

EDUCATION

M.S., Civil Engineering,
University of Florida

B.S., Civil Engineering,
University of South
Florida

PROFESSIONAL REGISTRATION

Professional Engineer /
CO
ASFPM Certified
Floodplain Manager
(CFM)

AFFILIATIONS / ORGANIZATIONS

CASFM Member
ASFPM Member
CDOT Protégé
DPLE Academy

EMPLOYMENT

J3 Engineering
Consultants
Principal-in-Charge
Sep 2007 – Present

Jacobs Carter Burgess
Senior Project Manager
Aug 2003 – Sep 2007

Kirkham Michael
Water Resources
Engineer
Aug 2000 – Aug 2003

MacVicar, Federico &
Lamb
Groundwater Hydrologist
May 1997 – Aug 2000

PUBLICATIONS

Author, Probabilistic
Funnel/Gate Design
Model, 1997

Co-Author, Post-Closure
Utilization of Landfills,
1997

Co-Author, Hydraulic
Performance of Conflict
Manholes, 1996



Mr. Cecil is a Principal and Owner and will be the Principal/Sr. Project Manager on this project. He brings more than 20 years of relevant civil and water resource engineering experience gained in Colorado, Wyoming, California, Arizona, Florida, Nevada and Utah, including the development and operation of hydrologic/hydraulic watershed and stream models. He holds a Master of Engineering Degree in Water Resources from the University of Florida and is a Certified Floodplain Manager. His experience range includes surface water modeling, groundwater and contaminant transport modeling, floodplain studies, stormwater master plans, regional detention design, water quality design, storm sewer design and general civil design. His greatest interest area is the implementation of sound floodplain and water quality management strategies to improve life/safety, stream stability, water quality, and habitat preservation. As the Water Resources Division Manager at **J3**, he is responsible for client management and project success.

Project Specific Experience:

Project Manager, West Fork of Second Creek Channel Improvements, RIDA Development Corporation, Gaylord Aurora — City of Aurora, CO: Engaged by the RIDA Development Corporation to design regional drainage improvements as part of the 85-Acre, 1,500 room Gaylord Rockies Resort and Convention Center in Aurora Colorado within the Highpoint Development at Denver International Airport. This included an Addendum to the Master Drainage Plan, which required updates to the hydrology; basin routing and associated EPA-SWMM model; a grade separated pedestrian underpass at the intersection of the West Fork of Second Creek and 64th Avenue and the associated headwall/wingwall and downstream grouted sloping boulder drop structure; stream improvements that included a wetland bottom 100-year channel, low flow pedestrian bridge, regional pedestrian/maintenance trail with structural retaining walls, and lastly, a sculpted concrete drop structure. A floodplain development permit, construction documents, environmental permitting, stormwater management plans and construction support were provided.

Project Manager, Raw Water Ponds — City of Greeley, CO: Assisted the City of Greeley with emergency rehabilitation work at their water treatment plant adjacent to the Cache La Poudre River. During the week of September 9th to 16th, the river's drainage basin received nearly 20 inches of rainfall. The resultant runoff caused numerous bank failures and flood related damages throughout the City of Greeley and Larimer County. The raw water ponds at the City's water treatment plant were threatened by the adjacent bank erosion. The project restored the bank to the extent practical, to its former location. **J3** prepared the necessary hydraulic modeling to support the design elements and to process the project through the Larimer County Floodplain Review Board.

Toll Gate Creek and East Toll Gate Creek Master Drainage Plan (MDP) and Flood Hazard Area Delineation (FHAD) — Aurora, CO: Served as Project Manager for this Urban Drainage and Flood Control District (UDFCD) Major Drainageway Planning and FHAD study area that encompasses the Toll Gate Creek and East Toll Gate Creek (Lower) watershed. This project was completed on behalf of the UDFCD, the City of Aurora, and Buckley Air Force Base for the express purpose of quantifying flood flows, identifying regional improvements, and mapping flood hazards. The resultant FHAD was adopted in 2014.

