

# KENNETH R. WRIGHT, P.E. PRINCIPAL ENGINEER

#### **CURRENT**

Serves as Principal Engineer for Wright Water Engineers (1961 to present) in its general practice of engineering. Includes agricultural and irrigation engineering, hydrology, water rights, water requirements and supply, groundwater studies, monitoring and wells, flood control and drainage, water rights appraisals, dams, pollution management, and permitting. In charge of company paleohydrologic research at Mesa Verde National Park and at Machu Picchu, Tipon, Moray, and Ollantaytambo, Peru.

#### **EDUCATION**

University of Wisconsin, Madison M.S. Civil Engineering, 1957

University of Wisconsin, Madison B.B.A., Business Administration, 1951

University of Wisconsin, Madison B.S. Civil Engineering, 1951

Coursework in Hydrology, 1967 Colorado State University

Real Estate Appraisal, 1992-present Continuing Education

#### **REGISTRATIONS**

#### Registered Professional Engineer:

Colorado Missouri Oklahoma Arizona Montana Texas California Nebraska Utah Iowa Nevada Wisconsin Indiana **New Mexico** Wyoming Kansas Ohio

Diplomate, Water Resources Engineer, The American Academy of Water Resources Engineers

Licensed Real Estate Appraiser, Colorado

Member and Past Chairman, Colorado State Board of Registration for Professional Engineers and Land Surveyors, 1975 to 1984. Served as Hearing Officer for professional practices complaints. Past Member, National Council of Engineering Examiners.

#### REPRESENTATIVE PROJECTS

## Hydrology

**Adolph Coors Company.** Water supply engineering, 1963 to the present, including monthly and annual water needs, water rights engineering, water rights purchase recommendations, groundwater investigations, appraisals, expert testimony, and preparation of water augmentation plans, groundwater monitoring and studies, deep well design and supervision, design and construction of dams. Long-range planning and industrial water supply management including study of springs and seeps and preparation of exhibits and testimony.

**Joseph W. Bowles Reservoir Company.** Retained by the reservoir company in a water rights change case involving the use the company infrastructure.

**Bessemer Ditch Company.** Principal in charge in firm's representation of the Bessemer Ditch Company in a water rights change case.

**Upper Crow Creek Groundwater.** Evaluated the nontributary groundwater associated with a 5,000+ acre property in Weld County, Colorado.

**ExxonMobil.** Computed water use requirements for the Exxon community of Battlement Mesa in western Colorado for sizing of pump stations, pipelines and storage.

**Northglenn, Colorado.** Prepared water requirements estimates for City of Northglenn, Colorado, to develop water rights portfolio. Services included expert engineer services for deposition and expert court testimony.

Colorado Springs Hillside District Flooding. Served as expert engineer on residential flooding.

**Fountain, Colorado Flooding.** Analysis of 2004 flooding of subservient landowner residence by housing development under construction.

**Multi-Family Housing.** Handled studies of damaging water occurrences at multi-family developments in Greeley, Fort Collins, the Denver metropolitan area, and Colorado Springs.

**Machu Picchu Hydrology.** Study since 1994 of Peruvian Inca sites of Machu Picchu, Tipon, and Moray to determine water sources, spring characteristics, and ancient domestic water requirements. Field and office research on paleohydrology of ancient Inca archaeological site of Machu Picchu, Peru, resulted in 2007 decoration for Distinguished Service from President Garcia.

**Prehistoric Hydrology.** Lead ongoing research program at Mesa Verde National Park on Ancestral Puebloan hydrology and water handling at four reservoir sites. Results published by the American Public Works Association in 2003 and Johnson Press in 2006.

**Forest Hydrology.** Served as National Park Service forest hydrologist for post-fire erosion control for the 1996 Chapin No. 5 Mesa Verde forest fire following the initial assessment by the Burned Area Emergency Rehabilitation (BAER) team, including staff training and archaeological site erosion protection.

**Texas vs. New Mexico, U.S. Supreme Court.** Consultant to Special Master in interstate dispute over water use, stream losses, evaporation, consumptive use, well pumping, diversions, groundwater modeling, and state line deliveries. Prepared findings and recommendations for settlement decree. Recommended monetary payment by New Mexico in lieu of water to make up past shortages.

**Independence Pass Erosion Control.** Responsible engineer for hydrology, runoff, erosion control, and corrective works for 12,000-foot high Independence Pass Highway 82 near Aspen, Colorado.

