George "Buzz" Link, P.E.

Vice President/Principal Engineer

Education
Bachelor of Science, Civil Engineering, California State Polytechnic University, 1975

Professional Registrations
Professional Engineer - Civil, California, No. C33261, 1981

Professional Affiliations
American Society of Civil Engineers (ASCE), Member

HDR | SWRI Tenure
12 Years

Industry Tenure
32 Years

Professional Experience

Mr. Link has 32 years of experience in real-time multi-purpose water project operations, analysis and management of water systems, development of mathematical computer models for operations and planning, management of power scheduling and demand-side load management. He utilizes operations and planning models to solve problems related to the requirements of water supply, water quality, fish and wildlife considerations, power supply, flood control, and recreation. Mr. Link's work history includes 10 years with the Bureau of Reclamation, where he spent five years as a Supervisory Hydraulic Engineer in the Central Valley Operations Coordinating Office. While there, he directed the daily water operations for the Central Valley Project.

HDR | SWRI Project Experience

Sacramento City/County Office of Metropolitan Water Planning, Lower American River Flow Management Standard. Mr. Link is HDR|SWRI's Principal Engineer in the development and negotiation of a new flow management standard for the lower American River, directed toward the SWRCB amendment of Reclamation's water rights permit. Development of the flow management standard considers indices of water availability for the American River Basin as well as potential conflicts inherent in a regulated water system with numerous designated beneficial uses, such as: (1) Central Valley Project/State Water Project (CVP/SWP) operational factors including storage and refill potential of CVP/SWP reservoirs, flood control, and Delta water quality objectives and demands; (2) American River Basin water supply and Folsom Dam hydropower generation; (3) requirements of the CVP Improvement Act including management of Section 3406 (b) (2) assets; and (4) regulatory requirements of the 1995 Bay-Delta Plan, California Fish and Game Code 5937, and biological opinions to protect Central Valley anadromous salmonids and delta smelt. Modeled flow requirements and rules to implement the requirements on a real-time basis have been developed. In addition to guiding the development of the flow management standard, Mr. Link provides technical expertise and consultation regarding the development and implementation of a biological assessment for the lower American River flow management standard. This process includes development of: (1) biological justification and rationale for the new flow standard; (2) narrative standards; (3) river flow management element; and (4) a Monitoring and Evaluation Plan for the lower American River. Significant coordination with, and presentations to, resource agencies and stakeholders is an integral component of this process.

Yuba County Water Agency, Proposed Lower Yuba River Accord. Mr. Link is the Principal Engineer for the proposed Lower Yuba River Accord (Yuba Accord), comprised of a coalition of over 15 agricultural, environmental, and fisheries interests, including state and federal agencies. The Yuba Accord is a collaborative settlement initiative, which will resolve nearly 15 years of controversy and litigation over instream flow requirements for the lower Yuba River. The science-based, consensus-oriented Yuba Accord proposes new instream flow requirements for the lower Yuba River that will significantly increase protection for the river's fisheries resources and will improve habitat conditions for lower Yuba River Chinook salmon and steelhead – among the last remaining wild populations in

California's Central Valley. The Yuba Accord also will represent the first major long-term water acquisition by the State of California for the CALFED Bay-Delta Program Environmental Water Account, and will improve water supply reliability for the major resource agencies. The Yuba Accord will promote the objectives of CALFED and the responsible stewardship of California's water supplies.

Sacramento Municipal Utility District, San Luis Dam and Reservoir Operations Analysis. Mr. Link is the Principal Engineer providing SMUD with engineering and hydrology services in the characterization of historical federal San Luis Reservoir operations, including collecting historical data and identifying institutional and natural causes within the data which could affect water and power operations at the reservoir. A hypothetical "baseline" power scenario, representing present operations, was developed.

