

Barbara R. Bradley, PE
President
Advanced Onsite Water



"Advanced Onsite Water is about transforming the way we treat magical, life-giving water. Honoring water, people, and wildlife happens through the sustainable, progressive technologies and practices we embrace." – Barbara Bradley

- Education** BS Civil Engineering with Honors – University of California – Berkeley
MS Environmental Engineering – University of California – Berkeley
PhD studies in Environmental Policy, School of Social Ecology
University of California – Irvine
- Registration** Registered Civil Engineer - CA #C-53105
Water Efficiency Rating System (WERS) Consultant (pending)
- Boards** Current: Environmental Health Advisory Board, County of San Diego
City of Malibu Wastewater Advisory Committee

Past: California Decentralized Water Recycling Council Board Member,
California Onsite Wastewater Association (10 yrs., President and other offices);
Berkeley Solid Waste Management Commission (6 years including Chair)
- Member** San Diego US Green Building Council, California Onsite Wastewater Association

Experience

Barbara's passion for water conservation, reuse, and autonomy has informed her 40 years of distinguished work. She specializes in sustainable engineering practices, integrating alternate waters collection, treatment, and reuse, and water conservation.

A strong relationship with regulators helps Barbara to implement effective, fair, and permissible solutions for her clients, despite project constraints and restrictive regulations. She successfully works in the cities of San Diego, Malibu, and Palm Springs; and in the counties of San Diego, Los Angeles, Riverside, San Bernardino, Orange, and Imperial; and obtains permits through the Colorado River, Santa Ana, San Diego, Los Angeles, and Lahontan Regional Water Quality Control Boards.

Barbara developed sustainable engineering analyses, practices, and designs that are now used routinely in the water conservation industry. A recognized expert in her field, Barbara regularly presents on sustainable water practices and methods at conferences in the U.S. and abroad. Through board appointments and independent consultancy, Barbara supports public agencies in their development of new, sustainable regulations and programs. Barbara Bradley is a recognized expert in programs and engineering practices for advanced onsite water recycling and wastewater treatment systems throughout California.

Finally, Barbara provides extensive services for commercial, multi-family, and multi-use developments throughout Southern California, including new commercial and multi-family developments; existing private and public facilities including resorts, office complexes; gas stations; restaurants; shopping centers; schools; condominiums; RV and mobile home park.

Her experience covers conservation assessments; strategic analysis for permitting and technology selection; site and groundwater studies; treatment system design; construction drawings; specifications; permitting; support during construction, and ongoing environmental compliance and engineering support.

Owner and Founder, Advanced Onsite Water

2003 – Present

Barbara founded Advanced Onsite Water in 2003, born from her passion to honor water and transform how we use it. She's built a unique, high-demand firm specializing in the types of projects described above. Barbara is highly adept at managing multi-discipline teams, communications, schedules, managing client expectations and regulatory relationships, and excellent work products.

AWARDS

Net Zero Water Award. SD Green Building Council, 2018. 8,000-gpd greywater reuse for the Silvergate Assisted Living and Memory Care Graywater, Americare Health and Retirement, San Diego.

Preservation Design Award. California Preservation Foundation, 2006. Wattles Estate and Gardens Cultural Landscape Report and Conservation Study, Hollywood Heritage Foundation.

Sustainable Design Award. Nolte Associates, 2003. Cottonwood Creek Restoration Design, Encinitas.

SELECT PROJECT EXPERIENCE

Excerpt of Conservation, Alternate Waters, Water Recycling, Wastewater Treatment, and Disposal at Commercial, Multi-Family, and New Development Properties

Paradise Cove Water Recycling – Malibu, CA. Combined two wastewater plants into one new recycled water plant producing 85,000 gallons per day for irrigating the grounds of the “most expensive mobile home park in the USA.” Developed a highly collaborative and mutually beneficial permitting strategy with the LA Water Board. Project Manager of 9 engineering and architectural consultant firms. Navigated through extremely challenging State and local permitting. Under construction. 2016-2019.

Silvergate Assisted Living and Memory Care Graywater Reuse. Designed and permitted the largest commercial greywater reuse system in San Diego and one of largest in California (8,000 gpd). All irrigation will use greywater. 2017-2018.

Catalina Island Conservancy Rainwater and Desalination – Catalina Island, CA. Engineered and obtained the permit for a first-in-California combined desalination and rainwater capture, treatment, and reuse system for deck washing, janitorial use, and irrigation at the new Trailhead Building in Avalon, one of the most drought-stricken places in California. 2015-2018.

