



**SPECIAL NOTICE REGARDING
CORONAVIRUS DISEASE 2019 (COVID-19)
AND PARTICIPATION IN PUBLIC MEETINGS**

On March 4, 2020, Governor Newsom declared a State of Emergency resulting from the threat of COVID-19. Governor Newsom issued Executive Order N-25-20 (3-12-20) and Executive Order N-29-20 (3-17-20) which temporarily suspend portions of the Brown Act relative to conducting public meetings. Subsequent thereto, Governor Newsom issued Executive Order N-33-20 (3-19-20) ordering all individuals to stay at home or at their place of residence. Accordingly, it has been determined that all Board and Workshop meetings of the San Bernardino Valley Municipal Water District will be held pursuant to the Brown Act and will be conducted via teleconference. There will be no public access to the meeting venue.

**BOARD OF DIRECTORS WORKSHOP - ENGINEERING
TUESDAY, JUNE 8, 2021 – 2:00 P.M.**

PUBLIC PARTICIPATION

Public participation is welcome and encouraged. You may participate in the June 8, 2021, meeting of the San Bernardino Valley Municipal Water District online and by telephone as follows:

**Dial-in Info: (877) 853 5247 US Toll-free
Meeting ID: 753 841 573
PASSCODE: 3802020**

<https://sbvmwd.zoom.us/j/753841573>

If you are unable to participate online or by telephone, you may also submit your comments and questions in writing for the District's consideration by sending them to comments@sbvmwd.com with the subject line "Public Comment Item #" (insert the agenda item number relevant to your comment) or "Public Comment Non-Agenda Item". Submit your written comments by 6:00 p.m. on Monday, June 7, 2021. All public comments will be provided to the Chair and may be read into the record or compiled as part of the record.

IMPORTANT PRIVACY NOTE: Participation in the meeting via the Zoom app is strongly encouraged. Online participants MUST log in with a Zoom account. The Zoom app is a free download. Please keep in mind: (1) This is a public meeting; as such, the virtual meeting information is published on the World Wide Web and available to everyone. (2) Should you participate remotely via telephone, your telephone number will be your "identifier" during the meeting and available to all meeting participants; there is no way to protect your privacy if you elect to call in to the meeting.



SAN BERNARDINO VALLEY MUNICIPAL WATER DISTRICT
380 E. Vanderbilt Way, San Bernardino, CA 92408

BOARD OF DIRECTORS WORKSHOP - ENGINEERING

AGENDA

2:00 PM Tuesday, June 8, 2021

CALL TO ORDER

Chairperson: Director Harrison

Vice-Chair: Director Hayes

1) INTRODUCTIONS

2) PUBLIC COMMENT

Any person may address the Board on matters within its jurisdiction.

3) SUMMARY OF PREVIOUS MEETING

3.1 May 11, 2021, Meeting (Page 3)

[Summary Notes BOD Workshop - Engineering 051121](#)

4) DISCUSSION ITEMS

4.1 Upper Santa Ana River Integrated Model: Results and Lessons Learned (Page 10)

[Staff Memo - Upper Santa Ana River Integrated Model: Results and Lessons Learned](#)

4.2 Consider Scope of Services with Scheevel Engineering for Professional Engineering Services and Engineering Staff Augmentation (Page 12)

[Staff Memo - Consider Scope of Services with Scheevel Engineering for Engineering Consulting and Staff Augmentation](#)

[Scope for Professional Engineering Consulting & Project Management Services by Scheevel Engineering dated June 1, 2021](#)

5) FUTURE BUSINESS

6) ADJOURNMENT

PLEASE NOTE:

Materials related to an item on this Agenda submitted to the Board after distribution of the agenda packet are available for public inspection in the District's office located at 380 E. Vanderbilt Way, San Bernardino, during normal business hours. Also, such documents are available on the District's website at www.sbvmd.com subject to staff's ability to post the documents before the meeting. The District recognizes its obligation to provide equal access to those individuals with disabilities. Please contact Melissa Zoba at (909) 387-9228 two working days prior to the meeting with any special requests for reasonable accommodation.



DATE: June 8, 2021

TO: Board of Directors Workshop – Engineering

FROM: Staff

SUBJECT: Summary of May 11, 2021 Board of Directors Workshop – Engineering

The Engineering Workshop convened on May 11, 2021, via Zoom video-teleconference. Director Harrison chaired the meeting.

Directors Present: President Kielhold, Vice President Hayes, Director Botello, Director Harrison, and Director Longville.

Staff Present:

Heather Dyer, MS, MBA – Chief Executive Officer/General Manager
Wen B. Huang, PE, MS – Chief Engineer/Deputy General Manager
Cindy Saks, CPA – Chief Financial Officer/Deputy General Manager
Bob Tincher, PE, MS – Chief Water Resources Officer/Deputy General Manager
Melissa Zoba, MBA, MPA – Chief Information Officer

Brent Adair – Project Manager II
Michael R. Esquer – Senior Project Manager
Kristeen Farlow, MPA – External Affairs Manager
Joanna Gibson, MS – Habitat Conservation Program Manager
Tom Holcombe – Operations Manager
Matthew E. Howard, MS – Water Resources Senior Project Manager
Aaron Jones, EIT – Associate Engineer
Chris Jones, MESM – Project Manager II, Biological Resources
Jose Macedo, ML, CPT-P (USA Retired) – Clerk of the Board/Assistant to the CEO
Adekunle Ojo, MPA – Manager of Water Resources
Kai Palenscar, Ph.D. – Project Manager II, Biological Resources

Members of the Public Present:

Melody McDonald, San Bernardino Valley Water Conservation District
David Raley, San Bernardino Valley Water Conservation District
Robert Martin, Bear Valley Mutual Water Company
Sam Fuller, Bear Valley Mutual Water Company

Pursuant to the provisions of Executive Order N-29-20 issued by Governor Gavin Newsom on March 19, 2020 this meeting will be conducted by teleconference only.