**Pitkin County On-Site Wastewater Regulation**. Consultant to County Environmental Health Department regarding preparation of regulations for on-site wastewater systems.

**Gunnison County Commissioners, Marble, Colorado**. Delineation of development constraint maps at Marble, Colorado for use by County Planning and Public Works Departments.

**Southeastern Water Conservancy District.** Surface and groundwater engineering studies and consultation, 1974 to 1992 on 64 hydrologic assignments. Expert witness services in Division 2 Water Court. Prepared technical research and assisted in brief preparation with Mr. Charles Beise on Bessemer Ditch pollution suit referred directly to Colorado Supreme Court from Federal Court of claims.

**Hydrology Design and Operation of Parfet Clay Pit Landfill for Adolph Coors Company.** Engineering studies and evaluation of industrial waste landfill. Development of operational plan. Presentation of engineering testimony before regulatory body for permit. Included lining, underdrains, and operational restrictions. Handled landfill addition in 1985.

**Rocky Flats Nuclear Weapons Plant.** Hydrology, hydraulic engineering, and planning for surface water management. Project manager for storm drainage and flood control master planning, 1990-92. Detailed studies in Coal Creek.

## Appraisals and Valuations

Fairplay, Colorado. Appraised value of excess water supply units for bank client.

**Land Company Condemnation.** Appraised value of a wellfield used by Joseph City Arizona Power Plant. 2007.

Arizona Public Service Company. Appraisal of water supply for power plant in Arizona. 2008.

**Water Company, Durango, Colorado.** Appraisal of direct flow and storage rights, physical reservoir, pipelines, and facilities of water company.

**Internal Revenue Service.** Appraisal services for area counsel of U.S. Internal Revenue Service at San Jose, California on pistachio orchard water rights on tax evasion case.

**Broomfield Home Builder.** Appraisal of portfolio of eight direct flow and storage water rights in South Platte River system for dedication to governmental entity.

**Water Company Condemnation.** Appraised water rights in condemnation lawsuit and testified in the Lake County District Court on market value and condition of 1881 pipelines. 1964.

**Department of Justice.** Analyzed and testified on value of Plum Creek water rights and testified in Denver Federal District Court, U.S. Army Corps of Engineers condemnation, for U.S. Department of Justice.

**Irrigation Company Condemnation.** Prepared evaluation of Standley Lake Reservoir and appraisal of market value of reservoir with water rights in condemnation action.

**Department of Justice.** Appraisal of value of easement in Weminuche Wilderness Area at Emerald Lake, Colorado.

**Resolution Trust Corporation.** Determined value of water supply related to held assets from savings and loan.

**Colorado – Big Thompson Water Right Units.** Analyzed yield and prepared valuation of water right units for a water company in Fort Collins, Colorado.

**Adolph Coors Company.** Prepared numerous valuations of direct flow and reservoir storage water rights for Clear Creek and South Platte River for acquisition by Coors. .

**Appraisal of Transmountain Ditch in Rocky Mountain National Park.** Analysis and appraisal of a transmountain ditch for exchange for Colorado Big Thompson Article 24 water.

**Appraisal of Reservoir Storage Right and Reservoir Right-of-Way.** Appraisal of reservoir easement and permit interests on failed dam located within Rocky Mountain National Park.

**Valuation of Denver Basin Groundwater.** Provide opinion of value of 30,000 acre-feet of adjudicated but undeveloped groundwater underlying lands of State Land Board. Work included analysis of distribution and transmission pipeline costs.

**Appraisal of Surface and Groundwater Water Rights.** Analyzed and prepared appraisal of South Platte surface water rights and Denver basin groundwater.

**Colorado Open Lands.** Analyzed water rights on Jefferson County ranch acquisition, appraisal of water rights for ranch in South Park for conservation easement.

**Water Company.** Value of damages to remainder of Cherry Creek water resources in condemnation lawsuit. Expert testimony in Arapahoe District Court.

**Conservation Easement for Irrigation Company.** Market value appraisal of shares in a ditch company having direct flow and storage rights for conservation easement on water rights.

**E-470 Condemnation.** Testified in Adams County District Court on damages for landowner in a condemnation lawsuit brought by the E-470 Authority. Second similar case was settled.