Saint Michael's Abbey Wastewater Treatment, Disposal, and Reuse System – Orange County, CA. For this monastery, convent, church, and school development, a 10,000-gpd onsite wastewater treatment system was designed and permitted for a new monastery, convent, and boarding school. Project to use AXMAX and subsurface drip dispersal in the vineyard. 2015-2019.

Val 9 Affordable Housing Graywater – San Bernardino, CA. Designed and permitted graywater treatment and reuse for 2 multi-family low-income housing units. Graywater system supplies all irrigation needs. Installed 2017.

Ridgecrest Regional Hospital Laundry Reuse – Ridgecrest, CA. Conducted the conservation assessment for the hospital's reuse of laundry water, siting and selection of equipment, and recommendations for technology suppliers, and recommendations for irrigation conservation. 2016.

Rio d'Oro Development Water Recycling and Integrated Water – Butte County, CA. Provided construction drawings and preliminary permitting of the water recycling system for Phase 1 of a new residential/mixed use/agricultural development (final buildout 2,500 homes). Developed reuse options and overall concept of integrated water systems for rainwater, stormwater, and recycled water for agriculture, landscaping, and toilet flushing. 2016-2017.

De Luz Development Wastewater Treatment, Disposal, and Reuse Systems – Riverside County, CA. New 80-lot residential development. Developed wastewater permitting strategies for a new 80-lot residential development. Services also included preliminary design and costs for two advanced treatment wastewater systems with partial reuse through subsurface drip dispersal. Ongoing.

The Oasis in Death Valley Wastewater Treatment, Disposal, and Reuse – Death Valley, CA. This famous resort includes lodging, restaurants, shops, employee residences, laundry, maintenance, and offices. Prepared Water Board permitting, construction drawings, and specifications for new 85,000 gpd advanced treatment system with subsurface drip dispersal in golf driving range. Prior work at this site included mapping, facility assessment, cost estimates. 2013-2019 ongoing services.

El Rancho Escondido Treatment and Disposal – Catalina Island, CA. At the Wrigley family's historic ranch, home, and chapel, we obtained approvals from LA Water Board and LADPH for wastewater treatment in this highly-restricted area of ecological significance. Produced construction plans for advanced treatment and onsite disposal. The permit allowed upgrades and expansions to the residences, stables, winery, employee housing, wine tasting room, and museum. 2015-2019.

Casablanca Onsite Water Recycling – San Diego, CA. Developed preliminary water recycling system site plan for the Casablanca 500-unit condo complex. Recommended technology selections, conducted Sewer Study of effect on City sewer, discussions with Water Board and City staff. 2014.

Trancas Country Market Treatment and Disposal – Malibu, CA. Led complex and demanding regulatory liaison and negotiations with Los Angeles Water Board and City of Malibu for this long-established community shopping center's upgrade and expansion. Designed and permitted Orenco secondary treatment system with denitrification, UV disinfection, in-ground onsite disposal. Developed pollutant loadings for extensive groundwater delineation model, oversaw field investigations, and gave public presentations/technical support for the project. LEED certified.

Paradise Cove Beach Café Treatment and Disposal – Malibu, CA. Designed and permitted expansion for all processes of an 18,000 gpd treatment plan for extremely popular restaurant on a private beach. Upgraded grease removal, flow equalization, pre-aeration, ammonia removal, disinfection, odor control. Designed subsurface drip dispersal. Construction inspection.

Paradise Cove Mobile Home Park Sewers, Treatment, and Disposal – Malibu, CA. Project manager for 280-unit beachside mobile home park. Designed and permitted a completely new wastewater collection, treatment, and disposal system for 60,000 gpd. Designed septic tank clusters, lift stations, Orenco AdvanTex secondary treatment, UV-ozone disinfection, small-diameter variable grade sewers, and subsurface drip dispersal/irrigation. Met RWQCB effluent quality requirements. Created a groundwater model (Hantsche method) to predict effect of discharged wastewater. Ongoing as-needed regulatory and engineering support.

Other Project Types. Restaurants: Moonshadows, Geoffrey’s Malibu, and La Salsa; **Hotel:** Malibu Country Inn. **Condominiums:** Malibu Outrigger, Malibu Gardens, and Malibu Villas. **Shopping Centers:** Anza, Cross Creek, and Trancas Country. **Mobile Home Parks:** Anza Pines, Malibu Beach, Glenview, El Moro Village, Meadowbrook, and Desert. **Other:** HRL Labs and office complex; Rancho Silverado Stables.