2. Public Comment

Director Harrison invited public comment. There was none.

3. Summary of Previous Meeting

The meeting notes from the April 13, 2021 Board of Directors Workshop – Engineering were accepted.

Chair Harrison took item 4.4 out of order.

4.4 Consider Proposed 2021 Water Supply Contingency Program to meet BVMWC In-Lieu Water Demand

Chief Engineer/Deputy General Manager Wen Huang reminded the Board that the State Water Project (SWP) allocation is at five percent. Although Valley District will meet its delivery obligation this year, staff believes it would be a good idea to preserve some of the State Project water this year for carryover to next year, Huang said.

Huang suggested working with the Bear Valley Mutual Water Company (BVMWC) to develop pumped groundwater as an in-lieu supply to meet delivery obligations to the Bear Valley Mutual Water Company (BVMWC) as was done during the previous drought in 2014-2015. He introduced Bob Martin, BVMWC general manager and Sam Fuller, consultant for BVMWC.

Senior Project Manager Mike Esquer explained the background of the Big Bear Municipal Water District Agreement and presented the proposed 2021 Water Supply Contingency Program.

BVMWC anticipates asking Valley District to deliver up to 8,500 acre feet (af) of in-lieu water, Esquer explained. He noted some sources of supply and identified additional sources for in-lieu water such as unused or underutilized wells to provide 4,000 af of the requested 8,500 af instead of using the State Project water. He explained the water rights of BVMWC shareholders, East Valley Water District, and the City of Redlands and the payment from

BVMWC to deliver water in lieu of Big Bear releasing a lot more water from the lake. He suggested needing up to \$600,000 to develop and pay for pumping of various wells within the system to deliver up to 4,000 af of in-lieu water. He recommended moving forward quickly as summer season will become busy for the in-lieu water as temperatures rise.

Mr. Huang further explained that BVMWC requested a credit toward future SWP purchases rather than payment for electricity costs to run their wells. If the Board approves the item, a portion of the payment from Big Bear would be transferred to their prepaid account. Staff requests the budgetary authorization to be able to use up to \$600,000, Esquer clarified.

BVMWC General Manager Bob Martin further detailed the water commitments to the City and EVWD.

San Bernardino Valley Water Conservation District Director David Raley asked why the State Project water would be left up north and water pumped from the Basin. Mr. Huang explained this is to hedge our bet for another dry year next year given the current water supply and demand situation. It allows Valley District to get by this year and retain state water supply for next year, he said. Mr. Raley posited that the water is safer in the Bunker Hill Basin than it is up north; Huang noted the groundwater is just enough to meet direct delivery.

Director Botello asked about plans to be proactive in being prepared for these events. Ms. Dyer detailed upcoming projects in preparation to meet demand. Mr. Tincher noted the strategy is to import water in wet years when it is plentiful and less costly and put it into groundwater storage reservoirs; and supply then shifts to wells in dry years. This project is in response to the unavailability of surface water, but the groundwater basins are over 80 percent full, he continued, and there is an impressive amount of groundwater in storage in the region. Director Longville added detail on the imported water activity and indicated support for the proposed program.

Action Item(s): Forward the Proposed 2021 Water Supply Contingency Program to meet Bear Valley Mutual Water Company In-Lieu Water Demand to the next Board of Directors Meeting for consideration.

4.1 Proposed Program of Work for Engineering / Operations Department FY 21/22

Chief Engineer/Deputy General Manager Wen Huang presented an overview of the department and work plan in preparation for Board budget discussion in the next few weeks.

Mr. Huang briefed the Board on completed and ongoing projects. He noted that the Administration building solar project is anticipated to be completed next month at a final cost of \$195,460, and the floating cover for the Citrus Reservoir has been effective and should be complete in June. The Waterman Turnout and Hydroelectric Generation Project is one of the largest projects this year, Huang noted, and will be completed by the end of the year.

Planned projects in 2021-2022 include the Central Feeder – EBX Intertie, Huang said, and explained the relationship to the earlier question from Director Botello. The Cactus Basin Turnout and Pipeline Project facilitates recharge on the west side of the service area, Huang advised. He detailed the Enhanced Recharge in the Santa Ana River Spreading Basins 1A and 1B projects and said the project design is completed. He reminded the Board about the purchase of the turnout from Western Municipal Water District last year and explained the WR-23 Trestles Turnout Project improvements.

Also in 2021-2022, Huang continued, are projects for Waterman Basin Cleaning, the Regional Recycled Water System, Radio and Data Communications Improvements at 35 sites, absorbing the Greenspot Pump Station, Supplemental Water for Rialto Channel Project, Devil and Sweetwater Basins with new turnout, Foothill Pipeline Crossing City Creek lowering solution to erosion and scouring, and negotiation of divestiture of local water agencies' small hydroelectric generation plants to Southern California Edison.

Director Harrison expressed appreciation to the team.

Action Item(s): Receive and file.

4.2 Proposed Program of Work for Environmental Department FY 21/22

Habitat Conservation Program Manager Joanna Gibson provided an overview of the department's focus and issues. She presented the benefits of the Upper Santa Ana River Habitat Conservation Program (HCP), including capture and recharge of approximately 87,000 af per year of local water supply.

The department also provides engineering and operations environmental support, Gibson explained. A new major effort is the Headwaters Resiliency Partnership, she said. The department looks for potential collaborators and alternate funding opportunities to help offset the District's contribution, she noted.

Gibson described the budget line items for the next fiscal year including field improvements, consultant costs associated with project implementation, and land purchase proposals for the San Bernardino Kangaroo Rat. As part of the HCP, there are multiple project-specific environmental implementation projects moving forward, she explained.

Other projects underway are development of plans and programs required as part of the Sterling Natural Resources Center, Gibson continued. There are also some safety and field equipment needs, she added. New programs include the Climate Adaptation and Resilience Plan, the Headwaters Resilience Plan, and potentially a Mission-Zanja Restoration Project.