Sacramento Municipal Utility District, Folsom Dam Transmission Line Relocation Mitigation Monitoring Plan. Mr. Link is the Principal Engineer for the mitigation and monitoring activities associated with the Sacramento Municipal Utility District's Folsom Dam Transmission Line Relocation project. He is overseeing HDR|SWRI staff members, who are coordinating with resource agencies, establishing and maintaining protective measures for the federally threatened valley elderberry longhorn beetle, overseeing monitoring activities at the project site, and preparing a mitigation monitoring report at the end of the construction phase of the project.

Sacramento Municipal Utility District, Central Valley Project Consulting Services. Mr. Link served as HDR|SWRI's Project Manager providing consulting services for SMUD's activities related to the Central Valley Project, which encompassed 15 tasks during 2000 through 2006. Examples of those tasks completed include (1) preparation of an EIR to support the assignment of 30,000 acre-feet per year of its CVP water to the Sacramento County Water Agency (SMUD Water Supply Project); (2) assisting SMUD in the proceedings regarding the Clear Creek Restoration Program; (3) performing hydrologic modeling of the SMUD Alternative for the Trinity River EIS/EIR; and (4) supporting SMUD with litigation support activities related to Trinity River restoration. In addition, Mr. Link served as project manager for modeling associated with the effects of proposed channel modifications for habitat enhancement purposes, impacts of bridge removal and replacement, and the adequacy of a proposed gravel supplementation program on the Trinity River. Mr. Link performed the hydrologic modeling of the Sacramento Municipal Utility District Alternative, with a limited comparison to the existing Trinity Alternative. The modeling scenario included Sacramento and American river water temperature and salmon mortality modeling.

Northern California Water Association/CH2M Hill, Sacramento Valley Water Management Program Environmental Impact Statement/Environmental Impact Report. As HDR|SWRI's Principal Engineer, Mr. Link oversaw the modeling for the completion of the aquatic resources, water quality, surface water supply and management, and hydropower sections of the EIS/EIR for the Sacramento Valley Water Management Program. Flow-related impacts on aquatic resources, surface water supplies, water quality, and power resources were determined from the results of hydrologic modeling simulations. Modeling tools used to simulate baseline conditions, as well as conditions with the implementation of the Short-Term Program, included CALSIM II, Reclamation's Water Temperature and Salmon Mortality models, DWR's Delta Simulation Model II, as well as related pre- and post-processing applications utilized to develop the simulations.

Bureau of Reclamation/CDM, Environmental Water Account Environmental Impact Statement/Environmental Impact Report. Mr. Link was part of a team of consultants that assisted five state and federal CALFED agencies--Reclamation, DWR, USFWS, NMFS and CDFG--in developing the environmental documentation required to implement the EWA. The EWA is one component of the long-term comprehensive plan adopted in the CALFED Bay-Delta Program Record of Decision. The overall purpose of the EWA is

to increase water supply reliability and to provide sufficient protections, combined with the Ecosystem Restoration Program and the regulatory baseline, to address CALFED's ecosystem quality needs in the areas of fishery protection, restoration, and recovery. HDR|SWRI, as the technical lead, developed a refined project description, identified the effects and interrelationships between related water acquisition and management programs, and developed alternatives that were analyzed and compared in the EIS/EIR in the areas of surface water quality and quantity, and fisheries resources. Mr. Link led HDR|SWRI's modeling team and oversaw the post-processing of DWR's modeling for the project.

Contra Costa Water District/Environmental Science Associates, Los Vaqueros Reservoir Expansion Project. HDR|SWRI is conducting project operations planning and hydrologic modeling in support of the Los Vaqueros Reservoir Expansion Project. HDR|SWRI developed a strategy for operations of the project for the Environmental Water Account, water supply reliability, and other purposes. Mr. Link oversaw the Delta and reservoir operations, water quality, and fishery modeling necessary for the development and evaluation of the operating scenarios, as well as how the operating scenarios would be coordinated with CCWD, SWP, CVP, and potential participating agency water supply operations. The modeling included CVP/SWP system operations (with CALFED), Delta flows and operations, Delta water quality, and Los Vaqueros Reservoir expansion alternatives operation. The analysis includes water quality, water supply reliability, and Delta environment enhancement benefits and impact analysis.