Piney Creek Floodplain — Arapahoe County, CO: Worked with the Urban Drainage and Flood Control District to evaluate the existing conditions floodplain of Piney Creek. This drainageway is plagued by sediment aggradation and degradation and consequently, the floodplain is believed to be modified from its regulatory location. Additionally, an adjacent

trail system is routinely inundated with deposited sediment. Ken's team prepared the necessary hydraulic modeling to evaluate the existing floodplain and based upon those results, a new trail alignment was designed. J3 prepared the construction, permitting, and processing documents.

Natrona County International Airport Master Drainage Plan and Stormwater Pollution Prevention Plan (SPCC) — Casper, WY: Provided project management and oversight for the preparation of a comprehensive MDP of over 3,700 acres for the airport. This effort included a HEC-HMS watershed model and a StormCAD analysis of over 4.6 miles of existing storm sewer. The 5-year and 100-year storm analysis evaluated the current system's stormwater pipe and storage capacity. Following the analysis, upgrade recommendations where existing storm sewer and water quality infrastructure locations had insufficient capacity were evaluated.

Cherry Creek Restoration — Centennial, CO: Completed a channel restoration and geomorphology analysis for 7,400 linear feet of Cherry Creek, one of two major rivers that flow through Denver. The project intent was to restore this reach to its 1937 alignment to the extent practicable and to create a natural floodplain to improve function and water quality. The prior condition was a severely incised channel with significant bank erosion. Specific tasks included a historic floodplain and geomorphologic analysis for years 1937, 1952, 1975, 1988, 1991, and 2000. This information was used to determine the stable channel alignment and hydraulic characteristics and to modify the effective hydraulic model to generate revised floodplain delineation. This work was the precursor for the Parker Jordan Centennial Open Space project.

Anthem Development Master Drainage Plan — City of Broomfield, CO: Provided oversight for the Anthem Master Drainage Plan for a 3,000-acre mixed-use development. Specific involvement included hydrologic analysis and hydraulic design for a network of three improved channels and six on-line detention ponds for a sub-area encompassing approximately 1,100 acres. In addition, the project incorporated design flows from Sienna Dam, designed as an on-site irrigation reservoir to supplement water demand within the Anthem development. The project defined floodplain limits, storage requirements, and infrastructure improvements necessary to balance the planned community's goals.

Project Engineer, Oak Gulch Regional Detention and Restoration — Parker, CO: Performed the analysis and modeling for a 1,200-acre master drainage study that included one regional detention and 6 sub-regional detention / water quality ponds. The project concept was to maintain natural channels and preserve the floodplain within a golf course corridor. Historic irrigation diversions to this natural drainage destabilized the sandy streambed and bank slopes. The approach was to incorporate a stabilization design using both hard and soft solutions. This effort was part of a Cherry Creek Watershed Outfall Systems Plan for Urban Drainage.

Project Engineer, Riverside Parkway — City of Grand Junction, CO: Riverside Parkway is a 7.4-mile new urban arterial roadway through a heavily developed portion of Grand Junction. The Parkway bisects ten major drainages around the southern part of the City and two of these drainages are FEMA regulated floodplains. In addition, the project also bisects eight major drainage outfall lines of the City's Combined Sewer Separation and Stormwater Management Master Plan. The project included the analysis and design of the major basin culvert crossings, as well as the stormwater collection and conveyance infrastructure, water quality, and a wetland mitigation facility.

Old Town Drainage Study and Floodplain Master Plan — City of Steamboat Springs, CO: Evaluated various options to reduce risks associated with the existing FEMA regulated floodplains, which currently encumber numerous public and private properties. The floodplain encroachments were caused by decades of development up to the creek banks. The J3 team evaluated various diversion alternatives, including the implementation of a parallel storm conveyance to remove peak flows from the undersized conveyance and transfer the peak flows to an adjacent basin. Incremental hazard assessments have been performed to improve the hydraulic capacity of five bridge crossings. The project required a detailed hydrologic and hydraulic analysis to determine design flows throughout the Old Town area. Recommendations were provided regarding the number and type of inlets and the horizontal design of stormwater pipes. In addition, J3 prepared construction documents for the Butcherknife Creek box culvert crossing of State Highway 40 which was constructed by CDOT during a concurrent roadway project.