**Boulder Diagonal Highway.** Analyzed and testified in Boulder District Court on water rights taking market value for Colorado Department of Highways. 1963.

**Mining Company**. Performed fair market value appraisals for two water rights at Lead, South Dakota for mining company.

**Oil and Gas Company Appraisals**. Served as appraiser for oil and gas company for water utility and sewer utility. Also appraised recreational facilities prior to sale of special district. Determined value of water rights for sale to metropolitan district. Provided consulting evaluation services on contract negotiations for U.S. government for long-term contract for Ruedi Reservoir water supply. Pro-forma income and expense of projects for sanitation district.

**South Park, Colorado Bank.** Appraiser for trust department of bank for South Park water rights to settle estate and advise on sale to municipality. Appraisal used as a basis for settlement and sale purposes.

**Appraisal Handbook.** Co-author of appraisal handbook for water rights for Colorado Water Trust and Colorado Coalition of Land Trusts. 2005.

**North Park Reservoir Appraisal.** Prepared appraisal of direct flow and storage rights in North Park for sale to State of Colorado for fishery purposes. Both State of Colorado and seller approved appraisal. 1991.

Water Company, Cherry Creek Project. Appraised value of tributary and deep nontributary water rights for bank client.

Water Company. Appraised water rights in condemnation of water company and testified in Lake County District Court on value. 1964.

**Condemnation of Water Company, Yuma, Arizona.** Valuation of water rights out of Colorado River at Yuma, Arizona in condemnation. Expert testimony in Yuma District Court.

## Drainage, Flood, and Erosion Control

**Walgreens at Superior, Colorado.** Wetted expansive soils cause slab distress to the Superior, Colorado Walgreens store. WWE's water budget analyses related to over-irrigation and various water paths, such as utility trenches and surface openings, and demonstrated that excess water made its way to the underlying expansive subsoils. 2007.

**McMurrian Residence, Edwards, Colorado.** Construction claim analysis for foundation failure due to collapsible soil of Eagle Valley Evaporite.

**Lincoln Plaza, Lone Tree, Colorado.** Wetted expansive soils cause the medical imaging office floor slab to rise up some three inches, causing damage to partitions and the office ceiling and causing the imaging equipment to become out of calibration. WWE's water source and water path analyses were coupled the field surveys and geotechnical engineering studies to help define causes and recommended cures. 2007.

**Taylor Morrison of Colorado, Inc., et al. v. Aztec Consultants, Inc., et al.** District Court, Adams County, roof drains, infiltration, soil wetting and residential water management. Court testimony and deposition. 2012.

**Kevin J. Cook v. Lindgren Landscaping and Irrigation, Inc.** On behalf of defendant in Case No. 09CV900 (District Court, Larimer County) on irrigation system water use and soil infiltration related to expansive soils. 2011.

**Highpoint Vista v. Tait & Associates.** Testified on engineering adequacy of drainage design in Case No. 2007CV901 (District Court, Larimer County). 2009.

**Mullen High School.** Storm runoff during construction work at the Fort Logan National Cemetery flooded Mullen High School in 2005. Our engineering evaluation of the construction site showed that best management practices were inadequate and that the detention pond design did not account for detaining frequent storm runoff. 2007.

**Ancestral Puebloan Investigation.** Field work and analysis of drainage basin, sedimentation, and hydraulic features of four Ancestral Puebloan Reservoirs at Mesa Verde National Park. 1995 – 2007.

**Inca Drainage Investigation.** Study and documentation of Inca drainage and hydraulic structures at Machu Picchu, Tipon, and Moray, Peru as President of Wright Paleohydrological Institute. Analyzed features included canals, fountains, drop structures, and drainage infrastructure.

**Villages at Raccoon Creek.** Evaluation of perimeter drain installation by contractor named as 3<sup>rd</sup> Party in drainage lawsuit. Case settled before trial. 2007.

**Coyote Village.** Evaluation of alleged grading and drainage deficiencies at Arapahoe County multifamily development.

**Aspen Music School.** Project manager for Keno Gulch mudflow and damage to the Aspen Music School in 1996 and 1997. Evaluated drainage from the Aspen ski mountain as to effect of lubrication on mudflow.

**Hillsboro Condominiums.** Investigation of drainage and grading deficiencies in Colorado Springs multi-family development.

