Wright Water Engineers, Inc.

JEFFREY M. NELSON, P.E.

SENIOR ENGINEERING PROFESSIONAL

CURRENT Lead engineer for design and construction administration for water and wastewater pumping and conveyance systems; reservoir repairs and upgrades; wetland reclamation; mine site reclamation and water management; master planning studies and existing infrastructure analysis.

EDUCATION B.S.E., Civil Engineering, 1998, Colorado School of Mines

REGISTRATION Professional Engineer—Colorado #37115; Wyoming #11375

REPRESENTATIVE PROJECTS

Gateway General Store and Community Center, Gateway, Colorado. Lead engineer in the design of a transient non-community public water system per CDPHE and EPA regulations to deliver water to a proposed general store and existing community center with post office and branch library. The project includes hydraulic modeling of both the raw water delivery system and the treated water distribution system; siting and designing a new groundwater well and pump; design of a disinfection treatment system, storage tank, booster pump station and coordinating the distribution system and the instrumentation and controls system for the project. Additional services included construction review and bid review.

Town of Larkspur Water System Improvement Project. Lead engineer for design of Town of Larkspur, Colorado, water system improvements funded through the State Revolving Fund. Project includes hydraulic modeling of existing distribution system, evaluation of pressure zone, pipeline sizing and storage tank siting. The hydraulic modeling included review of existing pressure zone boundaries and identifying the need for additional pressure zones and infrastructure improvements to accommodate the revised boundaries. Other project components include design of new well sites, development of well pilot testing protocols and design of water treatment systems. The project also involved design of raw water and treated water pipelines to convey existing well water to treatment and the treated water to the new storage tank.

Goose Bay Marina Concession Area Modernization, Canyon Ferry Lake, Montana. Development of stormwater management, conveyances and detention pond system for a 60-acre RV campground for the federal government. The project included eight detention ponds sited to avoid impact to recreational areas and design of storm sewers and swale to convey stormwater while avoiding water distribution, water treatment, wastewater collection and wastewater treatment systems also designed by WWE. Water system hydraulic design and modeling of the raw water delivery system and the potable water distribution system, including shallow, summer-service-only water lines and deeper, winter water lines. The system included over 100 services, multiple air valves, and over one mile of distribution pipelines.

River Run Ranch for Sun Communities Nonpotable Water System, Granby. Project engineer on the design and construction of a Nonpotable Water System to serve a resort development. Included design oversight for 4,000 feet of pipeline, a raw water pump station, creek intake, and lining of an augmentation pond.

Nonpotable System Master Plan, City and County of Broomfield, Colorado. Performed treatment and distribution studies for expansion of a large nonpotable water system. Both raw water and tertiary treated wastewater were used in this system. A computer hydraulic distribution system analysis was performed.

Double L Ranch, Durango, Colorado. Project engineer for an aesthetic and irrigation water feature at a private ranch and tree farm. The project included two ditch intakes, sedimentation pond, two pump stations, a meandering channel, geomembrane lining of two ponds and the channel and two water return structures. This water feature also included construction-phase services, including review of submittals and change orders.

Rogers Reservoir, Durango, Colorado. Lead engineer for the rehabilitation of the existing Animas Pipeline Outlet energy dissipation structure and design of replacement outlet. The project involved analysis of the existing structure, design of repairs to the failing boulder rundown, and design of a new rundown and energy dissipation structure for an extended pipeline. The pipeline extension was designed to accommodate a new flow meter and included a new energy dissipation structure discharging to a new grouted boulder rundown.

Sterling Hills Pond Rehabilitation. Senior engineer for design and construction phase for the rehabilitation of a water quality and detention pond at the Sterling Hills West subdivision in 2021. WWE worked with the Sterling Hills West Metropolitan District board to develop a design to address issues related to the functionality and maintainability of this pond. The design included retrofit of an existing stormwater pond constructed in the early 2000s to add forebays, micropool, and an underdrain system to collect a perched groundwater layer above the shallow claystone bedrock.

Mt. Emmons Mine, Crested Butte, Colorado. Performed audit of existing wastewater and stormwater treatment facilities of an inactive metals mine near Crested Butte, CO. Project included analysis of stormwater routing methods throughout site. Provided recommendations for a maintenance and upgrade of treatment systems to comply with existing requirements and performed financial analysis to determine costs to maintain, upgrade and operate the facilities. Prepared a rate study to recommend an appropriate mill levy that could be assessed on a new proposed special district that was being considered to finance the costs if the district acquired the facilities from the mine owner.

