

# City of Santa Fe, New Mexico

## Memorandum

**DATE:** February 7, 2025  
**TO:** Alan Webber, Mayor  
**FROM:** Zoë Isaacson, River Commission Staff Liaison *ZRI*

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This memorandum serves to inform you that the terms for four appointments to the Santa Fe River Commission have expired. After review, we respectfully recommend the reappointment of the following three commissioners: Jake Lyon, Heidi Klingel, and Anna Hansen.

Unfortunately, Pat Smyth has informed us of his decision to step down from the Commission, as he will be relocating out of state within the month to join his partner. This will leave one appointment open on the Commission.

We recommend the appointment of Karen Jackson, Geomorphologist and Water Quality Expert, Los Alamos National Laboratory, to fill the open position.

Should you require any further information or clarification, please do not hesitate to contact me.

Thank you and please do not hesitate to reach out should you have any questions or concerns.

Sincerely,

*Zoë Isaacson*

Zoë Isaacson  
Santa Fe River Commission Staff Liaison  
505.955.6853

Attachments:

Heidi Klingel Resume

Jake Lyon Resume

Anna Hansen Resume

Karen Jackson, Cover Letter and Resume

**Heidi M. Klingel**  
Hydrologist/Geologist/Fluvial Geomorphologist



Santa Fe, NM

## Education

2014

### **M.S. in Geoscience, Fluvial Geomorphology**

- Colorado State University, Fort Collins
  - Advisor: Dr. Ellen Wohl
  - Thesis: Developing a Physical Effectiveness Monitoring Protocol for Aquatic Organism Passage Restoration at Road-Stream Crossings. Field work included site elevation surveys (total station), sediment transport studies, and flood analysis

2004

### **B.S. in Earth Science, Environmental Geology (Water)**

- University of California, Santa Cruz

## Professional Experience

*August 2019 to Present*

### **City of Santa Fe River Commissioner, Chair**

#### **City of Santa Fe**

Not paid; 8 hours/month

Duties:

- Advise the Mayor and City Counselors on matters pertaining to the management of the Santa Fe River watershed and the Santa Fe River; issues include stream restoration, administration of the instream environmental flow within the Santa Fe River, stormwater management, and rainwater harvesting.
- Annually quantify and prescribe the timing of the instream “Living River” hydrograph; a dam release environmental flow from the City’s reservoirs.
- Create public outreach materials
  - Created a GIS based “Story Map” about stormwater in the Santa Fe River; it is hosted on the City of Santa Fe Webpage (2022).
  - Organized and gave talk on environmental flows in the Santa Fe River at a community lecture series; August 2023.
  - Creating an interactive map which displays the longitudinal wetted extent within the river during prescribed peak floods (2024).
  - Participation in the “Love Your Watershed Day” event (table with a poster on the Santa Fe River Environmental Flow; explain water rights and instream flow to public; May 2023 and upcoming in May 2024).

November 2021 to Present

## Hydrologic Technician (1316; GS-11)

### The National Stream and Aquatic Ecology Center (USFS, WO)

\$85,535/year; 40 hours/week

#### Physical Hydrology and Watershed Measurements

- Quantify stream discharge, stream stage and sediment composition at diverse field sites; teach techniques to field personnel; write standard operating procedure documents. Example efforts include work for instream flow projects in the Verde River basin, AZ and the Snake River Headwaters, WY.
- Help to develop field study techniques by applying standard physical hydrology and watershed measurements to aquatic habitat and lifecycle requirements. Example project- determining a minimum fish passage and habitat connectivity discharge for the Yellowstone Cutthroat Trout environmental flow in WY; Presented the study results to USFS, NPS, and DOJ staff.
- Develop stream-discharge rating curves within Aquarius software; responsible for all aspects of data entry and error correction within Aquarius for various time series. Derive time series from several time-series (e.g., fish jump height over a waterfall step). Example project: a fish barrier analysis and design project on the Wild and Scenic Poudre River, CO. Train others on using Aquarius software.
- Lead topographic surveys in remote field areas; apply knowledge of survey techniques and equipment most appropriate for the survey area. Combine total station and GNSS survey data. Geographically correct the data using survey software. Teach survey techniques to field crews (e.g., led eight techs in a coordinated GNSS survey at the Hoback River, WY).
- Routinely plan, manage and lead field data collection efforts; including field readying survey equipment, gathering field tools, organizing camping equipment, meal planning, map making, transportation planning, crew organizing. These tasks are made more complicated in wilderness settings and for large groups.

#### Hydraulic Modeling

- Create hydraulic models (1-D and 2-D) in support of environmental flows (e.g., 15 1-D models created for the Verde River basin federal reserved water rights filings in AZ), stream restoration projects, and post-wildfire flood hazard assessment (e.g., 2-D models at campgrounds within the Hermits Peak-Calf Canyon Wildfire footprint, NM). The models result in floodplain delineation and rating curves from which ecological relationships to flooding and desiccation can be analyzed, as well as areas prone to flood hazard.

#### GIS, Remote Sensing, and Statistical Analyses

- Perform geospatial analyses utilizing the following software: Google Earth Engine (using JavaScript code), ArcGIS-Pro, ArcGIS Online (AGOL), RAS-Mapper, Trimble Business Center, and Trimble Access. Geospatial analyses include both raster and vector data, as well as field data collection (GNSS and total station topographic surveying). Examples include creating field maps, creating figures for posters and technical papers, as well as calculating watershed characteristics (slope, aspect, max. and min. elevations, etc.) over very large datasets.
- Support the development of an on-line flood prediction tool ([Flood Prediction Portal](#)) through geospatial analysis, running trend and spatial statistics, tool testing, and bug assimilation.
- Perform statistical analyses for hydrologic studies (e.g., flood frequency analyses, flow duration curves). Analyses have included multi-variate and spatial statistics (e.g., for trends in flood magnitude). Proficient in R coding and R Studio statistical software.

