



Wright Water Engineers, Inc.

RACHEL PITTINGER, P.E.
SENIOR WATER RESOURCES ENGINEER

CURRENT Rachel's water resources engineering experience includes projects related to water supply and planning, water rights investigation, water rights valuation, water rights operation modeling, watershed modeling and planning, funding, and technical evaluation related to water supply projects and construction management.

EDUCATION B.S., Civil Engineering, 1999
University of Colorado, Boulder, Colorado

REGISTRATIONS Professional Engineer, Colorado, #40300
Professional Engineer, Utah #13095739
Certified Professional in Erosion and Sediment Control (CPESC) #3771
Certified Erosion, Sediment, Storm Water Inspector (CESSWI) #4700

REPRESENTATIVE PROJECTS

WATER RIGHTS

Town of Buena Vista, Colorado. Water resources engineer for town on water rights, planning, design, and construction services for wells, water treatment plant, pump station, water storage, water transmission lines, and distribution system.

Water Rights Acquisition, Rocky Flats Environmental Technology Site (RFETS) (U.S. Department of Energy [DOE] facility located near Golden, Colorado). Provided engineering support to DOE on negotiations to acquire long-term lease of water from neighboring municipality to offset depletions related to operation of detention ponds.

Coors Brewing Company. Evaluated water supply and water rights including augmentation plans and feasibility studies. Prepared engineering evaluations, water rights inventories, hydrologic evaluations, and ditch analyses. Performed audits and replacement analysis of water system facilities for potential acquisition, water supply planning, consumptive use analysis, return flows, transit loss, exchange and depletion quantification, and flood flow analysis for risk-based assessment. Reviewed/modified models used in Conditional Letter of Map Revision (CLOMR) and Letter of Map Revision (LOMR) submittal. Conceptual level Drainage Plan preparation and analysis for proposed structure located in a historic drainage using HEC-1 and HydroCAD. FHAD updates.

L.G. Everist Inc., Fort Lupton, Colorado. Prepared substitute water supply plans and augmentation plan for a gravel operation in Adams and Weld counties, Colorado, along the South Platte River in accordance with the State Engineer's Office. Analysis included water right investigation, consumptive use analysis, return flows, and exchange and depletion quantification.

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Appraisal of Water Rights, Client Confidential, Summit County, Colorado. Performed appraisal of water rights to be donated as part of a conservation easement.

Valuation Consultation for San Juan County Water Conservancy District, San Juan County, Colorado. Performed audit and replacement cost new-less-depreciation analysis of water system facilities for a private water company for potential acquisition.

Appraisal of Surface and Groundwater Water Rights for FDIC, Client Confidential, Colorado. Analyzed and prepared an appraisal of South Platte surface water rights and Denver basin groundwater for Federal Deposit and Insurance Corporation.

Yield Analysis and Appraisal of Yampa River Water Rights, Routt County, Colorado. River operation study of Yampa River in northwest Colorado to determine average and dry year yield. Assisted in preparation of appraisal of water rights.

Appraisal of Water Rights Associated with Oil Shale Project, Confidential Client, Colorado. Project Engineer. Analyzed yield and market for absolute and conditional water rights in the Colorado River basin.

Valuation Consultation for industrial Client, Confidential Client, Colorado. Analyzed water quality, consumptive use, and supply/demand analysis of the facility and other users in the watershed.

STORMWATER

Stormwater Management Plans and Permitting for Residential Development. Assisted multiple, large residential developers in stormwater permitting, creation of stormwater management plans, inspections, inspection guidelines, permitting and material handling/spill response. Provided training for developers, site superintendents, and subcontractors.

Dewatering and Stormwater. Designed construction dewatering facilities and stormwater quantity and quality design, lake water quality investigations, hazardous materials management, watershed development, and National Pollutant Discharge Elimination System (NPDES) permit application preparation.

City of Arvada. Managed investigation and prepared engineering evaluation report regarding flooding of a subdivision within the City of Arvada.

Hydrologic and Hydraulic Modeling. Performed flooding analysis, floodplain and floodway delineation using hydrologic and hydraulic models. Assisted in preparation of expert witness reports for litigation. WWE represented parties in the states of Colorado and Texas.

Rocky Flats Master Planning. Updated CUHP models to evaluate the regional stormwater for the DOE RFETS and areas within the Clear Creek watershed. Model development included analysis of existing and future land uses, flow paths, and drainage boundaries. Model results used to identify locations in the watershed requiring additional storage for stormwater detention and water quality treatment.

The Garden City Company and The Associated Ditches of Kansas, Kansas. Consulted on issues regarding Total Daily Maximum Loads (TMDLs), non-point source pollution and state water quality standards on Arkansas River. Extensive water quality analysis for key parameters of concern leading into a TMDL allocation. Provided assistance with stormwater runoff and water quality issues for a regulatory hearing with U.S. Environmental Protection Agency (EPA) regional office.