President Kielhold pointed out that the benefits of the HCP are realized over the 50-year life of the HCP. Director Longville requested a periodic summary update to the Board as comments come in for the EIR.

Action Item(s): Receive and file.

4.3 Consider the proposal by Geoscience to provide modeling support for the proposed artificial recharge project at the Cactus Basins in the amount of \$84,142

Manager of Water Resources Adekunle Ojo referenced the earlier presentation item 4.1 by Mr. Huang and explained this proposal moves the project a step closer. He explained that the scope of work is to optimize recharge, complete CEQA documentation, address habitat constraints to allow for construction and permitting to take place for supplemental water for the Rialto-Colton Basin. Construction of basin facilities will begin next year, and recharge will start in 2022 or early 2023, he said.

He presented a map overview of the project, provided background, and noted that construction is in progress. As more development takes place, land available for recharge is reduced, he noted, so Cactus Basins owned by the San Bernardino County Flood Control District (Flood Control) provide a prime opportunity to recharge. He discussed the Integrated

Santa Ana River Model (SAR) which includes the interrelationship of the basins and how flow moves over time across basins and will be used by Geoscience.

He summarized the proposal to update the perchlorate data, develop assumptions for model scenarios, run the model and analyze results, and prepare the technical memorandum, for a cost of \$55,080. The work is expected to take about three months, he noted. Additional tasks will include the CEQA process, he advised.

Director Harrison commented on the impacts of the perchlorate plume. In response to President Kielhold and Director Harrison, Mr. Huang confirmed that Flood Control owns all the basins and is doing the construction. Recharge in Basins 1 and 2 would require a lot of habitat mitigation if we were to fully clear them of vegetation for recharge purposes, he explained. Chief Executive Officer / General Manager Heather Dyer explained that when basins are not maintained and they have water, wetland habitat develops. If they were now bulldozed for recharge purposes, the loss of the wetland would have to be mitigated. There may be a future scenario when the value of recharged water would offset the mitigation costs, she added.

President Kielhold asked about expectations for the CEQA document. Mr. Huang responded and said the Notice of Preparation will be issued in the coming months and the plan is to be done with CEQA early next year.

In response to Director Hayes, Ms. Dyer advised that the previously discussed work on Cactus Basin #2 had been completed. It had been used by West Valley Water District for discharge and needed some maintenance. It is a much smaller footprint than would be used for recharge, she noted. Director Harrison asked if it would have adverse impact on the perchlorate plume. Mr. Huang said that staff did not believe so. Some modeling has been done given the amount of water that will be recharged there will not be impact on the plume.

Director Longville recalled skepticism about the value of the Integrated SAR and said she had believed it would provide the data necessary for future decisions but felt she had underestimated its value. She suggested expanding the model to understand the headwaters. Ms. Dyer provided some history of the model.

Action Item(s): Forward the proposal by Geoscience to provide perchlorate modeling support for the proposed artificial recharge project at the Cactus Basins in the amount of \$84,142 to the next Board of Directors Meeting for consideration.

4.4 Consider Proposed 2021 Water Supply Contingency Program to meet BVMWC In-Lieu Water Demand

This item was addressed earlier in the meeting.

5. Future Business

None.

6. Adjournment

Staff Recommendation

Receive and File



DATE: June 8, 2021

TO: Board of Directors Workshop - Engineering

FROM: Bob Tincher, Chief Water Resources Officer/Deputy General Manager
Adekunle Ojo, Water Resources Manager

SUBJECT: Upper Santa Ana River Integrated Model: Results and Lessons Learned

At the June 8th Board Workshop, staff will present the key findings, modeling results and lessons learned from the development of the Upper Santa Ana River Integrated Model and use of the model to analyze the region's proposed water supply projects as part of the Upper Santa Ana River Watershed Habitat Conservation Plan.

Background:

The Santa Ana River (SAR) is the largest river systems in Southern California – originating in the San Bernardino Mountains and discharging into the Pacific Ocean in Orange County. Managing flow in the river and the corresponding effect on groundwater levels is important to the many communities that rely on water from the River and the groundwater basins associated with it. The Santa Ana River Stipulated Judgement of 1969 established minimum average annual flows at two key areas along the River: at the Riverside Narrows and at Prado Dam, the latter representing the division between the upper and lower portions of the Watershed. The Upper Santa Ana River Watershed incorporates the Chino, Rialto-Colton, Riverside-Arlington, San Bernardino Basin, Temescal and Yucaipa groundwater basins.

Multiple stakeholders in the watershed, including Orange County Water District and the Wildlife Agencies, California Department of Fish and Wildlife and U.S. Fish and Wildlife Service, expressed concern over reduced streamflow in the Santa Ana River and suggested that a study be conducted to determine the cause. San Bernardino Valley Municipal Water District (Valley District), in cooperation with partners, suggested a regional, multi-agency, study that would evaluate the water supply projects in the Upper Santa Ana River Watershed Habitat Conservation

Plan (HCP). The proposed projects in the HCP include the Enhanced Recharge in Santa Ana River Basins, Riverside North Aquifer Storage and Recovery, and several other stormwater capture and recycled water projects along the River. Geoscience Support Services, Inc. was selected for this work in 2017. The resulting model, known as the Integrated Santa Ana River Model (Integrated Model), is impressive in its scope stretching from Yucaipa to Prado Dam.

Covering an area of approximately 888,768 acres (1,389 square miles), the Integrated Model is, for the first time, able to simulate underflow across groundwater basin boundaries allowing the simulation of streamflow and evapotranspiration for the purpose of comprehensively assessing the effect, if any, of the various projects on flows and riparian habitat in the Upper Santa Ana River. Modeling scenarios were designed to assess the hydrologic response of the Upper SAR to the various projects, including streamflow diversions, stormwater capture, recharge basins, effluent changes, and new discharge locations. The scenarios tracked changes in riparian habitat, groundwater levels, and streamflow as compared to a baseline (no project) scenario.