Confidential Mining Client, Crested Butte, Colorado. Project engineer for evaluation of existing raw water collection system for an acid rock drainage water treatment plant. Project included evaluation of the existing conditions of an existing raw water collection system, estimation of remaining service life available and development of an opinion of probable capital cost for component replacement. The system included a 5,000-foot-long parallel water line from an existing bulk head in a hard rock mine shaft, evaluation of an aeration pond and two surge/overflow ponds, evaluation of 3 pump stations and one aeration control building, and evaluation of associated yard and transmission pipelines. This evaluation was developed in support of a special district service plan for the entire treatment facility.

University of Colorado at Boulder Main Campus Potable Water Pipeline Evaluation. Project engineer for the evaluation of the existing potable water infrastructure at the CU Boulder Main Campus. The project was to develop a replacement work plan for aging water infrastructure. The evaluation included coordination of and participation in a leak detection survey of the campus infrastructure, evaluation of available pipeline break and replacement information, evaluation of soil types in the various areas of the campus, and evaluation of the pipeline materials used on the campus. The CU Boulder Campus is a master meter customer from the City of Boulder water department and is responsible for maintaining its own infrastructure. This assessment was used to prioritize replacement of pipelines on the campus using a weighting factor that accounted for likelihood of breaks occurring, pipe age, soil type and other factors.

West Creek Irrigation Diversion Structure, Gateway, Colorado. Project engineer overseeing construction of an irrigation diversion structure on West Creek in Gateway, Colorado. This structure included a low head dam with downstream grouted boulder sloping drop structure, diversions to two irrigation ditches on opposite banks of the creek, bypass pipelines and fish ladder construction. The project entailed replacement of an existing diversion dam which required extensive annual maintenance and obstructed the passage of fish further upstream. Tasks included coordination of sub consultants for structural design, geotechnical engineering, and contractor coordination.

Arapahoe County Water and Wastewater Authority (ACWWA) Chapparal Pump Station, Centennial, Colorado. Lead project engineer for planning, design and construction of a potable water pump station with a chlorine residual booster. Project included planning for future growth, considerations for low demand periods, and fire flow demands for residential subdivisions and an elementary school. The project also included an extensive instrumentation and control system to maintain distribution system pressure and residual chlorine concentration, including monitoring and control of the station from off site. This assignment involved extensive coordination with regulatory agencies, such as the City of Centennial, Arapahoe County, Southeast Metro Stormwater Authority, Colorado Department of Public Health and Environment, South Metro Fire Rescue Authority and the neighborhood HOA.

2011 ACWWA Integrated Water and Wastewater Master and Management Plan. Lead project engineer for recent master plan update including updates to potable and nonpotable water distribution system models. This included identifying future locations of wells and water distribution piping and development of a capital improvements plan for a five-year timeframe and buildout conditions. Other aspects of the project included coordinating assembly of existing sanitary sewer system models.

Wilson Vanadium Mine Water Treatment System, Hot Springs, Arkansas, for Umetco Minerals Corporation. Oversight of startup and testing of a new vertical turbine pump station and associated controls system to provide continuous surface water discharge to an adjacent creek. Design services for repair and upgrades to an existing stormwater treatment system for treatment of acid rock drainage, including mixing components and SCADA system replacement and upgrades.

Craig # 2 / Big Creek Reservoir, Gateway, Colorado. Project engineer for outlet repair for an existing regulatory dam. The project consisted of designing a cured-in-place-pipe system for the existing 330-foot-long outlet pipe and repair of the existing outlet slide gate. This was a fast track project initiated after the outlet gate became lodged open during a routine state inspection to place the dam back in service; the owner decided to repair the leaky outlet pipe while the dam was drained for emergency repair of the outlet gate. Extensive coordination with the Office of the State Engineer was required to both obtain approval for construction and approval to store water after construction. Also performed construction observation during all facets of the project and prepared post construction reporting as required by the state.

