the Redevelopment of a Former Oil Field in Carson, California - Dominguez Energy/Carson Companies
- Assessment of Methane and Petroleum Hydrocarbon Contamination at a Former Oil Field in Santa Fe Springs, California – General Petroleum
- Natural Resource Damage Assessment (NRDA) at the Guadalupe Oil Field, California - State of California (Department of Fish and Game [DFG], Oil Spill Prevention and Response [OSPR], Attorney General and Regional Water Quality Control Board [RWQCB])
- Assessment of the Impact of Oil Field Activities on Surface Water and Groundwater Resources in the Central Coast of California – State of California
- Groundwater Investigation and Remediation at Four Petroleum Terminals in Wilmington, Carson, and San Pedro, California - GATX
- Research into Technologies for Treatment of MTBE in Water - Association of California Water Agencies (ACWA) / Western States Petroleum Association (WSPA) / Oxygenated Fuels Association (OFA)
- Characterization and Remediation of a Hydrocarbon Release (including MTBE) from a Refined Product Pipeline in Fractured Bedrock in Illinois – Shell
- Investigation and Remediation of Petroleum Hydrocarbon Contamination Beneath a City Maintenance Yard and City Bus Yard – City of Santa Monica, California
- Investigation and Remediation of a Gasoline Release (including MTBE) in Fractured Bedrock Resulting from a Catastrophic Tank Failure – Intrawest Ski Resorts, California

- Assessment of LNAPL, Aromatic Hydrocarbon, and Chlorinated Solvent Contamination Beneath a Former Waste Disposal Facility in Santa Fe Springs, California – Confidential Client
- Investigation of Soil and Groundwater Contamination at a Fueling Facility at a Municipal Airport – City of Santa Monica, California
- Pipeline Leak Investigation and Remedial Design - Mobil Pipeline, Ft. Tejon, California
- Investigation of a Petroleum Release in Fractured Bedrock - Chevron, Julian, California
- Contribution of Multiple Sources to Groundwater Contamination – Mobil Oil Corporation, La Palma, California
- Forensic Assessment of a Gasoline Release – Mobil Oil Corporation, Santa Monica, California
- Investigation of a Diesel Fuel Release – General Petroleum, Point Hueneme, California
- Service Station Investigations and Remediation (> 60 sites) - Mobil Oil Corporation, World Oil, Los Angeles County Metropolitan Transportation Authority (LACMTA), and Others
- Assessment of a Crude Release from a Former Pipeline - Mobil Oil, Gorman, California
- Remediation of 2,000,000-gallon (7,560 m^3) LNAPL Spill - Gulf Strachan Gas Plant, Alberta

Chlorinated Compounds

- Evaluation of PFAS Contaminant Sources, Extent of Contamination, Fate and Transport, Persistence of Impact at Water Supply Wells, and Selection of Remedial Actions for Release Sites – Confidential Municipal Client, Florida
- Evaluation of soil vapor and groundwater contamination beneath a large apartment complex associated with releases at an adjacent dry cleaner – Confidential Client
- Determination of Damages Associated with PFAS, including Remediation of Soil and Groundwater Contamination, for Several Confidential State Attorneys General
- Assessment of Contaminant Sources, Release Location and Timing, Soil and Groundwater Contamination, and Remedial Actions at a Dry Cleaners in Pleasanton, California – Confidential Property Owner
- Investigation of Numerous PFAS Contaminant Sources, Extent of Contamination, Fate and Transport, and Persistence of Impact at Two Separate Water Supply Well Fields – Confidential Municipal Client, Massachusetts
- Evaluation of Groundwater Contamination at an Aerospace Facility in El Cajon, the Threat to Water Supply Wells, and Vapor Intrusion Concerns at Overlying Properties – Confidential Client
- Investigation of Chlorinated Solvent Contamination of Soil and Groundwater at a Dry Cleaners in Orange County, California – Midway City Sanitation District
- Assessment of PFAS Contaminant Sources, Extent of Contamination, Fate and Transport, Persistence of Impact at Water Supply Wells, and Selection of Remedial Actions for Release Sites – Confidential Municipal Client, South Dakota

- Analysis of Site Operating Records and Soil and Groundwater Contaminant Data to Identify Contaminant Release Locations, Fate and Transport of Contamination, and Remedial Options at a Dry Cleaners in Glendale, California – Confidential Property Owner
- Investigation of Groundwater Contamination and Potential Sources for TCE Contamination in Groundwater and Water Supply Wells in a Community Adjacent to a County-Operated Airport – Confidential Client
- Evaluation of Poly-Chlorinated Biphenyls (PCBs) in Storm Water and the Impact on Groundwater Resources and the Use of Treated Storm Water for Aquifer Recharge and Saline Intrusion Barriers – Confidential Municipal Clients
- Investigation of Chlorinated Solvent Contamination and Implementation of an Extended Remediation Pilot Study at a Chemical Distribution Facility in Los Angeles, California – Pacifica Chemical Corporation
- Assessment of the Effectiveness of Site Investigation and Remediation Activities, Investigation of Off-Site Groundwater Contamination, and Development of Remedial Programs (and Costs) at Solvent "Source Sites" in the South Basin Groundwater Protection Project (SBGPP) - Orange County Water District
- Consulting Support to a Community Adjacent to the Santa Susana Field Laboratory (SSFL), a Facility Previously Used to Test Rockets – Bell Canyon Homeowners Association
- Investigation of Groundwater Contamination by Perfluorinated Compounds (e.g., PFOA, PFOS) and its Impact on Public Water Supplies in Southeastern North Carolina – Confidential Client
- Investigation of Chlorinated Solvent and Petroleum Hydrocarbon Contamination and Implementation of an Extended Remediation Pilot Study at a Small-Batch Chemical Distribution Facility in Santa Fe Springs, California – Angeles Chemical Corporation
- Evaluation of Contaminant Distribution and Fate, and Development of a Remedial Approach and Costs, for Chlorinated Solvent Contamination in Groundwater at a Light Industrial Facility in Northridge, California – Confidential Client
- Project Management Consultant (PMC) for the Hazardous Substances Account Act (HSAA) Program (i.e., State-CERCLA) as part of the SBGPP – Orange County Water District
- Assessment of Conceptual Hydrogeology and the Sources of 1,2-DCA and PCE Contamination of a Large Public Water Supply Well – Confidential Client
- Investigation and Remediation of Chlorinated Solvent Contamination in Soil and Groundwater Beneath a Metal Finishing Facility in Inglewood, California – Bodycote Hinterliter and Joseph Collins Estate.
- Investigation and Remediation of Soil and Groundwater Contamination at a Former Wood Treating Facility – Port of Los Angeles
- Assessment of the Nature of PCE Releases from Dry Cleaning Facilities, the Impact Upon Groundwater Resources, and the Cost of Remediation – City of Modesto, California

- Investigation of Chlorinated Solvent Contamination in Soil, Groundwater and Drinking Water Supplies Beneath Various Facilities in Lodi, California – Confidential Client
- Investigation of TCE and Hexavalent Chromium Contamination at the Suva School in Montebello, California – Communities for a Better Environment
- Remediation of Chlorinated Solvents, Including Vinyl Chloride, in Soil and Groundwater Beneath a Former Aerospace Facility in West Los Angeles, California – Playa Vista Capital
- Assessment of Chlorinated Solvent and Hexavalent Chromium Contamination at an Active Metal Finishing Facility in the City of Garden Grove, California – Confidential Client
- Investigation and Remediation of Hexavalent Chromium and TCE Contamination at an Active Plating Facility in West Los Angeles – confidential client
- Contamination of Drinking Water Supplies by TCE and Perchlorate from an Aerospace Manufacturing Facility in Redlands, California – Individual Plaintiffs
- Investigation and Remediation of Hexavalent Chromium, TCE, and Gasoline LNAPL Contamination at an Active Plating Facility in Santa Fe Springs, California – Confidential Client
- Investigation and Remediation of Hexavalent Chrome and TCE Contamination at the Los Angeles Academy (formerly Jefferson) Middle School, Los Angeles, California – Jefferson Site PRP Group
- Evaluation of Groundwater and Contaminant Conditions at an Active Municipal Landfill in Los Angeles County, California – Browning Ferris Industries (BFI)
- Investigation of Chlorinated Solvent Contamination in Groundwater Beneath a Municipal Airport – City of Santa Monica, California
- Resource Conservation and Recovery Act (RCRA) Facility Assessment and Closure for a Large Aerospace Facility in Hawthorne, California – Northrop Grumman Corporation
- Characterization of Complex Hydrogeology and Contaminant Fate and Transport (with Poly-chlorinated Biphenyls [PCBs] and Chlorinated Solvents) in Karstic Bedrock at a Site on the National Priority List (NPL) in Missouri – MEW PRP Steering Committee
- Design of a Groundwater Remediation Program for Chlorinated Solvent, Perchlorate and Other Contaminants Utilizing Existing Drinking Water Wells – San Gabriel Valley Water Company (SGVWC)
- Investigation of a Chlorinated Solvent Release in Fractured Bedrock – Consolidated Electrical Distributors, San Diego, California
- Contamination of Drinking Water Supplies by TCE from an Aerospace Manufacturing Facility in Redlands, California – Individual Plaintiffs
- Investigation of a Chlorinated Solvent Release at an Active Chemical Terminal - GATX, San Pedro, California
- Technical and Regulatory Assistance, and RP Oversight and Review, Chlorinated Solvent Contamination Beneath a Former Aerospace Facility – City of Burbank, California
- Investigation and Remedial Design for a Chlorinated Solvent Release at an Active Machine Shop – Mighty USA, Los Angeles, California

- Remediation of Chlorinated Solvents in Groundwater as Part of a Rail Freight Transfer Terminal Development - Port of Los Angeles, California
- Remedial Evaluation of PCE Contamination at a Former Scientific Instruments Manufacturing Facility – Forest City, Irvine, California
- Evaluation of a Chlorinated Solvent Release at a Dry Cleaners - Los Angeles City Attorney, West Los Angeles, California
- Assessment of a Chlorinated Solvent Release from Former Dry Cleaners – DeLoretto Plaza, Santa Barbara, California
- Characterization and Remediation of LNAPL at an Active Chemical Refinery - ICI, Teeside, UK

Perchlorate

- Assessment of contaminant sources and extent, fate, and persistence of groundwater contamination associated with releases of perchlorate, 1,2,3-TCP, and solvents at an aerospace research and testing facility – Confidential City Client
- Investigation of Regional Perchlorate Contamination of Groundwater Resources in the Central Basin of Los Angeles – Water Replenishment District of Southern California (WRD)
- Investigation of regional groundwater contamination by perchlorate in the Rialto-Colton, Bunker Hill, and North Riverside Basins, and impact to water supply wells – City of Riverside
- Assessment of the Effectiveness of Site Investigation and Remediation Activities, Investigation of Off-Site Groundwater Contamination, and Development of Remedial Programs (and Costs) at Perchlorate Release Sites in the South Basin Groundwater Protection Project (SBGPP) - Orange County Water District
- Hydrogeologic Investigation, Source Identification, Water Supply Well Impact Assessment, and Drinking Water Treatment for Perchlorate – City of Morgan Hill, California
- Evaluation of the Fate and Transport of Perchlorate and NDMA Contamination and its Impact on Water Supplies in Rancho Cordova, California – Southern California Water Company
- Hydrogeologic Investigation, Water Supply Well Impact Assessment, Regulatory Assistance, and Responsible Party (RP) Oversight for Perchlorate Contamination – City of Gilroy, California
- Regulatory and Technical Assistance, RP Oversight and Review, Water Resource Impact Assessment for Perchlorate Contamination – City of Santa Clarita, California
- Design of a Groundwater Remediation Program for Chlorinated Solvent, Perchlorate and Other Contaminants Utilizing Existing Drinking Water Wells – San Gabriel Valley Water Company (SGVWC), San Gabriel Valley Superfund Site, California
- Evaluation of the Off-site Migration of Perchlorate and TCE Contamination from a Rocket Testing Facility in Simi Hills, California – City of Calabasas, County of Los Angeles
- Investigation of Potential Perchlorate Source Sites, Source Contribution, Contaminant Pathway Assessment, and Drinking Water Treatment – Fontana Water Company, West Valley Water District, Fontana, California

- Evaluation of Previous Environmental Investigations, Contaminant Transport and Remediation Options for Perchlorate and Solvent Contamination at the Stringfellow Acid Waste Disposal Pits in Glen Avon, California – Joint Underwriters

Hexavalent Chromium

- Investigation and Remediation of Hexavalent Chrome and TCE Contamination at the Los Angeles Academy (formerly Jefferson) Middle School, Los Angeles – Jefferson Site PRP Group
- Investigation and Remediation of Hexavalent Chromium and TCE Contamination at an Active Plating Facility in West Los Angeles – Confidential Client
- Hydrogeologic Investigation of Hexavalent Chromium Contamination in the Northern Area of the Central Basin in Los Angeles County – Water Replenishment (WRD)
- Investigation of TCE and Hexavalent Chrome Contamination at the Suva School in Montebello, California – Communities for a Better Environment
- Investigation of Fuel Oil LNAPL and Hexavalent Chromium Contamination at a Former Clay Products Manufacturing Facility in Fremont, California – Mission Clay Products
- Investigation and Remediation of Hexavalent Chromium, TCE, and Gasoline LNAPL Contamination at an Active Plating Facility in Santa Fe Springs California – Confidential Client

Other Projects

- Evaluation of Contaminant Conditions at a Municipal Landfill, the Presence of CERCLA Hazardous Substances, Compliance with CERCLA/NCP, and Contribution to Contamination – Placer County
- Determination of Compliance with the Coal Combustion Residual (CCR) Rule at an Operating Coal-Fired Power Plant in Alabama – Southern Environmental Law Center (SELC)
- Investigation of the Source, Magnitude, Extent and Fate of Polyethylene Nurdle Pollution in and Around Charleston Harbor – Charleston Waterkeeper and South Carolina Coastal Conservation League
- Assessment of the Impact of 1,2,3-TCP Contamination from Soil Fumigant Applications on Municipal Water Supplies – City of Corona
- Review and Critique of Proposed Coal Ash Pond Closure at the Tennessee Valley Authority (TVA) Gallatin Power Plant - SELC
- Evaluation of Surface Water and Groundwater Pollution by Boron and Other Metals and Salts Associated with Coal Ash at Georgia Power's Plant Scherer Generating Station - SELC
- Assessment of the Impact of 1,2,3-TCP Contamination from Soil Fumigant Applications on Municipal Water Supplies – City of Arcadia
- Investigation of PCB Contamination at a Former Wastewater Treatment Plant at a Former US Army Camp – City of Riverside
- Investigation of the Fate, Transport, and Persistence of 1,2,3-TCP Contamination of Groundwater and Municipal Water Supply Wells – City of Upland

- Assessment of Sediment, Surface Water, and Groundwater Contamination Associated with Coal Ash at the Belews Creek Coal-Fired Power Plants in North Carolina, and an Evaluation of Closure Options for Coal Ash Basins – NAACP
- Assessment of the Impact of 1,2,3-TCP Contamination from Soil Fumigant Applications on Municipal Water Supplies – Sunny Slope Water Company
- Investigation of Sources and Fate and Transport of 1,2,3-TCP Contamination in Groundwater and its Impact on Potable Water Supply Wells in and around the City of Claremont – Golden State Water Company
- Evaluation of disposal and/or treatment options for produced waters at three active oil fields in Kern County – California Resources Corporation
- Assessment of 1,2,3-TCP Contamination of Groundwater and Potable Water Supply Wells in the Nipomo Area of Central California – Golden State Water Company
- Evaluation of potential water resources impacts from a proposed coal ash landfill located within a flood plain near Laredo Texas – confidential ranch owner
- Investigation of the Fate, Transport, and Persistence of 1,2,3-TCP Contamination of Groundwater and Municipal Water Supply Wells – City of Hemet
- Investigation of elevated concentrations total dissolved solids (TDS) and dissolved metals in surface water and groundwater related to an active lignite mine and coal-fired power plant at a large ranch in southeast Texas – Peeler Ranch
- Assessment of soil, groundwater, and surface water contamination associated with a Former Manufactured Gas Plant (MGP) in South Carolina – Southern Environmental Law Center (SELC)
- Evaluation of Contaminated Groundwater and Surface Waters by 1,4-dioxane, Perfluorinated Compounds [PFCs], and Gen-X at a Chemical Manufacturing Facility in North Carolina – Cape Fear Riverkeeper
- Investigation of 1,2,3-TCP Contamination of Groundwater and Municipal Water Supply Wells – City of Fresno
- Evaluation of Surface Water, Sediment, and Groundwater Contamination and Assessment of Remedial Actions at a Former Manufactured Gas Plant in South Carolina – Confidential Client
- Evaluation of Flow Conditions and Water Quality in Surface Water and Groundwater at an Active Coal-Fired Power Plant in North Carolina, including Three-Dimensional Groundwater Flow and Solute Transport Modeling – Sierra Club
- Assessment of 1,2,3-TCP Contamination of Groundwater Resources and Water Supply Wells in Clovis, California, and Development of Well-head Treatment Programs and Associated Costs - City of Clovis
- Investigation of Surface Water and Groundwater Impacted by Acid Mine Drainage (AMD) from a Former Coal Mine in Alabama, Including Geophysical Mapping, Piezometer Installation, and Soil, Sediment, and Surface Water Sampling – Black Warrior Riverkeeper
- Evaluation of Groundwater and Surface Water Contamination by Coal Combustion Residuals (CCRs) from Ash Ponds at Power Generation Facilities in Eastern Virginia – Sierra Club

- Investigation of 1,2,3-TCP Contamination of Groundwater and Municipal Water Supply Wells – City of Atwater
- Evaluation of Contaminant Sources and Hydrogeologic Pathways for 1,2,3-TCP Contamination of Water Supply Wells - City of Tulare
- Identification of Potential Sources of Nitrate Contamination at a Municipal Water Supply Well – Water Replenishment District of Southern California (WRD)
- Assessment of Sediment, Surface Water, and Groundwater Contamination Associated with Coal Ash at Two Coal-Fired Power Plants in North Carolina, and an Evaluation of Closure Options for Coal Ash Basins – Roanoke River Basin Association
- Assessment of the Volume and Quality of Storm Water and Shallow Groundwater (from Dewatering) at a Large Condominium Complex, as part of a City's MS-4 Storm Water Permitting – Coronado
- Investigation of Nitrate Contamination of Groundwater Resources and Water Supply Wells in Delano, California, and Development of Well-head Treatment Programs and Associated Costs - City of Delano
- Evaluation of Contaminant Conditions and Closure Plans for Coal Ash Basins at Two Coal-Fired Power Plants in Virginia – Sierra Club
- Evaluation of Groundwater and Surface Water Contamination by CCRs from Ash Ponds at a Former Power Generation Facility in Central Virginia – Sierra Club and Potomac Riverkeeper
- Negotiation of Private Agreements Between Water Utilities and RPs – City of Santa Monica, STPUD, City of Morro Bay, SGVWC, GOWC, City of Oxnard, OCDA
- Evaluation of Power Plant Intake and Outfall Structures on Fecal Coliform Plume Dynamics and Resulting Beach Closures, Huntington Beach, California – California Energy Commission
- Investigation of Bacteria and Fecal Contamination in Groundwater Beneath the Downtown Area of Huntington Beach, California – City of Huntington Beach
- Investigation of the Source(s) and Transport of Enterococcus and Fecal Bacteria to the Near Shore Waters of Huntington Beach, California – City of Huntington Beach, County of Orange, Orange County Sanitation District (OCSD)
- Characterization and Remediation, Former Town Gas Sites - British Gas Properties, U.K.
- Aquifer Characterization, Contaminant Assessment, Slurry Wall Design and Installation, Soil Excavation and Water Treatment System Design - Port of Los Angeles, California

Professional History

aquilogic, Inc., Founder, Chief Executive Officer (CEO), and Principal Hydrologist, 2011 to present.
Ridgewood Infrastructure, Senior Advisor, 2019 to present.
exp, Executive Vice-President, Chief Business Development Officer, 2010 to 2011
WorleyParsons, Senior VP, Strategy & Development, 2006 to 2010.
Komex Environmental Ltd., Founder, CEO, Principal Shareholder, Director, 1992 to 2005.
Remedial Action Corporation, Project Manager and Geohydrologist, 1989 to 1992.

Lanco Engineering, Project Manager, 1985 to 1987, and 1988.
Royal Geographical Society, Kosi Hills Resource Conservation Project, Nepal: Project Director, 1983 to 1985

Teaching

Anthony has recently taught the following classes:

- Environmental Aspects of Soil Engineering and Geology - a ten-week course at the University of California, Irvine
- Site Characterization and Remediation of Environmental Pollutants - two lectures as part of the course at Imperial College London
- Methyl Tertiary Butyl Ether: Implications for European Groundwater - a one day seminar for the UK Environment Agency (UKEA)
- Successful Remediation Strategies – a two-day course for the NGWA
- Understanding Environmental Contamination in Real Estate, and one day class for the International Right-of-Way Association (IRWA)
- Project Development and the Environmental Process, a one-day class for the IRWA
- Environmental Awareness, a one-day class for the IRWA
- Regional Fuels Management Workshop, a two-day workshop for the USEPA.

Publications

In addition to his teaching experience, Anthony has prepared over 1000 written project reports, and has written, presented and published many articles regarding the following:

- The implementation of the SGMA in California
- Groundwater law in California
- The development of alternate water supplies, notably brackish groundwater
- Aquifer storage and recovery and other groundwater augmentation actions
- The Clean Water Act and groundwater contamination
- Contamination of groundwater and drinking water supplies by fuel oxygenates, chlorinated solvents, rocket propellants, PFCs, and metals
- Contaminant fate and transport in fractured or heterogeneous media
- The impact of oil field activities on the environment
- Source water assessment and protection
- Public health and toxicology
- Risk analysis and assessment
- Environmental economics
- General water resources and environmental issues

The following is a list of publications and presentations:

Brown, A., 2022. Are PFAS A Bigger Issue Than Other Emerging Contaminants – Implications For Water Utilities. 23rd Annual American Groundwater Trust (AGWT) – Association of Groundwater Agencies (AGWA), March 2022.

Brown, A., 2021. Science in the Court Room: Expert Witness Testimony in Contamination Cases. American Groundwater Trust California PFAS Webinar, March 2021.

Brown, A., 2021. Sources of 1,2,3-TCP and its Persistence in California Groundwater. American Groundwater Trust 1,2,3-TCP Webinar, February 2021.

Brown, A., 2020. Groundwater and the Clean Water Act. American Groundwater Trust California Groundwater Conference, Ontario, February 2020.

Brown, A., and T. Watson, 2020. Produced Water – A New California Resource. Produced Water Society Annual Seminar, Houston, February 2020.

Brown, A., 2019. Perspectives on the Future of the Water Business. Environmental Business International, Industry Summit, San Diego, March 2019.

Brown, A., 2019. Paso Robles – The First Jury Trial over Water Rights in California. American Groundwater Trust California Groundwater Conference, Ontario, February 2019.

Brown, A., 2018. Emerging Contaminants – Where Do They Come From? American Groundwater Trust Conference on Emerging Contaminants, Chino Basin, March 2018.

Brown, A., 2017. Contaminated Groundwater as a Resource. State Bar of California Environmental Law Conference, Yosemite, October 2017.

Stone A. and A. **Brown**, 2017 (organizers). Groundwater Law – An American Groundwater Trust Conference. UC Hastings Law School, San Francisco, May 18, 2017

Brown, A. 2016. The SGMA Cookbook – Implementing the Sustainable Groundwater Management Act. Association of California Water Agencies (ACWA), Spring Conference, Monterey, CA, April 2016.

Stone A. and A. **Brown**, 2016 (organizers). Groundwater Law – An American Groundwater Trust Conference. Loyola Law School, Los Angeles, April 26, 2016

Stone A. and A. **Brown**, 2015 (organizers). Groundwater Law – An American Groundwater Trust Conference. Doubletree San Francisco Airport, May 15, 2015

Brown, A., 2015. Challenges Implementing the California Sustainable Groundwater Management Act (SGMA). Bar Association of San Diego County, May 5, 2015.

Brown, A., 2015. Technical and Other Issues Implementing the California Sustainable Groundwater Management Act (SGMA). Ventura Association of Water Agencies, March 19, 2015.

Brown, A., 2015. Outlook for Environmental Services in the Global Energy and Resources Sectors. Environmental Business Journal, Environmental Industry Summit, San Diego, March 11-13, 2015.

Brown, A., 2015. The Effect of $50 Oil on the Environmental Services Sector. Environmental Business Journal Conference, San Diego, March 11-13, 2015.

Brown, A. 2014. Hydrology and the Law: The Role of Science in the Resolution of Legal Issues for Water Quality and Damages Issues. Law Seminars International, Santa Monica, CA. October 2014

Stone A. and A. **Brown**, 2014 (organizers). Groundwater Law – An American Groundwater Trust Conference. Marriott Marina del Rey, May 20-21, 2014

Brown, A. 2014. Environmental Issues with Hydraulic Fracturing. Los Angeles County Bar Association (LACBA), Spring Symposium, Los Angeles, CA. April 2014.