The project received approximately \$1 million in Section 6 grant funding to offset the cost of this modeling effort. The local matching funds were provided by the Santa Ana River Watermaster agencies – Inland Empire Utilities Agency, Orange County Water District, Western Municipal Water District, and Valley District. The development of the Integrated Model represents a large collaboration involving other stakeholders including the Santa Ana Regional Water Quality Board, U.S. Geological Survey, California Department of Fish and Wildlife, Balleau Groundwater, and ICF Jones & Stokes just to mention a few.

Fiscal Impact:

None, this is an informational report

Staff Recommendation:

Receive and file



DATE: June 8, 2021

TO: Board of Directors' Engineering Workshop

FROM: Wen Huang, Chief Engineer/Deputy General Manager

SUBJECT: Consider Scope of Services with Scheevel Engineering for Professional Engineering Services and Engineering Staff Augmentation

Valley District has historically maintained a relatively small staff as compared to its geographic size and responsibilities. The District currently has a staff of 29 filled positions on our organizational chart. As Valley District's responsibilities have increased over the last decade, in addition to newly added positions that the Board authorized to respond to the workload, the District has also relied on hiring consultants from time to time as an extension of staff. Our Engineering staff is led by our Chief Engineer and includes two Project Managers and one Associate Engineer; additionally, in the fiscal year (FY) 20-21, the Board of Directors approved a staff augmentation contract with Scheevel Engineering to provide on-call engineering consulting services. In order to continue to support the substantial engineering workload planned for this upcoming fiscal year, Staff recommends that the Board of Directors consider engaging Scheevel Engineering to provide engineering consulting services and to work as an extension of staff for FY 21-22.

Background:

At the Board of Director's Workshop on June 7, 2021, the Board reviewed the proposed FY 21-22 General Fund Budget, which, among other things, included a budgetary expenditure of \$52 million for planned field improvements and \$8 million for consultants, respectively. After several years of planning and development, many projects are transitioning into construction phase in the near future, including the Central Feeder and East Branch Extension Intertie Project, Enhanced Recharge Project, Santa Ana River Tributary Restoration Project, and the Cactus Basin Connector Project, just to name a few. As the District has done historically, Engineering Staff will

be handling the construction management in-house for most of the upcoming Projects, which are considered mid- and small-size projects (up to \$10 million). Due to our relatively small staff and a number of projects that will be constructed, as a result, in-house staff resources may be limited for other projects that are not in construction phase.

In order to address the anticipated shortfall of staffing levels, as the Board of Directors has done in current fiscal year, Staff recommends the Board of Directors consider engaging an engineering consultant for staff augmentation to assist in certain tasks/projects, such as engineering and design of the Devil and Sweetwater Spreading Basins, feasibility study and planning of the Santa Ana Sucker Microhabitat Project, preparation of specifications and inspection services for the Waterman Basin Cleanup Project, review and coordination with the Conservation District for the Active Recharge project and other important projects. Staff has conducted a thorough review of potential consultant candidates with broader expertise and qualifications and recommends Scheevel Engineering for consideration by the Board.

Nate Scheevel, the principal of Scheevel Engineering, has been working with Valley District on many projects, including the preliminary design and feasibility study for the Active Recharge Project, evaluation of the Riverside North Aquifer Storage and Recovery Project (a.k.a., Rubber Dam Project), Santa Ana Sucker Habitat Pilot Study, and development of the operation and maintenance manual for the Enhanced Recharge Project. Given the types of upcoming projects for which we need assistance, Mr. Scheevel is a uniquely qualified and trusted entity to perform duties as an extension of staff and our engineering team. Staff recommends that the Board of Directors consider entering into a professional services agreement with Scheevel Engineering for a not-to-exceed fee of \$200,000. His time will be tracked based on the projects that he works on, of which some will be reimbursed by other project partners.

Fiscal Impact:

The estimated cost for the scope of services is up to \$200,000, which will be included in Line Item 6360 Consultants of the proposed FY 21-22 General Fund Budget for consideration by the Board. Some of his time will be reimbursed by project partners, based on the specific projects that he works on during the year.

Staff Recommendation:

Forward a Professional Services Agreement with Scheevel Engineering for Engineering Consulting & Project Management Services up to an estimated fee of \$200,000 to the next Board of Directors' meeting for consideration.

Attachment:

Scope for Professional Engineering Consulting & Project Management Services by Scheevel Engineering dated June 1, 2021

June 1, 2021

San Bernardino Valley Municipal Water District
Attn: Wen Huang, P.E., Manager of Engineering
380 East Vanderbilt Way
San Bernardino, CA 92408



RE: Professional Engineering Consulting, Staff Augmentation & Project Management Services Proposal

Dear Mr. Huang:

Scheevel Engineering is pleased to present this proposal to you for professional engineering consulting and project management services to augment San Bernardino Valley Municipal Water District's (Valley District) staff. Scheevel Engineering provides a wide variety of consulting and field services unique to water resource projects. These services include project management, field inspection, feasibility analysis, operation and maintenance optimization, preliminary design, 3D CFD modeling, final design, construction management, water quality analysis, environmental restoration and performance enhancement consulting for water resources and groundwater recharge system projects.

Scheevel Engineering has prepared this proposal to provide professional engineering consulting services and assist Valley District staff with engineering, consulting, project management, field services and other technical services for current and future projects as directed by Valley District. The specialized services offered by Scheevel Engineering will include the tasks outlined below in Table 1: Scope of Work.

Scheevel Engineering will provide staff augmentation services on a wide variety of projects. The projects may include, but not be limited to Waterman Basin, Devil & Sweetwater Basins, Weaver Basin, Oak Creek Basins, Active Recharge, Enhanced Recharge, Recycled & Potable Water De-Chlorination, SAR Tributaries Restoration and Hidden Valley Wetlands. The schedule for each project is independent and expected to vary, and Scheevel will make every reasonable effort to accommodate the project schedules as they change.