Public Agency Alternate Waters Use, Water Conservation, and Recycling

CAL FIRE Graywater and Rainwater Reuse – San Diego, CA. Developed a construction drawings template for graywater reuse systems for use throughout California. Collaboratively developing a new type of permitting arrangement to allow the San Diego Water Board to permit a gray- and rainwater system for irrigation and ultimately for truck washing and offsite firefighting. 2015-2018.

County of San Diego Laundry Water Recycling – San Diego, CA. Developed laundry water feasibility analyses for 6 detention and animal shelter facilities. Developed water usage rates. Evaluated treatment system suitability, placement, and costs.

County of San Diego Water Recycling Feasibility – San Diego, CA. Conducted a feasibility study for this large office campus. Quantified ROI by defining water sources, end uses, technology, routing, permitting requirements for onsite water recycling at a large urban LEED Platinum office complex with a cooling tower, new construction (toilet flushing), and large irrigated landscaping.

County of San Diego Water Conservation Assessments – San Diego, CA. Auditing and developing recommendations for indoor uses, cooling towers, and irrigation changes for the 20 largest water-using facilities run by San Diego County (courts, detention facilities, hospitals, etc.). Recommending graywater reuse, recycled water (where feasible), major irrigation changes throughout, landscape palette changes, commercial kitchen and laundry upgrades. Water savings ranged from 15% to 30%.

Water and Energy Conservation Program, County of San Diego – San Diego, CA. Prepared a Water and Sewer Rate Study for cost projections conservation planning. Inspected and developed recommendations and costs for plumbing fixture changes in prisons and office buildings for water conservation. Proposed language adopted by General Services 5-year plan for water conservation pilot program. Developed education materials and led presentations to staff on in-building recycling.

Water and Energy Design Guidelines for a New College Campus, College of the Desert – Palm Springs, CA. Developed very specific, concrete design guidelines for all water-related aspects of the college’s West Campus, including educational buildings, cafeterias, maintenance areas, and landscaped areas. These guidelines were incorporated into the architect team’s contract and construction plans.

Onsite Wastewater Treatment Program (OWTP) Development, City of Los Angeles – Los Angeles, CA. Key author supporting program development of the Bureau of Sanitation’s OWTP. Adopted the Local Agency Management Program (LAMP) as a framework for updating program strategy, which developed attainable revenue streams and guided the technical understanding of OWTP Group staff.

County of Merced Sustainable Water Plan – Merced, CA. “County of Merced University Community Plan -- A Plan for a Sustainable and Livable Community.” Developed comprehensive integrated water, wastewater, water reuse, and storm water management infrastructure plan for a new 25,000-person community at the new University of California, Merced County campus. The Community Plan was predicated upon numerous sustainability approaches. Conducted agency meetings for permitting and focus group presentations. Provided senior review for all other aspects of the planned community.

City of Fillmore Reuse – Fillmore, CA. Designed and supported construction of 30 acres of large-scale subsurface drip irrigation systems disposing of two MGD of recycled water from municipal plant. Recycled water irrigates turf in the new Two Rivers Park, four schools, and public right-of-way.

AB885 Expert Support for New Regulation – Sacramento, CA. Assembled the team that successfully worked with the State Water Resources Control Board to implement the first-ever statewide regulations for onsite wastewater treatment. The uniform standards allowed more biomechanical treatment systems, which in turn produced greater health and environmental protection. Also led comparison of existing and future regulations. Gave technical support for technology and regulatory issues and system costs.

Tijuana Master Plan for Water and Wastewater – Tijuana, Mexico. Developed and led decision-making process using sustainability criteria for planning comprehensive water and wastewater services for Commission Estatal de Servicios Públicos (CESPT) for Tijuana and Rosarito, Baja California. Developed sustainability indicators with the stakeholder agencies, criteria for the overall master plan, and evaluation criteria for the infrastructure alternatives. Led the first-ever environmental impact assessment in Mexico for a master plan under new regulations delegating environmental authority to the State of Baja California.

Border Environment Cooperation Commission (BECC) – Juarez, Mexico. Project manager and author of sustainable development guidelines for environmental infrastructure projects that addressed social, environmental, and economic factors. Defined sustainability standards suitable for border communities in both the United States and Mexico. Developed the BECC's methodology for defining a project's sustainability aspects and sustainability criteria for engineering planning, design, and staff review procedures. Prepared scopes of work templates to integrate explicit sustainability tasks into engineering contracts with local agency applicants. Trained the BECC's engineering staff.