#### Scientific Writing, Editing, and Information Synthesis

- Collaborate with university partners to advance scientific understanding of various fields in biology as they relate to instream flows; publish findings in scientific journals (e.g., [Bateman et al., 2024](#) in *Ecology*).
- Write technical reports (e.g., E.V. Long post- wildfire campground flood hazard analysis, Santa Fe National Forest)
- Review and edit technical documents (e.g., Encyclopedia of Inland Waters, 2<sup>nd</sup> edition, LeRoy Poff: Chapter 177 “Riparian Zones”, by David M. Merritt; also the USFS Verde River basin instream flow federal reserved water rights

applications).

- Collaborate on expert witness testimony technical reports (e.g., Verde River basin federal instream flow reserved water rights filings, hydraulic models expert report).
- Research and write a “primer” for instream flows on USFS lands; this entails researching and synthesizing information on state instream flow programs throughout the U.S. (in progress).

#### Project Management

- Manage the USFS instream flow program’s field data and project files; work with Forest unit personnel to track data collection, equipment, and data uploads.
- Manage and maintain sophisticated and expensive field equipment.

#### Span of Influence and Other

- Assist with the development of the “Riverine Environmental Flow Decision Support System”; an online tool for assessing impacts to aquatic ecosystems by alteration in flow regime; provide consultation, hydraulic models and bug testing to the development team (USFS WO staff, USGS staff, Colorado State University Staff).
- Assist WO staff with stream restoration and aquatic organism passage site assessment, design and implementation on National Forest system lands throughout the US and Puerto Rico.
- Assist WO staff with teaching stream restoration techniques (e.g., stream simulation design for aquatic organism passage) to US Forest Service units and partners.

*April 2023 to August 2023*

### **Hydrologist (1315; GS-12); Riparian Ecologist (Detail)**

#### **The National Stream and Aquatic Ecology Center (USFS, WO)**

\$83,634/year; 40 hours/week

#### Monitoring

- Analyzed riparian community data collected at a stream restoration site on the Routt National Forest (CO); data were collected before and after treatment, as well as within a treatment area and a control area (BACI design); used multiple statistical techniques to demonstrate restoration effects. Wrote a technical report for WO, Forest staff and partners (Trout Unlimited).

*April 2019 to September 2019*

### **Geologist/Hydrologist (1350; GS-12); Watershed Program Manager (Detail)**

#### **Santa Fe National Forest (USFS, R3)**

\$74,937/year; 40 hours/week

#### Water Rights

- Organized and digitized the Forest’s water rights documents; added records and supporting documentation to the USFS water rights database
- Secured a state water right at an existing abandoned well in the name of the USFS.

#### Wild and Scenic Rivers Planning

- Reported on the water quality and hydrology of the designated Wild and Scenic River segment of the Chama River (Comprehensive River Management Plan, hydrology section).

#### Aquatic Restoration

- Planned a road decommissioning project (included field reconnaissance, sediment modeling, GIS and NEPA analysis).

- Developed a watershed restoration conceptual model, a method for identifying and prioritizing watershed restoration work on the Forest.

#### Monitoring

- Assisted the City of Santa Fe water managers with improving the existing stream gage design above the city reservoir
- Field reviewed the Conejos managed wildfire for achieving resource objectives

#### NEPA

- Participated on multiple interdisciplinary teams to plan landscape restoration projects (forest thinning and prescribed burning).
- Reviewed projects for compliance with law, regulation, and policy (e.g., Clean Water Act; Best Management Practices).

#### Program Management and Other

- Helped develop the FY20 watershed program of work.
- Represented the Agency at several public meetings related to revising the Forest Plan as well as landscape restoration projects
- Advised Forest leadership and staff on implementing mitigation measures to protect water quality during project implementation
- Served as a hydrologist on a Burned Area Emergency Response (BAER) team; modeled expected erosion and flood volumes; assessed hazards to human life and resources; prescribed treatments
- Advised a district ranger on best next steps (e.g., legal, administrative, best practices) for preventing further resource damage at the village of Cuba groundwater wells
- Advised mining company (special uses applicant) on best practices for avoiding water quality contamination during drilling operations during exploration activities

*November 2015-November 2021*

### **Geologist/Hydrologist (1350; GS-11)**

#### **Enterprise Program (USFS, WO)**

\$73,000/year; 40 hours/week

#### Project Management

- Routinely developed both short- and long-term plans for individual projects as well as those for balancing an annual program of work; project management.
- Routinely allocated funding within partner agreements to specific deliverables.
- Routinely developed project budgets; routinely worked with clients to estimate project costs
- Routinely developed and managed my annual program of work and funding (budget)
- Routinely juggled as many as ten projects for which I was the responsible hydrologist/watershed specialist

#### Wild and Scenic Rivers Planning

- Helped organize an interdisciplinary Wild and Scenic River training and assessment workshop (free flow and water quality components), De Soto National Forest.
- Analyzed and authored free flow and water quality portions of the forthcoming Comprehensive River Management Plan for the Black Creek Wild and Scenic River, De Soto National Forest and the Chama River, Santa Fe National Forest.
- Analyzed and wrote portions of the River Values report and forthcoming Comprehensive River Management Plan for nine sections of designated Wild and Scenic River, Mt. Hood National Forest.