Sacramento Municipal Utility District, Trinity River Hydraulic Modeling. Mr. Link served as project manager for modeling associated with the effects of proposed channel modifications for habitat enhancement purposes, impacts of bridge removal and replacement, and the adequacy of a proposed gravel supplementation program.

City/County Office of Metropolitan Water Planning, Water Forum Agreement Environmental Impact Report. Mr. Link served as HDR|SWRI's Principal Engineer for the Water Forum's successfully completed environmental impact report, overseeing all hydrologic, temperature, and salmon mortality modeling used as a basis of the impact assessment for water supply, fisheries resources, riparian vegetation, recreation, and cultural resources. He was directly responsible for water supply and power impact analyses and development of the modeling assumptions for the EIR.

Sacramento Area Flood Control Agency, Folsom Dam and Reservoir Interim and Long-term Reoperation. Mr. Link served as Principal Engineer in the preparation of feasibility studies for Sacramento Area Flood Control Agency to determine the effects of reoperation of Folsom Dam on water supply, power production, and pumping requirements, given demands on the Central Valley Project and instream requirements of the lower American River. He was responsible for directing all aspects of hydrologic, temperature, salmon mortality, and hydropower modeling supporting the long-term reoperation analysis for the feasibility studies and for the Final Environmental Assessment/FONSI.

Placer County Water Agency and Bureau of Reclamation, American River Pump Station Project Environmental Impact Report/Environmental Impact Statement. Mr. Link served as HDR|SWRI's Principal Engineer for the hydrologic modeling associated with the preparation of the EIR/EIS report for the American River Pump Station Project. The project involves construction and operation of a year-round pumping facility for PCWA which will divert water from the North Fork American River in the vicinity of the Auburn Dam construction site, closure of the Auburn Dam bypass tunnel; and restoration of a three-quarter mile reach of the river that was dewatered and impacted by activities associated with Auburn Dam construction.

Bureau of Reclamation, American River Basin Cumulative Report. Mr. Link served as HDR|SWRI's Principal Engineer for the American River Basin Cumulative Impact

Report, a comprehensive cumulative impact analysis prepared for Reclamation to use in several environmental documents and biological assessment for reasonably foreseeable federal actions within the American River Basin. He provided technical input in the development of modeling parameters and water demand assumptions regarding the anticipated future hydrology of the CVP/SWP as a result of completing the reasonably foreseeable federal actions.

Western Area Power Administration, Central Valley Project Operations Modeling and Impacts Assessment. Mr. Link was the project manager supporting the Western Area Power Administration in analyzing the benefits and costs associated with the potential changes in the operations of the CVP hydroelectric resources and the restructuring of the electric utility industry. He performed the modeling for, and assessed impacts associated with, various proposals that may impact how the CVP is operated.

Sacramento Municipal Utility District, Trinity River Environmental Impact Report/Environmental Impact Statement Alternative. Mr. Link performed the hydrologic modeling of the Sacramento Municipal Utility District Alternative, with a limited comparison to the existing Trinity Alternative. The modeling scenario included Sacramento and American river water temperature and salmon mortality modeling.

Northern California Power Agency, Trinity River Mainstem Final EIR/EIS Expert Witness Testimony. Mr. Link provided expert witness testimony and review comments regarding the flow regime associated with the Trinity River Final Environmental Impact Statement and Record of Decision for the project's effects on fisheries and aquatic habitat.