City and County of San Francisco Alternative Treatment Study – San Francisco, CA. Developed compendium of alternative wastewater and stormwater technologies for citywide infrastructure; evaluated technologies based on energy usage, recyclability, wildlife & recreational value, regulatory compliance, and feasibility for urban environment.

Palm Springs Aerial Tramway, 3 Wastewater Treatment and Disposal Systems – Palm Springs, CA. Designed, permitted, and provided construction support and regulatory plan preparation for three advanced treatment systems with denitrification; two systems were located in high-altitude, freezing conditions within the State Park while the other was on the valley floor in severe heat. The systems were temperature-conditioned for both extremes. ROWD permit approved by Colorado River RWQCB and Riverside County.

Mountain Recreation and Conservation Authority Treatment and Disposal – Malibu, CA. Assessed onsite wastewater conditions at agency's existing facilities, engineered design of advanced treatment systems at public beachfront park for public restroom facility.

Other Experience: Lilac and Hanson Schools, Bluff Utah Community Wastewater Plan

Water-Related Sustainability Projects

Bill and Melinda Gates Foundation New System Development - Seattle, WA. Conducted product development research and preliminary design for development of a mobile latrine cleaning and sludge treatment system to be used in developing nations where tight housing, limited streets, lack of sewers, and burgeoning populations have had severe impacts on public health.

Hollywood Heritage Erosion Protection Plan – Hollywood, CA. Awarded the California Preservation Foundation's 2006 Preservation Design Award for the Wattles Estate and Gardens Cultural Landscape Report and Conservation Study. Managed stormwater study analyzing storm impacts to a historic cultural landscape at the Wattles Estate and Gardens. Developed numerous alternatives for protecting the gardens from massive sediment and flooding problems. Selected solutions using sustainability and historic evaluation process. Demonstrated linkage between restoration and sustainable development. Provided documentation for successful grant applications.

Arrowhead Springs Resort Sustainable Development Plan – San Bernardino, CA. Developed and led a sustainable development plan for a new mixed-use development. Defined 3-tiered sustainability evaluation system and led a team of 11 specialists through the process for their respective disciplines. Developed guiding principles with stakeholders, identified sustainability targets, evaluated appropriate technological solutions through the three-tiered sustainability analysis. Recommended achievable goals to create a benchmark community. Analyses addressed siting, water, energy, materials, solid waste, transportation, human communities, biological resources, building systems, air quality, and landscaping.

The Alliance for a Clean Waterfront Alternative Technologies Plan – San Francisco, CA. Yosemite Watershed Restoration: Sewage and Stormwater Infrastructure Analysis and Alternatives. Used environmental justice and watershed-based framework. Selected and evaluated technical solutions resolving issues affecting water quality in economically depressed Bayview-Hunters Point community and area of San Francisco Bay linked to Yosemite Slough. Looked holistically at physical and social factors in the watershed boundaries to achieve socially, economically, and environmentally sustainable solutions. This included restoration of and access to habitats, natural watersheds, and shoreline areas.

Wetlands Restoration and Treatment Wetlands Design

Cottonwood Creek Restoration Design – Encinitas, CA. Awarded the 2003 Nolte Associates Sustainable Design Award for wetland design and water quality improvement calculations for the daylighting of Cottonwood Creek – an underground waterway flowing through that became a living part of Cottonwood Park. Designed the creek restoration using sustainability practices and materials. Implemented creekside vegetation to act as a biofilter for park runoff. Designed creek to receive natural seasonal flows and dry weather flows from urban uses. Used a sediment basin that preceded the park and the meandering flow path of the creek to improve water quality year-round.

Bay Point Tidal March Restoration – Concord, CA. *Land and Water* front cover feature article. Managed the remediation design and environmental aspects of a site contaminated with heavy metals. Developed cost-saving sampling and analysis protocol, which was accepted by the regulatory agencies. Managed subsequent construction phase and wetlands restoration of tidal and seasonal wetlands. Maintained regulatory relations as a top priority, ensuring buy-in for approach and changes when they became necessary. Restoration effort included soil import and amendment, grading, hydroseeding, planting, removal of exotic species, and monitoring (permitting phase required five years). Negotiated unanimous approval by all regulatory agencies to close the project one year ahead of the permitted schedule due to very successful restoration.

Prince of Peace Abbey Wetlands – San Diego, CA. Designed and permitted a subsurface flow wetland for disposal and habitat preservation in a remote and ecologically rich area.