Project Manager, Core Area Pond – Louisville, CO: Assisted the Urban Renewal Authority (URA) within the City of Louisville to support its redevelopment of an urban infill area that was previously developed without detention and water quality. The City approved an off-site attenuation facility that is located adjacent to the downstream wastewater treatment plant that was under design and Drainageway A2, which is an Urban Drainage and Flood Control District maintenance eligible conveyance that was also under design. As a result, this project was closely coordinated with both projects. Challenges included an instream intake structure, base flood elevations along Drainageway A2 and a discharge pipe controlled by a flap gate.

Project Manager, Killpecker Creek Floodplain Development Permit (2012-2015) – Rock Springs, WY: Analyzed multiple earthmoving scenarios, and their resultant impact to the regulatory FEMA hydraulic model to ensure no net rise in the base flood elevation. The project is located along Killpecker Creek in Rock Springs, Wyoming and was intended to locate a rail spur for use by the Union Pacific Rail Road. The project required the creation of the duplicate effective model, existing conditions model and multiple scenarios of the proposed conditions model. Field reconnaissance was completed to verify the accuracy of as-built bridge data that was not reflected in the regulatory model at the time of this project.

Project Manager, Happy Canyon Creek Pedestrian Bridge CLOMR (2014 – 2015) – Arapahoe County, CO: Processed the planning and construction documents for a new pedestrian bridge across Happy Canyon Creek. This included the CLOMR and LOMR FEMA approvals, coordination for Section 404 permitting, GESC permitting and all associated permitting requirements. Flows along Happy Canyon had to be analyzed for future conditions to support the design, but also had to be analyzed to match the FEMA regulatory flows. This required the review of, and coordination with the associated Major Drainageway Plan and Flood Hazard Area Delineation, completed by the Urban Drainage and Flood Control District.

City of Greeley Waterline Repair – Greeley, CO: Aided the City of Greeley with emergency repair work of a 27-inch treated water transmission line. The line crosses the Cache La Poudre River and was severely damaged by extreme flood events during the week of September 9th to 16th, 2013. During this period, the river's drainage basin received nearly 20 inches of rainfall. The resultant runoff caused numerous bank failures and flood-related damages throughout the City of Greeley and Larimer County. Alternative new alignments for the water line were evaluated and the most advantageous will be constructed. **J3** prepared the construction documents and the hydraulic modeling necessary to process the project through the Larimer County Floodplain Review Board.

Poudre River Scour Analysis – Greeley, CO: Aided the City of Greeley with findings and recommendations for the North Greeley 36-inch sewer installation. The City of Greeley will install a 36-inch sanitary sewer interceptor pipe that will cross beneath the Cache La Poudre River just west of North 8th Avenue and again between the Union Pacific Railroad tracks and North 6th Avenue. The pipeline will also cross the Eaton Draw. The crossings will be shallow with as little as 1-ft. of cover between the pipe encasement top and the river flow line. Therefore, the City needed to ensure the sewer line integrity.

Little Morrison Creek Waterline – City of Steamboat Springs, CO: Analyzed and investigated the floodplain and hydraulic impacts and waterline construction to transport diverted water from Morrison Creek to Stagecoach Reservoir (approximately 4 miles). The scope of work included the backwater analysis and design and examination of three project aspects: the creek diversion structure, the gravity and pressure pipeline, and the reservoir entrance configuration. Project deliverables included preparing the Findings and Recommendations Report, Preliminary Construction Drawings, Preliminary Construction Specifications and a Preliminary Construction waterline cost estimate.

Norlin Quad Utilities, University of Colorado – Boulder, CO: Prepared an evaluation and design of two separate utility rehabilitation projects located within Norlin Quad on the main campus. Due to the busy campus schedule, numerous mature trees, as well as strict landscaping requirements, this project required a very well-thought-out staging, phasing, and implementation plan. Each was developed to minimize disruption to pedestrian traffic, reduce service interruption periods to the numerous buildings that are serviced, and to limit the impacts and the resultant revegetation and restoration requirements.