Sacramento County Water Agency, Real-Time Operations Model Development for Folsom Shutters and Integration of Target Release Temperature Objectives. As Principal-in-Charge, Mr. Link prepared iterative modeling of lower American River water temperatures and salmon mortality to determine the monthly Folsom Reservoir target temperatures release objectives that would provide maximum benefit to both Chinook salmon and steelhead in the lower American River. Optimal Folsom Reservoir coldwater pool management via dynamic, monthly target temperature release objectives was determined within the constraints of coldwater pool availability and Central Valley Project Improvement Act flow objectives.

Tehama-Colusa Water User's Association, Water Supply Analysis. Leading HDR|SWRI's hydrologic modeling team, Mr. Link evaluated the impacts of additional water delivery to the Tehama-Colusa Water User's Association to the rest of the Central Valley Project system. Tasks included developing appropriate assumptions for simulation modeling, performing the modeling, and analyzing the results. Mr. Link was also the lead in developing innovative procedures to determine the magnitude of additional deliveries that could be delivered to the Association with no impact to the other Central Valley Project users while maintaining all Reclamation operational and environmental goals.

Nebraska Department of Water Resources, North Platte River Water Use Patterns. Mr. Link served as Principal-in-Charge for HDR|SWRI's litigation support to the legal team working for the State of Nebraska in its Supreme Court case against the State of Wyoming over the waters of the North Platte River and investigated historical and current water use in the North Platte River Basin. His primary role was to evaluate the hydrologic effects of water use in the North Platte River Basin. Results of modeling scenarios were presented in reports submitted as part of Nebraska's affirmative and defensive case disclosures, as well as affidavits prepared in support of legal motions. Mr. Link also assisted legal counsel in depositions of Wyoming's experts and in the preparation of legal briefs.

Non-HDR | SWRI Project Experience

Bureau of Reclamation, Central Valley Project Real-Time Operations. Mr. Link directed the daily water operations for the federal Central Valley Project, ensuring Reclamation compliance with flood control regulations, water supply contracts, environmental obligations, and regulatory requirements. Mr. Link directed the San Joaquin Valley operations associated with water availability and conveyance from the Delta. He was also responsible for oversight of Friant Kern Canal and Madera Canal operations.

Bureau of Reclamation, Central Valley Project Water Operations. Mr. Link estimated and interpreted run-off from the major Sacramento and San Joaquin river tributaries to assist in daily operation of the Central Valley Project. He also performed planning model studies for Reclamation's "Long-Term Central Valley Project Operations Criteria and Plan." He contributed to power operations and water supply forecasting, and performed a review of the entire Plan.

Bureau of Reclamation, Operation Simulation Modeling. Mr. Link developed operation simulation models that evaluated water and hydroelectric project attributes of existing and planned Central Valley Project facilities. These models facilitated evaluation of alternative water and hydroelectric project features and configurations and their effects on water supply and power generation.

Alameda County Water District, Water Supply Planning Simulation Model. Mr. Link oversaw the development of a long-term water supply planning simulation for the Alameda County Water District. A mixed integer linear program was used as the engine in the model to represent the operations of the system. The model has been successfully used by the District to analyze its long-term operations.

City of Santa Clara, Power Modeling. Mr. Link was responsible for the research and development of computer models to evaluate the increased power potential resulting from modification of reservoir operations at the City of Santa Clara's Stony Creek Hydroelectric Project.

Western Area Power Administration, Evaluation of Electrical Loads. Mr. Link was the Project Manager in charge of development of mathematical methods for the real-time evaluation of electrical loads of the Western Area Power Administration. He created models for demand-side operations and management of Western's Central Valley Project electrical loads.

Water Yield and Hydro Generation Evaluation. Mr. Link evaluated water yield and hydroelectric generation potential of a portion of the San Joaquin River tributary system assuming the development of additional storage facilities within the tributary. He provided an analysis of the value of the water within the tributary based on alternative development costs.

City of Redding, Operation Studies for Pumped Storage Project. Mr. Link served as the project manager responsible for technical operation studies for the City of Redding's Electric Utility proposed pumped storage project. These studies evaluated power production and reservoir operations based on the proposed project configurations.