

BENJAMIN S. BRAY, Ph.D., P.E.
 East Bay Municipal Utility District
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SUMMARY OF QUALIFICATIONS

I am a knowledgeable and experienced water resources analyst skilled in interpreting and communicating high-level technical analysis through application of advanced numerical methods to water resources in surface and ground water supply, hydrodynamics, and water quality. I have specific expertise in the following areas:

- Advanced Numerical Methods in Environmental Systems
- Surface & Ground Water Modeling
- Surface & Ground Water Quality
- Systems Engineering & Operations Research
- Inverse Problems in Environmental Systems
- Info-Gap Decision Theory
- Experimental Design & Linear Statistical Modeling Applications
- Monitoring Network Design
- Water Rights
- Conjunctive Use Analysis
- Adaptive Management
- Collaborative Science
- Hydrology
- Geomorphology

PROFESSIONAL EXPERIENCE

East Bay Municipal Utility District

Senior Civil Engineer, Water Supply Systems Modeling Section, September 2014 - Present
 Water Resources Specialist, January 2007 - September 2014

- Manage preparation of water resources engineering analyses. Develop, implement and apply appropriate models and modeling strategies. Supervise engineers, planners, administrative staff, and consultants.
- Direct or participate in a variety of studies and projects to preserve EBMUD's water rights, modify operational processes, and evaluate feasibility of water supply infrastructure.
- Diversify water supply through regional partnerships to obtain dry-year supplemental supplies for long-term planning. Support preservation of the District's CVP contract entitlement.
- Represent EBMUD in professional and technical forums and before regulatory and agency staff.

UCLA Civil & Environmental Engineering Department

Post-Doctoral Researcher

July 2006 – July 2007

- I served as a post-doctoral researcher on the Alamitos Barrier Project Reclaimed Water Study. This project was an outgrowth of my dissertation work where I performed modeling and technical analysis in support of the project. The modeling analysis performed for three agencies—Water Replenishment District of Southern California, Los Angeles County Department of Public Works, and the Orange County Water District—was used as the basis for approval by state regulatory agency, the Department of Public Health and Safety for permitting the injection of reclaimed water at the Los Alamitos Seawater Intrusion Barrier.

U.S. Army Corps of Engineers, Los Angeles District

Hydrologic Technician (full time)

Summer 2002

- Duties included QA/QC data processing and review of field datasets, statistical analyses of water resources datasets, development and review of technical reports, and archival of water resources datasets for management of flood control reservoirs in Southern California.

USDA Forest Service, Pacific Southwest Research Station, Redwood Sciences Lab

Hydrologic Technician (part time)

Summer 2000 – Summer 2001

- Duties included QA/QC data processing and review of field datasets in support of the Turbidity Threshold Study. Performed statistical analysis using SPLUS software to analyze stage, flow, turbidity, and suspended sediment datasets to analyze the effect of different land uses on suspended loads in the Caspar Creek Watershed in Northern California.

ACADEMIC BACKGROUND

University of California, Los Angeles

Doctor of Philosophy in Civil Engineering emphasis in Water Resources, minors in Operations Research and Linear Statistical Models, June 2006

Masters of Science in Civil Engineering emphasis in Water Resources, June 2002

- Awarded Chancellor's Fellowship & Dissertation Year Fellowship
- Teaching Assistant, Dept. of Civil Engineering 2002-2004
- Awarded ASCE Teaching Assistant of the Year, 2004

Humboldt State UniversityBachelor of Science Degree, *cum laude*, Environmental Resource Engineering, December 2000

- Research Assistant, NMFS Fish Passage through Culvert Study, Dec. 1999 – Jan. 2000
- Recipient, Homer Arnold Award in Applied Engineering, April 2000

PROFESSIONAL LICENSES AND ASSOCIATIONS

California Water & Environmental Modeling Forum, Member, 2007-Present
 Past Convener, 2015-Present Convener, 2013-2015 Vice Convener, 2010-2013

Registered Professional Civil Engineer in California, Certificate No. C 78883

American Society of Civil Engineers, Member M.ASCE #342868, 1997-*Present*

American Geophysical Union, Member #10233122, 2003-*Present*

**CALIFORNIA WATER & ENVIRONMENTAL MODELING FORUM
 ACHIEVEMENT HIGHLIGHTS**

Moderator and Member, Planning Committee, “Integrated Environmental Modeling of Estuarine Systems” Workshop in Collaboration with Delta Science Program, UCD Watershed Sciences, and CWEMF, May 22-23, 2015.

Member, CWEMF Peer Review Administration Committee, “Peer Review of the IWF, MODFLOW and HGS Model Codes: Potential for Water Management Applications in California’s Central Valley and Other Irrigated Groundwater Basins,” June 2011 – July 2013.

Session Chair, Session 3. Achieving Scientific Advancement by Exploring Dimensional Enhancements; Session 7. Sediment Transport and Channel Morphology with Spatially Resolved Models, Approaches, Applications, and Analysis. 2013 CWEMF Annual Meeting, April 22, 2013.

Session Chair, Session 10. Multi-Dimensional Modeling. 2012 CWEMF Annual Meeting, April 17, 2012.

Session Chair, Session 18: Multi-Dimensional Modeling, 2011 CWEMF Annual Meeting, March 1, 2011.