**Colorado State University.** Evaluation of cause of major flood damage to CSU Student Union and Library on insurance payments for Colorado Risk Manager.

City of Albuquerque. Analysis of 15 flood damage claims for City of Albuquerque Risk Manager.

**Meadow Creek Homeowners Association, Lakewood, Colorado.** Hired by homeowners' association to determine source of groundwater periodically flooding a residential unit.

**Sableglen Residences, Colorado Springs, Colorado.** Retained to prepare a design for drainage facilities for four existing residences where drainage problems occurred on a routine basis.

**Wyndham Park, Arvada, Colorado.** Represented the builder in a lawsuit with regard to surface and subsurface drainage deficiency issues at a multi-family development.

**Integrated Drainage System for University of Southern Colorado, Pueblo, Colorado.** Planning and design of subsurface drainage system, surface drainage, and landscape modifications to provide protection to campus housing and university buildings to avoid damaging of foundations, to avoid wet basements, and to minimize wetting of highly expansive soils. Materials analysis for subsurface drains at depths of 20 to 25 feet and surface drainage materials selection with consideration of alkaline soils.

**Multi-Family Housing, Highway 36 in Adams County, Colorado.** The Colorado Department of Highways improved Highway 36 in the north Denver area, which caused the blockage of historic drainage. Flooding of multi-family housing occurred. The problem was defined and solutions were proposed.

**Ammons Park Homeowner's Association, Denver, Colorado.** Prepared final design of works for homeowners' association to provide suitable drainage to large multi-family complex. Construction phase services were included.

**Sol Vista Drainage, Grand County, Colorado.** Engineer of record for drainage services for multifamily buildings.

**Colorado Christian Living, Centennial, Colorado.** Analyzed drainage works for multi-family development to protect development from offsite runoff.

**Denver Urban Drainage and Flood Control Manual.** Author of flood control and drainage criteria manual in 1967-1969 for Denver Regional Council of Governments and Urban Drainage and Flood Control District for a six-county metro area. This drainage criteria manual was in its 12<sup>th</sup> printing when we were asked to prepare a comprehensive revision in 2000. Recipient of "Friend of the District" award in 2008.

**Denver Metro Area Flood Control.** Engineer on hydrology and preliminary design of 40 miles of South Platte River corridor through Denver for the Urban Drainage & Flood Control District, 1983-1985.

**Los Alamos National Laboratory.** Oversaw the development and analysis of a graphical HEC-1 hydrologic model and HEC-RAS/HEC-GEO-RAS hydraulic model for a post-fire study of a 58-square-mile drainage area near LANL. Made recommendations for drainage and flood control in 2000-2003.

**Melbourne**, **Australia**. Prepared drainage criteria manual and three drainage master plans for the Melbourne and Metropolitan Board of Works. 1978.

**Department of Energy.** Engineer on master plan for storm drainage and flood control for Rocky Flats Nuclear Energy Plant. Work included evaluation of ordinary and extreme floods and erosion and revegetation studies to help manage potential contaminant movement. Work included use of several onsite reservoirs.

**City and County of Denver.** Served as drainage design engineer for Police Administrative Building in downtown Denver in regard to flood from Cherry Creek. Designed measures to protect structure from 500-year floods.

**American Society of Civil Engineers.** Author of Chapter 4 "Design Concepts and Master Planning" for ASCE Manual of Engineering Practice No. 77, *Design and Construction of Urban Stormwater Management System.* 

**Big Thompson River Flood.** Served as Special Consultant to Governor Richard Lamm for rehabilitation of the Big Thompson Canyon. Duties included technical analysis and coordination of all state agencies and Federal Emergency Management Agency (FEMA) efforts following the 1976 flood in which 140 people lost their lives.

**Sisters of Charity Flood Damage.** Served as investigative engineer for subservient landowner who suffered damages caused by upstream channel blockage by the Sisters of Charity Medical Center in Pueblo, Colorado. Investigation included hydrology, hydraulics, and the comparison of the natural flow of water against the man-made course of water flow.

**Prehistoric Surface and Subsurface Drainage.** 1994 to present field research on Inca drainage design at Machu Picchu in Peru. Findings published by the American Society of Civil Engineers.

**Arvada Urban Drainage and Flood Control.** Engineer and hydrologist on preliminary design of 13 miles of flood-prone streams in Ralston Creek Basin of the City of Arvada, Colorado and 1991 report on flood hydrology of Van Bibber Creek and U.S. Army Corps of Engineers.