### Aquatic Restoration

- Performed Hydraulic Modelling (1-D and 2-D HEC-RAS, for numerous Aquatic Organism Passage Projects, bridge design, large wood augmentation, and channel restoration, on multiple Forests around the country.
- Assisted with large wood stream restoration design, layout, and implementation for multiple projects and Forests around the Pacific Northwest and Alaska. Worked with heavy equipment operators during implementation and monitored turbidity.
- Assisted with BAER implementation of road-stream crossings and drainage; August Complex, Six Rivers National Forest.
- Performed a field assessment (GPS elevation survey, pebble counts, field notes) which led to a design concept for a road-stream crossing at which ESA listed fish need passage, in addition to meadow and 1000 ft. of channel restoration, Gila National Forest.
- Planned field assessments and led a four person crew during a four-week field campaign; performed the Geomorphic Roads Analysis and Inventory Package (GRAIP) for road related sediment sources on the Shasta-Trinity National Forest. Remote location and extended field time added to project complexity.
- Authored nine (draft) watershed restoration action plans (WRAPs); Medicine Bow-Routt-Thunder Basin National Forests/Grassland.
- Natural Resource Manager (NRM) Watershed Improvement Tracking database; data entry, quality control, reporting, and mapping (2016, 2017) for the Southwest Jemez Collaborative Forest Restoration (SWJM) Project; Santa Fe National Forest
- Designed, planned, and implemented road decommissioning within the SWJM Project; Santa Fe National Forest.

### Monitoring

- Designed, planned, researched, and implemented a soils moisture monitoring protocol (technical guide) for vegetation management operations within Jemez Mountain Salamander habitat, Santa Fe National Forest.
- Designed, planned, researched, and implemented long-term effectiveness monitoring of beaver dam analog stream restoration structures (monumented cross sections and longitudinal stream profiles with total station surveys); performed before and after surveys; presented results to permitting agencies (US Army Corps); Santa Fe National Forest.
- Designed, planned, researched, and implemented a soils compaction protocol (technical guide) for BMP effectiveness monitoring (post vegetation management) within Jemez mountain Salamander habitat, Santa Fe National Forest.
- Designed, planned, and conducted Proper Functioning Condition existing condition surveys within a wilderness range allotment in preparation for upcoming NEPA (hydrology report); Santa Fe National Forest.
- Designed, planned, researched, and implemented habitat condition monitoring for the New Mexico Meadow Jumping Mouse conservation strategy (hydrology report); Santa Fe National Forest.
- Designed, planned, and implemented an OHV trails analysis which resulted in recommendations for a final trails network, as well as monitoring protocol for watershed impacts; Angeles National Forest.
- Conducted stream condition monitoring (MIM protocol); Grand River National Grassland.
- Routinely prescribe Best Management Practices (BMPs) and project design features to minimize potential adverse impacts to water resources, as well as monitor their effectiveness post project.
- Planned, inventoried and reported on the condition of groundwater dependent ecosystems (GDEs) (including recommendations for rehabilitation) across three ranger districts of the Santa Fe National Forest. Trained, managed and led two field crews through two, two week field campaigns.

### NEPA

- Led an interdisciplinary NEPA team for several of the Sims Fire Restoration projects (CEs/DMs), Shasta Trinity and Six Rivers National Forests. Provided response to comments and objections.
- Provided input, review and technical edits to the Forest plan revision watershed plan components; Santa Fe National Forest.
- Authored the watershed resources analysis for the Santa Fe National Forest Land and Resources Management

Plan EIS (Forest Plan Revision). Provided response to comments and objections.

- Authored watershed resources specialist reports for multiple large landscape restoration projects, responded to comments and objections; Santa Fe National Forest.
- Analyzed environmental effects of vegetation management at a silvicultural certification defense stand (hydrology report); Santa Fe National Forest.
- Analyzed environmental effects of mining at 10 mineral claims (hydrology report, EA); provided response to comments and objections; Okanagan-Wenatchee National Forest
- Analyzed environmental effects of minerals withdrawal (hydrology report, EA); provided response to comments and objections; Rogue River-Siskiyou National Forest.
- Analyzed environmental effects of range management (hydrology reports; 2 EAs, 1 CE) within New Mexico Meadow Jumping Mouse habitat; Santa Fe National Forest. Provided response to comments and objections.
- Reviewed and provided technical edits to the water resources report and EIS for a hydro-geothermal Forest plan amendment; Santa Fe National Forest. Provided response to comments and objections.
- Analyzed environmental effects of a Land Exchange (hydrology report; CE), Santa Fe National Forest.
- Analyzed environmental effects of a prescription burn project (hydrology report, CE); Santa Fe National Forest. Provided response to comments and objections.
- Analyzed the environmental effects (hydrology report, EA) of a Coho salmon habitat enhancement project; Klamath National Forest. Provided response to comments and objections.
- Analyzed the environmental effects (hydrology reports; 2 EAs) of two fuels reduction/prescriptive burn projects; Inyo National Forest. Provided response to comments and objections.

#### Permitting

- Researched, analyzed, and obtained a Conditional Letter of Map Revision from FEMA for a river restoration project, Mt. Hood National Forest. This involves HEC-RAS hydraulic modelling, GIS analysis, and cartography.
- Researched, wrote, applied for, and obtained a California Water Board timber waiver; Shasta-Trinity and Six Rivers National Forests
- Researched, wrote, applied for, and obtained a US Army Corps 404 permit and 401 water quality certification for a meadow restoration project; Eldorado National Forest

#### Other

- Presented to the Mexican Forestry Commission Office of Watershed Reforestation and Restoration (CONAFOR) on the USFS Watershed Condition Framework (webinar). USFS International Programs assignment.
- Regularly created AGOL map content for use with Avenza, ArcGIS collector, and for communicating information with Forest units and partners.