Brown, A. 2014. Environmental Services in the Global Energy & Resources Sectors. Environmental Business Journal, Environmental Industry Summit, San Diego, March 2014.

Brown, A. 2013. Dealing with Emerging Groundwater Contaminants. Association of California Water Agencies (ACWA), Fall Conference, Los Angeles, November 2013.

Brown, A., 2013. Outlook for Environmental Services in the Global Energy and Resources Sectors. Environmental Business Journal, Environmental Industry Summit, San Diego, March 2013.

Brown, A., Colopy, J, and Johnson, T, 2007. Groundwater Science in the Courtroom: Observations from the Expert Witness Chair. Groundwater Resource Association of California (GRAC), Groundwater Law Conference, San Francisco, June 2007.

Brown, A. 2005. Emerging Water Contaminants. California Special Districts Association (CSDA), Annual Conference, Palm Springs, May 2005.

Brown, A. 2005. The Interplay of Science and Policy at Contaminated Sites. Los Angeles County Bar Association (LACBA), Spring Symposium, Los Angeles, CA. April 2005.

Brown, A., M. Trudell, G. Steensma, and J. Dottridge, 2005. European Experiences with Artificial Aquifer Recharge. Groundwater Resource Association of California (GRAC), Aquifer Storage Conference, Sacramento, March 2005.

Brown, A. 2004. Viagra, Estrogen, Prozac, and Other Emerging Contaminants: have you checked your groundwater lately? American Groundwater Trust (AGWT), Legal Issues Conference, Los Angeles, November 2004.

Brown, A. 2004. The Use of Groundwater Models in Complex Litigation. American Groundwater Trust (AGWT), Groundwater Models in the Courtroom Symposium, May 2004.

Brown, A. 2004. Emerging Groundwater Contaminants: MTBE as a Case Study. Association of California Water Agencies (ACWA), Spring Conference, Los Angeles, May 2004.

Rohrer, J., A. **Brown**, S. Ross, 2004. MTBE and Perchlorate, Lessons Learned from Recent Groundwater Contaminants. California Special Districts Association (CSDA), Annual Conference, Palm Springs, May 2004.

Hagemann, M., A. **Brown**, and J. Klein, 2002. An Estimate of Costs to Address MTBE Releases from Underground Storage Tanks and to Treat Drinking Water Supplies Impacted by MTBE. NGWA, Conference on MTBE: Assessment, Remediation, and Public Policy, Orange, CA. June 2002

Hagemann, M., A. **Brown**, and J. Klein, 2002. From Tank to Tap: A Chronology of MTBE in Groundwater. NGWA, Conference on Litigation Ethics, and Public Awareness, Washington, D.C., August 2002

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Hardisty, P.E., G.M. Hall, A. **Brown** and H.S. Wheater, 2000. Natural Attenuation of MTBE in Fractured Media. 2nd National Conference on Natural Attenuation in Contaminated Land and Groundwater. Sheffield, U.K., June 2000.

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Trudell, M.R., K.D. Mitchell, R.B. Mooder, and A. **Brown**, 2000. Modeling MTBE Transport for Evaluation of Migration Pathways in Groundwater. American Chemical Society, Div. of Environmental Chemistry, 219th ACS National Meeting. San Francisco, March 26-30, 2000.

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Brown, A., P.E. Hardisty, and H. Wheater, 1999. The Impact of Fuel Oxygenates on Water Resources. A one-day course for the UK Environment Agency. London, UK. June 1999

Brown, A., K.D. Mitchell, C. Mendoza and M.R. Trudell, 1999. Modeling MTBE transport and remediation strategies for contaminated municipal wells. Battelle In-Situ and On-Site Bioremediation, Fifth International Symposium, San Diego, CA. April 19-22, 1999.

Brown, A., 1999. LUST Policy and Its Part in the MTBE Problem. USEPA National Underground Storage Tank Conference. Daytona Beach, FL. March 15-17, 1999.

Brown, A., T.E. Browne, and R.A. Rodriguez, 1999. Restoration Program for MTBE Contamination of the City of Santa Monica Arcadia Well Field. Ninth Annual Conference on Soil and Groundwater Contamination, Oxnard, CA. March 1999.

Brown, A., 1999. Moderator of a Panel Session - Judging Oil Spill Response Performance: The Challenge of Competing Perspectives. International Oil Spill Conference. Seattle, WA. March 8-11, 1999.

Brown, A., 1999. MTBE: Asleep at the Wheel! Editorial in the Newsletter of the Los Angeles County Bar Association, Environmental Section. February 1999.

Brown, A., J.S. Devinny, T.E. Browne and R.A. Rodriguez, 1998. Restoration of a Public Drinking Water Supply Impacted by Methyl *tertiary* Butyl Ether (MTBE) Contamination. Proceedings of the NGWA/API 1998 Petroleum Hydrocarbons and Organic Chemicals in Groundwater: Prevention, Detection, and Remediation, November 11-13, 1998, Houston, TX.

Brown, A., 1998. Petroleum and the Environment: A Consultants Perspective. USEPA Regional Fuels Management Workshop, November 3-4, 1998, Shell Beach, CA.

Brown, A., 1998. How Much Does Remediation Really Cost? Presented at the Southern California Chapter of the Appraisal Institute, Summer Seminar Spectacular: Damages, Diminution and Mitigation. Anaheim, California, August 13, 1998.

Brown, A., J.S. Devinny, A.L. Gray and R.A. Rodriguez, 1998. A Review of Potential Technologies for the Remediation of Methyl *tertiary* Butyl Ether (MTBE) In Groundwater. International Petroleum and the Environment Conference, Albuquerque, NM. October 1998.

Brown, A., A.L. Gray, and T.E. Browne, 1998. Remediation of MTBE at Leaking Underground Storage Tank (LUST) Sites. The UST Clean-up Fund Conference, Austin, TX. June 22, 1998.

Brown, A., J.R.C. Farrow, R.A. Rodriguez, and B.J. Johnson, 1998. Methyl *tertiary* Butyl Ether (MTBE) Contamination of the City of Santa Monica Drinking Water Supply: An Update. Proceedings of the National Ground Water Association (NGWA) Southwest Focused Conference: MTBE and Perchlorate, June 3-5, 1998, Anaheim, California.

Patterson, G, B. Groveman, J. Lawrence, and **A. Brown**, 1998. The Legal Implications, Claims, and Courses of Action for Water Purveyors Impacted by MTBE and Perchlorate. Proceedings of the NGWA Southwest Focused Ground Water Conference: Discussing the Issue of MTBE and Perchlorate in Ground Water. June 3-4, 1998, Anaheim, California.

Clark, J.J., **A. Brown**, and R.A. Rodriguez, 1998. The Public Health Implications of MTBE and Perchlorate in Water: Risk Management Decisions for Water Purveyors. Proceedings of the NGWA Southwest Focused Ground Water Conference: Discussing the Issue of MTBE and Perchlorate in Ground Water. June 3-4, 1998, Anaheim, California.

Brown, A., J.S. Devinny, M.K. Davis, T.E. Browne, and R.A. Rodriguez, 1997. A Review of Potential Technologies for the Treatment of Methyl *tertiary* Butyl Ether (MTBE) in Drinking Water. Proceedings of the NGWA/API 1997 Petroleum Hydrocarbons and Organic Chemicals in Groundwater: Prevention, Detection, and Remediation, November 12-14, 1997, Houston, TX.

Brown, A., J.R.C. Farrow, R.A. Rodriguez, B.J. Johnson and A.J. Bellomo, 1997. Methyl *tertiary* Butyl Ether (MTBE) Contamination of the City of Santa Monica Drinking Water Supply. Proceedings of the National Groundwater (NGWA) and American Petroleum Institute (API) 1997 Petroleum Hydrocarbons and Organic Chemicals in Groundwater: Prevention, Detection, and Remediation, November 12-14, 1996, Houston, Texas.

Brown, A., J.S. Devinny, M.K. Davis, T.E. Browne, and R.A. Rodriguez, 1997. A Review of Treatment Technologies for Methyl *tertiary* Butyl Ether (MTBE) in Drinking Water. Proceedings of the American Chemical Society (ACS) Conference on Chemistry and Spectroscopy, October 1997, Irvine, California.

Brown, A., J.S. Devinny, T.E. Browne and D. Chitwood, 1997. A Review of Alternative Technologies for the Removal of MTBE from Drinking Water. Association of California Water Agencies (ACWA) Workshop on MTBE, March 13, 1997, Ontario Airport Hilton, California.

Brown, A., 1997. Methyl tertiary Butyl Ether (MTBE) in Groundwater and its Impact on the City of Santa Monica Drinking Water Supply. California Groundwater Resource Association (GRA), January 22, 1997, Wyndham Garden Hotel, Costa Mesa, California.

Gray, A.L., **A. Brown**, B.J. Moore, and T.E. Browne, 1996. Respiration Testing for Bioventing and Biosparging Remediation of Petroleum Contaminated Soil and Groundwater. NGWA Outdoor Action Conference, Las Vegas, NV, May 1996.

Brown, A., and P.E. Hardisty, 1996. Use of Technical and Economic Analyses for Optimizing Technology Selection and Remedial Design: Examples from Hydrocarbon Contaminated Sites. Sixth West Coast Conference on Contaminated Soils and Groundwater, AEHS, March 1996.

Farrow, J.R.C., **A. Brown**, W. Burgess, R.E. Payne, 1995. High Vacuum Soil Vapor Extraction as a Means of Enhancing Contaminant Mass Recovery from Groundwater Zones of Low Transmissivity. Accepted for Proceedings of the Petroleum Hydrocarbons and Organic Chemicals in Groundwater, API/NGWA Conference. Houston, TX. November 1995.

Ausburn, M.P., **A. Brown**, M. Brewster, and P. Caloz, 1995. Use of Borehole Terrain Conductivity Logging to Delineate Multiple Ground Water Bearing Zones and Map Alluvial Fan Facies. California Groundwater Resource Association (GRA), Annual Conference, November 1995, Costa Mesa, California.

Hardisty, P.E., S.D. Ross, F.B. Claridge and **A. Brown**, 1995. Technical and Economic Analysis of Remedial Techniques for LNAPL in Fractured Rock. International Association of Hydrogeologists (IAH), October 1995, Solutions 95 Conference, Calgary, Canada.

Croft, R.G., **A. Brown**, P. Johnson, and J. Armstrong, 1994. Tracer Gas Use in Soil Vapor Extraction and Air Sparge Pilot Tests: Case Studies. HMRCI Superfund XV Conf. Proceedings, Washington D.C, November 1994.

Bauman, P.B., M. Brewster and **A. Brown**, 1994. Borehole Logging as an Aid to Hydrogeologic Characterization of Leaking Underground Storage Tank (LUST) Sites. Proceedings from the National Groundwater Association (NGWA), 8th National Outdoor Action Conference and Exposition, Minneapolis, Minnesota. May 1994.

Bauman, P.B., **A. Brown,** M. Brewster, and M. Lockhart, 1994. The use of Borehole Geophysics in the Characterization of Both Vadose and Saturated Zone Lithologies at LUST Sites. Proceedings from the USEPA Technology Transfer at LUST Sites Conference, Urbana, Illinois. May 1994.

Bauman, P.B., J. Sallomy, **A. Brown** and M. Brewster, 1994. Unconventional Applications of Terrain Conductivity Logging to Groundwater Investigations. Proceedings of the Symposium on the Application of Geophysics at Environmental and Engineering Projects (SAGEEP), Boston, Massachusetts, 1994.

Brown, A., R.E. Payne, and P. Perlwitz, 1993. Air Sparge Pilot Testing at a Site Contaminated with Gasoline. Proceedings of the Petroleum Hydrocarbons and Organic Chemicals in

Groundwater: Prevention, Detection, and Restoration. API/NGWA Conference, Houston, Texas. November 1993.

Brown, A., 1991. Air Permeability Testing for Vapor Extraction. Conference Proceedings; Petroleum Hydrocarbon Contaminated Soil, San Diego, California. March 1991.

Wheater, H., B. Beck, **A. Brown,** and S. Langan, 1991. The Hydrological Response of the Allt a' Mharcaidh Catchment, Inferences from Experimental Plots. Journal of Hydrology, Vol. 123; pp 163-1990.

Brown, A., 1986. The Final Report of the Kosi Hills Resource Conservation Project, Nepal 1984. Royal Geographical Society Student Expedition.

RESUME

Timothy K. Parker, PG, CEG, CHG
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WORK EXPERIENCE

2021 – Present: **Ramboll Americas Engineering Solutions, Inc., Principal Hydrogeologist.** Oakland, California. Part time employee provides hydrogeologic consulting including basin characterization, groundwater flowpath analysis, 3D hydrogeologic conceptual model development, groundwater flow model oversight, groundwater storage, availability, and supply evaluations, expert witness and litigation support. Tim also is the Professional Geologist and Project Technical Director for Ramboll on the California Department of Water Resources (DWR) statewide airborne geophysical surveys of priority SGMA basins and provides Principal level support on numerous land-based, towed- and float-based geophysical surveys.

2009 – Present: **Parker Groundwater, President/Principal.** Sacramento, California. Independent technical consultant, specializing in strategic groundwater planning, SGMA comprehension and compliance, geophysics, groundwater monitoring, groundwater modeling, groundwater recharge and aquifer storage recovery projects, program implementation, stakeholder facilitation, groundwater monitoring, policy and regulatory analysis, environmental document review, expert witness and litigation support. Provides strategic planning, policy consulting and groundwater technical expertise to public and private sector clients to develop effective, sustainable solutions to complex problems in the water and evolving environmental and energy industries.

2005 – 2009: **Schlumberger Water Services, Principal Hydrogeologist.** Sacramento, California. Provided hydrogeologic expertise and project management on groundwater recharge and aquifer storage recovery projects, groundwater monitoring, groundwater resources management, and groundwater contaminant projects for public and private sector clientele. Application of advanced oilfield tools and technologies to groundwater projects. Integration of groundwater quality monitoring and protection on CO2 sequestration projects; liaison to Schlumberger Carbon Services, including planning, scope development, technical implementation, facilitation, and oversight. **Business Development** activities included strategic planning, prospect assessments, sales presentations, targeted workshops, client development and exploitation. Mentored and provided direction to staff; developed, tracked and controlled projects; worked closely with clients and other public and private organizations to implement projects on schedule, on budget with high level of quality.

2001 – 2005: **California Department of Water Resources, Division of Planning and Local Assistance, Conjunctive Water Management Branch, Senior Engineering Geologist.** Provided local technical and economic assistance to Sacramento and San Joaquin Valley groundwater authorities and water districts planning, developing, and implementing groundwater management plans and program implementation, conjunctive water projects, groundwater recharge and aquifer storage recovery projects, and local and regional groundwater monitoring programs. Elements include developing technical scope, implementing work, providing geologic and groundwater technical expertise, attending and speaking at public meetings. **Central District, Groundwater Planning Section**, Sacramento, California (early

2001 prior to joining CWMB). **Senior Engineering Geologist, Groundwater Planning Section**. Elements included: Integrated Storage Investigations Program conjunctive use project technical support, coordination, and project management; technical support on local groundwater monitoring and subsidence programs; technical support on Bulletin 118; Proposition 13 groundwater grant applications screening and ranking process for Central District geographic area. Supervised and provided direction to staff; developed, tracked and controlled program budgets; worked closely with other DWR groups, agencies and outside organizations to develop additional local assistance opportunities for DWR.

2000-2001: California Department of Conservation, Division of Mines and Geology, Sacramento, California. **Associate Engineering Geologist**. Responsible for: multi-year aerial photograph review, identification of landslides and potentially unstable areas, field reconnaissance and confirmation, preparation of maps and images using MapInfo, Vertical Mapper, ArcView, Spatial Analyst, Model Builder, and ArcInfo working closely with GIS specialists; assisting in development of GIS methodologies and database for Northern California watersheds assessment/restoration project; review of timber harvest plans and pre-harvest inspections; review of regional CEQA documents as related to engineering geologic issues; watershed assessment; technical presentations at multi-agency meetings and landslide/mass wasting public workshops.

1997-2000: CalEPA Department of Toxic Substances Control, Stringfellow Branch, Sacramento, California. **Hazardous Substances Engineering Geologist**. Responsible for: groundwater monitoring and analysis; developing approach and preparing a work plan for a Stringfellow site revised hydrogeologic conceptual model; researching, providing, and maintaining a comprehensive environmental data management system; assembling and contracting with an expert panel for consultation on the site; evaluating an existing MODFLOW porous media groundwater flow model; providing direction on the strategy and approach for the development of a revised groundwater flow and fate & transport model for the Stringfellow site; providing input on an as needed basis in support of the litigation and community relations elements of the project.

1993 - 1997: Law Engineering & Environmental Services, Inc., Sacramento, California. **Manager Project Management.** Responsible for supervising and providing direction to senior project managers; maintaining appropriate tracking system and controls for assurance of successful execution of scope, schedule and budget of major projects; maintaining quality assurance and controls on projects. Responsibilities included development/implementation of group budget spending plan, establishing performance standards and evaluating program progress and quality, staff recruiting, mentoring, maintaining utilization, business development, proposal preparation, commercial and government project marketing, client maintenance. **Project Manager** and **Senior Hydrogeologist** on hydrogeologic evaluations, site and regional groundwater quality monitoring programs, hazardous substance site investigations and remediation. Responsibilities included technical direction of projects, project scoping, schedule, budget, supervision of field activities, preparation of documents, developing cost-effective strategies for follow-on investigations and removal actions, and negotiating with state regulators on three Beale Air Force projects totaling more than $15 million.

1988 - 1993: Dames & Moore, Sacramento and Los Angeles, California. **Senior Geologist.** Provided hydrogeologic technical support, project management, regulatory compliance, technical/regulatory strategy, and on a variety of commercial and industrial

DTSC- and RWQCB-lead hazardous substance sites. Responsibilities included project technical direction, scope implementation, budgetary control, groundwater quality monitoring and analysis, supervision of field investigations, document preparation, client interface, negotiation with regulatory agencies on projects totaling approximately $5 million.

1986 - 1988: California Department of Health Services, Toxic Substances Control Division, Southern California Region, Assessment and Mitigation Unit, Los Angeles, California. **Project Manager** in the Assessment and Mitigation Unit. Responsibilities included development and implementation of work plans and reports for, and regulatory oversight of, State Superfund preliminary site assessments, groundwater quality monitoring and analysis, remedial investigations, feasibility studies, remedial action, and interim remedial measures. **Engineering Geologist**: Provided technical support to Permitting, Enforcement, and Site Mitigation Unit staff, including evaluation of hydrogeologic assessments, groundwater quality monitoring programs, work plans, and reports on federal and state Superfund sites and active facilities; assistance in budget preparation; assistance in zone drilling contract review.

1983-86: Independent Consultant, Sacramento, California. Provided technical assistance on variety of geologic and geophysics projects to other independent consultants in local area.

1982: Gasch & Associates, Sacramento, California. Geologic assistant conducting shallow seismic reflection surveys in the Sierra Nevada for buried gold-bearing stream deposits.

1981 - 1982: Geologic Assistant, Coast Ranges, Avawatz Mountains, White Mountains, and Kinston Peak Range. Geologic Assistant on various geological field studies, including gravity surveys, magnetic surveys, landslide and geologic mapping projects.

PROFESSIONAL REGISTRATIONS

California Professional Geologist No. 5594
California Certified Engineering Geologist No. 1926
California Certified Hydrogeologist No. 0012

ACADEMIC BACKGROUND

BS 1983, Geology, University of California, Davis
Graduate studies in hydrogeology, hydrology, engineering geology, waste management engineering

PROFESSIONAL AFFILIATIONS

American Ground Water Trust
2009 – 2012: Chair
2005 - 2013: Director

California Groundwater Coalition
2007-Present: Founding Member

California Department of Water Resources, Public Advisory Committee, Water Plan Update 2013

2010-2013: Appointed to participate on PAC and to lead new Groundwater Caucus

Department of Interior, Advisory Committee on Water Information, Subcommittee on Ground Water
2010-2019: Working Group for Project Implementation, National Groundwater Monitoring Network
2007-2010: Co-Chair - Work Group on Implementation for development of the Framework for a Nationwide Ground Water Monitoring Network
2007-2010: Member - Work Group on Network Design for development of the Framework for a Nationwide Ground Water Monitoring Network

Groundwater Resources Association of California
2023: Director Emeritus/Lifetime Member
2001-Present: Legislative Committee Member
2000 – 2019: Director
2000 – 2001: President State Organization
2001 – 2019: Legislative Committee Chair
1998-1999 Vice President
1996-1997 Secretary
1995-1996 President Sacramento Branch
1993-1994 Member-at-Large Sacramento Branch

International Association of Hydrogeologists
2023 – Present: Chairman, USA National Chapter
2016 – Present: Director
2017 – Present: Representative to American Geological Institute, Geoscience Policy Program Advisory Committee
2010 & 2016 – Planning Committee Member, International Symposium on Managed Aquifer Recharge (ISMAR), in Abu Dhabi and Mexico City.

National Ground Water Association
2019-Present: Director
2019-Present: Past Chair - Scientists and Engineers Section
2014-Present: Director - Scientists and Engineers Section
2007 - Present: Member - Government Affairs Committee
2020-Present: Chair, FEDD Task Force
2019-Present: Chair, Managed Aquifer Recharge Work Group
2018-2019: Vice Chair - Scientists and Engineers Section
2007- 2010: Director - Scientists and Engineers Section
2017-2018: Chairman, Government Affairs Committee
2007 - 1014: Chair - Groundwater Protection and Management Subcommittee
2005 – 2010: Chair - Regional Groundwater Management Task Force, Government Affairs Committee
2004 – 2005, 2007, 2009-10: Chair – Theis Conference Committee
2002 – 1012: Member – Theis Conference Committee
2002 – 2014: Member - Regional Groundwater Management Task Force, Government Affairs Committee
2003 – 2014: Member – Groundwater Protection and Management Subcommittee
2009 – 2014: Member - ASR Task Force
2009 – 2014: Member - Hydraulic Fracturing Task Force
2008 – 2009: Member – CO2 Sequestration Task Force

SELECTED PUBLICATIONS

California Groundwater Management, Second Edition, Groundwater Resources Association of California, co-author and project manager, 2005.

Water Contamination by Low Level Organic Waste Compounds in the Hydrologic System, in *Water Encyclopedia*, Wiley, 2004.

Potential Groundwater Quality Impacts Resulting from Geologic Carbon Sequestration, Water Research Foundation, co-author, 2009.

Aquifer Storage and Recovery in the US, ASR 9, American Ground Water Trust, Orlando Florida, September 2009 – a compilation of key ASR issues on DVD, contributing editor and speaker, 2010.

Sustainability From The Ground Up – Groundwater Management In California – A Framework, Association of California Water Agencies, principal author, 2011.

Best Suggested Practices for Aquifer Storage and Recovery, Co-author, National Ground Water Association, 2014, 2024.

ISMAR9 Call to Action: Sustainable Groundwater Management Policy Directives, Principal Author, 2016.

Managed Aquifer Recharge Special Publication, Co-Editor, Vol. 60. No. 5, Groundwater Journal, 2022.

Managed Aquifer Recharge: A Proven Technology for Water Supply Resilience, Lead Author, Vol. 60. No. 5, Groundwater Journal, 2022.

Challenges and Experiences of Managed Aquifer Recharge in the Mexico City Metropolitan Area, Co-Author, Vol. 60. No. 5, Groundwater Journal, 2022.

Applied Geophysics for Managed Aquifer Recharge, Lead Author, Vol. 60. No. 5, Groundwater Journal, 2022.

Evaluating Groundwater Conveyance of Point Source Pollution to a Navigable Water as Functionally Equivalent to Direct Discharge, Co-Author, National Ground Water Association, 2023.

SELECTED PRESENTATIONS

"Statewide Mapping of California's Aquifers with Airborne Electromagnetics," International Association of Hydrogeologists World Groundwater Congress, Davos Switzerland, 2024.

"The California Sustainable Groundwater Management Act Ten Years In," International Association of Hydrogeologists World Groundwater Congress, Davos Switzerland, 2024.

"SGMA-Adjudication Challenges", Los Angeles County Car Association 2024 Environmental Symposium, Los Angeles, CA, 2024.

"Central Valley Hydrogeology, Groundwater Conditions, and SGMA: Groundwater Priorities Around Climate", Keynote, AGWT California Groundwater Conference, Ontario, CA, 2024.

"Application of Supporting Data for DWR-AEM Survey Inversions and Lithology Models", GRA Western Groundwater Congress, Burbank, California, 2023.

"The New Statewide Water Supply Strategy for a Hotter, Drier California", AWWA Annual Conference & Expo, Ontario, CN, 2023.

"California's 2014 Sustainable Groundwater Management Act – Progress and Lessons Learned from the Groundwater Up", AWWA Sustainable Water Management Conference, Minneapolis, MN, 2023.

"Managed Aquifer Recharge Permitting in California", NGWA MAR Conference, San Antonio, TX, 2023.

Applied Geophysics for Managed Aquifer Recharge, Part 1: Near Surface Methods", NGWA MAR Conference, San Antonio, TX, 2023.

"Statewide Mapping of California's Aquifers with Airborne Electromagnetics (AEM)", Ground Water Protection Council Annual Forum, Salt Lake City, Utah, 2022.