**Lena Gulch Urban Drainage.** Supervision of resident engineering for municipal construction of flood channel in Wheat Ridge, Colorado, through existing urban development.

**Colorado Springs Urban Flood Channel.** Hydraulic engineer on municipal Cottonwood Creek channelization in Colorado Springs, including lined channels and check dams.

**City and County of Denver.** Served as expert witness for Denver in regard to condemnation action against property owner to gain right-of-way for Harvard Gulch in southeast Denver.

**Denver International Airport Gateway Area.** Engineer on hydrology, channels, retention storage, and detention storage on 600-acre Parkfield site for discharge into Rocky Mountain Arsenal federal lands (1995-97).

**Skyline Urban Renewal Project.** Planning, design and construction observations for downtown Denver storm sewer project for the Skyline Urban Renewal Project. Design and specifications for over one hundred curb opening inlets and underground reinforced concrete pipe ranging from 18 to 66 inches with outfall to Cherry Creek near Larimer Street. Design included rooftop ponding for all buildings in project area and plazas and parks.

**Downtown Pueblo.** Project manager for study of downtown Pueblo drainage basin as it affects storm drainage and flood control facilities for the Historic Arkansas Rehabilitation Project.

**Del Norte, Colorado.** Engineer for town of Del Norte in the San Luis Valley for master planning of the storm design and flood control system for the town. Work also includes water system and sewer system.

**EPA vs. Mile High Flood District (MHFD).** Investigative engineer and expert witness for Urban Drainage and Flood Control District (now known as MHFD) in a case before a Federal Hearing Officer relative to hydrology and drainage of Coal Creek and the Town of Lafayette, Colorado.

#### OTHER REPRESENTATIVE PROJECTS

#### Low Head Dams

**Union Avenue.** Performed analysis of USACE low head dam in Englewood, Colorado that was the site of three drownings. Planned corrections to eliminate hazards to public, developed preliminary design of cure and used USBR laboratory to test physical model to verify design to eliminate reverse roller.

**Clear Creek Drops.** Prepared final design for correction of two Colorado Department of Transportation drop structures on Clear Creek near I-25 in Adams County, Colorado, following drowning of two boaters.

**Kentucky Dam.** Preliminary design of cure for low head dam in Kentucky following detailed field evaluation and surveys to correct reverse rollers that had resulted in a boater drowning.

**Arkansas River, Colorado.** Directed final design of canal diversion low head dam structure on Arkansas River that included measures to insure against creating hazardous reverse rollers downstream.

**Brown Ditch Weir.** Design of three low head dams for USACE project on the South Platte River in Englewood, Colorado, to replace the Brown Ditch Weir, which had been a recreational boating hazard.

**Confluence Park.** Planned and designed a boat chute at the confluence of Cherry Creek and the South Platte River in Denver, Colorado. Designs included six drops for whitewater boating.

**Cherry Creek Punting.** Preliminary design of two low head dams on Cherry Creek in downtown Denver with bypass locks to allow for recreational punting.

**Harvard Gulch.** Final design of three 8-to10-foot drop structures for Denver's Harvard Gulch Flood Control Project. Included model testing at Colorado State University.

#### Dam and Reservoir

**Mesa Verde National Park.** Led research on four ancient reservoirs dating from AD 750 – 1180. Sites designated as National Historic Civil Engineering Landmarks by ASCE in 2004.

**Elk Lake Dam.** Repair including outlet works, spillway and embankment rehabilitation. Work included permitting with the Colorado State Engineer for dam safety and preparation of updated emergency action plan in northwest Colorado.

**Low-Head Dam Safety.** Served as dam safety expert on low-head dam hazards in drowning-induced lawsuits in Oregon, Arizona, New Jersey, West Virginia, Iowa, and Alabama.

**Denver Harvard Gulch Park Dam**. Designed and observed construction operations for small dam and reservoir at Harvard Gulch Park for City and County of Denver.

La Plata River Dam and Reservoir. Assisted with conceptual design of 120-foot-high Long Hollow Dam and Reservoir. Prepared initial estimate of cost to construct. Consulted with Colorado Attorney General, Colorado Water Conservation Board, and Colorado State Engineer on permitting. Potential seepage through abutments considered.