*October 2013-November 2015*

### **Geologist/Hydrologist (1350, GS-9)**

#### **Enterprise Program (USFS, WO)**

\$50,000/year; 40 hours/week

#### Monitoring

- Researched, developed and planned a groundwater (water table elevation and water quality) geodatabase (Arc-GIS and MS Access) as well as the associated technical guide. The database was to become an online tool for use by public and private entities, to share and better manage groundwater data; Caribou-Targhee National Forest.
- Planned, researched, and designed a watershed monitoring study for a sustainable supply of clean water to several Andean villages, USFS International Programs/USAID; Loja, Ecuador (2014).

### NEPA

- Conducted slope stability analysis for a vegetation management project (EA, geology specialist report); Shasta-Trinity National Forest. Provided response to comments and objections.
- Conducted comment analysis for a Rim Fire salvage project; Stanislaus National Forest.
- Analyzed environmental effects of range management on the Los Padres, National Forest. Provided response to comments and objections.

### Other

- Provided GIS support to the Sims Fire Restoration Projects (CEs); Shasta-Trinity and Six Rivers National Forests.
- Mapped (GIS) the 7<sup>th</sup> field hydrologic unit code watersheds for the entire Los Padres National Forest.

*May 2011-October 2013*

### **Graduate Research Assistant**

#### **USFS Rocky Mountain Research Station (RMRS) and Colorado State University**

\$24,000/year; 40+ hours/week

### Research

- Worked with RMRS scientists (now the National Stream and Aquatic Ecology Center) and others to help develop and test a physical effectiveness monitoring protocol for aquatic organism passage (AOP) restoration projects. Tested the protocol across the US at eighteen AOP sites on six National Forests. Reported the results as a [master's thesis](#). RMRS worked towards finalizing the protocol (technical guide) for agency wide distribution.

*May 2011-July 2011*

### **Geologist (1350, GS-11)**

#### **Enterprise Program (Detail) (USFS, WO)**

\$60,000/year; 40 hours/week

### Aquatic Restoration

- Synthesized and analyzed road inventory data for road decommissioning planning, Eldorado, and Shasta Trinity National Forests.

### Other

- Digitized and edited (using GIS) geologic maps for the northern province Forests of Region 5 (California)

*March 2009-May 2011*

### **Geologist (1350, GS-9)**

#### **Six Rivers National Forest (USFS, R5)**

\$48,000/year; 40 hours/week

### Monitoring

- Conducted snorkel and wading salmonid population surveys in rivers and streams
- Conducted fluvial geomorphic monitoring studies including repeat cross-sections, stream channel inventory (SCI protocol), and longitudinal profiles
- Conducted a multi-year macroinvertebrate study (long term effectiveness monitoring) at decommissioned road-stream crossings (BACI design).
- Conducted reconnaissance surveys for road storm damage emergency relief funding (ERFO) from the Federal Highway Administration.

- Monitored impacts by long term grazing on streams and riparian areas within wilderness range allotments.
- Field evaluated the effectiveness of best management practices; participated in database entry.

#### Aquatic Restoration

- Researched and wrote the geology portion of the Bluff Creek Watershed Analysis
- Planned and implemented road decommissioning and storm proofing surveys; prioritized watersheds for restoration based on collected road data

#### NEPA

- Analyzed environmental effects for three vegetation management projects (geology specialist reports, EAs). Provided response to comments and objections.
- Analyzed environmental effects for the travel management project (geology specialist report, EIS). Provided response to comments and objections.

#### Other

- Managed several road condition and inventory (external) agreements
- Researched and developed an inventory project (using contractors) for naturally occurring asbestos within road aggregate. Coordinated with the Regional office.
- Designed and authored a protocol (technical guide) for field designating Riparian Reserves under the Northwest Forest Plan.

*March 2007-March 2009*

### **Geologist Career Intern (1350, GS-7/9)**

#### **Six Rivers National Forest (USFS, R5)**

\$42,000/year; 40 hours/week

#### Monitoring

- Interpreted and mapped (via photogrammetry) chronological sets of aerial photos (1940 through 2003) to identify, track, and assess causation and volume of sediment delivered to streams by landslides. Data were digitized for use as a Geographic Information System (GIS) geodatabase.

#### Other

- Developed the geology program objectives and goals (e.g., Special Interest Area interpretive tools, LiDAR acquisition, landslide mapping by watershed)

*January 2005-January 2007*

### **AmeriCorps Intern: Watershed Stewards Project**

#### **Hosted by the Watershed Program, Six Rivers National Forest (Eureka, CA)**

\$12,000/year; 40 hours/week

#### Monitoring

- Salmonid population snorkel surveys
- Spawner surveys
- Surveyed widespread damage to the USFS road system by several large winter storm events (2006). Measured resulting landslide and debris flow volumes. Assimilated and reported the data by creating and querying a Microsoft Access database.

### Aquatic Restoration

- Authored and designed a watershed restoration brochure highlighting success stories across the Forest Service Pacific Southwest Region.

### Other

- Taught watershed education to grades K, 3, 5, 7, and 8.

*March 2006*

### **Humboldt Baykeeper (a Waterkeeper non-profit) Eureka, CA**

Volunteer

- Planned and facilitated storm water quality sampling by community volunteers; organized a large volunteer event

*January -May 2004*

### **Research Assistant (Fisher Hydrogeology Lab)**

### **University of California, Santa Cruz, CA**

Volunteer

- Operated a soils laboratory in which I used a pycnometer to measure soil porosity for a sea floor sampling project near Costa Rica.

