

**RESUME**  
**CHRISTOPHER S. PHILIPS, P.E.**

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**EDUCATION**

B.S. Civil Engineering, 1985, University of New Mexico  
M.S. Civil Engineering, 1996, University of New Mexico (Water Resources)

**EMPLOYMENT**

1999 – Present      Owner, Riverbend Engineering, Pagosa Springs, CO and Albuquerque, NM  
1992 – 1999        Senior Water Resources Engineer, Easterling & Associates, Albuquerque, NM  
1987 – 1992        Staff Engineer, Leedshill-Herkenhoff, Albuquerque, NM

**EXPERIENCE**

River Restoration, Geomorphic Assessment, Bank Stabilization, Habitat Enhancement:

**San Juan River near Farmington, NM:** design, permitting and construction management for a bank stabilization project at McGee Park, integrating new aquatic habitat for endangered species of fish. **Rio Hondo near Valdez, NM:** surveys, geomorphic evaluation, restoration design for habitat enhancement, construction management & staking, 401/404 permits. **Chama River near Chama, NM:** surveys, geomorphic evaluation, restoration design for habitat enhancement, construction management & staking, 401/404 permits, long term monitoring. **Los Pinos River west of Antonito, CO:** design of bank stabilization and in-stream habitat project for multiple landowners, includes geomorphic assessment and reference reach surveys, construction management and long term monitoring (this is a three phase project). **Pecos River near San Juan, NM:** surveys, geomorphic evaluation, restoration design for habitat enhancement, construction management & staking, 401/404 permits. **East Fork San Juan River near Pagosa Springs, CO:** field surveys, geomorphic assessment, river restoration design for aquatic habitat, wetlands design in floodplain, reference reach surveys, obtain 404 & 401 permits, construction staking and TSP services (this is a three phase project). **Rio Grande near Alcalde, NM:** design of floodplain improvements for flood damage reduction and riparian area restoration. **Piedra River near Arboles, CO:** design of bank stabilization and in-stream habitat project for the Southern Ute Tribe, includes geomorphic assessment and reference reach surveys, construction management and long term monitoring. **Pecos River near Terrero, NM:** surveys, geomorphic evaluation, restoration design for habitat enhancement. **Piedra River near Chimney Rock, CO:** assessment of river and groundwater changes from gravel mining operation at the Rafter T Ranch, including summary report, preparation of exhibits for a civil trial, expert witness testimony, design of river restoration project. **San Pedro Creek near Cedar Crest, NM:** assessment and design for restoration of riparian habitat, pedestrian trail design, planning for stormwater re-use from a large urban development; project included 2 miles of ephemeral system, and 2 miles of spring-fed perennial system, all subject to flash flooding. **Jean's Creek in McKinney, TX:** geomorphic assessment, design of bank stabilization, permit document preparation, construction layout staking and construction oversight. **Healthy Lakes & Streams Initiative in McKinney, TX:** stream assessments for 10 miles of creeks in an urban environment, conceptual planning & cost estimates for stabilization/restoration measures, summary report preparation. **The Branch, Phase I, McKinney, TX:** design of channel stabilization measures for two reaches of an urban creek, including accommodation for a future trail system, maintenance access, long term erosion, while retaining as much of a natural look to the system as possible. **Dolores River near Rico, CO:** surveys, geomorphic evaluation, restoration design for habitat enhancement, construction management & staking, 401/404 permits. **Rio Agua Sarca near Dixon, NM:** design of 1.5 miles of river restoration for the BLM, including habitat enhancement, riparian area restoration, improved subsurface water storage, etc. **Pecos River near Pecos, NM:** surveys, geomorphic evaluation, restoration design for habitat enhancement, construction management & staking, 401/404 permits. **Chama River near Chama, NM:** surveys, geomorphic evaluation, bank stabilization design for railroad bridge protection, construction management & staking, 401/404 permits. **Dolores River near Stoner, CO:** design of bank stabilization and channel re-shaping for riverbank and bridge protection, includes geomorphic assessment and construction management. **San Juan River near Fruitland, NM:** survey, design and permitting for a bank stabilization and river access boat ramp. **Pecos River near Pecos, NM:** surveys, geomorphic evaluation, restoration design for habitat enhancement. **Stollsteimer Creek near Chimney Rock, CO:** design of bank stabilization and in-stream habitat project for the Southern Ute Tribe, includes geomorphic assessment and reference reach surveys, construction management and long term monitoring. **Alamosa River near Capulin, CO:** update design documents and provide construction management for approximately 1.0 miles of a river restoration project. Tasks include field layout, staking, grade