PERMITTING AND STORMWATER MANAGEMENT PLANS

Fort Carson Military Reservation, Fort Carson, Colorado. Prepared stormwater management plan for this 2,500-acre facility under federal jurisdiction and provided hydrological support to stormwater infrastructure modeling efforts. Created a stormwater management plan incorporating local, state, and federal requirements including the U.S. Army Corps of Engineers (USACE) applying the low impact development (LID) approach and sustainable practices. Incorporated strategies defined by the Sustainability and Environmental Management System (SEMS) to meet the United States Green Building Council (USGBC) requirements for silver Leadership in Energy and Environmental Design (LEED) certification.

DRHorton, Greenwood Village, Colorado. Worked directly with DRHorton Continental series representatives to develop a system to assure that stormwater management plans (SWMPs) were adequate and in place, to conduct and document inspections and to train sub-contractors to comply with stormwater permit conditions. Conducted multiple training sessions for DRHorton staff ranging from site-superintendents to vice presidents. Assisted DRHorton with establishing the position and training of a "Water Quality Officer" who was responsible for stormwater permit compliance for DRHorton Continental Series construction sites throughout Colorado.

Lennar Environmental Management System and Training, Lennar Homes, Colorado. Worked with Lennar Chief Counsel and National Stormwater Program Director to assist with development of the Lennar Environmental Management System (LEMS), a company-initiated program to standardize construction site stormwater management documentation. Worked with local representatives, with stormwater management and site inspections at several large Lennar development projects around the Denver area.

Front Range Residential Development Sites, Front Range, Colorado. Worked through Independent District Engineering Services (IDES) and the Metropolitan Districts in many Front Range counties. The project involved multiple permits for land development activities, utility work, and street work. Work included managing SWMP preparation for permits, a standardized SWMP format that helped clients develop on a national level. Responsibilities included weekly site inspections for all phases of the project, regularly updating the stormwater management plan, documenting corrective actions, and communicating with the owner and subcontractors. Inspection and documentation procedures include weekly inspection in the field with a follow-up meeting to review, in detail, recommended corrective actions with the site superintendent, the owner's representative, and the erosion and sediment control subcontractors.

A Douglas County Development project presented special challenges due to the need to coordinate closely with the golf course to assure that construction activities did not release sediment or other pollutants onto the golf course and to schedule construction activities to minimize interference with operations of the golf course.

Village Homes of Colorado, Colorado. Assisted Village Homes in complying with the terms of an administrative order from USEPA and developing a company-wide stormwater compliance program. Helped to develop a system to assure that SWMPs were adequate and in place, to conduct and document inspections and to train sub-contractors to comply with stormwater permit conditions. Conducted training sessions for Village Homes' staff ranging from site-superintendents to vice presidents. Assisted Village Homes with establishing the position and training of a "Water Quality Officer" who is responsible for stormwater permit compliance for Village Homes' construction sites throughout Colorado.

Mountain Area Stormwater Management Plans, Summit County, Colorado. Plans developed for Breckenridge, Keystone, and Copper Mountain Resorts. Involved in updating, review and refinement of erosion and sediment control plans, recommending appropriate best management practices, and assurance of proper implementation and maintenance.

WATER/WASTEWATER

Buried Water Storage Tank, Arapahoe County Water Wastewater Authority, Centennial, Colorado. Assisted in preparation of a Location and Extent Plan and Subdivision Exemption Plat for the development and approval from the City of Centennial for a gray zone, 4-million gallon (MG), buried water storage tank to meet emergency fire flow requirements. Part of a team that attended and presented at many public hearings with City and meetings with homeowners to address neighborhood concerns. Prepared site erosion and sediment control plan.

4 MG Water Storage Tank, Arapahoe County Water Wastewater Authority, Greenwood Village, Colorado. Assisted in preparation of Location and Extent Plan and coordinated preparation of easement exhibits and Subdivision Exemption Plat for development approval from the City of Centennial for buried 4 MG water storage tank. Attended public hearings with City and meetings with homeowners to address neighborhood concerns. Prepared site erosion and sediment control plan.

Basalt Wastewater Treatment Plant Expansion, Basalt, Colorado. Submittal review and construction administration for design of a treatment plant expansion for a flow of 0.8 million gallons per day (MGD). Facilities included a new pretreatment building, nitrification/denitrification activated sludge, clarifier, and disinfection. Prepared a site application engineering report.

Lake Water Quality Management, Lena Gulch Metropolitan District, Golden, Colorado. Prepared an investigation report and feasibility analysis of alternative lake water quality management techniques. Assisted with preparation of contract documents and design specifications and construction observation for lake maintenance project.

WATER QUALITY

Lena Gulch Metropolitan District. Developed investigation report and feasibility analysis of alternative lake water quality management techniques. Prepared contract documents and design specifications and construction observation for lake maintenance project.

Homeowner's Association, Golden, Colorado. Performed investigation and review of existing drainage facilities and water quality assessment. Developed water quality sampling program.

GreenCO BMP Manual. Worked with others toward development of a comprehensive water quality and water conservation best management practice (BMP) Manual for the Green Industries of Colorado. Thirty-one BMPs related to landscaping, irrigation, nursery production practices, etc., were completed in a fact-sheet format for use by GreenCO's nine member industries and the public.