"Managed Aquifer Recharge in California Long-Term Projects & New Emphasis Under SGMA and the New Water Strategy", American Ground Water Trust, Ontario, California, 2022.

"Managed Aquifer Recharge – General Overview in California", Santa Margarita Groundwater Agency Workshop, Santa Margarita, CA, 2022.

"California's 2014 Sustainable Groundwater Management Act in 2021-Progress Update and Next Steps", AIPG National Conference, Sacramento, CA, 2021.

"California's 2014 Sustainable Groundwater Management Act: Lessons Learned (so far) and MAR Proposed", NGWA Groundwater Summit, Virtual, 2021.

The Path Forward on Statewide Application of Airborne Electromagnetics (AEM) in California with a Focus on the Indian Wells Valley Groundwater Basin, GRA Virtual Sacramento Branch Meeting, 2021.

"Introduction to Managed Aquifer Recharge: Principles and Industry Resources," NGWA Virtual Groundwater Week, 2020.

"Application of Geologic, Geophysics and Water Quality to Characterize Regional and Local Faulting, Geochemistry, and Sequence Stratigraphy for a Proposed Brackish Water Project, Indian Wells Valley Groundwater Basin, California", GRA 3rd Annual Western Groundwater Congress, Virtual, 2020.

"MAR Revolution in California, Steps to Increase Recharge Statewide", ISMAR10, Madrid, Spain, 2019.

"Groundwater 101: Measurement and Management for Sustainability", 2019 Wisconsin Groundwater Conference, Wisconsin Driller Association, Wisconsin Dells, WI, 2019.

"Development of a Comprehensive Data Management System for Indian Wells Valley Groundwater Basin, Painful But Necessary", AGWT Annual Groundwater Conference, Ontario, CA, 2019.

"California Water Management Approaches", NGWA Forum on Managing Groundwater and Surface Water as a Single Resource: Merging Science and Policies, Salt Lake City, UT, 2019.

"Surface Water-Groundwater Interconnection – A New Work Group", Department of Interior Subcommittee on Groundwater, Las Vegas, NV, 2018.

"The Evolving Landscape of Groundwater Management in California", NGWA Summit, Las Vegas, CA, 2018.

"The Indian Wells Valley Brackish Groundwater Study: A Multi-benefit Groundwater Study", ACWA Fall Conference, 2018.

"Managing Groundwater Storage: Managed Aquifer Recharge in California", American Geosciences Institute Webinar, 2018.

"Challenges with Data and Statewide Standardization: From the Ground Down," Sustainable Groundwater Management on the Central Coast Workshop, San Luis Obispo County, CA, 2017.

"Call to Action to Recharge California's Depleted Aquifers", GRA Annual Meeting, Sacramento, CA, 2017.

"Call to Action to Recharge California's Depleted Aquifers", ACWA Biannual Meeting, Sacramento, CA, 2017.

"Highlights from Groundwater Fact Finding Trip to Denmark – California Connections," San Luis Obispo County, CA, 2017.

"Managed Aquifer Recharge," Drought Summit, Irrigation Association & National Ground Water Association, Las Vegas, NV, 2016.

"Got Groundwater? State of Low Impact Development & the Sustainable Groundwater Management Act: Recharging Streams and Groundwater," Localizing California Waters, Yosemite, CA, 2016.

"Sustainable Groundwater Management – A New Law in California," International Association of Hydrogeologists Congress – Montpelier, France, 2016.

"Policy Directives for Groundwater Management," Special Sessions on Groundwater Management Policy Principles, Mexico City, Mexico, 2016.

"California's New Sustainable Groundwater Management Law," Special Sessions on Groundwater Management Policy Principles, ISMAR9, Mexico City, Mexico, 2016.

"Comprehensive Drought Legislation," National Ground Water Association Fly-in, Washington DC, 2016.

"Capitalizing on Climate Crisis to Change to Sustainable Groundwater Management in California," 42nd International Association of Hydrogeologists Congress, Rome, Italy,2015.

"California's Sustainable Groundwater Management Act," National Ground Water Association Summit, San Antonio, TX, 2015.

"Sustainable Groundwater Management Act- An Opportunity for Improved Land Use/Groundwater Management Collaboration", Annual Meeting Real Property Law Section of the California Lawyers Association, Santa Barbara, CA, 2015.

"Improving Groundwater Management and Increasing Storage in California: A work in Progress and Perfect Storm for Change," 41st International Association of Hydrogeologists Congress, Marrakech, Morocco, 2014.

"A Year of Groundwater and Recharge Streamlining in California?" 14th Biennial Symposium on Managed Aquifer Recharge, Orange, CA, July 2014.

"California Groundwater Management – Time for a Change?" Climate Change, Water and Society, Climate Change and the Future of Water in California, UC Davis, CA, 2014.

"Understanding Groundwater Management," 23rd Annual Water Symposium, Association of Water Agencies of Ventura County, Oxnard, CA, 2014.

"Santa Rosa Plain Groundwater Study & Management Planning," Sonoma County Farm Bureau, Santa Rosa, CA, 2014.

"A Collaborative National Groundwater Monitoring Network," Briefing for State Water Resources Control Board and Department of Water Resources, Sacramento, CA, 2014.

"Groundwater in California: Policy, Legal and Regulatory Challenges," Water Education Foundation, Sacramento, CA, 2014.

"California Groundwater Management: Status Statewide and Sonoma Valley", North Bay Watershed Association 2014 Conference, Sonoma, CA, 2014.

"Where Do We Go From Here to Increase Groundwater Recharge and Storage", ", 40th International Association of Hydrogeologists Congress, Perth, AUS, 2013.

"Managed Aquifer Recharge in California: Summary of Projects and Policy Issues," 8th International Symposium on Managed Aquifer Recharge, Beijing, China, 2013.

"Hydraulic Fracturing and Groundwater: A Consultant's Perspective," San Gabriel Valley Groundwater Forum", San Gabriel, CA, 2013.

"Options to Solve California's 22st Century Groundwater Challenges: Shifting from Through-Delta Imports to Regional Interdependence", 40th International Association of Hydrogeologists Congress, Perth, Australia, 2013.

"Recycled Water Managed Aquifer Recharge in California," Second Technical Workshop on Managed Aquifer Recharge with Recycled Water, Mexico City, Mexico, 2013.

"California Integrated Groundwater Management: What is Working & Not – Road Map for Best Practices," National Ground Water Association Summit, San Antonio, TX, 2013.

"Managed Aquifer Recharge Policy, Legal and Regulatory Challenges: Options for Change," Groundwater Resources Association of California, Managed Aquifer Recharge in the Urban Environment, Burlingame, California, 2013.

"California's Groundwater Basins – Challenges and Solutions to Replenishment," Session - Water Present: How are California's Water Infrastructure Projects Holding Up and What New Options Do We Have? 6th Annual Orange County Summit, Disneyland-Anaheim, CA, 2013.

"Technical and Policy Challenges to Streamline Groundwater Recharge and Storage," Sacramento Chapter of the Environmental & Water Resources Institute, Sacramento, CA, 2012.

"Technical Lessons Learned and Experience Gained from Managed Aquifer Recharge in California, Nevada and Florida," International Seminar on Aquifer Artificial Recharge, Belo Horizonte, Brazil, 2012.

"What is Working and What is Challenging Managed Aquifer Recharge Progress and Why in California, Florida and Texas," International Seminar on Aquifer Artificial Recharge, Belo Horizonte, Brazil, 2012.

"Status of Groundwater Monitoring and Well Log Data in California," 2012 Water Technology Conference, Clovis, CA, 2012.

"Challenges and Opportunities for Conjunctive Use and Groundwater Storage, California Water Commission, Sacramento, CA, 2011.

"California - State of the State – Groundwater Challenges," Aquifer Recharge Conference, Status of Projects, Issues, and Solutions, ASR 11, American Ground Water Trust, Orlando, FL, 2011.

"Overview of Recent Groundwater-Related Policy Documents," Groundwater Caucus Meeting, California Water Plan Update 2013, Sacramento, CA, 2011.

"State of the State of Groundwater Management in California," Statewide Issue Forum, *The Next Chapter: How Do We Really Sustain California's Groundwater?* - ACWA Spring Conference, Sacramento, CA, 2011.

"California Statewide Groundwater Elevation Monitoring (CASGEM)," National Ground Water Association, Groundwater Summit, Baltimore, MD, 2011.

"NGWA Best Suggested Practice for Aquifer Storage & Recovery," National Ground Water Association, Groundwater Summit, Baltimore, MD, 2011.

"Groundwater Management – New Initiatives at the State Capitol and in the Bay Area," Bay Area Water Forum, Oakland, CA, 2011.

"Groundwater Monitoring: Can the State Plan Nice with the Locals?" California Water Policy Conference, Los Angeles, CA, 2011.

"Santa Rosa Plain Preliminary Groundwater Management Planning Efforts," Santa Rosa Public Workshop, Santa Rosa, CA, 2011.

"Sonoma Valley Groundwater Management Program," California Roundtable on Water and Food Supply, Davis, CA, 2011.

"MAR Technical, Regulatory and Policy Challenges, Barriers and Evolving Solutions in the United States," ISMAR07, Abu Dhabi, United Arab Emirates, 2010.

"ASR Technical, Regulatory and Policy Challenges – Evolving Solutions," 40th Annual American Institute of Professional Geologists Meeting/10th Annual American Ground Water Trust ASR in Florida Meeting, Orlando FL, 2010.

"State of Sonoma County Water and Collaborative, Locally-Driven Solutions," NWRA 2010 Western Water Conference, Jackson, WY, July 2010.

"Development and Implementation of Pilots for a National Groundwater Monitoring Network," Towards Sustainable Groundwater in Agricultural, San Francisco, CA, 2010.

"Should there be a Separate Class of Underground Injection Well for Groundwater Replenishment?" NGWA Groundwater Summit, Denver, CO, 2010.

"The California Legislature Mandates Statewide Comprehensive Groundwater Level Monitoring," NGWA Groundwater Summit, Denver, CO, 2010.

"Sonoma's Buried Treasure: Groundwater," Water Wisdom and Energy workshop, Sonoma CA, 2010.

"California ASR Status," Groundwater Protection Council Annual UIC Conference, Austin, TX, 2010.

"ACWA's Strategic Framework for Sustainable Groundwater Management," ACWA Fall Program, San Diego, CA, 2009.

"ASR Smorgasbord," Aquifer Storage and Recovery in the US, AGWT 9th Annual ASR Meeting, Orlando, FL, 2009.

"National Water Quality Assessment Program Review," presented to National Academies of Science Committee to Review NAWQA Cycle 3 Proposed Program, on behalf of National Ground Water Association, Washington DC, 2009.

"ASR Water Quality and Public Perception Challenges," ASR Issues Roundtable, Ground Water Protection Council, Salt Lake City, UT, 2009.

"Opportunities and Challenges for Supplementing Water Supplies in California – a Local Approach," Ground Water Protection Council Energy and Water Forum, Salt Lake City, UT, 2009.

"Managing Groundwater in the Wine Country: A Successful Approach in the Sonoma Valley," Napa Engineer's Society, Napa, CA, 2009.

"Introduction to California Groundwater Policy Development", Groundwater Institute for Teachers™, Clovis, CA, 2005.

"Developing and Implementing a Groundwater Management Plan", GRA California Groundwater Management Workshop, Glendale, CA, 2005.

Low Concentrations of Organic Compounds in the Hydrologic System, GRA Annual Meeting, Newport Beach, CA, 2002.

"Now What do You Do With the Data?" Association of California Water Agencies Workshop, Sacramento, CA, 2001.

"Noyo River Watershed Assessment", ESRI User Conference, San Diego, 2001.

"GIS in the Timber Harvest and Watershed Assessment Programs", California Division of Mines and Geology, ESRI User Conference, San Diego, CA, 2001.

"Identification & Management of Unstable Areas on Forested Landscapes", California Licensed Forester Association Workshop, Eureka, CA, 2001.

"Engineering Geologic Aspects of Timber Harvests in the Sierra Nevada and California Division of Mines & Geology's Approach to Timber Harvest Review", AEG-GRA Joint Annual Meeting, San Jose, CA, 2000.

PROJECT EXPERIENCE

Timothy K. Parker, PG, CEG, CHG

EXPERTISE

Facilitation
Litigation Support
Hydrogeologic Evaluations
Geophysical Investigations
Managed Aquifer Recharge
Strategic Groundwater Planning
Water Policy and Regulatory Analysis
Sustainable Groundwater Management
Data Collection, QA/QC and Management
Groundwater Monitoring and Aquifer Testing

2021 – Present: Ramboll Americas Engineering Solutions, Inc., Oakland CA.

Current Work:

- **California Department of Water Resources (DWR) –**
  - Statewide DWR-AEM Surveys **–** Project Director and Professional Geologist responsible for overall project planning, execution and delivery, report review and project quality assurance/quality control. Approximately 30,000 line-kilometers of the state's SGMA high and medium priority basins have been surveyed with airborne electromagnetics (AEM) to date. The project involves ensuring SkyTEM data are acceptable quality, modeling (inverting) the data into useable information, and providing three different inversion models and a lithology model for each survey line. In-fill AEM surveys are planned in 2024-2025.
  - Basin Characterization Studies – The project involves conducting pilot studies of tools and technologies at three to four sites that can help improve basin characterization and raise the bar on groundwater management, by developing a toolset for local agencies to use. Studies are currently in the planning phase.
- **Indian Wells Valley Water District –**
  - Litigation support is being provided to the Indian Wells Valley comprehensive adjudication, including detailed technical analysis of hydrogeologic data, development of groundwater flow models and preparation of the physical solution to be presented to the court. Tim provides Principal oversight of the ongoing work and as needed expert support.
  - Basin Groundwater Storage Assessment – A volumetric assessment of the basin geometry, specific yield and groundwater in storage has recently been completed using the basin 3D hydrogeologic conceptual model developed in 2019. Results of the assessment indicate as much as 40-million-acre feet of fresh groundwater in the basin.
  - Groundwater Flow Model Development – A groundwater flow model is being constructed to run simulations of a variety of basin management scenarios and to test the safe yield determined for the basin. Tim serves as the project Director and lead hydrogeologist.
- **Cadiz, Inc.–** An environmental justice assessment is being conducted to identify potential adverse and beneficial environmental impacts of the proposed Northern Pipeline Right-of-Way conversion for water conveyance (the "Northern Pipeline Project") on vulnerable communities. This assessment was performed utilizing various environmental justice screening tools to inform characterization of

potential environmental, health, economic, water resource, and climate concerns in communities in the vicinity of the Northern Pipeline. This characterization then informed the assessment of adverse and beneficial impacts of the Northern Pipeline Project on communities, specifically disadvantaged or under-resourced communities. Tim is providing technical input on groundwater conditions, planned actions and water policy based on his previous work on the project.

Completed Work:

- **DWR -** Fremont Weir **-** A towed time domain electromagnetics (tTEM) survey was conducted as part of the Fremont Weir Adult Fish Passage Modification Project. The objective was to use the tTEM tool to map the subsurface geology adjacent to the levee that parallels the Tule Canal to assess the relative permeability of the sediments. tTEM results revealed a number of fluvial channels at different depths across the investigation area, including shallow structures trending north-south parallel to the levee to a depth., which were useful for planning the next phase of construction.
- **Confidential Client –** A water supply availability analysis was conducted for a confidential client in the State of Querétaro focused on the Querétaro Valley aquifer system. Five potential locations were being considered for cloud computing data centers that have strict water supply requirements for cooling. The work was phased to allow meetings and communications with the Mexican government in order to obtain as much data as possible to understand the risks with water supply reliability in the areas being considered. Tim conducted the work.
- **Confidential Client -** A water availability analysis was conducted for a creamery located on the Eel River in northern California. The work involved compilation of readily available water and groundwater resources studies and reports, compilation of well completion reports and geophysical logs, development of a local hydrogeologic conceptual model, and analysis of hydrologic trend data. Results of the work suggested low risk for water availability in the localized area, although salinity could be become an issue in the future if ground water demands increase and salinity continues to move inland from the coast. Tim conducted the work.
- **Confidential Client -** A water availability analysis was conducted for three sites as part of a Phase 1 acquisition for a beverage company in Fullerton CA, Chicago Il, and Frostproof Fl. The project involved assessing the current water demands and wastewater production, water demands and status of rights, and determining future risks to water availability. Tim lead the Team.
- **Robinson Rancheria AEM and tTEM Survey –** An AEM and tTEM survey were conducted in the southern portion of the Upper Lake Basin. The purpose of the survey was to refine the hydrogeologic conceptual model, and help determine the next steps for groundwater resources development, considering a significant environmental restoration project to be conducted in the next decade. The survey results suggest that foothill geology includes a thick weathered bedrock cover that holds and slowly releases water to springs and drainages annually, with some springs nearly drying in the late summer early fall. Tim was the client interface, participated in the tTEM survey, and provided Principal input and review of the report.
- **Salinas Valley Deep Aquifer AEM Survey –** A fourth AEM survey of the Salinas Valley was conducted using a deeper sensing electromagnetic array to assess the bottom of the deep aquitard and corresponding top of the Depp Aquifer. Results were quite good, allowing the mapping of the top and uppermost portion of the Deep Aquifer in some detail. Several conductor layers (fine grained strata) were also mapped that were quite extensive in the southern portion of the valley. Tim provided senior level input.

2009 - Present: Parker Groundwater, Sacramento, CA.

Current Work:

- **Indian Wells Valley Water District (Client since 2010) –** Hydrogeologic Consultant to the District. Provides technical support on GSP development and implementation, and litigation support on basin comprehensive adjudication. Providing planning for a basin wide surface infiltration recharge assessment to be conducted in 2024. Provided technical input and review of planning and implementation of Ramboll work on development of a brackish water project has included scoping and conducting basin wide AEM survey, comprehensive compilation, quality screening and development of water level, water quality and lithologic database, interpretation of data in GeoScene3D – this project was rolled into the Stanford Groundwater Architecture Project. Provide Principal input and review of a Water Supply Improvement Plan to redistribute pumping stresses spatially in the Indian Wells Valley. Assisted the District with preliminary planning for development of a basin wide groundwater management program, conjunctive use and managed aquifer recharge opportunities and strategies. Also provided legislative and water policy updates & advice.
- **Sonoma Water (Client since 2005)-** *Groundwater Management Planning, Program Implementation, and Technical Support*. Provides technical support on a variety of groundwater sustainability plan tasks for the three Sonoma County SGMA priority basins, including technical review on groundwater data analysis and modeling, assembling data and information on COD basin plans and activities, project and management actions.
- **Sonoma Valley Groundwater Sustainability Agency (Client since 2018)** – *Facilitation of Advisory Committee* – The project involves providing facilitation services to the Sonoma Valley GSA for the technical Advisory Committee, including meeting planning, facilitation, and preparation of meeting notes. Tim also provides technical input as requested, and legislative/administrative updates to the group. He has also worked as a contract facilitator to the Center for Collaborative Policy on the project, and the facilitation services were funded by the California Department of Water Resources.

Completed Work:

- **Adams Broadwell Joseph & Cardova, PC, Attorneys at Law –** Water supply demand and reliability review of three proposed geothermal project plants in the Salton Sea area as part of a comprehensive CEQA environmental review.
- **Ramboll -** Hydrogeologic consultant on development of refined hydrogeologic conceptual framework for Paso Robles subbasin using AEM and comprehensive geologic and water level data compilation. – this project was part of the Stanford Groundwater Architecture Project
- **Aquilogic** – Cadiz Water Supply Project Review – the Cadiz project involves the proposed groundwater extraction in the Cadiz groundwater basins of 50TAF per year for 50 years – conducted expert review and made recommendations for additional hydrogeologic characterization and monitoring measures to be added to the San Bernardino County Groundwater Monitoring, Mitigation and Management Plan to avoid causing undesirable results – completed on behalf of Three Valleys Water District and Jurupa Community Services District.
- **Cadiz Inc. –** Cadiz Valley Water Conservation, Recovery, and Storage Project
  - Groundwater Stewardship Committee - Member of Groundwater Stewardship Council to review the monitoring, operations and maintenance plan for the EIR for the Cadiz basin water conservation and groundwater-banking project. The purpose of the Groundwater Stewardship Committee (GSC) was to ensure that the project is implemented with best management practices while protecting

Mojave Desert. The monitoring plan included precipitation, groundwater level, groundwater quality, land subsidence parameters, and incorporated monitoring at wells and springs in the watershed.
  - Conducted expert review of the proposed project and made recommendations for additional data collection and analysis to further characterize hydrogeologic conditions.
- **City of West Sacramento –** Regulatory interface and evaluation of hydraulic effects of a managed aquifer recharge facility consisting of a rainfall rooftop capture and infiltration system on the shallow groundwater flow field and possible interference with an adjacent in situ groundwater remediation system.
- **ESA-PWA –** Sonoma Valley Stormwater Management and Groundwater Recharge Scoping Study **-**Team member on stormwater/ flood control and groundwater recharge scoping study for Sonoma Water to evaluate potential flood control and groundwater replenishment strategies in the Sonoma Creek watershed. Tim provided hydrogeologic input and senior review.
- **Eddie Robbins, P.E. –** Provided assistance with well siting, drilling and capacity testing of bedrock water supply wells in Marin County.
- **GEI Consultants –** Team member on groundwater banking feasibility study for Sonoma County Water Agency to evaluate potential conjunctive use opportunities, groundwater recharge, aquifer storage and recovery, and other strategies in the Santa Rosa Plain and Sonoma Valley groundwater basins. Tim provided hydrogeologic input and senior review.
- **Kenyon Yeates -** Provided evaluation of cement batch plant draft EIR for groundwater resources sustainability issues and impacts.
- **Kern County** – Groundwater Sustainability Agency Formation and Groundwater Sustainability Plan Development Support - The project involved working closely with a Kern County Supervisor and staff to conform to the Sustainable Groundwater Management Act in the Indian Wells Valley Groundwater Basin. Provided strategic consulting and technical support to assist eligible public agencies in forming a Groundwater Sustainability Agency. The work included preparation of a work plan and budget for Groundwater Sustainability Agency formation, development of a stakeholder assessment, providing briefings to local stakeholders at public meetings, development of meeting handouts, providing a working draft committees charter, and developing a scope of services for the successful Stressed Counties Grant application award.
- **Land Watch and The Open Monterey Project –** Provided water and groundwater resources technical review of Salinas River Groundwater Basin Model development by participating on model development Technical Advisory Committee.
- **Law Offices of Michael W. Stamp – DEIR & FEIR Reviews –**
  - Ventana Inn Proposed Wastewater Collection and Treatment System - Technical review specific to hydrologic and groundwater analysis for omissions and whether the EIR process failed to fully consider and identify supporting evidence of lack thereof, and provided a brief narrative technical summary.
  - Corral De Tierra Neighborhood Retail Village Project – Technical review specific to hydrologic and groundwater analysis for omissions and whether the EIR process failed to fully consider and identify supporting evidence of lack thereof, and provided a brief narrative technical summary.
- **Lippe Gaffney Wagner LLP** - Permanente Creek Flood Protection Project Draft Subsequent EIR - Technical review specific to hydrologic and groundwater analysis for omissions and whether the EIR process failed to fully consider and identify supporting evidence of lack thereof, and provided a brief narrative technical summary.

- **MR Wolfe Associates, P.C.** - Harper Canyon (Encina Hills) Subdivision Aquifer Test Report and Monterey County General Plan - Technical review specific to hydrologic and groundwater analysis for omissions and whether the EIR process failed to fully consider and identify supporting evidence of lack thereof, and provided a brief narrative technical summary.
- **Marin Municipal Water District** - Peer review of existing Marin County Groundwater Studies and advise MMWD on proceeding actions. The project involved review and evaluation of existing reports and literature on groundwater within the District jurisdiction to see if adequate assessment of groundwater resources had been done and if there were additional opportunities for conjunctive management of surface water and groundwater.
- **Monterey Downs Project –**Monterey Downs EIR - Technical review specific to hydrologic and groundwater analysis for omissions and whether the EIR process failed to fully consider and identify supporting evidence of lack thereof, and provided a brief narrative technical summary.
- **W.A.T.E.R. & Gateway Neighborhood Association (GNA) -** Mouth Shasta Crystal Geyser Water Bottling Plant EIR – Review of Mt Shasta Crystal Geyser bottling plant technical documents and water and groundwater resources elements of draft EIR, preparation of technical memo.
- **Sonoma Water -** Groundwater Management Program Implementation, and Technical Support.
  - *Sonoma Valley Groundwater Management Program* - The project involved providing technical support, strategic consulting and facilitation for groundwater management program implementation part of a larger county conjunctive use program, and included optimizing the groundwater monitoring program, evaluating managed aquifer recharge, assessing groundwater extraction-related subsidence, installing additional monitoring wells, and pursuing other studies as described in the Plan. He was also technical consultant to the SVGMP program and facilitated the quarterly Basin advisory Panel and monthly Technical Advisory Committee meetings. Activities included updating the groundwater flow model (by Water Agency staff), continuing to enhance the monitoring program, and working with the Water Agency and local stakeholders to begin work on Groundwater Sustainable Agency formation and identifying the tasks necessary to conform to Groundwater Sustainability Plan requirements in the Sustainable Groundwater Management Act. The Plan activities were sunset in 2017 with the completion of the Insights and Recommendations – Sonoma Valley Groundwater Conditions and Management transition document.
  - *Santa Rosa Plain Groundwater Management Planning* **–** The project involved working with the Sonoma Water, a facilitator and stakeholders on a Basin Advisory Panel and Technical Advisory Committee for developing and implementing a groundwater management plan in the Santa Rosa Plain groundwater basin, part of a county conjunctive use strategy. This effort included developing Basin Management Objectives (BMOs) for groundwater levels, water quality, surface water-groundwater interaction, inelastic land subsidence, and recharge area mapping. The project also involved a review of the preparation of a study by the US Geological Survey, including the development of a GSFlow model for the Santa Rosa Plain. The Groundwater Management Plan was completed by Tim in August 2014 and adopted by the Sonoma County Water Agency Board in early October 2014. He also acted as technical advisor to the Basin Advisory Panel and Technical Advisory Committee in implementing the Plan and conducting meetings. The Santa Rosa Plain groundwater management program focused on implementing many of the

activities outlined in the plan and working with the Water Agency and local stakeholders to begin work on Groundwater Sustainable Agency formation and identifying the tasks necessary to conform with Groundwater Sustainability Plan requirements in the Sustainable Groundwater Management Act. The Plan activities were sunset in 2017 with the completion of the Insights and Recommendations – Sonoma Valley Groundwater Conditions and Management transition document.