checking for irrigation works, progress reports and monthly fiscal reports. **Animas River near Cedar Hill, NM:** surveys, geomorphic evaluation, bank stabilization design, construction management & staking, 401/404 permits, long term monitoring. **Navajo River near Lumberton, NM:** design of an intake structure in the river for a public water supply system. **Chama River near Los Ojos, NM:** surveys, geomorphic evaluation of impacts from in-stream gravel mining, preliminary restoration design. **Red River at Red River, NM:** field surveys, geomorphic characterization, restoration designs for aquatic habitat and public fishing access, obtain 401 & 404 permits, construction management, layout staking and contractor instruction for the first phase of construction. **Animas River near Aztec, NM:** surveys, geomorphic evaluation, restoration design for channel stability, construction management & staking, 401/404 permits, long term monitoring. **Uncompahgre River at Ridgway, CO:** construction surveys, river restoration and wetlands design of Phase II, whitewater feature design (2) and field supervision of construction, construction oversight. **Rio Grande at South Fork, CO:** field surveys, geomorphic characterization, restoration designs for aquatic habitat enhancement, obtain permits & environmental clearance for T & E species. **Animas River at Farmington, NM:** survey, design and permitting for whitewater enhancements and aquatic habitat features. **Uncompahgre River near Ridgway, CO:** surveys, geomorphic assessment, river restoration and wetlands mitigation design for in-channel site impacted by gravel mining. **La Plata River near Hesperus, CO:** geomorphic assessment, field surveys and design for an irrigation diversion headworks, 404 permit and construction staking. **San Miguel River near Placerville, CO:** geomorphic assessment, field surveys, preliminary design for aquatic habitat restoration and bridge crossing. **Montoyas Arroyo in Rio Rancho, NM:** stable channel morphology assessment, design and construction oversight. **La Cueva Arroyo near Albuquerque, NM:** two separate projects involving arroyo realignments and restoration design, 404 permitting and construction oversight. **Chama River near Abiquiu, NM,** channel morphology assessment, bank stabilization design. **Rincon Arroyo near Rincon, NM:** channel morphology and bank stabilization design. **Weminuche Creek and East Fork Piedra River (both near Pagosa Springs, CO):** field surveys, sediment sampling, long term monitoring of restoration work.

#### Hydrology, Hydraulics, Bridge Scour & FEMA Floodplain Studies:

**Upper Stollsteimer Creek Watershed Study:** rainfall-runoff modeling for a large watershed including Ntl. Forest and downstream urbanizing areas, hydrographic surveys of four reservoirs within the watershed, inventorying existing drainage infrastructure, preliminary design of new drainage infrastructure, including sediment traps, detention basins and water quality enhancement wetlands. **Uncompahgre River at Ridgway, CO:** bridge scour studies (2) for CDOT approvals, **San Juan River at Pagosa Springs, CO:** Floodplain studies for three separate residential development projects, including topographic surveys, HEC-RAS analysis, comparison with FEMA maps & studies, recommendations for prudent site development, etc. **Rio Fernando in Taos, NM:** Floodplain study for a new complex of municipal buildings, preparation of an elevation certificate. **Vado Arroyo near Vado, NM:** hydrologic modeling, hydraulic modeling for drainage and sediment management infrastructure. **East Mesa Drainage Master Plan at Las Cruces, NM:** hydrologic and hydraulic modeling of a rapidly urbanizing 50 sq mi. watershed, preliminary design and cost analysis of a comprehensive stormwater management system. **Northern Meadows Drainage Master Plan in Rio Ranch, NM:** watershed modeling and on-site drainage infrastructure design for a 700 unit subdivision, hydraulic design of on-site storm drains, hydraulic design for re-alignment of a major arroyo. **Stollsteimer Creek Floodplain study for commercial building, near Pagosa Springs, CO:** Floodplain study for a commercial building bordering a mapped floodplain; preparation of an elevation certificate. **Alamogordo Flood Control Channels (2) in Alamogordo, NM:** hydraulic design and cost estimating for two large flood control channels under contract with the USACE Albuquerque District. **Uncompahgre River at Ridgway, CO:** Analysis, documentation and processing of a FEMA map change (LOMR) based on changes to the river and floodplain. **Zuni River Study, near Zuni, NM:** watershed level study of sedimentation and geomorphic changes in the Zuni River basin, under contract with the USACE Albuquerque District. **Santa Ana Dam, near Bernalillo, NM:** assessment of dam condition, hydraulic capacity and spillway functions, breach assessment and flood encroachment study, for Santa Ana Pueblo. **North Valley Storm Drain, in Albuquerque, NM:** hydrologic and hydraulic modeling for re-habilitation and expansion of an urban area storm drain system. **South Hobbs Drainage Studies (2) in Hobbs, NM:** hydrologic and hydraulic modeling, design of several storm drain systems, design of a 7 acre combined retention pond & recreational complex. **Santa Fe National Cemetery in Santa Fe, NM:** on-site hydrology and hydraulic storm drain design, offsite watershed hydrologic analysis, hydraulic design for arroyo re-alignment. **Hydrologic, hydraulic and sedimentation analyses for various arroyos in New Mexico** including Bilbo Arroyo, Rincon Arroyo, Barranca Arroyo, Venada Arroyo, Montoyas Arroyo. **Stream gage analysis for multiple rivers** including The San Juan, the Animas, the Rio Blanco, The Rio Grande, The Uncompahgre, The La Plata, Red River and others. **FEMA CLOMR applications and subsequent FEMA LOMR approvals** for La Cueva Arroyo (2 locations), and the Montoyas Arroyo. **Bridge and culvert scour analyses** on the Venada, Rincon and Barranca arroyos, San Miguel and

Uncompahgre rivers, and other locations. Floodplain evaluations for various developments on the Rio Blanco (2 locations) and the San Juan River (2 locations).