**Salt River Erosion Control Dam.** Served as technical investigator for low-head dam erosion control structure in the Salt River, Tempe, Arizona of the Maricopa County Flood Control District relative to standard of care and safety in regard to multiple drownings in 1992 and 1993.

**Dam Safety Inspections.** Hydrology and inspection of dams at St. Mary's Lake, Dukes Lake, Rolling Reservoir, and B-3 Reservoir, 1982. Organized Dam Safety Conference with Federal Emergency Management Agency in 1983. Assisted on preparation of legislation of dam safety for 1983 Legislative Session (HB 1296). Received award from Professional Engineers of Colorado.

**Adolph Coors Brewing Company.** Planning and design of embankments for reservoir storage at Clear Creek-Golden brewery. Work included dam seepage and outlet works.

Dam and Reservoir Water Supply and Storage Company (Irrigation Company). Company engineer, 1964 to 1988. Dam and reservoir planning, design, and construction, including engineer of record for 86-foot-high Long Draw Dam (1966 to 1972) and Trap Lake II preliminary design (1981 to 1983). Analyzed feasibility, agricultural economics, and irrigation water requirements. Follow-up assignment to opine on potential seepage through dam.

**Dam Safety.** Responsible dam safety engineer on Storrie Lake Dam and reservoir safety emergency at Las Vegas, New Mexico following structural failure of concrete outlet works. Monitoring of overall dam safety and adequacy and structural failure in outlet works and piping. Reporting to State Engineer of New Mexico. Services included implementation of emergency measures, dam failure emergency response plan for catastrophe flooding and cost estimates for corrective work. Reported weekly to New Mexico State Engineer during emergency period.

**Kremasta Dam, Greece.** Audit of river discharge field measurements and handling of technical corrections, basin flood yield studies, sediment discharge analyses, channel degradation studies, and maximum probable flood studies for spillway design, 1961-62.

**Fall River Dam.** Engineer of record for design and construction supervision of 83-foot-high Fall River Dam for Agricultural Ditch and Reservoir Company in 1971-72.

Adams County Commissioners, 1996 Drownings. Consultant to Adams County Commissioners and Parks Department on retrofit of drainage structure in Lower Clear Creek. Analyzed hydraulic turbulence and reverse roller in regard to public health, safety, and welfare following two July 1996 drownings. Advised the Colorado Department of Transportation on retrofit design. The estate of the deceased filed notice of lawsuit.

#### **Design and Construction**

**Denver West Office Park.** Designed two lakes for Denver West on Lena Gulch in Jefferson County, with follow-up design for lake edging using granite stones.

**Vail, Colorado.** Design and construction of 300,000 gallon buried water tank, water supply for Midvail and water supply for Lions Head. Planning, design, and construction of Vail West water system.

**Mt. Werner Water and Sanitation District.** Provided service plan for formation of district in 1966 and planned, designed, and supervised construction of municipal water system.

Water and Sewer Design and Construction for Exxon, USA. Principal Engineer for planning, municipal design, and construction-supervision of utilities for new Exxon municipality to serve 20,000 people. Included hydrology, treatment plants, pipelines, pumping stations, reservoirs, river water supply, and wells. Engineering for formation of municipal districts. Included National Pollutant Discharge Elimination System (NPDES) permitting and design of sewage treatment plant modifications to reduce power consumption.

#### OTHER EXPERIENCE

Managing Partner, Wright-McLaughlin Engineers, 1964-1982. Firm dissolved in 1982.

**Partner, Wheeler and Wright, 1959-1961.** Partnership in consulting engineering firm practicing in the field of hydrology and water supply. Served as associate to Mr. Wheeler in 1958-1959.

**Hydraulic Engineer, U.S. Bureau of Reclamation, 1957-1958.** Hydrology and hydraulic engineering in Project Investigation Branch of Principal Engineer's Office on sedimentation, water surface profiles, Rio Grande channelization, and flood studies. Participation in USBR publication *Design of Small Dams*. Received Secretary of Interior Gold Medal for Valor for action on the Rio Grande in New Mexico.

Research Associate, Groundwater, University of Wisconsin, 1956. Electric analog and hydraulic modeling and report on toxic groundwater pollution of Wisconsin River aquifer by paper industry. Results published by American Society of Civil Engineers.