The first project was the rehabilitation of an existing 8-inch vitrified clay pipe sanitary line that had been damaged by tree roots. Due to the proximity of sidewalks and landscaping, it was determined to rehabilitate this line with trenchless technology. The preferred technology was cured in place pipe (CIPP). This allowed almost the entire sanitary line to be rehabilitated without impacting the Norlin Quad. The second project was an 8-inch waterline installation. The existing 6-inch waterline was under capacity and did not provide good flexibility for isolation of the various buildings that it services. Here again, it was decided to install a new trenchless technology waterline. The preferred technology is directional drilling with only limited areas of open cut required for new services and valves.

Service Center and Floodplain Analysis — City of Louisville, CO: Generated an existing conditions floodplain analysis for the City of Louisville to better describe perceived anomalies with the regulatory mapping. Flood patterns within the City were poorly described with a broad-brush Zone AE mapping west of Highway 93 and Zone A east of Highway 93. **J3** developed a geo-referenced HEC-RAS model that incorporated numerous lateral flows and a more rigorous overall solution. This work has allowed the City to evaluate several Master Plan alternatives for flood reduction and to also recommend several new alternatives. As a precursor to this work, **J3** prepared a floodplain development permit for the City's Service Center improvement project to demonstrate conformance with local regulatory criteria.

Project Manager, Evergreen Middle School (2002-2003) — Jefferson County, CO: Developed a Master Plan and completed the final design for drainage, parking and circulation improvements. A critical component of this project was the preservation of at least fifteen mature trees that were indicative of the unique character of the community.

Fiske Pond, University of Colorado — Boulder, CO: Prepared a conceptual design for the University of Colorado at Boulder to evaluate existing drainage conditions, develop a conceptual plan, and prepare the final design construction plans for modifying the use of Fiske Pond by incorporating temporary New Anderson Ditch irrigation water storage, as well as a water quality retrofit of Fiske Pond. To improve upon the pond's aesthetics, the conceptual plan incorporates numerous beneficial green infrastructure practices such as rain gardens and bioswales. The conceptual plan was reviewed by University staff and will be evaluated for future implementation once funding is secured.

Project Manager, Cherry Creek State Park West Boat Ramp — Centennial, CO: Managed the design, and ultimately provided construction management for the installation of water quality enhancements at the West Boat Ramp of Cherry Creek State Park. This included the removal of antiquated systems, strategically located storm sewer inlets, reinforced concrete pipe, a reconfigured water quality pond and the associated outlet structure to the reservoir. This project was located within the flood pool of the reservoir and therefore, required close coordination with the Army Corps of Engineers.

Project Manager, Cherry Creek Low Water Crossing — Arapahoe County, CO: This project included the design and construction of a prestressed concrete bridge across Cherry Creek within the vicinity of the Colorado Storm soccer complex. Its construction allowed for the eventual continuation of the Cherry Creek Trail which had been incomplete at that time. The design included the temporary diversion channel, bridge deck, abutments, soil stabilization, bioengineering, phasing plan, GESC permitting, floodplain development permit and construction support services.

Project Manager, Piney Creek Trail — Arapahoe County, CO: Provided an existing conditions hydraulic analysis of Piney Creek on behalf of the Urban Drainage and Flood Control District to assess how sediment accumulation may have impacted the base flood elevations associated with the regulatory floodplain. This work resulted in trail improvements to mitigate sand accumulation, standing water and flooding under the Tower Road underpass. This work was necessary until the regional Piney Creek sediment projects were completed by the Urban Drainage and Flood Control District and the Southeast Metro Stormwater Authority. The project required construction documents, environmental permitting, GESC permitting, and a floodplain development permit.

Project Manager, Steamboat Springs Flood Damage Assessment — Steamboat Springs, CO: Provided assistance to the City and their Benefit Cost Analysis (BCA) as a portion of the grant application to FEMA. Specifically, flood damage cost estimates were prepared for the 10-, 50-, and 100-year floods by evaluating velocity, shear stress, stream power and overtopping elevations. The results and subsequent field condition assessments were used to assign a vulnerability score using the Colorado Bridge Safety Assurance Procedure for the Colorado Highway Department. Numerous capital projects were identified to increase public safety and regional benefits.