Copper Mountain Resort, Colorado. Assisted in preparation of comprehensive water quality protection plan for Copper Mountain Resort, including specific recommendations for protecting water quality in West Tenmile Creek during construction projects.

Construction Dewatering Projects, Summit County, Colorado. Project included permitting of construction dewatering discharges to sensitive water bodies in the Colorado high country. Calculated anticipated pumping rates to draw groundwater down in alluvial aquifer for construction below the water table. Developed innovative treatment methods utilizing a combination of chemical treatment and best management practices to remove colloidal clays from groundwater with low alkalinity and low temperatures.

ENERGY/INDUSTRIAL

Barrett Resources, Carbon County, Wyoming. Coal bed methane water discharge treatment. Created and implemented a bench scale testing for iron constituents and sodium absorption ratio parameters for use in design of treatment system. Prepared Coal Bed Methane produced discharge permit application for site in Carbon County, Wyoming working with the Wyoming Department of Environmental Quality.

Kaiser-Hill Company, LLC, Pathway Analysis Study, RFETS. Provided technical support for a multi-disciplinary investigation to quantify transport of plutonium, americium, and multiple uranium isotopes in the environment at the Rocky Flats site. Participated in watershed improvement program intended to minimize the migration of plutonium and americium in runoff from RFETS.

Wilson Vanadium Mine. Surface hydrological modeling and analysis, on-going water quality investigation and analysis, permitting, design of sediment control structures during reclamation activities. Part of interdisciplinary team that prepared and presented to State agency, Use Attainability Analysis report. Prepared Closure and Post Closure documentation report as part of reclamation process.

West Elk Mine. Preparation of the annual hydrology reports for the Colorado Department of Minerals and Geology regarding surface water and groundwater quantity and quality impacts associated with mining.

Gunnison Energy Corporation, Gunnison and Delta Counties, Colorado. Part of an interdisciplinary team that prepared a comprehensive assessment and characterization of groundwater and surface water resources from gas exploration for Gunnison Energy Corporation, a Denver-based natural gas exploration company.

OTHER EXPERIENCE

Project Manager, Colorado Water Conservation Board, 2017–2022. Provided technical consultation and written materials to assist borrowers and their consultants in the preparation and successful completion of project designs and construction contract documents. These are outlined in the Colorado Water Conservation Board's Construction Fund Guidelines for construction projects receiving loan or grant funds. Regularly attend and present at stakeholder meetings and CWCB meetings related to raw water construction project funding.

Project Manager, Stanley Consultants, 2016–2017. Project manager on water resources engineering and planning, hydrologic/hydraulic modeling, drainage design, stormwater management, and water rights evaluations.

Lead Engineer, Brown and Caldwell, 2011–2016. Led project teams on design and planning of water/wastewater, infrastructure, and drainage assignments.

Water Resources Engineer, Boyle/AECOM, 2008–2011. Water resources engineer on drinking water, wastewater treatment, and water-resource management assignments.

Water Resources Engineer, Wright Water Engineers, Inc. 1999–2007. Water resources engineer on stormwater, flooding, and water quality assignments for public and private sector clients.

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Field Scientist, Paleohydrological Engineering Research, Mesa Verde National Park, Colorado, 2005. Field Scientist performing paleohydrology research through the Wright Paleohydrological Institute. Participated in research effort at Mesa Verde National Park, Colorado. Conducted percolation tests for determination of soil infiltration rates as they relate to the early water use and storage in the Mesa Verde National Park.

Research Assistant, Atmospheric Data Acquisition and Analysis, Boulder, Colorado, 1999. National Oceanic Atmospheric Administration mass data acquisition and analysis related to halogenated carbons using gas chromatography and mass spectrometry. Design, modification, calibration, programming, maintenance, and optimization of processes, instrumentation, and equipment to ensure the production of quality data.

MEMBERSHIPS

American Society of Civil Engineers
American Water Resources Association
Colorado Association of Stormwater and Floodplain Management
Association of State Floodplain Managers
Former Registered Appraiser, Colorado, No. 40026934 (2004–2012)
Former Certified Floodplain Manager (CFM), US0904565 (2008–2012)

PUBLICATIONS

Earles, T.A., J.C Clary, R. Pittinger, and D.B. Mehan. 2006. Bridging the Gap Between BMP Effectiveness and Receiving Water Quality Protection. *Journal of Ecotechnology*. V.2, No.2, December 2006

Jones, J.E., J. Guo, B. Urbonas, R. Pittinger. 2006. Safety at Urban Stormwater Ponds. *Stormwater*. January/February 2006. Vol.7, No.1

Stormwater Magazine February 2006–Pond Safety - Jones, J.E., J. Guo, B. Urbonas, R. Pittinger. 2006. Safety at Urban Stormwater Ponds. *Stormwater*. January/February 2006. Vol.7, No. 1

Stormwater Management at Copper Mountain- Innovative Construction Site Sediment Controls Prove Effective in Colorado Ski Resort. 2004. Prepared by T. Andrew Earles, Ph.D.; Jonathan E. Jones, P.E.; Rachel Peterson; Amir Etemadi, MBA; Dave McCall; and Paul Shepherd. Presented at 2004 Annual CASFM Conference

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