Table 1: Scope of Work

Scope Item Description
Project Management, Technical & Consulting Services – Provide engineering, technical support and project management services for field testing, planning, designing, bidding, construction and monitoring of multiple Valley District projects. Scheevel Engineering has identified Mr. Nate Scheevel for this engagement. Mr. Scheevel is a registered PE in CA with extensive field testing, planning, design, bidding, construction and monitoring experience. His experience can be found in the attached resume. Scheevel will provide its own vehicle, cell phone, laptop, general office supplies, computer software, flow measurement and water quality monitoring equipment.

Upon your review of the above scope of work please let me know if you would like any additions or subtractions. Scheevel Engineering provides all services at an hourly rate of \$200.00.

Scheevel Engineering proposes to provide up to 1,000 hours of consulting services on a time and materials bases for a not to exceed fee of \$200,000. Scheevel's travel time is free of charge and no additional fees or charges apply unless approved by Valley District. The fees associated with the above scope of work equals **\$200,000.00 (two hundred thousand dollars)**. A breakdown of the fees associated with the proposed scope of work is illustrated in Table 2: Schedule of Fees.

Table 2: Schedule of Fees

Scope Item Description	Hours	Rate	Fee
Scope Items			
1) Project Management, Staff Augmentation & Consulting Services	1,000	\$200/hr	\$ 200,000.00
Total	1,000		\$ 200,000.00

This proposal is valid for 30 days. Scheevel Engineering is prepared to start work on projects immediately and can modify the scope, proposed fees and schedule to meet Valley District's needs. Thank you for the opportunity to provide professional consulting services to San Bernardino Valley Municipal Water District.

Sincerely,
Scheevel Engineering



Nate Scheevel, P.E.
President/Principal

NATE SCHEEVEL

P.O. Box 28745, Anaheim, CA 92809
(714) 470-9045, nathanscheevel@yahoo.com

Professional Civil Engineer: CA# C80056, CO# 46839, MN# 50556
NCEES Model Law Engineer: Record Number 50504

EDUCATION:

2006 to 2008

University of California at Berkeley, Berkeley, CA
Bachelor of Science Degree - Civil Engineering

1994 to 1996

Dakota County Technical College, Rosemount, MN
Diploma - Heavy Construction Equipment Mechanics

EXPERIENCE:

July 2012 to
Present

Scheevel Engineering, Anaheim, CA

President/Principal

Provide professional civil engineering consulting services for private and public sector clients in California and Minnesota. Provide design services for water resource projects and heavy civil commercial projects. Provide specialty field testing/investigation, feasibility analysis, risk management, preliminary design, final design, project management, construction management and extension of staff services for recycled water, imported water and storm water resource projects. Provide design review, quality assurance, quality control for various groundwater recharge, recycled water, imported water and storm water capture and water resource projects. Provide groundwater recharge operation and maintenance modeling, optimization and consulting. Provide structural inspection, analysis and design. Provide surface water and sediment transport field data collection, analysis and computer modeling. Provide 1-D and 3-D CFD hydraulic modeling. Provide environmental restoration/enhancement analysis, design services and construction phase services.

January 2009 to
April 2014

Orange County Water District, Fountain Valley, CA

Senior Engineer/Engineer

Project manager for multiple water resource and groundwater recharge enhancement projects, including capital improvement and rehabilitation/replacement projects. Managed all phases of projects including pre-design, design, bid, construction and operation/maintenance support. Simultaneously managed multiple consultants and contractors. Drafted requests for proposals, public works contract provisions and technical specifications. Developed O&M procedures for recharge basins and facilities. Drafted board agenda item submittals and presentations. Reviewed design submittals and technical specifications. Developed and assured adherence to project budgets and schedules. Coordinated with local, state and federal agencies for permits and regulatory compliance. Performed project

outreach to area stakeholders. Managed construction projects including submittal review, RFI responses, change order negotiations and field inspections. Collaborated with engineers, scientists, planners and managers to enhance groundwater recharge operations. Performed design calculations and data analysis for pipelines, pump stations, structures and water conveyance and groundwater recharge facilities. Participated in OCWD's Recharge Enhancement Working Group (REWG).

May 2008 to
August 2008

Shimmick Construction Company Inc., Oakland, CA

Project Engineer

Assisted with the construction of the West Dublin-Pleasanton BART Station Project. Duties and responsibilities included: verified field measurements; updated as-builts; responded to requests for information; prepared and reviewed submittals; scheduled and coordinated work with subcontractors; ordered and supervised concrete pours, pile driving and excavations; supervised night construction on Interstate 580; developed contingency plans; and performed small design projects.

April 2004 to
June 2006

Orange County Water District, Anaheim, CA

Basin Cleaning Vehicle (BCV) Operations Supervisor/Operator

Responsible for all operational aspects of BCV program including, budgets, hiring, performance appraisals, data analysis and design modifications. Supervised 4 employees and oversaw all operations. Collaborated with engineers, geologists, scientists and other water industry professionals to enhance the performance of the BCVs. Responsible for research and development of new technologies to enhance the performance of groundwater recharge basins. Assisted with operation and maintenance of groundwater recharge system. Assumed responsibilities of the Department Safety Officer. Developed operational procedures, designed and implemented modifications to BCV systems. Managed outside consultants on BCV design modification projects. Purchased supplies and equipment. Operated, maintained, repaired and modified BCVs. Maintained and adjusted Delta V process management computer program.

April 2002 to
April 2004

Orange County Water District, Anaheim, CA

Heavy Construction Equipment Operator

Operated and hauled a variety of heavy construction equipment. Proficient operator of bulldozers, excavators, scrapers, backhoe loaders, wheel loaders, motor graders, compactors, dump trucks, water trucks etc. Assisted with repairs and updates on Basin Cleaning Vehicle (BCV3). Applied pesticides utilizing customized spray truck.