**Arabian American Oil Company, 1951-1955.** Construction engineer in Saudi Arabia on housing, utilities, oil pipeline under Persian Gulf to Bahrien Island, Trans-Arabian Pipeline cathodic protection, and overland pipeline from Ras Tanura to Ras El Mishaab. Authored *Civil Engineering* magazine article in 1956 on cathodic protection of Trans-Arabian Pipeline.

#### **PROFESSIONAL SOCIETIES**

Academy of Pan American Engineers, Member, 2009-present

American Society of Civil Engineers, Distinguished Member, 2006-present

Hydraulics Group, Colorado Section; Chairman, 1962

Committee on cooperation with Local Sections, Hydraulics Division; Chairman, 1967

Surface Water Hydrology Committee, Hydraulics Division; Chairman, 1968-1969

Finance Committee, Hydraulics Division Conference, Madison, Wisconsin; Chairman, 1956

Executive Committee of Hydraulics Division, 1971-1973; Chairman, 1973

Urban Hydrology Research Council, 1970-present

Engineering Foundation Research Conference, Urban Water Resources Mgmt. Co-chairman 1970

Task Committee on Design of Detention Outlet Works, 1983-1984

# Kenneth R. Wright, P.E.

Storm Drainage Manual, Author of Conceptual Design Chapter, 1983-1992

Machu Picchu: A Civil Engineering Marvel, Author, 2000

Tipon: Water Engineering Masterpiece of the Inca Empire, Author, 2006

Association of State Dam Safety Officials

Keynote lecture, Phoenix, Arizona, 2004

American Consulting Engineers Council, Member

National Director, 1966-1968

President, 1969-1970 Consulting Engineers Council of Colorado

Certified Consulting Engineer

American Water Works Association, Member

Regional Conference Technical Program Chairman, 1966

National Water Rights Committee, Chairman, 1982 to present

Editor, "Water Rights of the Fifty States and Territories" 1988

Editor; "Water Rights of the Eastern States" 1998

Rocky Mountain Center on the Environment Director, 1969-1970

President, 1971-1973

National Society of Professional Engineers, Member

U.S. Committee on Irrigation, Drainage and Flood Control

Executive Committee, 1978-1985

American Water Foundation, Founding Member, Board of Directors

Explorers Club - Fellow 1983 to present

Past Chairman, Rocky Mountain Chapter

Wright Paleohydrological Institute-President and Board Member, 1998 to present

Director, Machu Picchu Hydrological Survey 1994 to present

Director, Mesa Verde Paleohydrological Survey 1995 to present

American Society of Agricultural Engineers

Society for American Archaeology

#### **AWARDS**

Universidad Nacional de San Antonio Abad del Cusco, el Nombramiento de Docente Extroadinario Honorario, Cusco, Peru, 2017.

Honorary Medal, Town of Oropesa, Peru, 2014.

Lowell Thomas Award, Explorers Club, St. Louis, 2011.

University of Wisconsin, Honorary Doctorate of Science, Madison, May 2011.

Universidad Nacional de Ingenieria, Doctor Honoris Causa Degree, Lima, Peru, 2009.

Colorado Bar Association, Water Buffalo Award, Water Section, 2008.

Colorado Foundation for Water Education, President's Award, 2008.

The U.S. Society for Irrigation and Drainage Professionals, Service to the Profession Award, 2008.

Universidad Nacional de San Antonio Abad del Cusco, Peru, Honorary Professor, 2008.

Urban Drainage and Flood Control District (UDFCD), Friend of the District Award, 2008.

Bertolt Brecht College, Honorary Diploma, Lima, Peru, 2007.

Order of Merit for Distinguished Service to the Republic of Peru, 2007.

Ricardo Palma University, Profesor Honorario, Lima, Peru, 2007.

American Society of Civil Engineers, Honorary Membership Award, 2006, Distinguished Member, 2007.

American Society of Civil Engineers, Lifetime Achievement Award, 2005.

American Council of Engineering Companies of Colorado, Orley Phillips Award, May 2004.

American Council of Engineering Companies of Colorado, George Washington Award, May 2002.

University of Wisconsin School of Engineering, Distinguished Service Award, October 2002.

Universidad Nacional De Ingenieria, Profesor Honorario, Lima, Peru, 2002.

South Platte River Greenway, Friend of the River Award, 2001.

American Ethics in Business Award, 1999.

Colorado Ethics in Business Award, 1996.