*April 2004*

### **Coastal Watershed Council, Santa Cruz California**

Volunteer

- Participated in "Snapshot Day" during which I conducted storm water quality monitoring at several coastal streams.

## Relevant Training

### On the Job

- Large Wood Stream Restoration Workshop (presented by the National Stream and Aquatic Ecology Center, Chattanooga, TN), 2024.
- Expert Witness Training (presented by the USFS Instream Flow program, the DOJ, and the OGC; Flagstaff, AZ), 2023
- Floodplain Delineation using 2D HEC RAS (5 day short-course, from Urban Watershed Research Institute), 2019
- BAER team hydrologist, Naranjo Fire, Santa Fe NF, 2019
- **Instream/environmental flows analysis course (2018), presented by the USFS RMRS**
- Leadership Training for Public Servants (2017-2018), presented by a private contractor
- Proper Functioning Condition Monitoring (2017), presented by the NRCS
- Contracting Officers Representative (level 1)
- USFS Soils Disturbance Monitoring Protocol (2016)
- Stream Simulation design course (2012), presented by the USFS Stream Team
- "Groundwater Resource Management" course (2010), presented by the USFS Geology and Minerals Training Organization.
- California Best Management Practices (2010), presented by the CA Water Quality Control Board.
- LiDAR and Fusion software training series offered by the USDA Remote Sensing Applications Center.
- READ on the Hell's Half Acre Fire, Six Rivers NF, 2008
- Wildland Firefighter Red Card (Firefighter 2, Burned Area Emergency Response, Resource Advisor), 2008, 2009, 2010, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021
- Wildland Firefighter Basic Training, 2008

### Course Work

- Stream Biology and Ecology
- Scientific Basis for Freshwater Sustainability (Seminar on Environmental Flows)
- Environmental River Mechanics
- Stream Rehabilitation Design
- Geology of the Rocky Mountain Region
- Quantitative Spatial Analysis (Statistics)
- Design and Data Analysis for Researchers (Statistics)
- Hillslope Processes and Lab
- Fluvial Processes and Lab
- Geomorphology and Lab
- Field Geology and Lab
- Coastal Geology and Lab
- Groundwater and Lab
- Glaciology
- A 7-week geology, glaciology and ecology field study in the Wrangell Mountains, Alaska.
- Evolution of the Earth and Lab
- Earth as a Chemical System
- Mineralogy Lab
- GIS for Environmental Applications and Lab
- Remote Sensing/GIS for the Earth Sciences
- Physics Series and Labs
- Inorganic Chemistry series and Labs
- Calculus series for Science, Engineering and Math majors
- Biology Series

- General Ecology
- Freshwater Policy
- Aquatic Toxicology
- Political Economy and the Environment
- Composition and Rhetoric (with an emphasis on nature writing)

## Computer Skills

- ESRI Geographic Information Systems (GIS); ArcPro
- Google Earth Engine (using JavaScript code)
- R statistical analysis software and coding
- HEC-RAS (1-D and 2-D)
- Trimble business center, Trimble access
- Microsoft Access database design
- Microsoft Office software suite

## Other

- Proficient in Spanish (exchange student to Bolivia, 1998); many years of Spanish language classes at the highschool and college levels; extensive travel in Latin America and beyond
- Competent boater
- Strong swimmer
- PADI certified open water diver (~40 dives)
- American Sailing Association certifications for keelboat sailing (captain's license)
- Extensive backcountry experience (hiking, skiing, boating)
- Wilderness First Aid
- CPR
- Defensive Driving

## Publications

- Bateman, H.L., Huck, M.A., Klingel, H. and Merritt, D.M., 2024. Cue the chorus: Canyon treefrog calling phenology on the falling limb of spring floods and warming nights. *Ecology*, p.e4287.
- Klingel, H.M., 2014. Developing a physical effectiveness monitoring protocol for aquatic organism passage restoration at road-stream crossings. Master's Thesis. Colorado State University.

## References

### Supervisor

#### *Current:*

Dr. Dave Levinson- *Please contact*  
National Stream and Aquatic Ecology Center Director

[REDACTED]

### Colleagues

Dr. Dan Cenderelli- *Please contact*  
Fluvial Geomorphologist/Hydrologist  
National Stream and Aquatic Ecology Center

[REDACTED]

Matt Fairchild- *Please contact*  
Fisheries Biologist  
National Stream and Aquatic Ecology Center

[REDACTED]

Dr. Dave Merritt- *Please contact*  
Riparian Plant Ecologist  
National Stream and Aquatic Ecology Center

[REDACTED]

### Graduate Advisor

Dr. Ellen Wohl- *Please contact*  
Fluvial Geomorphologist  
Professor, Colorado State University Geosciences Department

[REDACTED]

### Santa Fe River Commission, City Staff Liaison

Zoe Isaacson- *Please contact*  
River and Watershed Manager  
City of Santa Fe Public Works Department

[REDACTED]

[zisaacson@santafenm.gov](mailto:zisaacson@santafenm.gov)

# JACOB LYON

Santa Fe, NM

Dear Zoe Isaacson,

I'm a native New Mexican with a diverse body of professional and volunteer experience centered around water and environmental management, both locally and across the country. I've designed remediation systems to clean up petroleum and PFAS impacted groundwater in a Boston suburb; I've modeled contaminant distribution in the Willamette River in Oregon to determine the responsible parties in a Superfund settlement; and I've advocated for Federal funds to be used for progressive water projects that benefit New Mexico taxpayers and keep our river systems free of unnecessary damming. Since I was a teenager, I've been enchanted with the precious rivers of my beloved State, and concerned about how we can secure a sustainable and equitable future with productive water resources, while allowing our rivers to flow to create healthy riparian ecological communities?