2010: Layne Christensen Company, Sacramento, California.

- **Department of Toxic Substances Control –** Assisted with high-level oversight of Stringfellow hazardous waste site groundwater remediation system, including well maintenance, system operation and optimization.
- **Desert Sands Unified School District –** Provided regulatory and technical assistance for former underground tank monitoring and closure.
- **Yuima Water District –** Assisted with new water supply well siting and drilling along the Elsinore Fault zone.
- **AGLand –** Assisted with well siting and regulatory interface for new irrigation well installations along Ventura River.
- **Water Replenishment District of Southern California –** Provided groundwater flow modeling evaluation for comparative analysis of vertical versus horizontal well field for brackish water recovery and recharge project in West Coast Basin.
- **Confidential Site –** Provided evaluation of properties for well field capacity and preliminary estimate of safe yield.
- **Kenyon Yeates** – Provided evaluation of Monterey County draft EIR for water resources, and groundwater recharge and recovery issues and impacts.

2005 - 2009: Schlumberger Water Services, Sacramento, California.

- **Sonoma County Water Agency -** Groundwater Management Planning, Program Implementation and Technical Support of the broader Sonoma County Water Agency Conjunctive Use Strategy – Sonoma county currently uses considerable groundwater for residential and predominantly agriculture (grape growing for the wine industry) but had no groundwater management program. The project involved development of an AB3030/SB1938 compliant, voluntary groundwater management plan (GMP), through a facilitated process with a broad-based group of local stakeholders over a 16-month period. The resulting GMP was adopted by SW, City of Sonoma and Valley of the Moon Water District. Tim also provided technical assistance to Sonoma Water with initial GMP implementation tasks and facilitation of the GMP Policy and Technical Advisory Committee meetings.
- **MWH Global, Inc./AWWARF -** Study on Potential Groundwater Quality Impacts Resulting from Geologic Carbon Sequestration **-** This was a Rapid Research Study jointly funded by the Water Research Foundation and the AWWA under Cooperative Agreement conducted jointly with MWH Global, Inc. The objectives of this study were (1) document and assess the technology and understanding of the GCS process, (2) identify and characterize potential impacts of GCS on quality of groundwater supplies, (3) review existing approaches and recommendations for assessing and mitigating these impacts, and develop a monitoring guideline, and (4) perform a comprehensive evaluation of this information to ascertain knowledge gaps and research priorities. The report, *Potential Groundwater Quality Impacts from Geologic Carbon Sequestration*, was published in 2009 by the Water Research Foundation.

- **Water Replenishment District of Southern California -** The project involved geophysical logging of multiple boreholes ranging in depth from 1,000 feet to 2,000 feet below ground surface. Logging suites include the array induction tool, micro-cylindrically focused log, magnetic resonance, natural gamma ray, scintillation gamma ray, full-bore formation micro-imager, and sonic scanner. Services included interpretation of geophysical logs and consultation on monitoring well design, and aquifer yield.
- **Nobis Engineering, Inc. -** Focused technical review of a groundwater flow model developed for the OLIN Chemical Superfund Site, Wilmington, Massachusetts – This site involves dense aqueous phase liquid (similar to brine) contamination of a local glacial drift drinking water aquifer, with some drinking water wells shut down and a remedial program initiated. A finite element groundwater flow model, intended to be used in the future to support contaminant transport and remediation simulations, was developed and calibrated for the site by the RP consultant. The project involved detailed review of model documentation on behalf of US EPA to(1) identify potential documentation gaps, (2) identify potential flaws in the site conceptualization and, (3) identify possible problems with implementation of the numerical model.
- **MWH Global, Inc. - City of Roseville Aquifer Storage and Recovery Program** – City of Roseville plans to meet the future water demand of the growing population with a conjunctive use program involving a 10 to 15 well aquifer storage recovery program. The project involved providing advanced geophysical logging and interpretation of ASR and monitoring wells, consultation on monitoring well and wellfield design, and technical support and policy for the city in development and pilot testing of the ASR well field.
- **Schlumberger Remediation - MEW Superfund Site, San Jose, California -** The MEW Superfund Site is a Silicon Valley semiconductor faculties, multi-site solvent-contaminated groundwater project. The program involved assessing and assimilating 25 years of groundwater monitoring and remedial data, developing a refined 3D hydrogeologic conceptual model, developing a revised groundwater flow model, and developing a fate and transport model. The data were evaluated and assimilated, conceptual and flow model completed and fate and transport modeling conducted.
- **Mojave Water Agency -** Mojave Water Agency Groundwater Model Development and Advanced Geophysical Logging for the R-Cubed Groundwater Recharge Project – The project included advanced geophysical logging of one to two 1200-foot boreholes through a thick unsaturated zone (~600 feet), development of a conceptual site model using Petrel, and develop a groundwater flow model using Eclipse. The assignment was to provide hydrogeologic and conjunctive use consulting on an as-needed basis to support feasibility and planning level design of a groundwater recharge project in the desert.
- **City of Corona -** HydroGeoAnalyst project development. The project involved bringing limited groundwater and surface water data sets into HydroGeoAnalyst, installing the software and preliminary training of staff.
- **Confidential Client -** Beneficial Use of Coal Bed Methane Produced Water, Wyoming - The project involved field inspection, geophysical log evaluation, preliminary Petrel model development, water resources, legal and regulatory assessment, groundwater monitoring review and evaluation, treatment options and cost analysis, and recommendations for CBM produced water use and reuse.

2001 - 2005: California Department of Water Resources, Division of Planning and Local Assistance, Conjunctive Water Management Branch, Sacramento, California.

- **Sacramento Groundwater Authority (SGA)/American River Basin Cooperating Agencies Partnership Projects.** Technical consultation and oversight on *Proposition 13* $21 million grant regional conjunctive use program involving aquifer-storage-recovery wells, and infrastructure expansion. Provided input on groundwater management plan development. Provided technical assistance on SGA groundwater banking & exchange pilot project, groundwater monitoring program, and groundwater data management system development. Other tasks consisted of review of technical reports, interface with SGA and CWMB, coordination on source water assessment, coordination on multi-agency VOC and ambient monitoring programs.
- **Central Sacramento County Groundwater Forum – (Sacramento) Water Forum Successor Effort.** Worked with (Sacramento) Water Forum Successor Effort and Groundwater Forum through facilitated, consensus-based approach involving a group of 30 broad-based stakeholders charged with the assignment of selecting groundwater management governance in the Central Sacramento County area. Worked with the Center for Collaborative Policy facilitator, Water Forum Successor Effort and Contractor to conduct stakeholder identification, stakeholder assessment, and develop and implement educational and conjunctive use programs for Groundwater Forum**.** Assisted with groundwater management plan; completed and the GMP is currently being implemented.
- **San Joaquin County.** Worked with San Joaquin County, local water districts and agencies, CCP facilitator and Contractor to facilitate conjunctive water management projects and groundwater management program development in the San Joaquin County area. The groundwater management program included conjunctive use and groundwater recharge feasibility. Activities included attendance of coordinating committee meetings and public meetings, and assisting in development of stakeholder assessment. Worked with San Joaquin County to develop approach and managed installation of six groundwater-monitoring wells in Stockton area for salinity evaluation. Involved Lawrence Livermore National Laboratory (LLNL) and USGS in initial well sampling and analysis. Developed cooperative approach with local agencies, USGS, and DWR for five year $2.6 million salinity assessment, groundwater monitoring, groundwater flowpath and geochemical conceptualization. Also assisted in developing groundwater management plan, including development of BMOs and initial groundwater management program implementation.
- **Stockton East Water District (SEWD) Proposition 13 Project.** Provoidfed technical assistance to the SEWD to implement a $7M pipeline and injection/extraction well program in the northeast San Joaquin County area, to be completed under a $3.5M Proposition 13 grant.
- **California State University of Sacramento (CSUS) -** Groundwater Monitoring Well Installation for Groundwater and Stream-Aquifer Interaction Evaluations - Cooperative effort involving CSUS, LLNL, USGS, Sacramento Groundwater Authority (SGA), and Sacramento Area Flood Control Agency (SAFCA). Developed approach and managed installation of 12-groundwater monitoring wells at CSUS. Well installation funded by DWR. Wells are used for assessment of groundwater flow and stream-aquifer interaction by CSUS and DWR, with data provided to SGA and SAFCA.
- **Yolo County Integrated Storage Investigation Project.** Provided technical consultation on the Water Resources Association of Yolo County technical group to

prepare a preliminary white paper to summarize adequacy of the data for completing a basin analysis, conjunctive use and groundwater recharge opportunities, and the level of effort necessary to compile, organize, and interpret the data. The main emphasis of the basin analysis was potential conjunctive use and managed aquifer recharge project development in Yolo County, and evaluation of groundwater monitoring program in Yolo.

- **Proposition 13 and AB 303 Groundwater Grant Application Review and Ranking.** Reviewed and ranked Proposition 13 and AB 303 groundwater conjunctive use competitive grant applications, including managed aquifer recharge feasibility and pilots, groundwater monitoring well installations, groundwater monitoring program reviews, groundwater management planning and recharge evaluations. Worked closely with the DWR staff to complete the screening and ranking of groundwater grant applications submitted within the Central District.
- **Bulletin 118.** Provided technical support for Central District geographic coverage Bulletin 118 update, a "state of the data approach" to develop a revised groundwater budget for each basin including review and summary of boundaries and hydrographic features, hydrogeologic units, yield data, water budgets, managed aquifer recharge potential, well production characteristics, water quality and monitoring data, and ground subsidence information if available.

2000 - 2001: California Department of Conservation, Division of Mines and Geology, Watershed Assessment/Restoration, Sacramento, California.

- **Co-Founder of the Watersheds of the DMG's Component of the Interagency North Coast Watersheds Assessment Program (NCWAP).** Assisted with budget change proposals, program work plans and budgets; acquisition of capital support items, response to questions from the Legislature and Resources Agency; attended interagency management meetings; helped develop presentations on landslide and fluvial geomorphology issues; participated watershed pilot studies; developed and tested GIS mapping and database protocols.
- **Researched methods and approach for on-screen mapping of landslides from stereo photographs**. Standard practice involved mapping landslides from stereo imagery on plastic overlays. Proposed approach involved use of software and high-end graphics workstation with stereo-analyst application to conduct the work on-screen, to reduce time required and improve work quality. Developed detailed workflow and ArcView Spatial Analyst model of relative landslide potential and comparison with SHALSTAB model.
- **Responsible for aerial photograph review of a portion of the Noyo River Watershed, and field reconnaissance of geology.** Provided a quality control review of portions of the Noyo River watershed, through aerial photo review, and field geologic reconnaissance and landslide mapping
- **Review of timber harvest plans the Sierra Nevada Mountains for potential soil erosion and slope stability issues related to engineering geology, and proposed timber harvest activities**. Provided comments and recommendations to the California Department of Forestry and Fire Protection (CDF). Attended pre-harvest inspections on as-needed basis, and prepared reports describing the engineering geologic conditions observed and recommendations when warranted.
- **Responsible for review of multiple CEQA type documents for engineering geologic issues related to public safety.** Reviewed negative declarations, mitigated negative declarations, environmental impact statements, and

environmental impact reports on various types of projects for engineering geologic issues relating to public safety and conformance with CEQA.

- **Review of Sustained Yield Plan, Red River Forests.** Responsible for review and comment on soil erosion and slope stability issues regarding forest harvesting practices, forest road construction and maintenance in relation to timber harvesting in the Modoc Plateau.
- **Review of Option A, Hawthorne Forests.** Responsible for review and comment on soil erosion and slope stability issues regarding forest harvesting practices, forest road construction and maintenance in relation to timber harvesting in the Northern California.

1997-2000: Cal EPA Department of Toxic Substances Control (DTSC), Stringfellow Branch, Sacramento, California.

- **Task Manager for preparing an approach to develop a Stringfellow site revised hydrogeologic conceptual model.** Responsible for in-house preparation of a work plan for a revised hydrogeologic conceptual model of the Stringfellow site, utilizing oriented core, well installation, aquifer testing data, and other existing pertinent geohydrochemical data.
- **Task Manager for providing a comprehensive environmental data management system.** Established need, gained support and sponsorship from state agency management, prepared scope and managed and supervised development of a Stringfellow comprehensive environmental data management system for hydrologic, geologic, chemical, meteorological, geographic information. Established the need to develop standard operating procedures for data input into the data management system as the data are generated, which includes specifications for electronic data deliverables format. DTSC contractor Tetra Tech's EMAGIS system utilized Map Info Professional as a platform with connections to as MS Access and DBASE, EXCEL, SURFER, provides a 2-D and 3-D statistical geospatial interpolation module, and could write various groundwater modeling and visualization file formats including MODFLOW and AVS.
- **Task Manager for assembling a panel of experts and getting them on-board and contracts in-place.** Established need, gained support and sponsorship from management, prepared scope and managed the development of a panel of experts to provide technical support on the Stringfellow project. Contracted with Lawrence Livermore National Laboratory (LLNL) to obtain public and private sector industry expertise. Worked with LLNL to put together a panel of experts for technical support on the various aspects of the projects including regional and local geology and structure; fractured rock media characterization; hydrogeologic conceptualization; contaminant fate & transport; remedial design and cleanup optimization.
- **Task Manager for 3-D visualization of 3-D seismic and electronic goniometer fracture data.** Data collected at the site include 3-D seismic and oriented core electronic goniometer fracture data. Responsible for developing approach to evaluate the two sets of corresponding fracture data. The approach involved overlaying the fracture data into a 3-D visualization model utilizing Advanced Visualization Systems software. Developed scope and managed project through a Contract with Lawrence Berkeley National Laboratory (LBNL) to complete the work.
- **Task Manager for 2-Phase Extraction Treatability Test.** Responsible for oversight and direction of Contractors to develop approach and work plans to perform a 2-Phase Extraction (TPE) treatability test at the site. A treatability test consisting of the Xerox TPE technology was conducted to support the Supplemental Feasibility Study. The objective of the tests was to collect the data necessary to assess if TPE

is a viable remedial solution for the site. The test involved extraction from nine existing wells and monitoring eight to ten wells at each extraction point.

- **Task Manager for Soil Flushing Treatability Test.** Responsible for oversight and direction of Contractors to develop approach and prepare work plan for a Soil Flushing treatability test at the site. A treatability test consisting of a variety of bench-scale tests was conducted to support the Supplemental Feasibility Study. The objective of the testing was to assess is natural soil flushing will enhance the remediation of the site. The testing involved soil physical and chemical analysis, bench-scale soil column flushing, and sequential extraction tests in a laboratory setting.
- **Responsible for groundwater modeling technical review.** Responsible for: (1) technical review of existing MODFLOW porous media groundwater flow model; and (2) developing options and providing a recommended approach for a groundwater flow and fate & transport model utilizing the revised hydrogeologic conceptual model.
- **Task Manager to re-evaluate and photo-document all Stringfellow site core.** Geological investigations had been conducted at the site for nearly two decades, and involved many different geologists and correspondingly dissimilar interpretations of the geology. The objective was to evaluate all of the core and geology consistently, in order to provide a uniform understanding of the site geology in the hydrogeologic conceptualization. The cores were also photographed in digital and 35mm slide format to provide electronic as well as standard film record of the core for database storage and readily available future review.
- **Responsible for oversight of coring and well installation activities/oriented core electronic goniometer data collection.** One of four geologists responsible for oversight of Contractor field activities at the Stringfellow site involving: (1) completion of 31 oriented core holes using rotary wash drilling methods; design and installation of 72 groundwater monitoring and extraction wells using dual tube percussion and air rotary casing hammer drilling methods; development and sampling of the new wells. Also provided options and recommended approach for obtaining electronic goniometer data (versus mechanical with hard copy data) for the fracture information from the oriented core holes.

1993 – 1997: Law Engineering & Environmental Services, Inc., Sacramento, California

- **Delivery Order (D.O.) 4 Manager for Site and Base Wide Investigations, Beale Air Force Base, California.** Managed project consisted of conducting a basewide groundwater operable unit hydrogeologic evaluation; basewide groundwater monitoring program; basewide groundwater flow/fate & transport modeling; conducting a basewide background soil evaluation; developing/negotiating a risk consensus statement; conducting remedial investigation, feasibility study and remedial action plan on six sites; engineering evaluation/cost analysis on four sites; and supplementary remedial investigation of three sites. The sites included an aircraft ground equipment maintenance area, a bulk fuel storage area, a transportation refueling vehicle maintenance shop, vehicle fuel station, a fire protection training area, a jet test cell, an inactive hazardous waste landfill, and an inactive non-hazardous waste landfill. Contaminants included fuel hydrocarbons, metals, aromatic and chlorinated volatile organic compounds.
- **D.O. 16 Manager for Site 13 Investigations, Beale Air Force Base, California.** Managed project consisting of the remedial investigation, feasibility study, preparation of the remedial action plan, design and implementation of a groundwater interim removal action at a 13-acre inactive hazardous waste landfill site. Site contaminants include chlorinated volatile organics, heavy metals, diesel- and jet-fuel

range hydrocarbons, semivolatile organic compounds, and M-5 ointment. The soil and groundwater investigation included the completion of approximately 60 exploratory test pits, 30 soil borings, 20 soil boring/Hydropunch sample locations, 30 groundwater monitoring well installations and sampling, aquifer testing, data management and analysis. The groundwater removal action consisted of extracting TCE-impacted groundwater from nine wells, filtering and treating the water by air stripping, and discharging to the base waste water treatment facility.

- **D.O. 21 Manager for Site 13 Remedial Design, Beale Air Force Base, California.** The D.O. 21 project consisted of the preparation of the remedial design for soil remedial action at Site 13. The project also included a soil treatability test, and one year of operation & maintenance of the Site 13 groundwater interim removal action system.

1988 - 1993: Dames & Moore, Sacramento and Los Angeles, California.

- **Senior Geologist and Project Manager for the Remedial Investigation (RI), Feasibility Study (FS), and preparation of the Remedial Action Plan (RAP) for the Union Pacific Railroad Yard Superfund site in Sacramento, California.** The former railroad maintenance yard is a 90-acre site consisting of an inactive area and active switching yard, situated on weakly consolidated fluvial sediments. Managed geological and hydrogeological evaluations, ancillary investigations, removal actions, interim remedial measures, and quarterly groundwater monitoring at the site, and supervised data management and analysis. The soil and groundwater investigation included the completion of approximately 300 exploratory test pits, 26 soil borings, and 42 groundwater monitoring wells. Groundwater investigations also included the completion of more than 100 cone penetration test/Hydropunch in-situ groundwater sampling locations to assess the extent of off-site groundwater contamination and development of a MODFLOW groundwater flow and fate & transport model to effectively locate long-term groundwater monitoring wells, and refine the understanding of on-site groundwater contamination and potential sources. Additional evaluations/actions at the site have included:
  - Speciation and dissolution kinetics evaluation of selected samples - mineralogy and chemistry by X-ray fluorescence (XRF), X-ray diffraction (XRD), scanning electron microscopy (SEM), X-ray photoelectron spectroscopy (XPS), and surface analyses by laser ionization (SALI), phase association of metals by sequential extraction, and dissolution kinetics of metals by column rate studies at five different pH - results of the evaluation were utilized to assess potential environmental and human health impacts associated with slag present at the site.
  - Ambient air assessment for total suspended particulates, arsenic, lead, and asbestos by low volume samplers, and analysis for metals by XRF and for asbestos by transmission electron microscopy (TEM)
  - Removal of 1,000 yards of metal impacted soil from vacant and residential lots adjacent to the site.
  - Classification and removal of 2,500 yards of non-hazardous material from the site.
  - Removal of a 72,000 gallon concrete underground storage tank
  - Abandonment of a former yard water supply well which included an underground concrete water storage vault.
  - Installation of dedicated sampling systems in selected quarterly groundwater monitoring wells.
  - Preparation of Final RI/FS and submittal to the Cal EPA in 1991.
  - Preparation of Draft RAP and submittal to Cal EPA in 1991.

  - Preparation of Revised Draft RAP and submittal to Cal EPA in 1993.
  - Implementation of on-site groundwater interim remedial measure to minimize off-site migration of impacted groundwater in 1993. Shallow groundwater is extracted from two existing groundwater monitoring wells, treated by a shallow-tray air stripper on site, and treated water discharged to the sanitary sewer. Effluent air from the shallow-tray unit is scrubbed through liquid-phase carbon.
  - Planning and implementation of an extensive community relations effort, including numerous public meetings, quarterly reports, issuing fact sheets on all site related activities to approximately 3,000 surrounding neighbors.
- **Technical Support on two railyard investigation and remediation projects involving hydrocarbons, heavy metals and asbestos.** The projects involved development and implementation of site investigation work plans, groundwater monitoring programs, remedial action plans, impoundment closure plans, risk assessment hazardous waste characterization and regulatory compliance. Field activities included mitigation and impoundment closure activities, air, soil, and groundwater investigations. Development of spreadsheets and data management system to store and managed collected data.
- **Project Manager for the Defense Fuel Supply Point Ozol facility, (near) Martinez, California, Follow-on Investigation.** The facility is a jet fuel bulk storage and transfer terminal situated on complexly folded and faulted marine sediments. The California Regional Water Quality Control Board is the lead agency for the project. Managed preparation of work plans to complete additional soil borings, install additional groundwater monitoring wells, conduct groundwater monitoring and free product removal assessments, and evaluate site hydrogeology.
- **Technical Support on confidential truck stop leaking underground fuel tank site.** Provided litigation support for multiple responsible party cost apportionment based on review of existing documents, groundwater monitoring program data, and hydrogeological and contaminant fate and transport assessment.
- **Task Manager for a confidential evaluation of a former mining site.** Speciation and dissolution kinetics evaluation ongoing to assess form of arsenic in mine tailings, soil, and bedrock to preliminarily assess potential environmental and human health impacts from arsenic in mine tailings. Microanalytical testing by XRD to evaluate mineralogy; SEM and EMPA to evaluate micromorphology, microchemistry, metal distribution within particles, and evidence of weathering on particle surfaces; XPS and SALI to evaluate metal distribution and form on particle surfaces. Chemical analysis by XRF for total metal concentrations; sequential extractions in a series of progressively more aggressive solvents to assess major metal phase associations; dissolution rate studies to evaluate dissolution kinetics and solubility of metals at several different pH levels.
- **Project Manager for a confidential site evaluation involving slag utilized as sandblasting material.** Initial evaluation to preliminarily assess type of slag, and to identify presence and distribution of metals in the slag. Speciation of metals in slag by XRF to evaluate chemistry and SEM to assess micromorphology, microchemistry, metal distribution within particles, and evidence of weathering on particle surfaces.
- **Project Manager for a confidential residential site evaluation involving lead contamination.** Evaluation conducted to characterize lead contamination, assess source of lead contamination, and to provide litigation support disputing claim that a nearby state Superfund had impacted the residential site. Speciation of soil, dust, and paint samples by XRF to evaluate chemistry, and SEM to assess micromorphology, microchemistry, and metal source distribution in dust and soil samples.
- **Project Manager for second party review of United Heckathorn, Federal Superfund Site, Richmond, CA.** The site is a former pesticide formulating and packaging facility located on Richmond Inner Harbor. Soils, sediments and biota in

channels and the San Francisco Bay contaminated by DDT, dieldrin, aldrin and other pesticides. Reviewed RI/FS and provided interpretation of contaminant distribution, recommendations regarding suggested remedial strategies, proposed alternatives, interim remedial measures, and final remedial action for the site.