New and Alamo Rivers Wetlands Plan – Imperial County, CA. Prepared conceptual plans for constructing wetlands along the New and Alamo Rivers in Imperial County, California to remove heavy sediment and chemical loads from agricultural drainage. Prepared wetlands design guidelines. Provided quality control and senior guidance for documenting over 100 wetland sites.

Hayward Marsh Treatment Improvements – Hayward, CA. Improved the wetlands treatment marsh for Union Sanitary District when it failed to perform as intended. Recommended baffle installation and chemical dechlorination to increase the nitrification capacity of the system by 20 percent. Provided engineering services during construction.

Presentations, Press, Lectures, and Publications

- “Gray Water Safety, Practices, and Reuse.” Presented to the San Diego Area Chapter, International Code Council. May 18, 2019.
- Water Reuse Practice Guide*, contributing author. William J Worthen Foundation. 2018
- “Advanced Onsite Water: Changing the Way We Treat Water.” Presented at the Blue Tech Conference of the Maritime Alliance. November 11, 2017.
- “NZW: State of the Region Address.” Presented to the San Diego Green Building Council’s Net Zero Conference. May 25, 2017.
- “Water Resilience through Water Reuse.” Presented to the Urban Fabrick Collaborative. November 21, 2016.
- “Alternate Waters.” Presented to BNIM. July 13, 2016.
- “Sustainability Matters.” Presented to the San Diego-Israel Water Technology Summit. July 10, 2016.
- “Water Resilience in San Diego County: The Building Scale” Presentation to the San Diego Green Building Council. August 27, 2015.
- “Water Resilience Part 2” Presentation to AIA Committee on the Environment, San Diego. Feb. 24, 2015.
- “From Crisis to Putting Things Right: What Matters when the Well Runs Dry.” Presentation to Conservation Action Committee, San Diego County Water Authority. February 12, 2015.
- “Sustainability: Water, Recycling, and Materials for the Built Environment.” Presentation to Marmol Ratzinger, Los Angeles. September 18, 2014.
- “Recycling Black Water: Context, Structure, and Application.” Presentation to IAPMO, San Diego Chapter. May 6, 2014.
- “Regulatory Pathway: Onsite and In-building Recycled Water.” Zero Energy Zero Water Building Conference, San Diego Green Building Council. September 11, 2013.
- “Using an Integrated Approach to Developing Sustainability Guidelines and Performance Targets for a New College Campus” with B. F. Douglas, *et alia*, presented at WEF, 2011.
- “*In the Work Place*.” Interview by American Liquid Waste Magazine. February 2009.
- “*California Tackles Nitrogen from Onsite Wastewater Systems*.” Southwest Hydrology. Jul/Aug 2009.
- “Frontiers in Water Science.” Lecture presented at the School of Environmental Engineering, San Diego State University, San Diego, CA. April 16, 2009.
- “The Making of a Good O&M Manual.” 2009 Conference of the California Onsite Waster Treatment Association. March, 2009.
- “Sustainable Development and the Role of Onsite Wastewater Treatment.” 2008 Conference of the California Onsite Wastewater Treatment Association. March, 2008.
- “Water Sustainability: Policy Innovation and Conditions for Adaptive Learning,” with Dr. Helen Ingram. Presented to the Michigan State University Sustainable Michigan Endowed Project Academy. November 11, 2005.
- “Applied Sustainability” Lecture, Urban Planning, University of California, San Diego, CA. July 2004.
- “Advanced Onsite Treatment and Dispersal Offers New Solution for Mobile Home Parks,” with Steve Braband in the *Tenth National Symposium on Individual and Small Community Sewage Systems Proceedings* of the March 21-24, 2004 conference (Sacramento, CA), ed. Kyle R. Mankin, Pp. 506-513.
- “Water Infrastructure Decision Making for the Triple Bottom Line,” presented and submitted at the Southern California Water Infrastructure Fourth Annual Water Resources Institute Conference. February 26, 2004. Ontario, CA.
- “*Water without Borders*” co-authored chapter with Emilio de la Fuente. Presentation, published