#### Sedimentation Studies:

**Zuni River Feasibility Study (for the USACE)**, reservoir sedimentation analyses, capacity calculations, HEC-6 analysis. **South La Cueva Arroyo**, sediment transport and prudent line analysis. **North Domingo Baca Arroyo**, HEC-6 analysis. **Venada Arroyo**, sediment transport analysis. **Barranca Arroyo**, sediment transport analysis. **Bilbo Arroyo**, sediment transport analysis and detention basin sedimentation design. **Vado Arroyo**, sediment transport analysis. **Rincon Arroyo**, sediment transport analysis, equilibrium sediment transport design for re-aligned arroyo. **Montoyas Arroyo**, sediment transport analysis, equilibrium sediment transport design for re-aligned arroyo. **Santa Ana Dam**, reservoir sedimentation analysis. **Geomorphic evaluation of sediment movement and depositional/scour features, sediment characteristics, sediment transport continuity and threshold of motion shear stress analysis for multiple rivers** including the Rio Grande at South Fork, the San Juan at Pagosa Springs, The Animas and San Juan rivers at Farmington, the Uncompahgre at Ridgway, The Animas at Aztec, The La Plata at Hesperus, The San Miguel at Placerville, The Rio Blanco near Pagosa Springs, Red River at Red River. **Suspended and bed load sediment measurements** on the Weminuche river, the Uncompahgre river, the Animas river, and various small tributaries to four reservoirs at Pagosa Lakes.

#### Wetlands and Ponds:

**San Juan River near Pagosa Springs, CO:** Civil site design and on-site wetland mitigation design, including groundwater movement assessment and detailed grading plan for surface water and subsurface water utilization for the San Juan River Villas project. **Uncompahgre River near Ridgway, CO:** Design, permitting and construction management for a 3 acre wetlands mitigation project, integration surface water diversions, trail system, adjoining river restoration, etc. **Animas River Park in Farmington, NM:** preliminary design of a fishing pond in the Animas River floodplain, including water diversion, trail system, aquatic habitat and wetland design, water rights filing documents. **East Fork San Juan River near Pagosa Springs, CO:** preliminary fishing pond design in the river's floodplain, including design for aquatic habitat, peripheral wetlands design, water diversion structures, etc. **Pagosa Lakes Recreational reservoirs (4) in Pagosa Springs, CO:** hydrographic surveys of lake bottom topography, storage volumes and estimates of sediment accumulation. **Navajo River near Chromo, CO:** consult on pond management for fishing pond adjoining the river. **Wetland Restoration in Aztec, NM:** provide hydrologic and hydraulic design on a multi-disciplinary team creating a 1.5 ac. compensatory wetland.

#### Grading & Drainage Design:

Grading & drainage design for more than 80 projects in the past 20 years, both commercial and residential, with and without FEMA floodplain constraints, with and without new on-site storm drains, detention/retention basins and/or water quality enhancement buffer strips, including wetland components for habitat restoration and water quality enhancement. Prepare stormwater management plans for more than 20 sites for compliance with NPDES Phase I & II compliance.

#### **PUBLICATIONS**

Principal Author: "Drainage Manual Volume 1, Hydrology", New Mexico State Highway and Transportation Department, 1995 (including rainfall analysis software).  
"Natural Patterns in Arroyos in the Northwest Albuquerque Area", 1999, unpublished  
"Determining Critical Bank Height for Arroyos near Albuquerque", 1992, unpublished

#### **PROFESSIONAL REGISTRATIONS**

New Mexico Professional Engineer No. 11624  
Colorado Professional Engineer No. 33674  
Texas Professional Engineer No. 99702  
NRCS Technical Services Provider TSP #04-4511 (Certified for rivers, wetlands, ponds and erosion control work in Colorado and New Mexico)

Certified Floodplain Manager, registered with the NM Association of Floodplain Managers

***SPECIALIZED  
TRAINING***

Completion of Rosgen training through level 4, Natural Channel Design

Completion of Zeedyk advanced training in wet meadow, cienega and riparian restoration

***PROFESSIONAL  
AFFILIATIONS***

Member - American Society of Civil Engineers

Member – American Water Resources Association

***DESIGN AWARDS***

Bilbo Arroyo – ACI, NM Chapter, excellence in concrete award (Roller Compacted Concrete project), 1995

Barranca Arroyo – ACEC, NM Section, Innovative use of Roller Compacted Concrete, 1994