- **Project Manager for evaluation of potential for waste re-classification of molybdenum waste produced at the Cyprus Mine.** The molybdenum waste was classified as hazardous by the standard waste classification approach. However, the material was largely inert, available chemical data suggested the waste should not necessarily be classified as hazardous, and cost and other waste re-classifications supported additional testing and literature searches to assess the potential to re-classify the waste as non-hazardous. This project involved specialized chemical testing, including evaluation of the solubility of the waste at various pH and in a variety of solutions. Additionally, the project included speciation of the waste to determine what species the molybdenum and associated trace chemicals were present as, and a literature search of the DTSC files to assess what successful waste re-classifications had been completed.
- **Project Manager** for numerous preliminary site assessments for property transfers**.**
- **Site Field Manager** for aquifer testing and water quality investigation and groundwater monitoring of a leaking underground storage tank site in Los Angeles, California.
- **Site Field Manager** for aquifer testing and water quality investigation and groundwater monitoring of a former manufactured gas plant Superfund site in Venice, California.
- **Field Geologist** for a remedial investigation of a former manufactured gas plant Superfund site in Venice, California.
- **Task Manager** for preparation of Work Plans for Remedial Investigations at hazardous waste sites in Norwalk and Dinuba, California.

1986 - 1988: California Department of Health Services, Toxic Substances Control Division, Southern California Region, Assessment and Mitigation Unit, Los Angeles, California

- **Geologist on Burmah Castrol, Inc., Richmond,** a petroleum lubricant storage and transfer facility. Reviewed hydrogeological evaluation and groundwater monitoring program of the proposed remedial action for the site.
- **Geologist on Chem Clear, Los Angeles,** a hazardous waste treatment facility. \Reviewed seismic risk evaluation for the facility.
- **Geologist on Lockheed, Burbank,** an aircraft manufacturing facility. Reviewed groundwater monitoring program report for the site which included 12 poorly designed monitoring wells completed to 600 to 1,200 depth with multiple screens separated only by blank casing and fully gravel-packed to depth. Borehole geophysical logs indicated a series of coarse-grained water producing zones separated by low permeability confining zones. Packer isolated hydraulic head and analytical testing for TCA and PCE indicated downward vertical gradients and increase contaminant concentrations with depth over time. Recommended sealing up all of the wells to the bottom of the shallowest screen to avoid further downward migration of contaminants along the fully gravel packed annulus and water column.
- **Geologist on Los Angeles Air Force Station, Los Angeles,** an aerospace research and development facility. Reviewed RI Work Plan.
- **Geologist on McColl, Fullerton,** an acid petroleum sludge waste site. Provided contractor oversight of well installation and groundwater sampling activities, and reviewed groundwater monitoring reports.

- **Geologist on McKesson, Santa Fe Springs,** a former chemical-blending and packaging facility. Reviewed site investigation work plan and groundwater monitoring program.
- **Geologist on Orange County Steel, Anaheim,** an auto shredder facility. Reviewed RI Work Plan and groundwater monitoring program.
- **Geologist on San Fernando Valley Ground Water Basin,** a 20,000-acre groundwater basin impacted by solvents. Provided oversight of contractor well installations and reviewed and groundwater monitoring program, and groundwater remedial action design documents.
- **Geologist on Thomas Ranch, Corona,** an acid petroleum sludge waste site. Provided oversight of RI/FS activities and review of groundwater monitoring program and other documents.
- **Geologist on Marine Corps Air Stations, Tustin and El Toro**. Provided oversight of RI/FS activities, groundwater monitoring program and reviewed site technical documents.
- **Project Manager on Bortz Oil Company, Los Angeles,** a former solvent-blending and packaging facility. Provided oversight of RI/FS activities, groundwater monitoring program and review of documents. Provided litigation support to the District Attorney.
- **Project Manager on Chem-O-Lene, Ventura,** a specialty oil-drilling products blending and packaging facility. Provided oversight of RI/FS activities, groundwater monitoring program and review of documents. Provided litigation support to the District Attorney.
- **Project Manager on Facet Energy, Long Beach,** a former oil recycling facility. Provided oversight of RI/FS activities, groundwater monitoring program and review of documents.
- **Project Manager on Southland Oil, Los Angeles,** a former oil recycling facility. Provided oversight of RI/FS activities, groundwater monitoring program and review of documents.

1982: Gasch & Associates, Sacramento, California

Geologic Assistant on shallow seismic surveys to map placer gold deposits in the northern Sierra Nevada providing geologic research and geologic field mapping, geophone placement and removal.

1981-1982: Geologic Assistant, Sacramento, California

Geologic Assistant on various field studies including gravity and magnetic surveys in the North Coast Range and Avawatz Mountains, landslide mapping in the Coast Range, and geologic mapping in the Coast Range, White Mountains, and Kinston Peak Range. Work involved providing geologic research and geologic field mapping, and surveying with gravity and magnetic instrumentation.

KRIEGER & STEWART, INCORPORATED
STAFF RESUME

CHARLES A. KRIEGER

Years Employed: 1984 through 2024

License: California Registered Civil Engineer No. 44545

Education: Bachelor of Science in Civil Engineering, University of California, Davis

Professional Summary:

As of 2011, Krieger is President and CEO of Krieger & Stewart, Incorporated. Krieger's responsibilities have included technical expertise, public acceptance, and funding for a variety of public agency projects, ranging in cost from $1M to $15M.

Krieger's experience includes serving as District Engineer for numerous special districts; investigation of alternative aqueduct systems for State Water Project Contractors; investigation of water resources, including groundwater, spring water, surface water, and imported or supplemental water supplies, also groundwater recharge and conjunctive use; preparation of engineering appraisals of water and wastewater systems; preparation of water, wastewater, and recycled water general or master plans; preparation of water, wastewater, and recycled water environmental impact reports; performance and supervision of design engineering services including construction document preparation for water, wastewater, recycled water, drainage, and flood control projects including water wells and well pumping plants; supervision of construction engineering services, including construction management and construction inspection for water, wastewater, recycled water, drainage, and flood control projects including water wells and well pumping plants; service as consultant to cities, counties, and special districts on public works projects, particularly water, wastewater, recycled water, and flood control; and service as engineering consultant or expert witness in disputed or litigated matters involving land, easements, water rights, water (groundwater, spring water, surface water), wastewater, recycled water, irrigation, drainage, flooding, construction, and valuation.

Relevant Project Experience:

- Coachella Valley Water District's Engineer's Report for the Mission Creek Subbasin Area of Benefit (2015 and 2003)
- Coachella Valley Water District's Engineer's Report for the East Whitewater River Subbasin Area of Benefit (2015)
- Coachella Valley Water District's Engineer's Report for the West Whitewater River Subbasin Area of Benefit (2015)
- Coachella Valley Water District's Salt/Nutrient Management Plan (participated as subconsultant)
- Coachella Valley Water District's Mission Creek/Garnet Hill Subbasins Management Plan (participated as subconsultant)
- Desert Water Agency's Domestic Water Facilities General Plan (2020, 2008, 1998, 1992, and 1988)
- Desert Water Agency's Wells 39, 40, 41, 42, 43, 44, and 45
- Desert Water Agency's Shallow Groundwater Recovery Well System
- Technical Support Services for Desert Water Agency related to groundwater and surface water supply issues
- Technical Support Services for Desert Water Agency related to groundwater rights litigations
- Eastern Municipal Water District's Potable Water Well No. 38
- Eastern Municipal Water District's 2008/2009 Recycled Water Operations Plan and Master Plan
- City of Colton's Water Supply Assessment for Pellissier Ranch Specific Plan (2008)
- City of Colton's Southwest 44 Sewer Facilities Master Plan (2008)
- City of Colton's Wells 27, 28, 29, 30, and 31
- City of Colton's 1996 Water Master Plan Update
- Indian Wells Valley Water District's Wells 17,18, 30, 31, 33, 34, and 35
- Indian Wells Valley Municipal Water District's Southwest Well Field Infiltration Pilot Study
- Indian Wells Valley Water District's Domestic Water General Plan (2020, 1997, 1990, and 1985)

EDDY TEASDALE, PG, CHG

Principal Hydrogeologist

Years of Experience

24

Areas of Expertise

Groundwater Assessments Geologic Site Characterization and Assessment
Aquifer Storage and Recovery Indirect Potable Reuse Geologic Modeling
Water Resources Evaluation Litigation Support Subsidence
Water Supply Wells Well Rehabilitation Well Optimization
Environmental Impact Studies
Contaminant Fate and Transport
Hydrogeologic Studies
Aquifer Testing Design and Analysis AQTESOLV
Numerical Groundwater Modeling Visual MODFLOW
Groundwater Vistas GMS
SEVIEW (SESOIL and AT123D)

Education

MS, Hydrogeology, University of Idaho, Moscow
BS, Geology, University of Texas, Arlington

Professional Registrations

Professional Geologist CA No. 7791; ID No. 1561
Certified Hydrogeologist CA No. 926

Professional Affiliations

- Groundwater Resourced Association of California (GRA), 2004-Present
- National Groundwater Association (NGWA), 1996-Present
- International Association of Hydrogeologists; 1998-Present
- American Water Resource Association, 1998-Present

Eddy Teasdale has over 24 years of experience working on geological and hydrogeological investigations in the United Stated and internationally (England, Ireland, North Africa, and Guam). Projects have involved complex, comprehensive geology, hydrogeology, conveyance, flood control, and environmental issues. He has worked in all major aquifer types (alluvial basins, volcanic, carbonate and bedrock terrains). He is an experienced project manager who has successfully managed large, complex projects. He has extensive experience in writing technical reports and working with local, state, and federal regulatory agencies including presenting project information and resolving project issues. Eddy 's primary areas of technical expertise are in hydrogeologic characterization and groundwater modeling.

Eddy has served as a subject matter expert for the Professional Geologist and Certified Hydrogeologist exams for the Department of Consumer affairs in California Since 2006. He has assisted in the development, review, grading, and appeals process for the annual hydrogeologist certification exam. Participation in the six member expert team is by invitation only and participants are required to be both licensed and certified in their specialties in addition to having demonstrated extensive applied experience in their respective fields. Eddy is the current President of the North Sacramento Valley Groundwater Resources Association and is a member on the technical advisory committee for the Butte County Well Drillers Advisory Group.

Eddy has worked on projects for a wide range of clients including:

Federal – US Bureau of Reclamation (USBR), US Army Corps of Engineers (USACE), US Environmental Protection Agency (US EPA), and the United States International Boundary and Water Commission (USIBWC)

State of California – California Department of Water Resources (DWR), and California Department of Toxic Substances Control (DTSC)

Private Clients – Shell, Chevron, BNSF, the Boeing Company, First Solar, British Petroleum, Duke Energy, Freeport-McMoran, First-Solar, Anheuser-Bush, SMS Briners

City, County and Water Districts in California – LA Department of Water and Power, Butte County, Glenn County, Colusa County, Tehama County, Yolo County, South Tahoe PUD, Fresno County, City of Fresno, City of Manteca, City of Woodland, City of Lathrop, City of Pleasanton, City of Sacramento, City of Modesto, City of Winters, City of Chico, City of Yuba City, Yolo County Flood Control, City of Newman, Three Valley's Water District, Mojave Water Agency, Twenty-Nine Palms, City of Knight's Landing, Yolo County, City of

Santa Cruz, San Frisco PUC, Monterrey Regional Water Pollution Agency, Eastern Municipal Water District, Antelope Valley East Kern, Arizona American Water Company, California American Water Company, California Water Services, Del Oro Water District, Westlands Water District, Turner Island Water District, Indian Wells Valley Water District

Other Consultant Companies (expert witness) – AECOM, SPF, Carollo Engineers

RELEVANT PUBLICATIONS

Jim Zhang and Eddy Teasdale, 2021 "Steady-State Flow Model Calibration Using Multiple Sets of Groundwater Observations" Groundwater (in Review)

Jim Zhang, and Eddy Teasdale, 2015, "An Iterative Method of Modeling Pump and Treat-Injection System with "Partial Treatment" AGU Meeting 2015, San Francisco, CA.

Jim Zhang, and Eddy Teasdale, 2012, "Steady-State Flow Model Calibration Using Multiple Sets of Observed Groundwater Elevation Data" AGU Meeting 2012, San Francisco, CA.

Eddy W. Teasdale, Jim Zhang, and Liz Elliott, 2010, "Using General Head Boundary Conditions in Groundwater Flow Models" AGU Meeting 2010, San Francisco, CA.

Parrish, K.E., R. Nommenson, and E. Teasdale, 2008, Practical Groundwater Cleanup Optimization with a TMR Model, Abstracts for Applications of Optimization Techniques to Groundwater Symposium, Sacramento, California, October.

Eddy W. Teasdale, Jim Zhang, and Kent Parrish, 2007, "An Enhanced Method of MODFLOW Simulation of Groundwater Extraction/Injection through Wells Penetrating Multiple Aquifers" AGU Meeting 2007, San Francisco, CA.

Kent Parrish, Jim Zhang and Eddy Teasdale, 2007. "A Closed-form Equation for Predicting Groundwater Response to Pumping in Homogeneous, Confined Horizontal Aquifer with Unidirectional Flow" AGU Meeting, December 2007, San Francisco, CA.

Eddy Teasdale, Kent Parrish and Ed Titus, Presentation 2007 "Well Field Optimization" 27th Biennial Groundwater Conference and 16th Annual Meeting of the Groundwater Resources Association of California.

Eddy Teasdale, Kent Parrish and Robb Clayton, Presentation 2005 "Groundwater Models;" The Geological Conceptual Approach" 25th Biennial Groundwater Conference and 14th Annual Meeting of the Groundwater Resources Association of California.

"Groundwater Pollution". Presentation: Northern California Natural History Museum without walls lecture series, Chico, CA, October, 2004.

"In-Situ Well Rehabilitation Techniques, Case Studies from the Desert", Presented as an in-house training seminar, Leeds U.K, November, 2003

John H. Bush, Dean L. Garwood, and Eddy W. Teasdale, Poster, 2002, Re-Interpretation of the Pullman-Moscow Geology, Idaho-Washington: "An Example of the Importance of Geological Mapping to Groundwater Modeling", Idaho Rural Water Development Project, December, 2002.

Xeriscape ("Zeri" scape" your garden, and help in conserving our "groundwater" in the Palouse, Presentation: Latah County, Pullman, and Whitman County, January 2002.

Abstract " Evidence for Structural Partitioning of Groundwater Resources in Moscow, Idaho Pullman, Washington and surrounding areas", Geological Sciences, University of Idaho, Moscow, ID, AGU Fall Meeting, San Francisco, CA, December, 2001.

EXPERIENCE

Groundwater Sustainability Plan

Groundwater Sustainability Plan, Tehama County Flood Control and Water Conservation District, Tehama County: *Project Manager*. Led the development of 4 GSPs for the Bowman, Antelope, Los Molinos and Red Bluff Subbasins, including the technical work on the GSP chapters related to water budgets, sustainable management criteria, evaluating sustainability management actions and projects, and collaborating with the GSA and stakeholders.

Groundwater Sustainability Plan, Big Valley, Lake County: *Project Manager*. Led the development 1 GSPs for the Big Valley Basin, including the technical work on the GSP chapters related to water budgets, sustainable management criteria, evaluating sustainability management actions and projects, and collaborating with the GSA and stake-holders.

Groundwater Sustainability Plan, Westside Subasin, Westlands Water District, San Joaquin Valley, CA: *Principal Hydrogeologist*. Provided senior guidance for technical and policy support to the GSA for the Westside Subbasin. He also oversaw the technical activities including basin description and water budgets. Guided the client through the process to develop sustainability management criteria and helped to coordinate projects and management actions. Also the project manager who oversaw the design, installation, and testing of 5 multi complete monitoring wells. These wells will be integrated into the current monitoring program.

Groundwater Sustainability Plan, McMullin Area Groundwater Sustainability Agency, Kings Subbasin, Kerman, CA: *Principal Hydrogeologist*. Provided technical assistance to the GSA's legal counsel. Specific tasks included leading a groundwater modeling analysis to evaluate the impact of agricultural pumping in the basin, helped to refine the overall water budget, developed a sub-basin water budget, identified possible projects and management actions, including an assessment on pumping allocations and the effects that would have on defining sustainability indicators.

Groundwater Sustainability Technical Support, Turner Island Water District, Merced and Delta Mendota Sub- basins: *Principal Hydrogeologist*. Reviewed all work being prepared by the Subbasins and GSA consultant. Tasks included review of all GSP chapters, technical assistance to improve the understanding and management of water resources, and refined and further characterized areas of potential recharge.

Groundwater Sustainability Plan Implementation, Colusa Sub-Basin, Glenn and Colusa Counties: *Principal Hydrogeologist*. Eddy played a key role in developing the annual reports by providing critical analysis and oversight. He also led the initiative to secure funding through Prop 68, Round 2, effectively managing the application process and aligning it with project goals. Additionally, he supported efforts to identify GSP revenue needs and determine appropriate cost allocations, ensuring the financial sustainability of groundwater management projects.

Groundwater Sustainability Plan Implementation, Vina, Wyandotte Creek and Butte Subbasins: *Principal Hydrogeologist*. Eddy led the development of the annual reports and guided the process for securing Prop 68, Round 2 funding. Additionally, he supported various efforts related to the implementation of Groundwater Sustainability Plan (GSP) projects. His contributions were instrumental in advancing management actions for sustainable groundwater management.

Groundwater Sustainability Plan Implementation, Tehama County Flood Control and Water Conservation District and Corning Sub-Basin, Tehama and Glenn County: *Project Manager*. Led the development of 4 GSPs for the Bowman, Antelope, Los Molinos, and Red Bluff Subbasins, including the technical work on the GSP chapters related to water budgets, sustainability management criteria, evaluation of sustainability management actions and projects and collaboration with the GSA and stakeholders. In addition, he led the development of the annual reports for water years 2021 through 2023. Eddy helped secure $16 million in GSP implementation funding and is currently leading the development of GSP implementation tasks for all the subbasins in Tehama and Glenn County.

Big Valley Groundwater Sustainability Plan, County of Lake, CA: *Principal Hydrogeologist*. Since 2021 to present, LSCE has provided Lake County with SGMA compliance and technical support GSP development, implementation, and long-term funding strategy support. Key aspects of these services include Preparation of their 2022 GSP Report, preparation of annual reports (2022), preparation of a GSP implementation funding strategy white paper. LSCE provided grant management and coordination with DWR technical staff and grant administrators, supported development of groundwater data management system, and supported groundwater education and outreach. Responsible for the preparation of analyses and interpretations through reports and associated GIS and graphical products, the evaluation of options for revenue implementation based on cost per acre, per parcel and cost per well and coordination with Groundwater Sustainability Plan's advisory committee, specifically focused on future funding options.

Groundwater Sustainability Plan, Indian Wells Valley Groundwater Authority Technical Advisory Committee, Indian Wells Valley, CA: *Principal Hydrogeologist*. Since 2018 to present, Eddy represents a significant agricultural interest by participating in various Technical Advisory Committees and working groups in the Indian Wells Valley. His responsibilities include evaluating options for additional groundwater recharge and contributing to the development, scope, schedule, and budget of the Groundwater Sustainability Plan (GSP). He was also involved in reviewing GSP chapters developed by others, providing support for groundwater modeling,

and conducting safe yield analysis. Through these roles, Eddy plays a vital part in shaping sustainable water management strategies in the region.

Geotechnical Experience

Groundwater Dewatering, Orange County, CA Confidential Client, Shell Carson Terminal, Carson, California: *Project Hydrogeologist*. Developed a dewatering model to assess the total and recoverable volumes of water at the site, to simulate LNAPL recovery rates, and time to reach recovery goal of current system, and to optimize the current system by changing pumping schedules and/or relocating/adding pumping wells.

Groundwater Dewatering, Orange County, CA: *Project Hydrogeologist*. Dewatering during expansion of the Trampas reservoir construction is a critical issue due to the presence of shallow groundwater. Eddy conducted, as part of the Groundwater Pumping Pilot Study (GPPS) task, a preliminary dewatering analysis to estimate the volume of groundwater water that could be generated during construction activities associated with expanding the reservoir. Slug tests were performed at a site monitoring well to estimate permeability values of the saturated zone, and then a groundwater model was built, developed and utilized to estimate water volume removal rates and time to dewater.

Groundwater Dewatering, Owens Valley, CA: *Project Hydrogeologist*. The Los Angeles Department of Water and Power (LADWP) requested that URS provided third party oversight of their contractor for completion of the dewatering system evaluation associated with the North Haiwee Dam Seismic Improvement Project. As part of the North Haiwee Dam Seismic Improvement Project, a new embankment dam will be designed and constructed approximately 800 feet north of the existing North Haiwee Dam. The materials underlying the proposed dam have the potential to liquefy under seismic loading conditions. As a result, these foundation materials need to be removed and replaced or improved in-situ. The ability to provide groundwater control and dewater the dam foundation is critical for assessing the ground improvement approach.

Confidential Client, Canon City, CO: *Hydrogeologist*. Eddy developed a conceptual-level alternatives study for dewatering existing tailings within the primary tailings impoundment with the existing dewatering drain system and liner. Four conceptual alternatives were evaluated for lowering the phreatic surface within the tailing prior to cover placement in order to minimize differential settlement.

SCRSD, Sacramento Force Main, Lower Northwest Interceptor, Sacramento, CA: *Hydrogeologist*. Assisted in the preliminary evaluation of dewatering requirements, preliminary cost estimates, and appropriate types of groundwater control systems for the 2.7-mile-long project, comprised of twin parallel 66-in. ID force mains constructed in open cut with three micro tunnel segments. Assisted in the preparation of Geotechnical Baseline Report (groundwater conditions, stratification, and hydraulic properties of water-bearing strata); and review of contractor's dewatering submittals.

Seepage Evaluation, Urban Levee Evaluation Program, Sacramento, CA; CA Department of Water Resources: *Project Hydrogeologist*. Eddy was the Project Hydrogeologist for the seepage evaluation task on this program to determine the hydraulic conductivity of the major strata. He completed an in-situ hydrogeologic analysis of several areas in the Sacramento/San Joaquin Delta.

USACE Ft. Worth – Lamar Street Levee Site investigation and Design, TX (Section F Project #3): *Lead hydrogeologist*. Preparation of the geomorphology study for the project and rapid drawdown tests. The proposed 3-mile long levee crosses a State and City Highway, two heavy rail lines and a light rail line. The project included the design of earth embankments, flood walls, flood gates, utility crossing, drainage culverts and other features.

United State International Boundary and Water Commission (USIBWC) American Canal Re-lining, El Paso, TX: *Lead Hydrogeologist*. Subsurface investigation including conducting large pump tests, groundwater modeling and preliminary dewatering analysis for the final design of the relining and rehabilitation of the American Canal in El Paso, Texas. The project will increase the canal capacity from 1,200 cfs to 1,535 cfs. The urban setting of the project presents major engineering and construction challenges as the project is adjacent to a state highway, a BNSF railroad line, water and sewer pressure lines, fiber optics telecommunications and power lines, and the Department of Homeland Security border fence. The presence of a contamination plume from an adjacent property also requires canal construction dewatering water to be treated to remove contaminants.

United State International Boundary and Water Commission (USIBWC) Final Design of the Courchesne/Nemexas Levee Reaches, El Paso, TX: *Lead Hydrogeologist*. Rehabilitation of the 3 mile levee reaches. The project includes an extensive

field investigation and design to construct earth embankments, flood walls ("T" walls and "I" walls), large drainage structures, cutoff walls and other features.

Dewatering Evaluation, American Canal Expansion Project, El Paso, TX: *Project Hydrogeologist*. Developed a Groundwater Flow Control Plan and dewatering design for the expansion of the American Canal in El Paso Texas. The project consisted of a mass excavation and extending 15 feet below grade and 10 feet below groundwater table. Groundwater levels had to be dewatered by a combination of deep pumping wells and temporary shoring systems.

Groundwater Evaluation, Delta Habitat, Conservation, and Conveyance Program, Sacramento, CA, CA Department of Water Resources: *Project Hydrogeologist*. Eddy was the Project Hydrogeologist for the dewatering evaluation task on this program to improve delta conservation and conveyance. He provided independent technical review on initial geologic and hydrogeologic analysis of several areas in the Sacramento/San Joaquin Delta. He is also lead the development of a screening-level analysis of potential construction dewatering protocol for a future feasibility study on the program. MODFLOW is being used to evaluate the general size of the construction dewatering activities and the predicted changes in groundwater levels during construction.

Confidential Client, Albany, NY: *Hydrogeologist*. Eddy designed and planned a test well and pumping test to evaluate groundwater control needed (pressure relief) for the excavation of a 110-ft diameter by 175-ft deep shaft and a shallower adjacent shaft through fill and alluvium. Eddy provided consultation on pressure relief wells, filter design, test pump capacity, screened intervals for test well and piezometers, test durations, modification of test well to evaluate characteristics of two distinct pervious zones, tidal effects, analysis of test results, and pump test report. Eddy also reviewed and commented on contractor's dewatering plan, specification, aquifer test analysis and system design report and other submittals following award of tunnel construction contract.

Former Adak Naval Complex, Adak, Alaska, U.S. Navy, T&M: *Lead Hydrogeologist*. Eddy developed a groundwater flow, particle tracking and transport model and the data analysis and interpretation for site. He performed the groundwater modeling using MODFLOW, MODPATH and MT3D computer programs. He is also lead the development of a screening-level analysis of potential construction dewatering protocol for a future feasibility study on the program.