In high school, I volunteered for the Santa Fe Watershed Association, cleaning our arroyos and mapping the health of the town's watershed. I also spent my summers getting to know and falling in love with the rivers of Northern New Mexico—the Rio Grande, the Chama, Embudo Creek—as a raft guide for Kokopelli River Adventures. At Dartmouth College, I quickly found a home in the Earth Science Department and took every class I could related to water resource management and hydrological systems. During this time, I learned about the complicated history and circumstances that have surrounded the development of our largest Western cities and the costs, both financial and environmental, of securing this water for their growth. Armed with knowledge and passion, during my junior year, I spent a semester back in New Mexico supporting the effort to stop the proposed Gila River diversion associated with New Mexico's allotment of Central Arizona Project funds. My work advocated for the funds to be used for water conservation projects that would benefit the citizens of southern New Mexico.

After graduation from college, I worked as a project manager and geologist for an environmental consulting firm in Boston helping some of the nation's largest industrial and petroleum companies manage their environmental liabilities. From coordinating the one-million dollar remediation of petroleum spill to working with developers to convert an abandoned PCB and heavy metal laden property to mix-used development in downtown Boston, I collaborated with community leaders, state regulators, and a slew of technical experts to reach solutions that benefited all engaged parties. I learned the fine skill of synthesizing technical data into understandable conclusions that stayed true to objectivity.

In July of this year, I left Boston to move back to Santa Fe, a place my heart never left. A goal I set when I knew I was moving back to New Mexico was to harness my passion for water resource management and involve myself in creating solutions for New Mexico in the face of climate change. Innovative and smart management of our rivers and watershed are integral to shaping a long-lasting future for Santa Fe and its citizens. With my well-traveled experience, I think I would be a perfect asset for the Santa Fe River Commission, and I would be honored to serve the position.

I appreciate your consideration,

Jacob Lyon

# JACOB LYON

[REDACTED], Santa Fe, NM [REDACTED]  
[REDACTED]

I am a native New Mexican, a geologist and project manager, who dreams of finding unconventional solutions to the American West's looming water crisis to secure a future for the communities of this exceptional region.

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## EXPERIENCE

**JULY 2017 – MAY 2021**

### **PROJECT MANAGER / GEOLOGIST, ROUX ASSOCIATES, BOSTON MA**

Project manager and technical geologist for multiple environmental remediation projects

- Managed multiple remediation and compliance projects with budgets of \$30K - \$1M.
- Collaborated with state regulators, clients, and scientific specialists to implement a cutting-edge remedial program that will save the client millions of dollars and lead to the redevelopment of a defunct manufacturing facilities.
- Managed the design and implementation of storm water pollution prevention plans for industrial manufacturing facilities and construction projects.
- Became a technical expert on a variety of emerging remediation technologies.
- Supported the allocation process to remediate contamination in the Willamette River in Portland, Oregon as part of the Portland Harbor Superfund Site.
- Served as a technical consultant to evaluate the human health affects of a 160-square mile PFAS plume affecting the greater Minneapolis Area.
- Responded rapidly to client needs under short deadlines to facilitate the clean-up of a high-profile real estate development in downtown Boston.

**DEC 2015 – FEBRUARY 2016**

### **LEGAL FIGHT AGAINST THE GILA RIVER DAM PROJECT, INDEPENDENT**

Researched and calculated the water use on the Gila River pursuant to decreed water rights to determine the need for the proposed NMCAP Entity diversion project. Produced a report highlighting findings used to inform the Environmental Impact Statement submitted to the EPA.

## EDUCATION

**GRADUATED 2017**

### **BACHELOR OF ARTS – MAJOR IN EARTH SCIENCES, DARTMOUTH COLLEGE**

GPA: 3.73/4.0; Top 10% of students in Earth Sciences Department; Top 15% of class of 2017  
Relevant Course Work: Water Resource Management, Advanced Hydrology, Energy-Water Systems

**GRADUATED 2013**

**SANTA FE PREPARATORY SCHOOL, SANTA FE, NM  
VERSHIRE, VT**

Salutatorian; Graduated Cum Laude

**AUGUST 2011 – DECEMBER 2011**

**MOUNTAIN SCHOOL OF MILTON ACADEMY,**

## MORE ABOUT ME

Whitewater raft guide for 3 years in New Mexico; enjoy spending weekends skiing, whitewater kayaking, hiking, mountain biking or rock climbing; amateur cheese maker; a book that shaped me: Encounters with the Arch Druid by John McPhee.

Karen Jackson

[REDACTED]

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Santa Fe, New Mexico

February 3, 2025

Dear Santa Fe River Commission Board and Mayor Webber,

As a professional geologist, I've been passionate about the natural world, science, and the environment throughout my personal and professional life. The majority of that passion has been devoted to rivers. As an undergraduate, my summers were spent SCUBA diving in the St. Croix River (MN/WI) researching endangered mussels. As a graduate, I studied the importance of instream wood in mountain rivers to earn a Master's in fluvial geomorphology. As a professional, I became a state regulator writing National Pollutant Discharge Elimination System (NPDES) permits in Idaho to protect rivers from degradation. My experience with rivers allows me to see and appreciate the bones of a river (bedrock geology, slope, valley confinement), its life-blood (water, flow regimes, nutrients), and eventual progeny (fish, invertebrates, vegetation, etc.). I would be honored to bring this passion and experience to the Santa Fe River Commission.