June 1996 to
March 2002

Scheevel & Sons, Inc., Preston, MN

Owner/Operator/Mechanic

Co-owner and operator of a small, diversified excavating company. Experienced in residential, commercial, demolition, water/sewer and

agricultural projects. Developed excavation and site design plans to accommodate customers' needs. Prepared bids and estimates. Interpreted construction drawings, specifications and checked grades. Supervised a 7-member crew at job sites as well as in the shop. Coordinated projects with engineers, subcontractors, utility companies and state agencies, such as the Minnesota Pollution Control Agency, MNDOT and the DNR. Repaired, maintained and operated bulldozers, excavators, scrapers, backhoe loaders and dump trucks on a daily basis.

October 1995 to
May 1996

Trenchers Plus, Inc., Minneapolis, MN

Mechanic

Diagnosed and repaired trenching and directional boring equipment. Performed field service work. Developed repair estimates for customers.

March 1992 to
September 1995

Scheevel & Sons, Inc., Preston, MN

Owner/Operator/Mechanic

Repaired, maintained and operated various heavy construction equipment. Developed preventative maintenance plan for fleet of heavy construction equipment.

OTHER:

Proficient in: Microsoft Word, Excel, PowerPoint, Outlook, MS Project, Sketch-Up, HEC-RAS, EPANET, RISA, AutoCAD; Possess California Class A Driver's License (Combination, Airbrakes, HAZMAT, Tank and Doubles/Triples); Completed Delta V Factory Training; OSHA Certified as Competent Person in Trenching Safety and Confined Space; Experienced welder; Extensive experience in heavy equipment transporting; Possess MN Boiler Operator Special Engineer License; Developed and taught course in steel fabrication at UC Berkeley.

Scheevel Engineering / Nate Scheevel
Project Experience:

Below is a partial list of projects that Mr. Scheevel has been involved with. Scheevel Engineering would be happy to provide more information on any of the projects listed below:

- 1) Prado SMDP Sediment Transport and WQ Monitoring & Analysis (OCWD) – Provide field data collection and analysis in Prado Basin and the Santa Ana River to determine the effects of sediment removal from Prado Basin. The focus of the monitoring and analysis is on geomorphology, sediment transport and water quality to restore native fish habitat in the Santa Ana River.
- 2) Santa Ana River Tributaries Recycled Water Dechlorinating Project (SBVMWD) – Provide field data collection and analysis for passively dechlorinating recycled water to restore flow to tributaries of the Santa Ana River and enhance native fish habitat.
- 3) Riverside North Aquifer Storage and Recovery Project (SBVMWD/WMWD) – Consultant to Valley District and Western to provide design review, value engineering, cost estimating, infiltration rate determinations and operations and maintenance modeling and recommendations for a new Santa Ana River rubber dam diversion and recharge basin system.
- 4) Santa Ana River Sediment Monitoring Program (OCWD) – Consultant to OCWD to perform a detailed sediment transport study of the Santa Ana River from San Bernardino/Riverside County to Orange County. Scope of work includes the collection of field data (suspended sediment concentration, bedload, bed material, stream flow measurements and cross section surveys) and analysis to compare field data to sediment transport models for the Santa Ana River. Includes a full scale sediment removal field project with field data collection and design performed by Scheevel.
- 5) Prado Basin Sediment Management Demonstration Project (OCWD) – Project Manager for the planning and design of a demonstration project to remove up to 500,000 cy yd of sediment from Prado Flood Control Basin and re-entrain it into the Lower Santa Ana River to replenish sediments in the River and enhance groundwater recharge in Orange County.
- 6) Prado Basin Ecosystem Restoration Feasibility Study (OCWD) – Consultant to OCWD to provide engineering and technical analysis services to support a U.S. Army Corp Ecosystem Restoration Feasibility Study to increase water conservation, ecosystem restoration and sediment management for Prado Basin and the Lower Santa Ana River. Includes engineering analysis, environmental

restoration design, cost estimating, sediment transport analysis, scheduling and implementation planning.

- 7) Santa Ana Sucker Protection and Beneficial Use Enhancement Project (SAWPA) – Consultant to SAWPA for the field modeling, analysis, design, bid document preparation, construction and monitoring phase services for Sucker fish habitat features in the Santa Ana River.
- 8) Santa Ana River Stream Bifurcation Pilot Project (SBVMWD) – Consultant to Valley District for the preliminary design, design, construction and monitoring of a native fish habitat enhancement project in the Santa Ana River.
- 9) Five Coves Basin Freshwater Marsh Project (OCWD) – Designed and managed/directed the construction of a new freshwater marsh habitat area in a groundwater recharge basin.
- 10) Conrock Riparian Stream Project (OCWD) - Designed and managed/directed the construction of a new riparian stream adjacent to/within a groundwater recharge basin.
- 11) Weir Pond Rehabilitation Project (OCWD) – Project Manager for the pre-design and final design to reconfigure 3 de-silting basins used to remove fine-grained sediments from storm water. Design included CFD model analysis and review.
- 12) Ammonia Tank Basin Seismic Evaluation (Mesa Water) – Provide field inspections and a seismic risk analysis for a 2,000 gallon ammonia tank. Present analysis and findings in a report to satisfy California Accidental Release Prevention (CalARP) requirements.
- 13) Admin Hallway Structural Design (OCWD) – Performed structural inspection, analysis and final design of new hallway walls/doors for administration building improvements.
- 14) OCWD/City of Santa Ana Reservoir Wall (OCWD) – Consultant to OCWD to perform final design services and develop bid/construction documents for a new CMU wall around an existing reservoir site in the City of Santa Ana.
- 15) Dry Chem 2nd Floor Addition (TVMWD) – Consultant to Three Valleys Municipal Water District for the structural design of a 2nd story floor addition to an existing dry chemical building.
- 16) Carport Canopies Project (TVMWD) – Consultant to Three Valleys Municipal Water District for the structural design to replace two existing carport canopies.