Surface Water Modeling, Emergency Levee Repair Program, Sacramento, CA, CA Department of Water Resource: *Project Hydrogeologist*. During this emergency levee repair effort, Eddy assisted in the application hydrodynamic modeling effort in support of emergency levee repairs in the Sacramento River System from Walnut Creek, CA to Oroville, CA. Eddy performed hydrologic and hydraulic analysis for the levee erosion sites; developed hydraulic models for the levee erosion sites by utilizing 2-dimensional models CCHE2D and SMS. This modeling effort compares the hydrodynamic flows for existing and project design riverbed bathymetric conditions. This effort is used to evaluate emergency levee repair designs so that they meet strict criteria and minimize negative secondary effects in river flow from the levee repairs.

Well and Pump Stations

Del Rio Well 68, City of Modesto, CA: *Project Manager*. LSCE provided well drilling and design services including a site-specific investigation, zone sampling, and well design. Prepared all environmental permits, contract documents, drilling specifications and provided contractor oversight and supervision of all drilling tasks, zonal sample design and sample collection, well construction installation, aquifer testing, and final water quality testing of production well for a system including over 75,000 water service connections.

As contract manager, Eddy responded to City requests, assigned tasks to the project team, and completed and negotiated task scope of work, fee, and schedule with City project management staff. He also managed several project specific tasks assignments, supporting CEQA, litigation, well siting, well drilling, construction management, well testing and aquifer testing, and provided third party review of recent pump station infrastructure.

PFAS Treatment and Well Rehabilitation, City of Pleasanton, CA (2022): *Project Manager*. The City's existing Well 5, 6, and 8 facilities support approximately 20 percent of the City' potable water demands through an annual groundwater pumping allotment of 1,140 million gallons per year to serve a population of over 80,000. Due to widespread use of PFAS over the last 80 years, all these wells have been impacted. Eddy is the technical lead on the assessment of the three existing production wells, installation of a multi-completion

monitoring well, design of two new wells (Wells 9 and 10), and destruction of four exiting wells (Wells 3, 4, 5 and 6). This work is part of a PFAS treatment project, where the above ground treatment facilities tasks are being led by our teaming partner on this proposal, Carollo Engineering.

ASR Program, City of Roseville, CA: *Project Manager*. Surface water from Folsom reservoir is the primary water supply source for the City of Roseville, serving a population of over 150,000. As part of Environmental Utilities' long-term water supply planning, six (6) new sites were identified for ASR well installations enabling the City to implement the conjunctive use of surface and groundwater to provide water supply reliability. Eddy is leading the LSCE Team (working alongside Carollo and ASR Systems) and is currently performing field investigations, well testing, engineering analysis and preparing design recommendation and providing permitting assistance.

The design-assist contracting approach is being used to construct the project. The City has retained the Team for the project duration to maintain the design intent from design through construction. A separate RFP has been developed by the City and our Team to select the construction contractor for the four (4) of the ASR wells under a collaborative project delivery approach.

Monitoring Well Installation, City of Woodland, CA (2023): *Project Manager*. The City of Woodland, serving 17,000 water connections, began ASR injection operations in December 2017. LSCE was contracted to characterize how current ASR injection operations (typically occurring in the winter months) and nearby agricultural well pumping might be influencing local and regional groundwater horizontal directions and groundwater velocities. Eddy is leading the monitoring well radial distance analysis, a monitoring well siting study, monitoring well designs, engineer's estimates, and future construction management services.

Production Well Assessment, City of Palo Alto, Palo Alto, CA: *Hydrogeologist*. Provided hydrologic and engineering services to the City of Palo Alto to assist in establishing a municipal emergency backup water supply system. The City is required to demonstrate the capability of providing adequate backup water supply for fire suppression and emergency public use in the event that the primary water supply is disrupted by a seismic event or other catastrophe. Since 1962, the City has received most of its municipal water supply from the Hetch Hetchy system. Prior to 1962, the City operated five groundwater wells for its entire drinking water supply to the public. Evaluated the feasibility of using these five inactive wells to meet water supply requirements and function as a backup system.

Well 21 Assessment and Aquifer Storage and Recovery Feasibility Study; City of Lathrop, CA (2022): *Project Manager*. The LSCE Team was responsible for assessment of existing Well 21 and installation of a multi-completion monitoring well to further characterize uranium in the well. Project siting and installation of a second single completion monitoring well at a separate location is underway to assess water quality and hydrogeologic conditions to support the City's first Aquifer Storage and Recovery Project, servicing a population of over 23,000. The proposed source of water is from South San Joaquin Irrigation District. Eddy is serving as the Team leader for both projects including the well design and construction support.

Public Supply Well Siting, Groundwater Modeling, Design, and Installation, City of Modesto, CA: *Hydrogeologist*. Responsible for a project involving the siting, design, installation, and testing of one 600-foot deep public supply wells. Well siting tasks included developing A 3-dimensional groundwater model (MODFLOW) was constructed covering approximately 10 square miles, and with 3 vertical model layers to simulate the Upper, Middle, and Lower Alluvial Units. The model will be utilized simulate the impacts that additional extraction could have in surrounding wells.

Well design tasks include preparation of a site-specific design for the well based on an exploratory boring analysis, and coordination of contractor activities.

Project management/oversight responsibilities include the supervision of lithologic log preparation, analysis of geophysical logs, evaluation of the results of sieve analyses of drilled cuttings, oversight of depth-specific groundwater sample collection and analysis, and supervision of post-construction aquifer testing and analysis. The final site-specific well design for the public supply well will be determined on the basis of this information.

Groundwater Evaluation and Modeling, Victor Industries Site, and Central Plume Site, State of California, Chico, CA: *Project Hydrogeologist*. Study included the evaluation of the aquifer system beneath the City of Chico and Butte County, a regional water balance, and detailed spatial and temporal correlation of groundwater pumping and influences in site monitoring wells. The project also involves development of a two 3-D numerical groundwater flow and transport models.

The models are being used to aid in implementing an interim remedial design that will clean-up dissolved concentrations of trichloroethylene (TCE) and tetrachlorethene (PCE). The preliminary design includes two extraction wells, a treatment plan and injection of treated water.

Hydrogeological Analysis, Newmark Groundwater Facility, San Bernardino, CA: *Hydrogeologist*. Performed numerous groundwater resources investigations in this area for the USEPA, including designing, installing, and aquifer testing 13 production wells; performing groundwater flow and capture zone modeling; and evaluating the effects of potential groundwater level declines. Accomplished planning, design, and construction of 52,000 feet of 12-, 16-, 20-, 24-, and 30-inch ductile iron pipe; 4,000 feet of 12-inch PVC pipe; three new treatment plants with over 30 MGD capacity; and a 7,500-gpm pump station and hydrotank. Eddy also evaluated hydrogeology and surface and subsurface geophysical studies as part of this project.

Water Supply Wells, Lake Los Angeles, Los Angeles County Department of Public Works, CA: *Hydrogeologist*. Provided hydrogeology for a team of geologists/engineers installing three water supply wells for LACDPW. The well installation oversight activity included installing a sanitary seal conductor casing, logging cuttings during the pilot boring, geophysical logging, isolation testing at discrete depths, well design, installation of well casing/screen, well development, aquifer testing/analysis, and pump design. A DWSAP was provided in the final documentation report. One well was completed as an Aquifer Storage & Recovery (ASR). Another well required depth specific sampling of arsenic using a sampling technology developed by the USGS. The projects are typically fast-tracked and conducted in residential neighborhoods.

Water Supply Wells, Torrance, CA: *Principal Hydrogeologist*. Hydrogeologic support for a team of geologists/engineers drilling two pilot borings to assess groundwater quality in the North Torrance Well Field. The city is currently evaluating their options for well screen placement in consideration of a nearby chlorinated solvent plume that also contains the emergent chemical 1, 4-Dioxane.

Groundwater Well Installation, Confidential Client, Firebaugh, CA: *Principal Hydrogeologist*. Provided technical oversight for the drilling, testing and design construction of two, 1,300 foot groundwater supply wells for a private power energy facility. Provided review of the open hole geophysical logs to confirm producing zones, evaluated the borehole conditions for well completion, and evaluated and approved the final design of the well screen and casing. The identification of saline zones for potential isolation was also an issue at this site. Also oversaw the technical review of the well development and testing program, which included the successful development and aquifer testing of both wells. Each well produced more than 2.500 gpm sustained yield.

Groundwater Well Installation, and Aquifer Testing, Confidential Client, Inyo County, CA: *Hydrogeologist*. Supervised aquifer pumping tests that were performed as part of a geotechnical investigation used to assess the constructability of the new dam site. As part of the aquifer testing scope two pumping wells were installed, the development of 11 existing monitoring wells were evaluated and three additional monitoring wells were installed at the Site. The purpose of the tests will be to establish aquifer properties in the area of the proposed dam, which can then be applied to designing a dewatering system that will maintain sufficient drawdown of groundwater (up to 20 to 30 feet) during the course of subsurface construction activities.

Design, Permitting, and Installation of Aquifer Storage and Recovery Wells, Chandler, AZ: *Hydrogeologist*. Supervised the installation of five ASR wells for the ongoing Ocotillo Recharge Project for the City of Chandler. Responsibilities for this ongoing project include the analysis of lithologic and geophysical data, hydrogeologic services in support of an Aquifer Protection Permit and an Underground Storage and Recovery Permit, and evaluation of the projected mounding effects of the proposed ASR wells.

Groundwater Well Installation, Confidential Client, Morenci, AZ: *Principal Hydrogeologist*. Provided technical oversight for the drilling, testing and design construction of two, 1,600 foot groundwater supply wells for a private mining facility. Provided review of the open hole geophysical logs to confirm producing zones, evaluated the borehole conditions for well completion, and evaluated and approved the final design of the well screen and casing.

Water Supply Wells Project, San Antonio, TX: *Hydrogeologist*. Assisted the San Antonio Water System with a multi-phased ASR project to provide large-scale water transfer and storage from the Seale and Randolph Pump Stations facility to the Carrizo Aquifer in south Bexar County, Texas. The ASR project used relatively new technology to store excess Edwards Aquifer water during rainy times for use during the dry south Texas summers.

The ASR project was the second largest in the country when it was completed. When Phase I of the ASR project began, it stored more than 3.5 billion gallons of water and included San Antonio's first drinking water treatment that will serve as the hub for receiving additional water supplies in the future. Phase Two of the project doubled the storage capacity to nearly 7.5 billion gallons. Performed the majority of the hydrogeological services associated with well design and site selection, design, bidding and construction oversight of 12 new 20-inch ASR wells and all associated well field infrastructure to increase the project capacity from 30 mgd to 64 mgd.

Hydrogeology

Drought Impact Analysis Study, Butte County Department of Water of Water Resources and Conservation, CA: *Principal Hydrogeologist*. As drought conditions continue to persist throughout the western United States, Butte County not only wants to assess the overall impact of the drought, including the evaluation of the economic impacts but also continue to develop efficient and systematic processes that results in short and long-term reduction in drought impacts to the citizens, economy and environment in Northern California. Eddy led the development of the Drought Impact Analysis Study (Study) to document 2021 conditions specifically related to water transfers, groundwater demand, groundwater levels, evaluate the economic impacts of stakeholders and provide recommendation on next steps to improve drought resiliency in the region.

Palermo Clean Water Consolidation Project – Phase 1, Butte County Water and Resource Conservation, CA: *Principal Hydrogeologist*. In 2021, LSCE performed the first phase of the Palermo Clean Water Consolidation Project for the Palermo community which is located south of Oroville, CA. For over a decade, the community has continued to face health and safety issues due to possible groundwater contamination issues. Through this project, the LSCE team identified the preferred project for consolidation, performed ta preliminary design and identified the ideal funding opportunity for the project through the Drinking Water State Revolving Fund. As drought conditions continue to persist throughout the western United States, Butte County not only wants to assess the overall impact of the drought, including the evaluation of the economic impacts but also continue to develop efficient and systematic processes that results in short and long-term reduction in drought impacts to the citizens, economy and environment in Northern California. Eddy led the development of the Drought Impact Analysis Study (Study) to document 2021 conditions specifically related to water transfers, groundwater demand, groundwater levels, evaluate the economic impacts of stakeholders and provide recommendation on next steps to improve drought resiliency in the region.

Salt and Nutrient Management Plan (SNMP), Twentynine Palms Water District, San Bernardino County, CA: *Principal Hydrogeologist*. Twentynine Palms Water District (District) is located in the high desert of Southern California, east of San Bernardino and northeast of Palm Springs. The District service area encompasses over 80 square miles and includes the City of Twentynine Palms. The District largely services single-family residences, with some multi-family residential units, commercial properties, and minor light industry. There is no community sewage system and wastewater is disposed of through individual septic tank and tile field disposal systems. The District is located within the boundaries of three groundwater basins, identified as the Twentynine Palms Groundwater Basin, the Joshua Tree Groundwater Basin, and the Dale Valley Basin by the California Department of Water Resources Bulletin 118-03. The District only pumps groundwater from and manages the Twentynine Palms Groundwater Basin and portions of the Joshua Tree Groundwater Basin. The SNMP was developed to provide the RWQCB with a water quality analysis based on the available data on salt and nutrients in the groundwater, and also outlines a plan to address key data gaps. While working for another consulting company, Eddy worked on the update of the District's plan, including responding to comments from the Colorado River Regional Water Quality Control Board (RWQCB) on the SNMP originally submitted in 2015. The RWQCB had concerns about the use of septic tanks in the Twentynine Palms area.

Water Quality Evaluation, Antelope Valley East Kern Water Agency, Palmdale, CA: *Hydrogeologist*. Working with AVEK to support the groundwater banks to provide water supply stability and water quality control. AVEK plans to recharge surplus SWP water during average-to-wet periods and withdraw groundwater during dry-to-drought periods. Provided hydrogeology and engineering services to evaluate water-bank performance using groundwater flow modeling, providing locations and designs for extraction wells and recharge basins, construction stormwater compliance, designing delivery systems and connections to water-supply lines, and estimating the TOC concentration of discharge water from the new extraction wells.

Groundwater Resource Assessment, City of Tehachapi, CA: *Hydrogeologist*. Concept Study evaluates the City's setting for potential to implement an indirect potable reuse (IPR) disinfected tertiary effluent groundwater replenishment reuse project (GRRP). The scope included a review of the regulatory regulations and review of the proposed concepts with DDW and the RWQCB with specific metrics and criteria presented to meet the criteria above as well as control of pathogenic organisms. Need for the project and reliability of quantified supply sources (local, imported and recycled water) was identified. Project developed to meet needs for BOR funding. Plans developed to secure additional funding sources like Prop 1 and SRLF.

Department of Water and Power EIR Revisions, Hansen Spreading Grounds, Sun Valley, CA: *Hydrogeologist*. To maintain the reliability of the City of Los Angeles' potable water supply and reduce dependence on imported sources of water, the City, as represented by the Los Angeles Department of Water and Power (LADWP) and the Los Angeles Department of Public Works Bureau of Sanitation (LASAN) and Bureau of Engineering (BOE), proposes to implement the Los Angeles Groundwater Replenishment (LAGWR) Project (the Proposed Project or Project) to replenish the San Fernando Groundwater Basin (SFB) with up to 30,000 acre-feet per year (AFY) of purified recycled water (purified water) from the Donald C. Tillman Water Reclamation Plant (DCTWRP). As a team member, assisted in the preparation of the Geology and Hydrogeology sections of the Environmental Impact Report, in accordance with the requirements of the California Environmental Quality Act (CEQA) and the State CEQA Guidelines.

Hydrogeological Analysis, Initial Study/Mitigated Negative Declaration, Anheuser Busch, Groundwater Replenishment and Reuse Project, Van Nuys, CA: *Hydrogeologist*. Prepared the Water Quality Section of the Initial Study/proposed Mitigated Negative Declaration (IS/MND) evaluating the potential environmental effects of the proposed Recycled Water System Expansion Project, in accordance with the requirements of the California Environmental Quality Act (CEQA) and the State CEQA Guidelines. AECOM is also designing and testing the injection well, bench testing the treatment train, and will be involved with further pilot testing.

SGMA Support, Indian Wells Valley, CA: *Principal Hydrogeologist*. Appointed to the Technical Advisory Committee (TAC) to the Indian Wells Valley (IWV) Cooperative Groundwater Management Group (CGMG). In 2014, municipal, agricultural, domestic, China Lake (US Navy), and mineral exploration groundwater use exceeded 25,000 acre-feet per year (AFY). In August 2015, the DWR designated IWV a critically over-drafted basin. Served as a trusted advisor in planning for implementation of the GSP through regional coordination.

Nance Canyon Partners, LP, Hydrogeological Input, Nance Canyon, Butte County, CA: *Principal Hydrogeologist*. Consulting services in support of Well Siting Project on 5,000 acres located near the City of Chico, California to site well(s) capable of providing water of sufficient quality and production to support grape vineyards, olive groves, and hops farming. Reviewed available historical project reports, public records, proposed project design to focus the site visit, determine possible data gaps, and aid in the planning level analysis. Conducted a site visit to stake three well locations.

Water Quality Evaluation, Antelope Valley-East Kern Water Agency (AVEK), Palmdale, CA: *Hydrogeologist*. Working with AVEK to support the groundwater banks to provide water supply stability and water quality control. AVEK plans to recharge surplus SWP water during average-to-wet periods and withdraw groundwater during dry-to-drought periods. Eddy is providing hydrogeology and engineering services to evaluate water-bank performance using groundwater flow modeling, providing locations and designs for extraction wells and recharge basins, construction stormwater compliance, designing delivery systems and connections to water-supply lines, and estimating the TOC concentration of discharge water from the new extraction wells.

Groundwater Modeling, SFPUC, San Francisco, CA: *Principal Hydrogeologist*. Reviewed a complex 3-D finite element groundwater flow model (FEFLOW) to simulate groundwater conditions during the construction, maintenance, and operation of the new Irvington Tunnel: Modeling objectives are: (1) Evaluate the influence of tunnel construction on groundwater system (groundwater drops); (2) Simulate groundwater inflows to tunnel during tunnel construction and maintenance; (3) Simulate groundwater recovery after tunnel construction, and (4) Evaluate the effectiveness of grouting along the length of the tunnel to promote increases in groundwater levels near the tunnel.

Groundwater Assessment and Modeling, Gulf Coast, TX, Lower Colorado River Authority: *Project Hydrogeologist*. Provided peer review support for the groundwater study and modeling of flow system in the lower portion

of the Colorado River Watershed. The purpose of the study was to evaluate well field alternatives to develop approximately 62,000 acres/year of additional groundwater supply for irrigation districts in the lower portion of the Colorado Watershed. The numerical model covered approximately 10,000 square miles and consisted of six model layers.

Beneficial Use Analysis, Santa Clara Valley Water District, Santa Clara, CA: *Hydrogeologist*. This project consisted of a study to evaluate the feasibility of extracting shallow groundwater in the Santa Clara Valley Groundwater Basin. The project focused on the Santa Clara and Coyote sub-basins. Based on the feasibility of groundwater extraction for selected areas, potential beneficial uses of extracted groundwater were evaluated. Rating criteria were developed that included sustainable pumping rates, quality of extracted groundwater and the necessity of treatment, program implementability, permitting issues, proximity to existing pipeline conveyance and infrastructure, and cost.

Beneficial uses that were considered included industrial, commercial, landscaping, irrigation, residential, stream augmentation and others. The study allowed the SCVWD to decide whether to proceed with a detailed planning study for specific beneficial use projects and to identify the most likely partners for such each project. The first phase of the project has been completed and the second phase will be implemented later in 2010.

Pure Water Monterey Project, Monterey Regional Water Pollution Control Agency, Monterey, CA: *Hydrogeologist*. The Kennedy/Jenks team has been involved in the Pure Water Monterey Project, working closely with MRWPCA, regulators, funding agencies, and stakeholders for several years. For the AWPF and pump station, Kennedy/Jenks led the 30% and is currently completing the final design for the injection field system, Kennedy/Jenks conducted injection well monitoring and performed the 30% and final design.

Groundwater Resource Modeling, Chandler, AZ: *Hydrogeologist*. Assisted in constructed a numerical groundwater flow model to evaluate additional recharge capacity for the proposed expansion of an existing direct injection recharge facility. The analysis of potential groundwater mounding included a review of existing hydrogeologic data and development of a three-dimensional groundwater flow model. The client was considering expanding its operations by construction of another facility and needed to know whether the existing injection system was capable of receiving additional flow. A 3-dimensional groundwater model (MODFLOW) was constructed covering approximately 60 square miles, and with 10 vertical model layers to simulate the Upper, Middle, and Lower Alluvial Units. The model successfully demonstrated that additional injection is possible at the site. The project was completed on schedule and under budget.

Groundwater Resource Assessment and Water Supply Study, Riverside County, CA: *Hydrogeologist*. Prepared a desktop water supply analysis for the Desert Quartzite Solar Project to assess the feasibility of obtaining the water supplies needed to support construction and operation of the Project. The water supply sources considered are: groundwater wells developed on the Project site; existing groundwater wells in the immediate vicinity of the Project site; and/or other off-site sources that would need to be conveyed (i.e., trucked) to the Project site. Eddy is also developing a regional (basin) scale groundwater flow model which included portion of the Colorado River, mountain front recharge, hundreds of miles drain and canal system, valley inflow and outflow gaps; calibrated the model with multiple hydraulic targets; evaluated groundwater pumping influence to the USGS accounting surface of the Colorado River basin.

Groundwater Resource Assessment, City of Modesto, CA: *Hydrogeologist*. Completed a drawdown analysis for two proposed production wells in the Del Rio Area. The purpose of the analysis was to evaluate the potential impacts on local groundwater levels in the area from pumping the Del Rio New Well and the Del Rio Replacement Well. Because both of these wells will be located within the active pumping area, the City of Modesto has chosen to conduct the analysis to determine impacts to groundwater that may result from pumping the proposed wells. Eddy utilized the USGS Northeastern San Joaquin Valley Groundwater Numerical Flow Model and converted it to a local-scale model.

Groundwater Resource Assessment, Fresno County Department of Public Works and Planning, Fresno County, CA: *Hydrogeologist*. Constructed a numerical groundwater flow model to evaluate additional recharge capacity for the proposed recharge facility. The analysis of potential groundwater mounding included a review of existing hydrogeologic data and development of a three-dimensional groundwater flow model. The applicant was considering using extracted groundwater (related to dewatering activities) to recharge the aquifer and needed to know whether the proposed recharge system was capable of receiving additional flow and what the impacts of the additional recharge would be on the local

hydrogeology. A 3-dimensional groundwater model (MODFLOW) was constructed covering approximately 60 square miles; the model successfully demonstrated that additional recharge is possible at the site. The project was completed on schedule and under budget.

Groundwater Evaluation and Hydrology Study, Fresno County Department of Public Works and Planning, Fresno County, CA: *Principal Hydrogeologist Conducted hydrology studies as technical support of an EIR for permitting the construction and operation of a proposed gravel mine operation*. The project consisted of a geologic/hydrologic study subject to review by the Fresno County Planning Department. Eddy conducted groundwater modeling to assess the impacts of mine operations on nearby groundwater and surface water resources, prepared technical reports and coordinated with regulatory agencies.

Hydrogeological Analysis, Los Angeles County, Los Angeles Department of Water and Power EIR Revisions, Hansen Spreading Grounds, Sun Valley, CA: *Hydrogeologist*. To maintain the reliability of the City of Los Angeles' potable water supply and reduce dependence on imported sources of water, the City, as represented by the Los Angeles Department of Water and Power (LADWP) and the Los Angeles Department of Public Works Bureau of Sanitation (LASAN) and Bureau of Engineering (BOE), proposes to implement the Los Angeles Groundwater Replenishment (LAGWR) Project (the Proposed Project or Project) to replenish the San Fernando Groundwater Basin (SFB) with up to 30,000 acre-feet per year (AFY) of purified recycled water (purified water) from the Donald C. Tillman Water Reclamation Plant (DCTWRP). As a team member, assisted in the preparation of the Geology and Hydrogeology sections of the Environmental Impact Report, in accordance with the requirements of the California Environmental Quality Act (CEQA) and the State CEQA Guidelines.

Hydrogeological Analysis SUNPOWER Corporation, Plant Water Supply Hydrogeologic Evaluation, Richmond, CA: *Hydrogeologist*. Reviewed a 3-D groundwater flow model to evaluate the net impact of groundwater pumping for a proposed solar power plant on the local aquifer. The model was utilized to evaluate the current and future groundwater flow conditions and the water budget of the aquifer system, and to predict the potential maximum drawdown in the vicinity of extraction wells and the impacted area of the project-specific pumping for various scenarios of plant operation conditions.

Regional Groundwater Flow Modeling of Folsom JFP Auxiliary Spillway Area, U.S. Army Corps of Engineers (USACE), Folsom, CA: *Hydrogeologist*. Reviewed a 3-D finite-element groundwater flow model using FEFLOW to simulate groundwater flow in the Folsom JFP Auxiliary Spillway Area. Model was used to estimate uplift pressures acting on the base and walls of the spillway, and to estimate the seepage rate into the spillway excavation. Analyzed results, prepared reports, and met with the U.S. Army Corps of Engineers.