Until I was 8 years old, I lived in Santa Fe. Throughout that time I had access to the outdoors, and could explore freely (see photo below). However, after 8, my family moved frequently, and ultimately ended up in Shanghai, China - a city without natural spaces, blue sky, or wildlife. I remember needing a day-time and night-time inhaler just to breathe. The dichotomy of those experiences have inspired me to devote my life to environmental causes. After decades away, I have moved back to New Mexico, the only place that has ever felt like home, to devote my efforts here.



(Little Karen doing a pebble count on a Little Tesuque Creek riffle, ~1992)

In my professional career, it has been demoralizing to see environmental protections threatened and rolled back. While I cannot fix it all, doing nothing is not an option. I would like to start by doing something in my own backyard, on the Santa Fe River. I believe my passion for rivers and experience would be a great asset to the Commission, and would look forward to a chance to serve a key element of our community.

Thank you for your consideration,  
Karen

# Karen J. Jackson, PG

[REDACTED], Santa Fe, NM, 87507 [REDACTED]  
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## WORK EXPERIENCE

### Los Alamos National Laboratory, Environmental Professional

Location: Los Alamos, New Mexico

Duration: September 2022 - Present

- Current subject matter experts for the Los Alamos National Laboratory groundwater discharge permit (DP-857) issued by New Mexico Environment Department. Current duties involve water quality compliance from the Laboratory sanitary wastewater facility.
- Assist with surface water issues related to the Laboratory wastewater National Pollution Discharge Elimination System Program (NPDES) permit.

### Idaho National Pollution Discharge Elimination System Permit Writer, Idaho Department of Environmental Quality

Location: Boise, Idaho

Duration: October 2017 - August 2021

- Wrote wastewater permits for the Idaho Pollution Discharge Elimination System Program (IPDES) for municipalities and industries within Idaho.
- Typical permit writer duties included: visiting a discharger, meeting with operators and city officials, performing reasonable potential analysis of discharge data, developing permit limits and conditions, preparing a permit for public comment, permit issuance, and addressing permit appeals.
- Additional permit writer duties included:
  - Assess submitted IPDES applications for completeness
  - Draft IPDES permits and fact sheets for facilities needing permit coverage
  - Generate responses to public comments on proposed permits
  - Coalesce and analyze stream flow data, model results (e.g., DFLOW, CORMIX), organize and lead public meetings to address public concerns regarding proposed permits.
  - Work with AG's office on permit appeals as they arise.
  - Answer permitting questions from regional offices and external stakeholders.

### Staff Geologist/Associate Geologist - Condor Earth Technologies, Inc.

Location: Sonora & Stockton, California

Duration: June 2014 - September 2017

- Staff Geologist duties included: Conduct groundwater monitoring and sampling, log monitor well drilling, monitor well destruction, assist with report writing and data compilation, support with storm water compliance documents
- Typical Associate Geologist duties included:
  - Installing and destroying, writing work plans for installation and destruction of, logging, and sampling monitoring wells for UST and California WDR sites.
  - Conduct statistical investigations and draft reports for background groundwater quality reports for wastewater plants and industrial facilities.
  - Writing, editing, and implementing Storm Water Pollution Prevention Plans (SWPPPs) for the California Industrial General Permit (IGP) and Construction General Permit (CGP).
  - Evaluating industrial facilities after storm water results exceeded Numeric Action Levels (NALs), advising on additional Best Management Practices (BMPs), and writing compliance reports.
  - Some experience working for Small MS4 General Storm Water Permit compliance.
  - A Qualified Industrial SWPPP Practitioner (QISP-IGP) and Qualified SWPPP Developer (QSD-CGP) in California.
  - Organizing/managing storm water programs for industrial and city clients.
  - Conducting training sessions for the industrial and municipal sector regarding storm water compliance. Public outreach talks were also given each year.

## **Teaching Assistant – Colorado State University**

Location: Fort Collins, Colorado

Duration: September 2012 - May 2013

- GEOL 150 – Physical Geology for Scientists and Engineers
- GEOL 121 – Introductory Geology Laboratory

## **Wyoming Department of Environmental Quality – Water Quality Intern**

Location: Cheyenne, Wyoming

Duration: June 2011 - November 2011

- Conducted environmental site investigations using fluvial geomorphology modeling, chemistry sampling, and macroinvertebrate collections. Generated data analyses, and compiled watershed assessments. Knowledgeable in federal environmental compliance principles, and river equilibrium concepts.
- Field skills included surber and dip net biological sample collection, water chemistry collection, *E. coli* collection and analysis, embeddedness surveying, and bank geomorphology evaluations. Office responsibilities included geomorphology analysis using the RiverMorph®, data compilation and extraction, and creating maps using GIS/ArcMap

## **Teaching Assistant – Macalester College**

Location: Saint Paul, Minnesota

Duration: January 2010 - May 2011

- GEOL 394 Surface and Groundwater Hydrology, GEOL 194 Geocinema, GEOL 150 Dynamic Earth/Global Change, & GEOL 155 History/Evolution of the Earth
- Duties included: Set up, assisted in, and graded labs. Organized, attended, and participated in field trips.