Casto Reservoir, Gateway, Colorado. Project engineer for construction phase of dam repair project, which included removal of one outlet pipe and replacement of a second outlet and associated outlet works; installation of seepage monitoring toe drains; and regrading of dam embankment to provide stable slopes. Responsible for review of construction submittals, contractor coordination and assuring compliance with state approved plans and state regulations for dam construction. Prepared dam construction report and updated emergency action plan.

Craig #1 Reservoir, Gateway, Colorado. Project engineer and resident project representative for construction of seepage monitoring toe drain system and staff gage installation for existing dam and reservoir. Responsibilities included submittal reviews, requests for information review and responses, construction observation and coordination with contractor, Office of the State Engineer, owner and project surveyor. Also responsible for preparation of record drawings and construction report for State Engineer approval.

Three Springs Mitigation Wetland Mitigation, Durango, Colorado. Project engineer for design of three wetland mitigation areas adjacent to the Florida River to offset for impacts to existing wetlands at nearby development property. Project involved collection and monitoring of groundwater elevations throughout the growing season to select elevation for successful groundwater supplied wetlands and development of grading plans to integrate proposed wetlands into adjacent wetlands and upland areas without subjecting area to excessive flooding or erosion from high flows in nearby river during spring runoff events.

Santa Susana Field Laboratory, Los Angeles, California. Project engineer responsible for assisting a surface water expert panel by developing and reviewing conceptual-level designs for surface water treatment systems, stream stabilization methods and surface water conveyance systems at the Santa Susana Field Laboratory in Ventura County, CA. Once the concepts were established, responsible for detailed review of construction plans for surface water treatment systems, including sediment basins, filtration beds and pump systems.

Boeing Plant 2, Seattle, Washington. Project engineer responsible for review of construction plans on behalf of the surface water expert panel. Reviews included evaluation of stormwater treatment systems and associated valves, piping and grading at the Boeing Plant 2 facility in Seattle, WA. Assisted in development of sampling protocol for imported construction materials for conformance with NPDES and RCRA permit requirements.

Confidential Mining Client in Jefferson County, Colorado. Project engineer for design of approximately 3,500-foot-long, 18-inch-diameter pipe to temporarily bypass a creek through mine site, to enable restoration of mine site to occur. Assisted with development of short-term and long-term mitigation and restoration plans for creek and associated riparian corridor.

Denver jetCenter, Arapahoe County, Colorado. Project engineer for evaluation of deteriorating pavement and subgrade in tie-down apron for plane parking at Denver jetCenter at Centennial Airport, Arapahoe County, CO. Evaluation included analysis of surface water flow patterns and airport operations, such as refueling and deicing, to identify possible causes of pavement deterioration. Also performed coordination of nondestructive testing of existing pavement and review of the testing results to develop a plan for phased pavement replacement.

Winter Park Lift, Grand County, Colorado. Developed grading plan for new Panoramic Express Lift at Winter Park, including establishment of steep slope criteria in conjunction with geotechnical engineers. Plan was developed to address drainage and stability concerns of the U.S. Forest Service as the reviewing governmental authority and property owner.

Broncucci Property, Adams County, Colorado. Professional engineer responsible for development of grading plan to remove fill material illegally placed within the 100-year floodplain of Clear Creek in Adams County, CO. Project included construction phase services and as-built survey review to ascertain that the construction was performed in accordance with the approved plans to allow development restriction placed on the property by the county to be removed.

Himmelland Dam, Fryingpan River, Colorado. Project engineer responsible for hydraulic calculations for slip-lining an existing dam outlet with a new HDPE pipe, including supporting calculations to justify that the elimination of the existing outlet air vent would not cause a pipe collapse due to vacuum pressure.

Hendricks West Creek Ranch Ponds. Development of pond grading and edge treatment concepts for creation of an entrance feature pond at the West Creek Ranch in Gateway, Colorado, including connections to irrigation ditches, pond maintenance drains, and outlets to maintain water quality within the pond.

Former Rocky Flats Plant. Project engineer for the design of three dam breaches at the U.S. Department of Energy's former Rocky Flats Plant in Jefferson County, Colorado. The project consisted of designing breaches for several Class IV dams and preparing plans and specifications for review by the State Engineer's Office. The main component of the project included design of grouted sloping boulder drop structures to stabilize the channel and design of a stop log structure to allow for controlled retention of surface water runoff.