- 17) Confined Space Davit Arm Design (SCWD) – Consultant to SCWD to perform final design services to develop a standard design for a confined space davit arm anchorage.
- 18) Roof Beam Project Laguna Beach County Water District (LBCWD) – Consultant to LBCWD for the design of glulam beam roof design.
- 19) Timber Roof Beam Designs (Various) – Timber beam design for various small projects. Provided specialty structural analysis and design of timber beams and columns.
- 20) Upper to Lower Five Coves Transfer Structure (OCWD) – Designed and constructed a new surface transfer/flow measurement structure to provide data for infiltration rate testing.
- 21) LaJolla Rubber Dam Foundation Repairs (OCWD) – Project Manager for the investigation, design and repair implementation to remediate seepage underneath an inflatable rubber dam foundation located in a flood control channel. Performed the investigation, provided seepage analysis, designed repairs and supervised the repairs of the Project.
- 22) Grain Elevator Pit Structural Design (Meldahl Construction) - Consultant to Meldahl Construction, Inc. to design a reinforced concrete pit for a grain elevator.
- 23) Preston Dairy & Farm Agrichemical Facility (D&F) – Consultant to D&F to construct a new agrichemical facility campus. Project includes 5 new buildings with 3 new process systems. Responsible for preliminary design report, special structural design, site design and layout, utilities design, final design, contractor selection, scheduling, budgeting and accounting, construction management, inspection and regulatory agency coordination and permitting.
- 24) Harmony Agri Services Facility Enhancements (Harmony Agri) – Sub-Consultant to provide all structural analysis, design, construction document preparation and specialty field inspection for reinforced concrete foundations for buildings and a 65' tall tank tower.
- 25) Hyperion Secondary Effluent Pump Station (West Basin) – Consultant to West Basin Municipal Water District to provide project management services for the construction of their secondary effluent pump station.
- 26) Recycled Water Project Management Assistance (West Basin) – Consultant to West Basin Municipal Water District to provide project management services for several recycled water projects including pump stations, flow EQ basin and Title 22 filter rehabilitation projects.

- 27) Phase III Clearwell Rehabilitation Project (West Basin) – Consultant to West Basin Municipal Water District to provide project management services for pump, piping modifications and the rehabilitation of a microfiltration clearwell.
- 28) Chino Basin Program PDR (IEUA) – Subconsultant to IEUA for a preliminary design report for the development of up to three advanced water treatment facilities (AWTFs).
- 29) Burreis Pump Station Project (OCWD) – Project Manager for the pre-design, permitting and final design of a new, 200 cfs storm water pump station. Managed construction of Phase I, which was awarded the ASCE Orange County Branch - Award for 2014 Flood Management Project of The Year.
- 30) Santiago Basin Floating Pump Station Project (OCWD) – Project Manager for a 50 cfs floating pump station and floating pipeline to transfer storm water between recharge basins.
- 31) Waterman Basin Emergency Maintenance (SBVMWD) – Consultant to Valley District for the emergency maintenance of a multipurpose (flood control and groundwater recharge) basin system. Services included developing and directing basin cleaning activities as well, assisted with permitting and performing a basin subsurface soils investigation.
- 32) Active Recharge Project (SBVMWD) – Consultant to Valley District for the preliminary design, diversion design, O&M modeling, cost estimating and benefit analysis of 9 new groundwater recharge basins and 4 existing flood control basins.
- 33) Santa Ana River Enhanced Recharge Phase 1B (SBVMWD) – Sub-consultant to Valley District for the final design of a series of recharge basins (> 200 acres) below Seven Oaks Dam. Provided field infiltration rate testing, O&M modeling and final design assistance for specialty groundwater recharge features for the project. Develop a comprehensive O&M Manual for the Enhanced Recharge System.
- 34) Chino Basin Program (IEUA) – Sub-consultant to IEUA for the development of a preliminary design study for an advanced water treatment facilities (AWTF) program for Chino Basin. Services include groundwater recharge systems consulting with a focus in issues specific to using AWTF water in recharge basins and injection wells.
- 35) Kansas Avenue Basin (RCFCWCD) – Consultant to Riverside County Flood Control & Water Conservation District for field infiltration rate pilot testing and preliminary design of groundwater recharge improvements for an existing flood control basin. Includes development of a preliminary design report. Performed pre-design, exploratory excavation and final design service for the pilot test project, as well as assistance with construction management, data collection and

final performance reporting including final design recommendations. Design included 3 infiltration rate test cells and a temporary pipeline system.

- 36)RMPU Improvements Preliminary Design Project (IEUA) – Sub-Consultant to IEUA for the preliminary design of improvements for 9 groundwater recharge basins. Tasks include field investigations/testing, infiltration rate determinations, operation and maintenance analysis/recommendations, design review and operations modeling.
- 37)Wineville Basin Proof of Concept Project (IEUA) – Consultant to IEUA for pre-design, final design and implementation of an infiltration rate testing project. Scheevel Engineering performed pre-design, exploratory excavation and final design services, as well as assistance with construction management, data collection and final performance reporting including design recommendations. Design included 6 infiltration rate test cells and a temporary pipeline system.
- 38)San Sevaine Basin Improvements Project (IEUA) – Consultant to IEUA responsible for the subsurface investigation and the project development report (PDR), including pre-design concepts, calculations and analysis. The PDR presents analysis of several alternatives (including pump station and pipelines) to improve/increase groundwater recharge at San Sevaine Basins.
- 39)Lower Day Basin Improvements Project (IEUA) - Consultant to IEUA for preparation of a Preliminary Design Report (PDR), permitting assistance and final design assistance to develop design concepts and provide a basis of design for the Lower Day Basin Improvements Project. Perform 3D CFD modeling of Day Creek Channel diversion alternatives. The purpose of the Project is to increase the amount of storm water and supplemental water captured and recharged into the Chino Groundwater Basin.
- 40)RMPU Operations Plan (IEUA) – Consultant to IEUA for developing operations and maintenance plan for the RMPU Projects. The O&M Plan covers 8 groundwater recharge basins maintenance, pipelines, pump stations, rubber dams, spillway gates and other groundwater recharge related facilities and features.
- 41)Victoria Recharge Basin (WMWD) – Sub-Consultant to Western for infiltration rate field pilot testing, preliminary design, final design, construction management assistance and O&M manual development of a new groundwater recharge basin. Scheevel Engineering performed pre-design, exploratory excavation and final design service for the pilot test project, as well as assistance with construction management, data collection and final performance reporting including final

design recommendations. Provided project management and construction management services during construction.