New Irvington Tunnel Project, San Francisco Public Utilities Commission (SFPUC), San Francisco, CA: *Hydrogeologist*. Reviewed a complex 3-D finite element groundwater flow model (FEFLOW) to simulate groundwater conditions during the construction, maintenance, and operation of the new Irvington Tunnel. Modeling objectives are: (1) Evaluate the influence of tunnel construction on groundwater system (groundwater drops); (2) Simulate groundwater inflows to tunnel during tunnel construction and maintenance; (3) Simulate groundwater recovery after tunnel construction, and (4) Evaluate the effectiveness of grouting along the length of the tunnel to promote increases in groundwater levels near the tunnel.

Groundwater Evaluation, Sites Reservoir, Colusa County, CA: *Principal Hydrogeologist Assisted in preparing the Initial Alternatives Information Report, Plan Formulation Report, and worked on the Feasibility Study for the North of the Delta Offstream Storage (NODOS) investigation*. The Initial Alternatives Information Report identified the project study area; problems and needs; and developed a formal mission statement for the investigation. This report also studied the feasibility of four offstream storage sites that would be suitable for the offstream storage of water from the Sacramento River (Sites Reservoir, Colusa Reservoir, Thomes-Newville Reservoir, and Red Bank Reservoir). The primary objectives for the study are increased water supply and improving the survivability of anadromous fish and other aquatic species. Secondary objectives include recreation, hydropower, and flood control benefits.

The Plan Formulation Report refined the objectives for the study, developed and evaluated alternatives, and provided a preliminary assessment of the environmental consequences associated with the alternatives. The alternatives included modifications to existing fish screens and changes in the operation of Red Bluff Diversion Dam to benefit anadromous fish. New and expanded pumping facilities and a terminal regulating reservoir were proposed for the existing Glenn-Colusa

and Tehama-Colusa canals to convey water to and from the new reservoir. Expanding the existing canals to increase their capacity, installing a pipeline to further increase conveyance capacity, and using a diversion from Stony Creek Canal to divert water from Black Butte Reservoir into Sites Reservoir were also considered.

Project Hydrogeologist, Initial Feasibility Study of Industrial Water Resources for Peak Power Generation, Rough and Ready Island Center, Stockton, CA: *Principal Hydrogeologist Provided hydrogeologic review for this study*. The purpose of the study was to identify and screen the potential water supply sources available to meet future industrial water demand requirements.

The study required estimating future potable water demands and critically reviewing previous geologic and hydrogeologic work for the area.

Project Hydrogeologist, Groundwater Assessment, Northfield, Kentucky, Louisville: *Principal Hydrogeologist*. Conducted a groundwater resource study to assess if two new water wells could produce the projected water yields needed for operations. Compiled results and prepared an implementation plan for the contractor.

Hydrogeologist, Groundwater Assessment, US Naval Facilities Engineering Command Pacific, Guam and CNMI Military Relocation Supplemental Enviro, Guam, Guam: *Principal Hydrogeologist*. Senior peer-review hydrogeologist for 11.3-million gallons per day (MGd) expansion of the groundwater production network in northern Guam to support the US Marine Relocation from Okinawa, Japan to Guam. The final report estimated the total number of wells required to support the additional groundwater production requirements, provided a range of expected pumping rates, provided well design specifications, and recommended well field locations. The report provided a ranking of well locations based on costs per installed well capacity and various constraints such as impacts to military mission, quality of life, biological resources, cultural resources, and existing wells; and proximity to sinkholes and other karst features, faults, fuel lines, wastewater utilities, and explosive ordnance.

Public Outreach, Groundwater Water Usage Compliance, California High-Speed Rail Authority High-Speed Train (HST), Palmdale to Burbank Section, CA, High Speed Rail Authority: *Principal Hydrogeologist*. Responsible for budget, scope, and schedule oversight of the groundwater task under the Palmdale to Burbank segment of the HST project, alternatives design development with the CEQA/NEPA environmental planning process and the public outreach efforts for this highly complex, high-profile transportation project to link the Bay Area with Los Angeles. Developed strong working relationships with the all the JV task leads and JV management team, the California High-Speed Rail Authority, the Program Management Team, the Engineering Management Team, the Federal Railroad Administration, and the environmental and engineering task leads for the adjoining Burbank to Los Angeles section of the project.

Water Supply Investigation, Confidential Client, Pismo Beach, CA: *Principal Hydrogeologist*. Provided technical assistance and aquifer test analysis to evaluate the potential development of a groundwater resource. The purpose of the testing was to support a water supply analysis for the client's proposed Phase V development. In summary, the assessment indicates that the predicted groundwater level drawdown impacts for the proposed project requirements (approximately 13.28 acre feet per year [AFY] or 8.23 gpm on a constant average pumping rate basis) would result in negligible drawdowns and less than significant effects on nearby wells/users.

Water Supply Investigation, City of Marysville, OH: *Principal Hydrogeologist*. Provided technical assistance to investigate the feasibility of construction and operating an ASR facility for the City of Marysville using portable water (consisting of a combination of treated surface water and treated groundwater). The study considered the ability of the aquifer to store and release treated water as needed. Specific tasks included a hydrogeologic assessment, mounding analysis, water quality analysis and geochemical model screening, conceptual design and economic considerations, regulatory and water right issues.

Groundwater Well Evaluation, and Aquifer Testing, Confidential Client, Richmond, VA: *Hydrogeologist*. Supervised the evaluation of the well conditions of seven production wells, provided recommendations to help reduce future operation and maintenance costs and provided future well design guidance alternatives to reduce O&M costs. Specific tasks included an historical data evaluation of extraction wells, well

evaluation video surveys, pre-rehabilitation well and aquifer samples (geochemical and biological), sample result interpretations, well rehabilitation alternatives and recommendations (including procedure) and post-well testing.

Water Supply Investigation, Coalinga, CA: *Principal Hydrogeologist Provided technical assistance and aquifer test analysis to evaluate the potential development of a groundwater resource for a potential solar hybrid power plant*. The objective of the test was to evaluate the aquifer characteristics in order to estimate well yield and the affects long-term pumping may have on other wells in the vicinity of the proposed site. The proposed project was planning to use recycled water for fifty percent of the water demand and the remaining fifty percent would be from groundwater.

Production Well Assessment, Arizona, American Water Company, Phoenix, AZ: *Principal Hydrogeologist*. Worked on the Arizona-American Water Company Well Evaluation Project, a wellfield analysis that incorporated 25 wells in Sun City and 11 wells in Sun City West (36 wells), of which most were over 40 years old. Over 60% of the wells had problems associated with sand production, structural stability, low production, high pump costs, or water quality. The evaluation successfully characterized the primary cause of the well performance problems and provided recommendations for each well (clean, replace, rehabilitate, etc.).

Old Seaman's Club and Lower Tower, Cabras Island, Guam, Private Client: *Lead Hydrogeologist and technical advisor*. Responsible for evaluating the performance of natural attenuation of fuel hydrocarbons at both sites.

Lead Hydrogeologist, Former Adak Naval Complex, Adak, AK: *Lead Hydrogeologist and technical advisor*. Developed a groundwater flow, particle tracking and transport model and the data analysis and interpretation for site. He performed the groundwater modeling using MODFLOW, MODPATH and MT3D computer programs.

A Municipal water supply source was threatened with diesel range organic compounds from the Site. The contaminant plumes have impacted down-gradient properties and threaten other nearby domestic and agricultural water supply sources.

Landfill Project, Various sites in CA: *Project Hydrogeologist*. Developed a one-dimensional unsaturated zone leaching modeling process to support site closeout. The process involves modeling residual unsaturated zone contamination leaching to groundwater. Predicted groundwater impact is compared to groundwater threshold concentrations and the results are used to obtain regulatory closure. Several sites in Northern California have been closed and others are pending using this process.

Sharpe Army Depot (formerly DLA Defense Distribution Depot, San Joaquin Sharpe Site), Lathrop, CA: *Hydrogeologist*. Performed ITRs on all environmental program reports, work plans, and analytical and numerical modeling. He led the performance evaluation of the groundwater remedy and performed technical review the Sharpe Site Third Five-Year Review. He supported the preparation of the ESD for OU 1, which modified the groundwater remedy to include in situ treatment and LUCs. Eddy was involved with designing the investigation to determine whether natural attenuation of VOCs is occurring in the distal portions of groundwater plumes. Results from the investigation will determine whether MNA is a viable component to add to the groundwater remedy.

DLA Defense Distribution Depot, San Joaquin – Sharpe Site, Sharpe, CA, AFCEE: *Hydrogeologist*. Led technical reviews of all environmental annual monitoring, work plans, and interpretative reports. He guided the development of the CSMs for the site. He prepared the technical arguments that successfully achieved shutdown of 21 EWs on the Sharpe Site. Eddy presented the arguments in a focused feasibility study for adding MNA as a part of the groundwater remedy. He demonstrated that natural attenuation was occurring across the site, while EWs were hydraulically stabilizing VOC plumes. Eddy wrote the summary evaluation of historical water quality and potential threats to 30 privately owned potable water wells from contaminant plumes.

DLA Defense Distribution Depot, San Joaquin: *Principal Hydrogeologist Tracy Site, Tracy, CA, AFCEE- Led technical reviews of environmental annual monitoring, work plans, and interpretative reports*. He guided the development of the CSMs for the Tracy Site. He led technical team that created the proposed plan and ROD for the extraction and treatment remedy for dieldrin contamination beneath a portion of the Tracy Site. Eddy also participated in meetings with AFCEE and DLA managers and regulatory agency personnel to select a remedy for this controversial project.

Emergency Response, Nubieber, CA: *Principal Hydrogeologist*. Initiated an emergency response team to assess, characterize and clean-up a 4,000 gallon diesel spill that involved the derailment of seven locomotives.

The assessment consisted of removing liquid diesel; drilling and sampling several boreholes in the area of the former spill at the site. It was determined that the spill had impacted the soil and groundwater at the site. The site was characterized, remediated and closed within 10 months after the spill occurred.

Groundwater Resource Investigation, Chico, CA: *Supervising Hydrogeologist*. Installation, site characterization and general testing of 6, 200-foot exploratory test borings. Testing involved general lithological characterization using sample cuttings and geophysical logs. Utilized downhole video, optical televiewer, and flowmeter equipment to further characterize an existing agricultural well.

Sampling Experience

Chico Urban Area Nitrate Compliance Program (CUANCP), Butte County, CA: *Project Manager*. Managed the CUANCP, which involves semiannual to annual groundwater monitoring to evaluate trends in nitrate concentrations in groundwater beneath the Chico urban area. As the program has evolved over the past few years, the list of analytes has grown to include isotopic sampling of groundwater along with other key-indicator constituents of septic waste such as acesulfame-K. The isotopic relationships in groundwater beneath densely populated areas on septic systems compared to agricultural areas have become the focus for monitoring to evaluate impacts to the shallow aquifer. The monitoring program has shifted from tracking simple nitrate concentration trends, to evaluating trends in specific areas that should show nitrate concentration decreases with time due to destruction of septic systems, or where agricultural use contributes some portion of the nitrate loading seen in the monitoring results. The objective of the recent changes in the program is to facilitate long term tracking of related isotopes to distinguish fractionation of septic wastes in the shallow aquifer and a reduction of those wastes with time.

Nitrogen Isotope Study, Chico, CA: *Principal Hydrogeologist*. Designed an investigation program for Butte County to assess the source of elevated nitrate in local groundwater. The City was seeking data that would indicate whether elevated nitrate concentrations were attributable to leaky water conveyance piping or to agricultural practices. The study relied on collecting groundwater samples from strategic- located regional water wells and analyzing them for stable nitrogen isotopes and indicator parameters that are associated with municipal wastewater, agricultural fertilizers, and other livestock wastes.

Chico Urban Area Nitrate Compliance Program, Chico, CA: *Principal Hydrogeologist*. Primary report author and lead geochemist for the evaluation of stable isotopes of water, boron, and nitrate, as well as the presence/absence of caffeine and artificial sweeteners Ace-K and sucralose to determine the source of nitrate in groundwater.

Groundwater Sampling, Analysis and Reporting, Butte County, CA: *Principal Hydrogeologist*. Coordinated the sampling and analysis for the semiannual groundwater monitoring to evaluate trends in nitrate concentrations in groundwater beneath the Chico urban area in response to a Regional Water Quality Control Board Prohibition Order restricting the use of individual septic systems in high density residential areas. The project tracks nitrate concentration trends in groundwater in response to new sewer pipeline construction. As new residential connections are established and septic systems are abandoned, nitrate concentrations in shallow groundwater should decrease. Assist in the semiannual reporting.

Groundwater Well Installation, Chico Unified School District, Nord, CA: *Principal Hydrogeologist*. Provided technical oversight for the drilling, testing and design construction of one 900-foot groundwater supply wells for to support drinking water at the Nord School.

Provided review of the open hole geophysical logs to confirm producing zones, evaluated the borehole conditions for well completion, and evaluated and approved the final design of the well screen and casing. The identification of an elevated nitrate zone for potential isolation was also an issue at this site. Also oversaw the technical review of the well development and testing program, which included the successful development and aquifer testing of the well.

Nitrate Well Assessment, Town of Paradise, Paradise, CA: *Principal Hydrogeologist*. The project involved assessing the impacts to groundwater from septic systems. Assisted the Town in identifying potential contaminant sources. Preliminary data led to identifying data gaps, and installation of additional monitoring wells.

Chico Central Plume (aka Flair Cleaners Site) Department of Toxic Substances Control (DTSC) Project, Chico, CA: *Principal Hydrogeologist*. The project consists of intermediate and deep aquifer groundwater

extraction and treatment system expansion in Central Chico, CA. Groundwater that is contaminated with the dry-cleaning solvent PCE is extracted and treated with liquid granular activated carbon for unrestricted use.

Shallow groundwater is treated in-situ with the chemical oxidant, potassium permanganate. Responsible for semiannual sampling of site monitoring wells using the Passive Diffusion Bag (PDB) method. Prepared monthly and semiannual monitoring reports including all site maps.

Victor (20th Street) DTSC Project, Chico, CA: *Geologist*. Remedial investigation and design at a former aluminum manufacturing facility contaminated with toxic metals and TCE. Responsible for semiannual sampling of site monitoring wells using the PDB method. Prepared monthly and semiannual monitoring reports including all site maps. Responsible for supervising and conducting field drilling and sampling, installation, abandonment and development of groundwater monitoring wells, activities.

Southwest Plume Project, DTSC Chico, CA: *Principal Hydrogeologist*. Consists of characterization of the Southwest Plume, a PCE plume in groundwater originating in downtown Chico, CA. Primary duties included groundwater collection, tracking and shipment of samples. Also responsible for using GIS to determine groundwater characteristics including flow direction and contaminant distribution.

Groundwater Resource Assessment, California State University, Chico (CSU-Chico), CA: *Principal Hydrogeologist*. Conducted construction and testing of the CSU-Chico Irrigation Well Relining project. As part of this project, he prepared contractor bid documentation, prepared an engineer cost estimate, and also supervised all field related field activities including geophysical investigation consisting of downhole video camera, caliper log and gyroscopic surveys, temporary removal of existing irrigation infrastructure, installation of well casing and screen relining, installation of temporary test pump, aquifer testing tasks and installation of permanent pump. Prior to relining activities, the irrigation well produced 500 gallons per minute (gpm) (with 150 feet of drawdown) and post relining the wells produced 1,200 gpm (with only 25 feet of drawdown).

Lauren Wicks, PG

Senior Geohydrologist

Years of Experience: 12
Years with Geoscience: 11

Education and Professional Registrations/ Certifications:

- BS, Geology, Cal Poly Pomona
- BS, Integrated Earth Studies, Cal Poly Pomona
- MS, Hydrology, University of Idaho
- California Professional Geologist (No. 9531)

Lauren has more than a decade of experience with groundwater and environmental investigations performed for numerous municipalities, state agencies, and private clients throughout California. She performs groundwater flow and transport modeling, hydrogeologic investigations, groundwater basin and water quality studies, artificial recharge projects, and has experience in GIS mapping, watershed management, database development and management. Lauren can support your team by developing accurate and complete written reports and documents, and by performing quality data review and evaluation.

Summary of Experience:

Searles Valley Minerals: Indian Wells Valley Groundwater Basin Adjudication

Lauren is currently participating in a Technical Working Group (TWG) on issues relating to sustainable management of the Indian Wells Valley Groundwater Basin. Lauren's technical duties have included review of previous studies, including the area's GSP, and collaborative development of a safe yield estimate for the Basin. Lauren also supports project management, communication, and coordination with TWG members and provides technical assistance for our client on other related issues.

California American Water: City of Marina v. RMC Lonestar, Monterey County Superior Court

Lauren is part of a team of hydrogeologists providing technical support for a lawsuit against California American Water Company's Monterey Peninsula Water Supply Project, a proposed desalination project that would draw water from slant wells drilled under the ocean. Lauren has participated in technical meetings and workshops, assisted with the development of groundwater flow and solute transport models to evaluate potential project impacts, helped draft expert reporting and review technical work submitted by opposing parties, and assisted with preparation for administrative hearings by the State Water Resources Control Board Administrative Hearings Office.

KEY QUALIFICATIONS...

- More than a decade of experience supporting groundwater modeling, sustainable yield studies, and calculating water budgets—helping to provide more accurate and thorough models and studies in order to present options to improve basin sustainability
- Detail-oriented—helping to provide more accurate data and high-quality deliverables

10+

Lauren has provided supporting documentation and modeling results for more than 10 groundwater-related litigation cases

Lauren Wicks, PG
Senior Geohydrologist

California American Water: Monterey Peninsula Water Supply Project (MPWSP)

The MPWSP is a proposed ocean desalination project that would provide a much-needed alternative water supply to the Salinas Valley Groundwater Basin, which suffers from legacy seawater intrusion and overdraft. The project involves designing subsurface intakes for the proposed desalination plant, which will consist of a series of slant wells along the coast near Marina, CA. Lauren has been involved with technical support for the MPWSP since 2013. These efforts have included development, recalibration, and scenario runs of multiple generations of groundwater flow and solute transport models, support for the environmental impact review, permitting, operational planning, groundwater monitoring, and associated reporting. Lauren continues to support the project during the final slant well design phase and development of a long-term monitoring plan to satisfy California Coastal Commission's conditional project approval.

South Coast Water District: Doheny Ocean Desalination Project

As part of a planned ocean desalination facility, Geoscience is helping South Coast Water District develop and construct subsurface slant well intakes to provide feedwater to the desalination facility. The slant wells are traditional wells constructed at an angle that draw saline groundwater from beneath the ocean floor, eliminating impacts to marine life. Lauren supported reporting efforts and provided technical assistance during the project's feasibility studies and environmental impact review. She continues to support the project with modeling of anticipated project drawdowns during the well design phase.

Rainbow Municipal Water District: San Luis Rey Valley Groundwater Recovery Project

Lauren acted as Geoscience's project manager on a collaborative groundwater development feasibility study. The goal of the study was to assess the technical, economic, environmental, regulatory, and overall feasibility of an imported water return flow recovery project as a source for reliable water supply. Geoscience supported this effort by developing a surface water and groundwater flow model of the Bonsall Valley Subbasin to evaluate the amount of return flow potentially available for recovery, ran recovery model scenarios, developed a GIS-based site suitability analysis tool to identify parcels within the basin suitable for the proposed project, and provided cost estimates for well infrastructure.

Upper San Luis Rey Groundwater Management Authority: Groundwater Sustainability Plan for the Upper San Luis Rey Valley Groundwater Subbasin

Lauren led a team of geohydrologists to develop a Groundwater Sustainability Plan (GSP) for the Upper San Luis Rey Valley Groundwater Subbasin. She coordinated public outreach and communication between multiple stakeholders, directed the development of a surface water and groundwater flow model for the basin, and took the reporting lead. The GSP was approved by DWR and Lauren continues to provide support to the local GSA through coordination of routine monitoring and publication of annual reports.

Western Municipal Water District: Groundwater Sustainability Plan for Arlington Subbasin

The Arlington Subbasin has been classified as a low priority groundwater basin under the Sustainable Groundwater Management Act (SGMA). Despite this, WMWD reached out to Geoscience to proactively develop a GSP for the subbasin to facilitate ongoing sustainable management. Lauren was part of the team that developed this GSP and took an active role in drafting the GSP document. Since it is a low priority basin, DWR review is ongoing.

Santa Ana Watershed Project Authority: Santa Ana River Waste Load Allocation Model Update

As part of the effort to estimate the projected total dissolved solids and nitrate-N concentrations of the Santa Ana River recharge water and discharge at Prado Dam, Lauren helped develop model scenario assumptions for the HSPF surface water model and evaluate model output. She summarized the results and findings of each project task, directed the creation of supporting figures and tables, responded to questions and comments from reviewers, and attended meetings to provide project status updates and present results.

San Bernardino Valley Municipal Water District: Santa Ana River (SAR) Integrated Model

This joint effort involved a peer review by the USGS and other consulting firms and sought to understand how potential effects of proposed projects may impact surface flow in the SAR and groundwater levels for the entire Upper SAR Watershed. During this project, Lauren helped develop the Integrated SAR Model. She directed efforts to produce tech memos summarizing the approach, process, and results of each project task, helped develop assumptions for predictive model runs, and prepared meeting minutes. She was a point of contact for project communications with the different agencies involved in the project and presented results and project assumptions at progress meetings and model workshops.

Elsinore Valley Municipal Water District: Hydrogeologic Study of the Warm Springs Groundwater Subbasin

Lauren assumed a primary role in the hydrogeologic investigation of Warm Springs Subbasin to assess feasibility of the development of local groundwater resources to support EVMWD's Integrated Water Resources Plan. This study involved the quantification of groundwater storage and safe yield for the Warm Springs Subbasin, estimation of potential yield for future municipal supply wells, determination of water quality and water treatment needs, identification of potential sites for well development, and consideration of environmental and permitting requirements.

San Bernardino Municipal Water District: Joint GW Model for the Rialto-Colton GW Basin

Lauren prepared a tech memo comparing previous groundwater models covering the Rialto-Colton area to identify the strengths and weaknesses of each model and helped develop subsequent model construction and calibration reports. She aided in compiling a well database with locations, construction information, lithologic information, and water level/water quality data availability. Additional modeling and reporting support included summarizing model construction, calibration, and predictive scenario results.

Calleguas Municipal Water District: Las Posas Valley Groundwater Basin Adjudication

Lauren was involved in the Las Posas Valley Groundwater Basin adjudication, which adjudicated all groundwater rights in the basin and provided for sustainable management pursuant to SGMA. Lauren was part of a technical team of groundwater modelers who evaluated safe yield in the Las Posas Valley Groundwater Basin. In addition to providing technical review and assisting with the development of water budgets and expert reporting, Lauren supported project management, communication, and coordination efforts between our team and attorneys involved in a groundwater basin adjudication.

State of Texas: Texas v. New Mexico

Lauren supported project management, communication, and coordination between our team and attorneys involved in groundwater rights litigation appearing before the United States Supreme Court.

Olivenhain Municipal Water District: San Dieguito Valley Brackish Groundwater Desal Study

OMWD relies almost entirely on imported water from the California and Colorado Aqueducts and is attempting to diversify its supply and produce groundwater locally. Lauren supported efforts to determine the amount of groundwater available in the San Dieguito basin and helped assess the feasibility of an inland desalting system.

Los Angeles County Public Works: Antelope Valley Groundwater Basin Adjudication

Lauren assisted with Phases 3 and 4 of the 15-year adjudication process for the Antelope Valley. During these phases she provided support for expert testimony and the development of a physical solution. This included the update and recalibration of a USGS model to verify the proposed sustainable yield, development of model scenarios to test the physical solution, and evaluation of the effect of outside pumping on recharge in the basin.

Castaic Lake Water Agency: Salt and Nutrient Management Plan for Santa Clara River Valley East Subbasin

Lauren assisted with the development of a Salt and Nutrient Management Plan (SNMP) to determine ambient water quality conditions in the East Subbasin and to ensure that water management practices are consistent with water quality objectives. This SNMP provided a framework for water management consistent with the Water Quality Control Plan Los Angeles Region (Basin Plan). Development of the SNMP also included development of a surface water and groundwater monitoring plan.

Rancho California Water District: Surface and Groundwater Model of the Murrieta-Temecula Groundwater Basin

Lauren helped conduct GSFLOW, soluble transport, and sustainable yield model runs to prepare a groundwater model plan in support of the Cooperative Water Resource Management Agreement (CWRMA) between the United States, on behalf of Marine Corps Base Camp Pendleton, and RCWD. The purpose of CWRMA is to allow Camp Pendleton and RCWD to effectively manage water resources consistent with prior rights and entitlements while avoiding potential conflicts. Subsequently, Lauren helped evaluate and report on a systematic model update and refinement process.

Western Municipal Water District: TDS and Nitrate Lumped-Parameter Model for the Riverside and Arlington Groundwater Basins

Lauren helped create a lumped-parameter model to meet the groundwater basins' monitoring and reporting requirements and assess compliance under various scenarios. She also helped prepare various technical memoranda throughout the modeling process.

Riverside Public Utilities: North Orange Well Field Evaluation, Well Siting, and Non-Potable Water Supply Assessment

Lauren helped interpret model results and prepared a technical memorandum summarizing the impacts of new potable and non-potable wells on the current North Orange well field wells.