## **St. Croix River Long Term Monitoring Research Assistant**

Location: Minnesota, Wisconsin

Duration: May 2009 - August 2010

- Sampled native and endangered mussel communities along the St. Croix River, MN/WI. Team used SCUBA off a pontoon boat to gather community health information (water quality, water chemistry, and suspended sediment data). Individual research focused on the impact of the St. Croix Falls Dam on mussel communities above and below the dam.
- Additional field skills: sieving and weighing bed sediment, calculating water discharge. Lab analyses: calculating bed sediment grain size distributions, suspended sediment concentrations, and total organic content of water.
- Promoted to lab manager. Duties: maintenance, supply, transportation of field equipment, instructing new assistants in lab SOPs, help them complete individual projects (analyze data, edit abstracts and posters, etc.).
- Co-authored successful grant proposal for summer funding for independent project

## **Macalester College Geology Department Lab Assistant**

Location: Saint Paul, Minnesota

Duration: Sept 2008 - Sept 2009

- Managed Macalester College Keck Lab and equipment
- Assisted Macalester College professors with suspended sediment research
- Maintained liquid nitrogen levels in scanning electron microscope (SEM)

## **EDUCATION**

### **Macalester College**

Bachelor of Arts Degree – *magna cum laude*

Location: Saint Paul, Minnesota

Duration: September 2007 – May 2011

- Major: Geology; Cumulative GPA: 3.85/4.00
  - Relevant Courses: Geomorphology, Surface and Groundwater Geology, Petrology and Geochemistry, Sedimentology/Stratigraphy, Soils & Landscapes, Mineralogy, Structural Geology, Paleobiology, Introduction to Statistical Modeling, Applied Calculus, Principles of Physics I, General Chemistry I & II, History/Evolution of the Earth, Dynamic Earth/Global Change, Geological Excursions

### Study Abroad

#### Semester with **SEA: Sea Education Association; Oceans & Climate (www.sea.edu)**

- Relevant Courses: Oceanography, Research in Oceans, Climate & Oceanographic Research Techniques
  - Sail handling and open ocean navigation was also part of the program

#### University of North Dakota

- Relevant Courses: Introduction to Geographic Information Systems, Digital Image Processing: A Remote Sensing Perspective

#### Colorado State University

Location: Fort Collins, Colorado

Duration: August 2012, April 2014

- Master's in Geoscience GPA: 4.00/4.00
  - Relevant Courses: Fluvial Geomorphology, Environmental River Mechanics, Statistics for Researchers, Applied Regression Analysis, Statistics of Environmental Monitoring, Stream Restoration Design, Research Methods in Surface Processes, Stream Ecology, Modeling Watershed Hydrology
- Advisor: Dr. Ellen Wohl

### GRADUATE RESEARCH THESIS TOPIC

Although several studies document instream wood loads and geomorphic effects in subalpine forests of the southern Rocky Mountain region, little is known of instream wood loads in lower elevation, montane forests of the region. The study focused on comparing instream wood loads and associated stream geomorphology between montane forest stands of differing age and disturbance history: (i) old-growth forests versus younger, minimally impacted forests, and (ii) healthy forest stands versus stands with greater than 25% of trees infested by mountain pine beetles.

### OTHER PROJECTS/RESEARCH

#### Bed Sediment Grain Size Distribution and Flow Dynamics of Indianhead Reservoir, St. Croix River, MN/WI

- Senior Honors Thesis 2010 - 2011: Created and conducted an individual research project on bed sediment grain size distribution and flow dynamics of the reservoir behind the St. Croix Falls Dam, MN/WI
- Took research to the American Geophysical Union 2010 Fall Meeting, Science Museum of Minnesota St. Croix Research Rendezvous, and guest speaker for the American Institute of Professional Geologists – MN Section

#### Upper St. Croix River Winged Mapleleaf Mussel Reintroduction Site Selection and Monitoring – Final Report 2009

- Co-authored final report for Army Corps of Engineers

#### Comparative Carbon Flux Between Upwelling Regions of the Equatorial Pacific

- Conducted an independent project aboard a sailing research vessel comparing carbon dioxide outgassing at the Equatorial Undercurrent to the Intertropical Convergence Zone using carbonate chemistry (Fall 2009)

### PUBLICATIONS

- Jackson, K., Wohl, E. 2015. Instream wood loads in montane forest streams of the Colorado Front Range, USA. *Geomorphology* 234, 161-170.
- Manual of Standard Operating Procedures for Sample Collection and Analysis – Wyoming Dept. of Environmental Quality; Updated SOP manual 2011
- Jackson, K., MacGregor, K.R., Hornbach, D.J., Hove, M.C.. 2010. Bed Sediment Grain Size Distribution and Flow Dynamics of Indianhead Reservoir, St. Croix River. Abstracts of the St. Croix River Rendezvous, Oct 2010. Sponsored

by the St. Croix Watershed Research Station, Science Museum of MN. ;Senior Honors Thesis presented at AGU 2010 Fall Meeting, and as guest speaker for the American Institute of Professional Geologists

- Hove, M. C., Jackson, K.J., Hornbach, D.J. 2010. Upper St. Croix River winged mapleleaf reintroduction site selection and monitoring – 2009 final report. Final report to St. Croix National Scenic Riverway, St. Croix Falls, WI. 24 pp.
- Hove, M. et al. 2010. Converting hydropower dam operation to run-of-the-river –The effect on endangered mussels and their habitat. Annual report to the St. Croix National Scenic Riverway, St. Croix Falls, WI. 29 pp.

## **HONORS/AWARDS**

Phi Beta Kappa - 2011

Hill Memorial Fellowship - 2013

Geological Society of America Research Grant - 2013

American Water Resources Association Richard A. Herbert Memorial Scholarship - 2013

Henry Lepp Award for Field Work - 2011

Outstanding Student Award – American Institute for Professional Geologists, MN Section - 2010

Student/Faculty Summer Research Collaboration Grant - 2010

Macalester College Student Travel Grant to attend the AGU Fall Meeting - 2010

National Science & Mathematics Access to Retain Talent Grant - 2009 to 2011

Sea Education Association Presidential Scholarship - 2009