- 42) San Antonio & Thompson Creek Spreading Grounds O&M Manual (PVPA) – Sub-Consultant to PVPA for the development of a spreading grounds operations and maintenance manual, includes spreading grounds improvements recommendations.
- 43) Alamitos Barrier Improvement Project (OCWD) – Project Manager for the permitting and final design of the civil infrastructure for 17 new recycled/imported water injection wells to prevent seawater intrusion into OCWD's groundwater basin.
- 44) La Sierra Pipeline & Sterling Reservoir & Pump Station Project (WMWD) – Consultant to Western to provide specialty construction management services for a new 30" pipeline and 30 cfs pump station.
- 45) Lower Five Coves Basin Infiltration Improvement Project (OCWD) – Designed and constructed a series of excavations to perforate a near surface confining layer in Lower Five Coves Basin to increase storm water recharge in the basin.
- 46) Peer review for alternative groundwater recharge methods:
 - a. Aquifer Transfer Well – Uses existing well technologies to transfer perched groundwater from zones high in an aquifer to deeper zones in the aquifer;
 - b. River-Bed Filtration Project – Uses shallow subsurface collection galleries to collect water filtered by the riverbed and then deliver the cleaner water to recharge basins;
- 47) Basin Cleaning Vehicle (BCV) Operations (OCWD) – Operations supervisor for a program to remove fine-grained sediments from groundwater recharge basins, while leaving the basins full of water and in service. Two primary technologies were used to achieve this objective: a fully submersible ROV system, and a floating barge system. Responsible for all operation and maintenance of the systems. A wide variety of operational data was gathered and analyzed for 4 basins to determine the effect of the BCVs on percolation rates. Full basin percolation rate testing was performed over an 8-year period.
- 48) Basin Cleaning Vehicle (BCV) Engineering (OCWD) – Responsible for designing and implementing modifications to the BCVs and recharge basins to increase effectiveness and efficiency. Designed and constructed basin modifications for infiltration rate testing. Collected, reduced and analyzed data. Prepared reports and presentations as to basin and BCV performance.
- 49) Alternative Basin Cleaning Technology Development (OCWD) – Responsible for developing and testing alternative basin cleaning methods. Methods tested

included: beach cleaning technologies, sweeping/broom technologies, rock picking technologies and windrowing technologies.

- 50) Field Investigation Experience – Mr. Scheevel has personally performed field investigations, proof of concept projects and pilot test projects to help determine infiltration rates at the following basins/sites.
- c. Kansas Avenue Basin (RCFCWCD) – Exploratory excavations and infiltration test cells
 - d. Waterman Basins (SBVMWD & SBCFCWCD) – Exploratory excavations and infiltration rate determination
 - e. Wineville Basin (IEUA) – Exploratory excavations and infiltration test cells
 - f. San Sevaine Basin (IEUA) – Exploratory excavations
 - g. CSI Basin (IEUA) – Exploratory excavations
 - h. RP3 Basins (IEUA) – Exploratory excavations
 - i. Burris Basin (OCWD) – Exploratory excavations and infiltration test cells
 - j. Victoria Basin (WMWD) – Exploratory excavations and infiltration test cells
 - k. Kansas Avenue Basin – Exploratory excavations and infiltration test cells
 - l. Lower Five Coves Basin (OCWD) – Exploratory excavations and basin perforations
 - m. Upper Five Coves Basin (OCWD) – Exploratory excavations
 - n. Weir Pond #3 (OCWD) – Exploratory excavations
 - o. Miller Basin (OCWD) – Exploratory excavations
 - p. Anaheim Lake (OCWD) – Exploratory excavations
 - q. EVWD Plant 143 (SBVMWD) – Exploratory excavation and infiltration test cell
- 51) Five Coves and Lincoln Basins Bypass Pipeline Project (OCWD) – Project Manager for the pre-design, permitting and final design of a 66-inch diameter bypass pipeline to increase recharge basin performance and percolation data collection improvements.
- 52) Lakeview Transfer Project (OCWD) – Project Manager for the pre-design, design and construction of carbon fiber (FRP) lining of a 7' x 7' reinforced concrete box culvert.
- 53) Kraemer Basin Valve Vault (OCWD) – Project Manager for the pre-design, design and construction of 15' x 40' valve vault around a complex system of 72-inch, 48-inch and 36-inch piping and multiple flow control valves.
- 54) GWRS Pipeline Assessment and Inspections (OCWD) – Project Manager for the regular inspection and condition assessment of 14 miles of 72-inch – 60-inch recycled water pipeline. Developed inspection and testing protocols and personally entered and inspected the pipeline.

- 55) Imperial Rubber Dam Replacement Project (OCWD) – Project Manager for the design, selection and replacement of OCWD's 7' x 320' inflatable rubber dam across the Santa Ana River, near Imperial Highway.
- 56) Imperial Headgates R&R Project (OCWD) – Project Manager for pre-design, permitting and design for the selection and replacement of a new trash rack system and diversion gate replacement.
- 57) Storm Water Detention Pond Investigation and Repairs (POET) – Consultant to POET Biorefinery to perform basin inlet repairs and investigate/repair a sinkhole in the berm of a storm water detention basin.