Chino Basin Desalter Authority: Chino Basin Groundwater Model Update

Lauren helped refine the Chino Basin Groundwater Model to evaluate impacts from proposed CDA wells. She also compiled data, updated model files, created model datasets, and calibrated the groundwater model.

Jurupa Community Services District: Geohydrologic Analysis of Future Groundwater Production

Lauren supported efforts to complete a geohydrologic analysis to determine future groundwater production potential.

East Valley Water District: Wastewater Reclamation Plant Engineering Report

Lauren helped produce technical memorandums summarizing the predicted impacts of recharging recycled water at various recharge sites as part of the proposed Sterling Natural Resource Center. The analysis included determining the amount of underflow available as diluent water and calculating travel times for recycled water recharge and recycled water contribution at nearby production wells.

GEOSCIENCE

Johnson Yeh, PhD, PG, CHG

Principal Modeler

Years of Experience: 34
Years with GEOSCIENCE: 34
Location: San Dimas, CA

Education and Professional Registrations/ Certifications:

- BS, Geology, National Taiwan University
- MS, Geology, National Taiwan University
- PhD, Sedimentology, University of Southern California
- California Professional Geologist (No. 6371)
- California Certified Hydrogeologist (No. 422)

For nearly 35 years, Johnson has managed groundwater modeling efforts, hydrogeologic investigations, groundwater basin and water quality studies, and artificial recharge projects. Johnson performs detailed statistical analysis of various types of data and has been the lead modeler on many high-profile projects—in fact, he was instrumental in helping to resolve one of the largest groundwater rights cases in California and developed models that helped a water district client successfully avoid a costly litigation. Johnson also taught a graduate level groundwater modeling course at the University of Southern California and his experience and knowledge enables him to develop detailed and thorough groundwater models that will help inform future groundwater management strategies and decisions. Johnson has also worked extensively with MODFLOW and has been helping the USGS beta-test GSFLOW, a combined surface and groundwater model based on MODFLOW and PRMS.

KEY QUALIFICATIONS...

- Specializes in watershed and groundwater modeling
- Assists USGS in testing GSFLOW model code - helping to keep groundwater models up-to-date
- Experience supporting more than 30 groundwater-related litigation cases

Specific Project Experience:

Searles Valley Minerals: Indian Wells Valley Groundwater Basin Adjudication, 2020-Present

Johnson is the technical lead for Geoscience's involvement in the Indian Wells Valley Technical Working Group. The group has worked collaboratively to evaluate basin conditions, groundwater storage, pumping , and a technically defensible estimate of safe yield to support sustainable basin management.

California American Water: Monterey Peninsula Water Supply Project (MPWSP), 2008-Present

The purpose of the Monterey Peninsula Water Supply Project (MPWSP) is to relieve the pressure on the local municipal water supply aquifer, and create new, local water supplies by providing desalinated water to northern Monterey County. The MPWSP will also help reduce and remediate seawater intrusion from overdraft conditions, which has been an ongoing water quality issue since the 1930s. Since the start of the project in 2008, Johnson and Geoscience have provided various services including the hydrogeologic characterization of the area, groundwater model development and modeling to create the aquifer testing program, a gap analysis, and exploratory drilling. Johnson was the lead modeler and led the efforts to update the three-dimensional variable density flow and solute transport model for the North Marina Area in 2008 and constructed a focused groundwater model near the CEMEX gravel plant in Marina, CA (NMGWM). Johnson is currently serving as a technical expert for Cal-Am during the City of Marina v. RMC

30+

Johnson has provided groundwater modeling to support our clients in more than 30 litigation cases.

Lonestar lawsuit against the MPWSP. The case has been referred to the California State Water Resources Control Board Administrative Hearings Office. During this process, Johnson has worked collaboratively with other Cal-Am experts to develop a series of expert reports and has led the development of a steady state groundwater flow and solute transport model to answer specific questions posed by the Administrative Hearings Officer and has provided testimony at multiple hearings. He is also supporting final slant well planning for the MPWSP through model analysis.

Western Municipal Water District: Riverside-Arlington Basin Groundwater Sustainability Plan, 2021-2022
Johnson oversaw modeling efforts to develop a GSP for the Riverside-Arlington Basin. The Basin is classified by DWR as a low priority basin and is one of the District's primary sources of local water supply. Johnson worked in conjunction with our team and the District to complete all models necessary to complete a compliant GSP.

Calleguas Municipal Water District: Las Posas Valley Groundwater Basin Adjudication, 2019-2022
Johnson was the lead technical support for Geoscience's collaborative participation in the Las Posas Valley adjudication, which focused on the evaluation of the basin's safe yield.

Yucaipa Valley Water District: Recycled Water Use Evaluation using the Gateway Sub-basin Focused Groundwater Model, 2018-2020
Johnson was the senior modeler overseeing the construction of a groundwater model used to predict the impacts of recycled water spreading on groundwater quality and to downstream municipal wells.

San Bernardino Valley Municipal Water District: Santa Ana River Integrated Model, 2017-2021
Johnson led our team in an effort to use existing groundwater and surface water models to develop an integrated groundwater model using MODFLOW for the upper Santa Ana River. The resulting Upper SAR Integrated Model (or Integrated SAR Model) was used to determine what factors may contribute to declines in SAR flows, and assess cumulative effects on SAR surface flows and groundwater levels.

Los Angeles County Public Works: Antelope Valley Groundwater Basin Adjudication, 2008-2016
Johnson was the lead technical support for Geoscience's participation in Phases 2 through 4 of the Antelope Valley adjudication. Using a USGS MODFLOW model, Johnson analyzed water level elevations and flow vectors in selected years, quantified groundwater underflow from the West Antelope Subbasin to the Lancaster Subbasin and evaluated the impacts of no-flow from the West Antelope area. Subsequently, he updated and recalibrated the model to correct technical deficiencies found during review. Johnson then used the updated model to verify estimates of safe yield, support the development of a physical solution, and evaluate the effect of outside pumping on recharge in the basin.

Santa Ana Watershed Project Authority: Santa Ana River Waste Load Allocation Model Update, 2016-2019
Johnson led efforts to update the Santa Ana River Waste Load Allocation Model, which is used by multiple agencies to assess water quality throughout the watershed. Model scenarios and assumptions were developed as part of the effort to estimate the projected total dissolved solids and nitrate-N concentrations of the Santa Ana River recharge water and discharge at Prado Dam. Once completed, Johnson oversaw the waste load allocation scenario runs and evaluations for major stream segments in the watershed.

Elsinore Valley Municipal Water District: Hydrogeological Investigation of the Warm Springs Subbasin, 2016-2017
Johnson led groundwater modeling efforts to complete a hydrogeologic investigation of the Warm Springs Subbasin. The modeling was used to help quantify the groundwater storage and safe yield of the Warm Springs Subbasin and estimate yield for future municipal supply wells.

City of Pismo Beach/WSC Inc.: Regional Groundwater Sustainability Project (RGSP), 2016-Present
The RGSP is a regional recycled water project that will help reduce the risk of seawater intrusion and help improve sustainability for the region's water supply. Johnson led efforts to evaluate existing characterization studies, groundwater models, and water quality data. He also constructed and calibrated an expanded MODFLOW groundwater model to evaluate injection and extracting scenarios and conduct an

anti-degradation analysis. He is continuing to support the project by running predictive model scenarios.

Rancho California Water District: Surface and Ground Water Model of the Murrieta-Temecula Ground Water Basin, 1995-Present
Johnson was the lead modeler to create an Integrated Ground Water and Streamflow Model. Johnson worked with a technical panel that included, RCWD, USGS, U.S. Marines, Camp Pendleton, Stetson Engineers, Santa Margarita Watermaster, and Geoscience. The technical was formed to avoid litigation between RCWD and the Camp Pendleton Marine Base. Johnson is responsible for preparation of the model and analysis of the results.

City of Oceanside: Mission Basin Model Update and Evaluation of Indirect Potable Reuse, 2015-2016
Johnson oversaw efforts to update and refine a groundwater model used to predict the impacts of recycled water spreading and injection on groundwater quality and to downstream municipal wells. In addition, the updated model was used to evaluate the impacts on threshold water levels in the Mission Basin to stay within permit constraints

San Bernardino Valley Municipal Water District: SBBA Flow Model Update for Artificial Recharge, 2011
Johnson updated the SBBA Refined Basin Flow Model and quantified the maximum amount of artificial recharge the SBBA could accept in water year 2012.

Brownstein Hyatt Farber Schreck, LLP: Cadiz Groundwater Conservation and Storage Project Phase I, 2011
Johnson ran conservation scenarios and helped draft a technical memo outlining the detailed scenarios run with the Cadiz model for their storage project near the Mojave Desert.

City of Riverside: Colton Soil Safe Project, 2011
Johnson provided comments on the EastStar Ground Water Model used for the Colton Soil Safe Project.

West Basin Municipal Water District: West Coast Basin Barrier Project Model Update, Addendum and Project Engineering, 2011
Johnson provided updates to the groundwater model for the West Coast Basin Barrier Project (LARWQCB Order. No. R4 2006 0069). In addition, the project included the drafting of an addendum to the 2010 Model Update Report and the engineering of the injection wells for the project.

Terra-Gen Power, LLC: DBS&A Revised GW Flow Model, 2011
Johnson provided comments on the DBS&A Revised Groundwater Flow Model.

Western Municipal Water District: Impact of Recharge on Contaminant Plumes and Modeling, 2010
Johnson was the project manager and lead ground water modeler to assess and model the area around the Riverside-Corona Feeder, to show the potential future impact of an initial operation scenario on the ground water levels and ground water quality in the San Bernardino Basin Area.

City of Riverside: Groundwater Monitoring for Flume 7 Well Impacts, 2010
Johnson provided groundwater monitoring results for the evaluation of impacts from pumping the proposed Flume 7 well.

Raymond Basin Management Board: Predictive Groundwater Modeling for Potential Storage, 2010
Johnson provided updated results of predictive ground water modeling for the Pasadena Groundwater Storage Program in the Raymond Basin.

Western Municipal Water District / City of Ontario / Jurupa Community Services District: Preliminary Drinking Water Source Assessment, 2009
Johnson was responsible for preparing a preliminary drinking water source assessment and protection documents for the CDA Wells I-16 and I-18 in the Chino Basin.

Western Municipal Water District: Groundwater Modeling, 2009
Johnson was responsible for the groundwater modeling of Riverside-Corona Feeder Project Conjunctive Use Scenarios in San Bernardino Valley.

West Basin Municipal Water District: Groundwater Modeling, 2009

Johnson was involved in the production of a 2008 Model Update Report for the West Coast Basin Barrier Project.

U.S. Army Corps of Engineers: Groundwater Modeling, 2009
Johnson developed a ground water flow model modification for the San Bernardino Lake and Streams Feasibility Study.

Marina Coast Water District: Groundwater Modeling Scenario 4f, 2009
Johnson conducted a North Marina Groundwater Model Evaluation of Regional Project Scenario 4f.

City of San Juan Capistrano: Local Water Supply Analysis, 2009
Johnson assisted in providing the City of San Juan Capistrano with a local water supply analysis.

Atascadero Mutual Water Company / City of Atascadero: Groundwater Flow & Transport Modeling, 2009
Johnson was responsible for the development of a ground water flow and solute transport model for a portion of the Atascadero Subbasin.

San Bernardino Valley Municipal Water District: Remediation Strategies for Ground Water Contamination, 2008-2009
Johnson was the project manager and lead ground water modeler to refine previous USGS models to better understand, analyze, and evaluate remediation alternatives related to ground water contamination problems.

Chino Basin Desalter Authority: Chino Desalter System Projects, 2008
Johnson developed a detailed analysis of the Chino Ground Water Basin that included a three-dimensional numerical ground water flow model (MODFLOW). A separate analysis was also conducted to assess potential water quality changes in project and existing wells as a result of the project.

San Bernardino Valley Municipal Water District: Groundwater Modeling and Regional Water Management Plan, 2008
Johnson assisted in the production of a San Bernardino Basin Area Groundwater Model 2009 Regional Water Management Plan.

Municipal Water District of Orange County: Subsurface Intake Feasibility Assessment, 2008
Johnson assisted in preparing a subsurface intake feasibility assessment for Task 3 for the proposed Dana Point Desalination Facility.

Western Municipal Water District: Groundwater Modeling, 2007-2008
Johnson prepared a ground water flow conceptual model for the Murrieta Valley area to determine conjunctive use scenarios.

SunCal Companies: CIM Wellfield Impact Evaluation, 2007
Johnson was responsible for the evaluation of potential impacts to the CIM Well Field from operation of the Eucalyptus Park Well - College Park Project in Chino, CA.

RBF Consulting and Vista Serena: Groundwater Well Pumping Evaluation, 2007
Johnson analyzed potential ground water drawdown from proposed production wells located on Santa Maria Beach in Cabo San Lucas, Mexico.

Raymond Basin Management Board: Groundwater Modeling, 2007
Johnson provided results of predictive ground water modeling for the Pasadena Groundwater Storage Program in the Raymond Basin.

Jurupa Community Services District: Potential Groundwater Production Evaluation, 2007
Johnson prepared a geohydrologic analysis of potential future ground water production in the Jurupa Community Services District.

Carollo Engineers and Water Replenishment District of Southern CA: Source Water Assessment, 2007
Johnson conducted a source water assessment for the I-105 Dewatering Wells.

Johnson Yeh, PhD, PG, CHG
Principal Modeler

Western Municipal Water District: Riverside-Corona Feeder Well Field Siting and Basin Response Study, 2006
Johnson assisted in the modeling for the Riverside-Corona Feeder Well Field Siting and Basin Response Study.

San Bernardino Valley Municipal Water District: Groundwater Model Modifications, 2006
Johnson was responsible for the preparation of proposed data collection and modifications to the USGS Basin Flow Model.

Rancho California Water District: Groundwater Modeling, 2006
Johnson was responsible for modeling the ground water contribution to the Santa Margarita River near Temecula Station (Temecula Gorge) streamflow.

Rancho California Water District, Groundwater Model Update, 2006
Johnson updated the Murrieta-Temecula Surface and Ground Water Model.

Municipal Water District of Orange County: Subsurface System Intake Feasibility Assessment, 2006
Johnson assisted in providing information to complete the Subsurface System Intake Feasibility Assessment - Task 4 Report.

Griffin Industries: Pole Creek Debris Basin - Subdrain System Effectiveness Analysis, 2006
Johnson assisted in providing information to complete the Pole Creek Debris Basin - Subdrain System Effectiveness Analysis.

Confidential: Groundwater Flow and Transport Modeling, 2006
Johnson conducted a geohydrologic evaluation and ground water flow and transport model of potential future impacts associated with a contamination plume and surrounding municipal supply wells.

Arizona Water Company: Groundwater Modeling, 2006
Johnson assisted in conducting a geohydrologic evaluation and ground water flow model near the City of Bisbee, Arizona.

David Evans & Associates / Metropolitan Water District of So. California: Groundwater Modeling, 2005-2006
Johnson was responsible for the development of a ground water model for the proposed East Recreation Lake near Diamond Valley Lake.

Big Bear Area Regional Wastewater Agency: Groundwater Modeling, 2005-2006
Johnson led the analysis of artificial surface recharge-induced ground water flow through finite difference model simulations for the proposed green spot site.

Raymond Basin Management Board: Groundwater Modeling, 2005
Johnson was responsible for running predictive simulations for the Raymond Basin ground water flow model.

Tetra Tech / San Diego County Water Authority: Groundwater Modeling, 2004
Johnson was responsible for reviewing and providing comments for Mission and Bonsall Basins Groundwater Models in Oceanside.

Raymond Basin Management Board: Groundwater Modeling, 2004
Johnson developed, constructed and calibrated a comprehensive ground water flow model for the Raymond Basin. The model was used as a tool to make predictive analyses of potential changes in ground water levels and movement of contaminated ground water under various conjunctive use scenarios.

Carollo Engineers / City of Ontario: San Bernardino County, CA, 2004
Johnson conducted a wellhead treatment study and created separate solute transport models for nitrate, total dissolved solids and perchlorate of a municipal water supply well near Ontario. This also included a ground water flow model which will be used for further assessment of other management issues.

Black & Veatch: Groundwater Modeling, 2004
Johnson was responsible for reviewing and providing comments for the Hayfield Groundwater Model.

Johnson Yeh, PhD, PG, CHG
Principal Modeler

Big Bear Area Regional Wastewater Agency: Hydrogeological Services, 2002-2004
Johnson conducted an initial geohydrologic review, prepared a pilot test work plan, and a ground water flow model for an area near Big Bear Lake to assess the feasibility of a potential future full-scale artificial recharge program.

Jurupa Community Services District: Chino Basin Artificial Recharge Evaluation, 2002
Johnson led modeling efforts to modify a previously established groundwater flow model of the Chino Basin to incorporate solute transport and assess the impact of artificial recharge operations planned by the Chino Basin Watermaster on Nitrate and TDS concentrations in the southern Chino Basin.

City of Placentia / Steven Andrews Engineering: Dewatering for the Orangethorpe Rail Corridor Lowering Project, 2000-2003
Johnson conducted a geohydrologic investigation and led groundwater modeling efforts to develop a MODFLOW groundwater model to investigate the effectiveness of dewatering wells in lowering historically high ground water levels near a 5-mile section of lowered railroad tracks.

Metropolitan Water District of Southern California, (Best, Best & Krieger, outside counsel): Riverside County, CA, 1994-2003
Johnson assisted in preparing expert witness evidence to the Metropolitan Water District of Southern California on Ground Water Issues Relating to Land Transfers, Water Supply, and Water Quality in Conjunction with the Diamond Valley Lake Project (formerly Eastside Reservoir). He assisted in the evaluation of the hydrology of the basin, monitored the water levels and water quality of the basin, and advised Metropolitan with respect to issues with private landowners. He also assisted in preparing court exhibits (including a physical ground water model) for a jury trial on ground water recharge and water supply issues with respect to the construction of Diamond Valley Lake.

Jurupa Community Services District: Stringfellow Perchlorate Plume Impact Analysis, 2002
Johnson assisted in the geohydrologic analysis of potential impacts of the Stringfellow Perchlorate Plume on the Proposed Jurupa Community Services District Ion Exchange Facility.

Black & Veatch / City of Downey: Groundwater Modeling and Geohydrologic Analysis, 2002
Johnson conducted a geohydrologic analysis and ground water flow model of a portion of Interstate 105.

Rancho California Water District and Camp Pendleton: Groundwater Modeling, 1995-2002
Johnson developed a three-layer ground water model incorporating ground water/surface water stream interaction.

Caltrans: Devil's Slide Tunnel, Geohydrologic Analysis and Ground Water Flow Model, 2001
Johnson designed, constructed and calibrated steady-state and transient 10-layer MODFLOW flow models in fractured and faulted hard rock terrain to simulate potential tunnel groundwater inflow during construction and at equilibrium of a proposed double-bore tunnel near Devil's Slide. The flow model simulated flow in several different rock types including faulted crystalline rock and folded turbidite sequences.

West Valley Water District (formerly West San Bernardino Co. Water Dist): Wellfield Interference Analysis, 2001
Johnson conducted a geohydrologic study and well field interference analysis for two proposed municipal water supply wells.

Santa Ana Watershed Project Authority / RBF Consulting: Groundwater Modeling, 2001
Johnson conducted a geohydrologic analysis and ground water flow model of the proposed Chino Desalter System Projects Area near Ontario.

Confidential: Groundwater Modeling, 2001
Johnson developed a ground water flow model of a scenario in the Temecula region.

Cadiz, Inc.: Current Model Refinements, 2000
Johnson assisted in the preparation of a Technical Memorandum of Current Model Refinements with Geoscience and Bill Hutchison in Cadiz Valley.

Johnson Yeh, PhD, PG, CHG
Principal Modeler

Cadiz, Inc.: Storage and Supply Program Evapotranspiration Estimates, 2000
Johnson assisted in the preparation of Cadiz Groundwater Storage and Dry-Year Supply Program and Dry Lake Evapotranspiration Estimates.

Cadiz, Inc.: Groundwater Modeling, 1995, 1998-2000
Johnson developed a ground water flow, transport and subsidence model of a portion of Fenner, Bristol and Cadiz Basins.

Metropolitan Water District of Southern California: Groundwater Modeling, 1999
Johnson developed ground water model scenarios of the West and East Dam Seepage and pumping requirements necessary to keep proposed recreational lakes dewatered for the Diamond Valley Lake (formerly Eastside Reservoir) Project, near Hemet.

Rancho California Water District: Streamflow Modeling, 1998
Johnson was responsible for the modeling of the streamflow at Temecula Gorge - No Pumping and No Vail Dam.

Metropolitan Transit Authority / JMA: Groundwater Modeling, 1998
Johnson developed an analytical model to determine the effects of construction of the Metropolitan Transit Authority's Hollywood Tunnel on ground water and springs in the area.

RBF Consulting: Groundwater Modeling, 1996-1997
Johnson assisted with the City of Arcadia Water Infrastructure Restoration Study Task 5.7 for the Santa Anita And Sierra Madre Watershed Hydrologic Models.

Orange County Water District: Groundwater Modeling and TCE Contamination Impacts, 1996
Johnson assisted with a review of ground water modeling and potential impacts of TCE contamination – Interim Action Feasibility Study near El Toro.

Black & Veatch: Sensitivity Testing and Groundwater Level Control Plan, 1996
Johnson assisted in performing a sensitivity test for foundation dewatering and ground water level control plan for the Diamond Valley Lake (formerly Eastside Reservoir) Project.

Black & Veatch: Groundwater Modeling, 1996
Johnson assisted in the development of a ground water model for seepage impacts in the East Dam area of the Diamond Valley Lake (formerly Eastside Reservoir) Project.

Best, Best & Krieger LLP: Temecula Groundwater Storage Estimates, 1996
Johnson assisted in the calculation of ground water storage change estimates in Temecula.

Orange County Water District: Groundwater Modeling, 1991-1996
Johnson was responsible for assisting in the development of various ground water basin models for the Orange County Water District, including the Well field interference study of the South Santa Ana Well Field and the computer simulation model of the Talbert Gap Seawater Barrier Project.

City of Big Bear Lake Department of Water and Power: Big Bear Lake Water Quality Technical Information, 1993-1995
Johnson was responsible for assisting in the preparation of technical information for Decuir & Somach involving relationships between ground water extractions, quality and inflow/outflow from Big Bear Lake.

Metropolitan Water District of Southern California: Groundwater Modeling, 1992-1995
Johnson assisted in the development of a model under a grant from the U.S. EPA. Results of project were used as the standards for Wellhead Protection Program.

Metropolitan Water District of Southern California: Azuza Landfill Litigation Support, 1995
Johnson assisted in the preparation of expert witness testimony and exhibits for the Metropolitan Water District of Southern California in support of the Azusa Landfill Litigation.

San Bernardino Valley Water Conservation District: Bunker Hill Storage Evaluation, 1994
Johnson assisted in the calculation of Bunker Hill Basin storage calculations and construction of a

MODFLOW ground water model to determine impacts from lowering ground water levels in a portion of the pressure Zone.

West Valley Water District (formerly West San Bernardino Co. Water Dist): GIS Particle Tracking System, 1993-1994
Johnson assisted in the development of a Geographic Information System incorporating particle tracking capture zone models -- to track water quality and other information in the protection of wells.

County of Riverside: Groundwater Modeling, 1993-1994
Johnson was responsible for assisting in the development of a Ground water basin flow model of the Elsinore Valley Municipal Water District.

Metropolitan Water District of Southern California: Water Contamination Evaluation, 1992-1994
Johnson assisted in the evaluation of potential for ground water and surface water contamination from release of Radionuclides from proposed Ward Valley Low Level Radioactive Waste Disposal Facility, Needles.

Orange County Water District: Groundwater Modeling, 1993
Johnson was responsible for assisting in the development of a Ground Water Model of the Talbert Gap Sea Water Barrier and Extraction Well Field to determine increases in Chloride and TDS.

RANPAC Communities: Groundwater Modeling, 1992
Johnson was responsible for assisting in the development of a ground water flow model for the evaluation of ground water resources in the Liberty Project Area.

City of Big Bear Lake Department of Water and Power / California Regional Water Quality Control Board: Water Quality Evaluation, 1992
Johnson participated in a water quality evaluation for purposes of Basin Plan Amendment in the Big Bear Ground Water Basins.

West Valley Water District (formerly West San Bernardino Co. Water Dist):Geohydrologic Evaluation, 1991
Johnson participated in the geohydrologic and geochemical evaluation and Investigation of Nitrate and TCE problems in the southern service area.

Rancho California Water District: Riverside County, CA, 1991
Johnson was responsible for assisting in the development of a ground water flow and solute transport model of the Lower Pauba and Wolf Valley Areas, in conjunction with the Basin Plan Amendment.

Rancho California Water District: Riverside County, CA, 1991
Johnson was responsible for assisting in the development of the model of present and potential artificial recharge capability of Pauba Valley facilities, near Temecula.

Metropolitan Water District of Southern California, 1991
Johnson participated in the investigation of potential ground water contamination due to Leachate Migration from the Sunshine Canyon Landfill.

City of Big Bear Lake Department of Water and Power: Well Field Groundwater Modeling, 1991
Johnson was responsible for assisting in the development of the Ground water model of the Division and Lakeplant Well Fields.