- monograph, recommendations to Congress. *Border Institute IV Symposium*, Southwest Center for Environmental Research and Policy and San Diego State University. May 3, 2002. Pub. November 2003.
- “Decision Making for Sustainable Development of Wastewater Infrastructure,” chapter in *Innovative Developments in Wastewater Treatment* by EPA Region 7. January, 2003.
- “Evaluation of Onsite Wastewater Treatment Technologies Using Sustainable Development Criteria” co-authored with Dr. G. Tchobanoglous, Dr. Glenn T. Daigger and Dr. A. Robert Rubin. *Clean Technologies and Environmental Policy* Vol. 4 number 2, September 2002. Springer-Verlag, Berlin.
- “Sustainable Water and Wastewater Management Along the Mexico-United States Border” Presentation, published monograph, and recommendations to Congress. *Border Institute II Symposium*, Southwest Center for Environmental Research and Policy (SCERP) and San Diego State University. Symposium April 18, 2000. Published March 2002.
- “Decentralized Treatment Offers Cost Effective Reuse for a Sustainable New Community,” with Dave Richard and Blake Tresan. *WateReuse Symposium XVI Replenishing America: Water Reuse for Tomorrow’s Youth*, September 8-11, 2001. San Diego, CA.
- “A Sustainable Development Case for Onsite Wastewater Treatment” with Dr. George Tchobanoglous, Dr. Glen T. Daigger, and Dr. Bob Rubin. American Society of Agricultural Engineers. Presentation and proceedings. March 12-14, 2001.
- “Searching for Sustainability in a New University Campus: A Conceptual Plan for Integrated Water-Related Infrastructure Systems” with Dave Richard, Blake Tresan, and George S. Nolte, Jr. American Consulting Engineers Council conference on Sustainability, Marco Island, FL. February 13-14, 2001.
- “Sustainable Development” Lecture, Urban Planning, San Diego State University, San Diego, CA. April 2001.
- “Metrics and Methodology for Sustainable Development,” American Consulting Engineers Council Conference on Sustainability, Marco Island, FL. February 13-14, 2001.
- “Sustainable Development Approach Can Be Useful for Water Utilities” front page article in *Utility Executive* and in *Watershed and Wet Weather* both by the Water Environment Federation. February 2001 issues.
- “Estudios Iniciales para la Planta Internacional de Tratamiento de Aguas Residuales.” Presentation and proceedings. *Sistemas Lagunares Avanzados en Tratamiento de Aguas Residuales*, IX Taller Binacional de Transferencia de Tecnología. Sponsored by Comision Estatal de Servicios Públicos de Tijuana (CESPT) and the California State Water Resources Control Board (SWRCB). Tijuana, Mexico. September 19 and 20, 2000.
- “A Sustainable Development Approach to Wastewater Infrastructure.” Co-authored with Dr. Glen T. Daigger. Presentation and proceedings, Water Environment Federation WEFTEC 2000. Anaheim, CA., October 15-18, 2000.
- “Sustainable Communities and Onsite Wastewater Treatment.” Training lectures. *Now and When: Future of Onsite Wastewater Treatment, California*. Wastewater Training and Research Center, California State University, Chico, CA. July 31, 2000 (Pomona, CA), September 2000 (Sacramento, CA).
- “Tidal Marsh Restored in Record Time.” Front page article in *Land and Water*, p 10-12. Mar/Apr 2000.
- “Decision Making for Sustainable Development of Water Infrastructure.” Co-authored with Dr. Glen T. Daigger. Presentation and proceedings. *US EPA 6th National Drinking Water and Wastewater Treatment Technology Transfer Workshop*, Kansas City, MO. August 2-4, 1999.
- “A Sustainable Development Process for Defining a New Urban Development.” Co-author (Linda Morse, AIA). Presentation and proceedings. *24th Ann. Conf. Nat’l Assoc. of Env. Prof.*, Kansas City, MO 6/23/1999.
- “Using Sustainability Indicators and Measurement as a Basis for Decision Making; Developing

Sustainability Targets for Residential and Commercial Development.” Co-authored with Dr. Frank Turina. Presentation and proceedings. *24th Annual Conference of the National Association of Environmental Professionals*, Kansas City, MO June 20-24, 1999.

Interviews and quotes in the *Engineering News Record* and the *Wall Street Journal*, 1998.

“Improved Pond Wastewater Treatment Technologies Produce Higher Quality Effluents at Modest Cost.” Co-authored with Dr. Glen Daigger and Ian Law. Proceedings. WEFTEC Asia 98, Singapore, March 8, 1998.

Training in Sustainability and Alternative Wastewater Treatment Technologies

Conducted training across the United States, Mexico, El Salvador, and Hong Kong in sustainability and decentralized wastewater treatment systems. Included criteria and decision-making approaches through public commissions, agencies, associations, and universities.