Confidential Major Energy Corporation, Southwest Colorado. Analysis, evaluation and preliminary design for client's office complex to compare use of a duplex lift station to a shallow slope gravity system to convey flow to a wastewater treatment facility one mile away. Considerations included utility crossings, depth of excavation and frequency of cleaning and maintenance for gravity sewer with a slope less than the recommended minimum slope compared with the operation and maintenance of a lift station.

Coors Brewing Company Lake B-5 in Golden, Colorado. Project engineer for converting a borrow pit into a partially lined 850-acre-foot water storage reservoir for the Coors Brewing Company. The project included design of a ½-mile-long groundwater collection system and an approximately ½- mile-long water transfer pipeline system from nearby storage reservoirs.

Northern Plains Commerce Centre, Bismarck, North Dakota. Performed hydrologic modeling and master drainage plan analysis for a 250-acre multimodal transportation center including conceptual design of four regional detention facilities for Kadrmas, Lee & Jackson and the City of Bismarck.

Wilson Vanadium Mine, Hot Springs, Arkansas, for Umetco Minerals Corporation. Project engineer for 70-acre spoils pile surface stabilization project featuring multiple detention ponds, access roads, surface drainage channels and stilling basins. Also responsible for design of a groundwater collection system and a stream restoration crossing. The surface stabilization included control of surface runoff and placement of an impermeable liner to reduce infiltration. The design included balancing grading to achieve stable placement of approximately 150,000 cubic yards of material.

Confidential Western Wyoming Project. Project engineer for design of wetland reclamation for a unique well site in Wyoming. The project included design and construction phase services for creation of new wetlands in a high alpine environment adjacent to an existing undisturbed creek. The creek and floodplain hydraulics were highly influenced by beaver activity causing the formation of braided channels. About the mitigation plan, Thomas Johnson, P.E., of the U.S. Army Corps of Engineers wrote: "Overall I think the plan is one of the best I have ever seen regarding the level of planning and detail in the design."

Confidential Rio Blanco County, Colorado Project. Project engineer for reclamation design and construction phase services of creek and channels impacted by construction of 4 to 6 parallel natural gas pipelines in an area with sandy and silty soils. This project included recreating approximately 1,000 lineal feet of channel, which was completely shifted by the pipeline installation, reclamation of open trench construction of multiple creek crossings, reclamation of multiple tributary channels and reclamation of approximately 15 acres of impacted wetlands.

W/J Ranch, Aspen, Colorado. Project engineer responsible for designing an aesthetic water feature at a private residential development by Lowe W/J, LLC. The feature consisted of six lined ponds interconnected via surface channels with numerous small drop structures. Water is recirculated through the six ponds by means of a dedicated pump system.

Town of Palisade Water Treatment Plant, Colorado. Design engineer for the Town of Palisade's replacement potable water storage tank including site grading, yard piping and access layout. A main component of the project was retrofitting existing facilities to conform to the requirements of the proposed plant improvements.

Shorefox Development, Granby, Colorado. Project engineer for a lift station and force main from master planning level design through final design and bidding phases to serve a 1500-acre residential, commercial and recreational development. The force main concept included approximately 9,000 lineal feet of parallel pipelines to match the phasing of anticipated growth and includes addressing freeze/thaw concerns of a high alpine environment. The wet well lift station included a triplex configuration, variable frequency drives and operator-adjustable control system set points to meet the anticipated population growth. Design engineer for site layout of two buried concrete storage tanks and transfer pump station for potable water system.

Pitkin Iron Homeowners' Association, Aspen Colorado. Project engineer for modifications to a potable water system serving 15 affordable housing units on the Roaring Fork River. The project consisted of designing improvements to an existing system to meet the community system requirements of the Colorado Department of Public Health and Environment (CDPHE). This included providing a new groundwater well for the development from the opposite side of the river, designing an insulated pipeline across an existing bridge from the opposite side of the river to a chlorination facility and pump house, modifying system components to meet the CDPHE requirements and submitting new capacity and plan submittals for the project components for approval by the CDPHE. Additionally, extensive office support of construction observation was provided and the project culminated in preparation of a *Standard Operating Procedures Manual* for the system.

ACWWA–Elbert County 1041 Permit, Elbert County, Colorado, for ACWWA. Assisted in preparation of 1041 permit application to Elbert County to transfer approximately 6,600 acre-feet of groundwater annually to the ACWWA service area. Prepared long-term growth projections of water demand within the service area. Also prepared and analyzed various water system development and construction phasing alternatives in relation to probable capital costs.