PUBLICATIONS AND PRESENTATIONS

Bray, B. S. (Fall, 2000). “Quantitative Assessment of Suspended Sediment Concentration on Coho Salmon in Freshwater Creek.” Senior Project, Environmental Engineering Department, Humboldt State University, California. 75p.

—, Sim, Y., and W. W-G. Yeh. “Calibration of a Complex Three-Dimensional Coastal Aquifer with Density-Dependent Flow.” *American Geophysical Union 2004 Fall Meeting, San Francisco*, Dec. 13-17, 2004

- , Sim, Y., and W. W-G. Yeh. “Flow and Transport Modeling to Improve Injection Barrier Operations in Southern California.” *American Geophysical Union 2005 Fall Meeting, San Francisco*, Dec. 5-9, 2005
- , Modeling and Optimization of Seawater Intrusion Barriers in Southern California Coastal Plain. Ph.D. Dissertation, Department of Civil and Environmental Engineering UCLA. June 16, 2006. 255p.
- , “The Attack of the Seawater.” Water Resources Planning Division Spotlight Presentation. May 15, 2007.
- , “Development of a Saltwater Intrusion Model.” EBMUD Engineer’s Forum Presentation. June 13, 2007.
- , Tsai, F. F-T., Sim, Y., and W. W-G. Yeh. (2008). “Calibration of a Large Scale Density-Dependent Model.” *Journal of the American Water Resources Association*. (JAWRA)43(5):1329-1343.DOI:10.1111/j.1752-1688.2007.00098.x.
- , “COVAR[WSMP 2040 Project, WRPD].” Water Resources Planning Division Spotlight Presentation. January 29, 2008.
- , and W. W-G. Yeh. (2008). “Improving Saltwater Barrier Operation with Simulation-Optimization in Southern California.” *Journal of Water Resources Planning and Management*. March/April 2008. DOI:10.1061/(ASCE)0733-9496(2008)134:2(171).
- Wisniewski, E., Bray, B. and J. Tam. “The Hot Topics @ CLE.” Water Resources Planning Division Spotlight Presentation. October 22, 2008.
- Bray, B. S., “2009 JSA Temporary Flow Change Proposal: In-Stream Temperature Impact Analysis.” EBMUD Technical Report. April 14, 2009.
- , “Camanche Reservoir Response to Extreme Weather in October 2009.” EBMUD Technical Memorandum, addressed to Priya Jain, Senior Civil Engineer. July 10, 2010. 30p.
- , “The Role of Extreme Weather in Reservoir Temperature Management A Case Study: Camanche Reservoir October 2009.” Poster Presentation, 2011 CWEMF Annual Meeting. February 28, 2011.
- , “Tracking Cold Water Replenishment in Camanche Reservoir 2008.” Water Resources Planning Division Spotlight Presentation. May 3, 2011.
- , “Investigating the Camanche Zone of Influence... for the Low Level Outlets.” Water Resources Planning Division Spotlight Presentation. September 27, 2011.
- , “Mokelumne River System Temperature Management.” Presentation to JSA Partnership Coordinating Committee. October 4, 2011.

- , “What is a... Water Resources Specialist?” Seminar Presentation for Center for Science Excellence, Contra Costa Community College. October 26, 2012.
- , “East Bay Municipal Utility District, A Little Bit About Where Our Water Comes From.” Presentation to Oakland Sunrise Rotary Club. January 8, 2013.
- , “Ben's Highlight Reel of the AGU Fall 2012 Meeting.” Water Resources Planning Division Spotlight Presentation. May 14, 2013.
- , “What’s up with all this ‘Fog’? A curious exercise... with a moral.” Water Resources Planning Division Spotlight Presentation. September 18, 2013.
- , “Mokelumne System Temperature Management: Integrating Modeling Tools & Monitoring Programs into Planning & Operations.” Presentation 2014 CWEMF Annual Meeting. February 24, 2014.
- , “Camanche Hypolimnion Management Meeting.” Presentation to JSA Partnership Meeting. June 9, 2014.
- , Technical Lead Author, Appendix E Modeling Technical Appendix, Permit 10478 Time Extension Project Final Environmental Impact Report. Approved by EBMUD Board of Directors September 23, 2014.
- , “EBMUD Drought Planning Put to the Test in 2014.” *American Geophysical Union 2014 Fall Meeting, San Francisco*. December 16, 2014.
- , “EBMUD Water Resources Planning.” Guest Lecturer Presentation to CSUEB Environmental Health Course. February 3, 2015.
- , “CWEMF Looks in the Rearview at 2014 & the Road Ahead in 2015.” Presentation to IEP Annual Meeting. March 18, 2015.
- , “Bay-Delta Hub Connecting All Things Water The EBMUD Bay-Delta Nexus.” Presentation to the Water Education Foundation’s 2015 Bay-Delta Tour. June 25, 2015.
- , “Mokelumne River Water Quality Operations Plan.” Presentation to Mokelumne River Technical Advisory Committee. July 15 2015.
- , “2015 Mokelumne River System Temperature & Water Quality Update.” Presentation to JSA Partnership Coordinating Committee. October 8, 2015.
- , “Water Resources Modeling The Technical Perspective of Water Management.” Guest Lecturer Presentation to CSU Sacramento, Hydrology Course. November 30, 2015.
- , “Use of Sequent Peak Algorithm Drought Severity Index and Hydroclimatic Reconstructions from Tree-Rings to Inform Water Supply Reliability Planning.” *American Geophysical Union 2014 Fall Meeting, San Francisco*. December 15, 2015.