Colorado Historical Society, Stephen Hart Award, 1996.

National Ski Patrol, Purple Star, Lifesaving.

U.S. Department of Interior, Gold Medal for Valor, 1958.

National Society of Professional Engineers, Dam Safety Award.

The American National Red Cross, Certificate of Merit, Lifesaving.

#### **PUBLICATIONS**

- Wright, K.R. 2021. The Masterful Water Engineers of Machu Picchu. *Water* 2021, 13, 3049. Academic Editor: Charles R. Ortloff. https://doi.org/10.3390/w13213049.
- Wright, K.R. 2021. Safety Issues Related to Low-Head Dams Promoted. *Environmental Connection*. International Erosion Control Association. Second Quarter. Vol. 16, No. 2.
- Wright, K.R. 2020. What USCID Members Should Know about Safety around Low-head Dams. *USCID Newsletter.* The U.S. Society for Irrigation and Drainage Professionals. Fall 2020. Issue No. 132.
- Kingery, K., K.R. Wright, and R. Hotchkiss. 2020. Considerations Surrounding the Rehabilitation and Removal of Low-head Dams. In Association of State Dam Safety Officials 2020 Annual Conference Proceedings. September 21.
- Wright, K.R. 2019. An Engineer's Recollections of the Water Rights Determination Act of 1969. *University of Denver Water Law Review.* Denver, CO. Volume 22: Issue 2. Spring.
- Wright, K.R., A.M. Gibaja Oviedo, G.F. McEwan, R.W. Miksad and R.M. Wright. 2016. *Incamisana: Engineering an Inca Water Temple*. ASCE Press. Reston, VA.
- Wright, K.R., and R.M. Wright. 2015. "The Inka Trails near Machu Picchu" in *The Great Inka Road: Engineering an Empire*. Ramiro Matos Mendieta and Jose Barreiro, eds. National Museum of the American Indian in association with Smithsonian Books. Washington, D.C., and New York.
- Wright, K.R. 2013. Inca Foundations, Site Preparation, and Drainage at Machu Picchu. Practice Periodical on Structural Design and Construction. American Society of Civil Engineers; Reston, VA. May. Volume 18: Number 2.
- Wright, K.R., and R.M. Wright. 2012. "Surveying Machu Picchu." *Professional Surveyor Magazine*. October. Volume 32: Number 10.
- Wright, K.R., and R.M. Wright. 2011. "Mate at Machu Picchu: Tea of the Prehistoric Inca." *Tea: A Magazine*. Autumn 2011. Issue 67.
- Wright, K.R. 2011. "Mysterious Moray: Incan Embellishment Reflected Upon the Ground." *ROOT*. Volume 3, Forgotten Spaces.
- Wright, K.R., and R.M. Wright. 2011. "Mystery of Moray: Unraveling an Enigmatic Inca Wonder." *The Explorers Journal*. Fall 2011. Volume 89: Number 3.
- Tschantz, B. and K.R. Wright. 2011. "Public Safety at Low Head Dams." Association of Dam Safety Officials *Journal of Dam Safety*. May. Volume 9: Number 2.
- Wright, K.R., A.V. Zegarra, R.M. Wright, G.F. McEwan. 2011. *Moray: Inca Engineering Mystery*. ASCE Press.
- Wright, K.R., and B. Tschantz. 2011. "The Dam Safety Imperative." *Water Resources Impact*. March. Volume 13: Number 2.
- Wright, K.R., G.F. McEwan, R.M. Wright. 2008. *Tipon: Obra maestro de la ingenieria hidraulica del imperio de los incas*. Universidad Nacional de Ingenieria; Lima, Peru.

- Wright, K.R. 2008. "Ancestral Puebloan Water Handling." *Lakeline*. Winter 2008. Volume 28. Number 4.
- Wright, K.R. 2008. "A True Test of Sustainability: The triumph of Incan engineering over scarce water resources survives today." *Water Environment & Technology*. September. Volume 20. Number 9.
- Wright, K.R. 2008. "Civil Engineering, Legal, and Political Collaboration: Solving Denver's Drainage Infrastructure Dilemma." *Leadership and Management in Engineering*. October. Volume 8. Number 4.
- Wright, K.R., C. Crowley, G. Crowley. 2008. "Erosion Control at Ancient Mesa Verde." *Erosion Control*. July/August. Volume 15. Number 4.
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