Chenango Subdivision, Arapahoe County, Colorado, for ACWWA. Prepared a water system evaluation to provide the Chenango Subdivision with a potable water distribution system to serve 236 single-family homes and capable of meeting the fire flow requirements of the Parker Fire Protection District. The water distribution system would allow homeowners to abandon their individual existing groundwater wells.

Antelope Subdivision, Arapahoe County, Colorado, for ACWWA and Antelope Property Owners Association. Prepared a conceptual-level water distribution system design to replace homeowners' individual wells in an existing 117-lot subdivision.

Potable System Design, Horse Creek Metropolitan District, Adams County, Colorado. Design engineer for potable water supply system design. Prepared preliminary design for 320,000-gallon water storage tank to serve 154 single-family residential lots. Prepared design criteria and coordinated preliminary design of booster pump station with a local manufacturer of a packaged, prefabricated pump station to provide a maximum hour demand of 750 gpm to provide 245 single-family homes with water service. Design incorporates expansion capacity to provide an additional 750 gpm to serve a total of 600 single-family lots, as well as providing a high demand pump with backup diesel generator power supply capable of providing 1,500 gpm as required by the local fire district.

River Valley Estates, Durango, Colorado, for TAG, LLC. Design engineer for a HOA-operated rural water supply system to serve 50 single-family lots. Designed a 121,000-gallon water storage tank, booster pump station and associated site design. Also designed wellhead sites and chlorination vault site. The water storage tank was a welded steel tank on concrete ring wall foundation and the booster pump station included a prefabricated building with variable frequency service pumps providing a maximum hour flow of 80 gpm for 31single-family lots.

ACWWPID Gray Zone 4 MG Water Storage Tank, Centennial, Colorado, for ACWWA. 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 four-million-gallon water storage tank. Performed final design of storm sewer system to serve the site and provide emergency overflow conveyance from the water storage tank.

Expert Witness Preparation

Santa Fe, New Mexico Water Treatment System. Provided conceptual/preliminary repair designs for an existing raw water delivery and treatment system for a 15 million gallon per day (MGD) facility. The water system diverts water from the Rio Grande River and pumps that water to a major municipal water treatment plant. Work included conceptual design of approximately 9 miles of pipeline, 3 raw water pump stations and development of an engineer's opinion of probable costs for a new raw water intake, pipelines, pump stations, sedimentation control facility and a new raw water storage facility.

Crystal Good et al vs. American Water Works Company, Inc., 2016. Technical lead in support of an engineering expert for the plaintiff regarding a chemical spill in the Elk River upstream of a water treatment plant intake serving the City of Charleston, West Virginia. Evaluated the water storage tanks, and pipeline distribution systems during the chemical spill event and evaluated normal water system performance on a seasonal and annual basis.

Creative Hardscape Company, Inc., v. Eric T. Koeplin. 2014. Prepared Expert Report to address the construction of a permeable pavement stormwater retention system in a residential driveway in Cherry Hills Village, Colorado. Testified in Arapahoe County District Court, Division 15 regarding the evaluation findings.

Arapahoe County Water and Wastewater Public Improvement District and Arapahoe County Water and Wastewater Authority Versus HDR Engineering, Inc. 2008 through 2011. Assisted in preparation of Expert Report to address the design/construction of the existing Chapparal Pump Station, City of Centennial, Colorado. Performed review of available information, including design and construction documents, record drawings, reports and correspondence, operations records, testing results, depositions, and photographs.

Highpoint Vista v. Tait & Associates. Co-authored expert report on drainage/grading issues for Larimer County District Court (No. 2007CV901) trial August 20, 2009.

Bennett Sewer. Assisted expert witness with development of position and supporting facts in a litigation matter involving a sanitary sewer line backup from surface water during construction of a major sewer line extension. The backup resulted in flooding of several residential properties and overflows at the wastewater treatment plant.

Hopkinsville. Project engineer responsible for developing hydrologic and hydraulic modeling of a local watershed in support of litigation matter. The case involved the drowning death of a young girl in a storm sewer system without safety measures in place.

PROFESSIONAL & HONORARY SOCIETIES

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