GRADY M. O'BRIEN, M.E., P.G.
Principal Hydrogeologist

CURRICULUM VITAE (CV)

WATER-RESOURCES

NEIRBO is a hydrogeology consulting practice led by Grady O'Brien that addresses environmental, engineering, and water resource concerns. Hydrogeology is the study of the distribution and movement of water in the soil and rocks of the Earth's crust. NEIRBO defines and quantifies groundwater flow that influences streamflow, surface-water occurrence, and their response to changing environmental conditions. By applying technical and engineering tools NEIRBO helps its clientele manage water supplies, land development, and climate change. Of utmost importance are engineering designs, mitigation measures, and water-management strategies that improve environmental conditions and water-resource sustainability.

EDUCATION

Colorado School of Mines
- Master of Engineering
- Geological Engineering

University of Wyoming
- Bachelor of Science
- Geology

REGISTRATIONS

Professional Geologist
- Arizona
- Washington
- Wyoming

PRACTICE AREAS

- Mine hydrogeology and dewatering
- Engineering & Construction dewatering
- Environmental impacts and permitting
- Water supply and management
- Hydrologic mitigation & engineering controls
- Groundwater and surface-water interactions

Grady has over 25 years of hydrogeology experience with natural and engineered systems in the mining, environmental, water supply, construction, and waste-containment fields. Grady's ability to analyze technical data and translate its significance and implications supports engineering designs, water-resource planning, and management decisions. Leveraging natural conditions by integrating with engineered design facilitates pragmatic solutions that enhances favorable conditions and mitigates detrimental outcomes. This understanding of natural environments and engineered systems allows clients to anticipate future conditions and to manage their projects proactively.

NEIRBO focuses on understanding the dynamics and interactions between groundwater, surface water, geology, soils, vegetation, aquatic species, climate, geomorphology, water quality, and engineering. We work with project teams and engage our network of subject-matter experts to address project-specific challenges. Grady provides value in his ability to interpret, translate, apply, and integrate scientific, engineering, and management principles. Pragmatic solutions are achieved by balancing the sometimes conflicting scientific, engineering, and management needs.

SELECTED PROJECTS

Geologic Controls on Streamflow, Stevens County, Washington. To support engineering design and implementation of corrective action alternatives at a legacy uranium mill site hydrogeologic characterization, testing, and modeling were completed. Critical hydrologic and geologic conditions that control gaining and losing stream reaches were identified. A 3D geologic model and groundwater flow model were developed to simulate the interactions between streamflow and groundwater. The nature of these interactions guided management decisions on remediation measures and site-closure actions that considered engineered soil covers, source removal, pump and treat system, permeable reactive barrier, groundwater collection trenches, and slurry-wall technologies. This project involved collaboration with geochemists, geologists, civil engineers, environmental managers, and site operations managers.

South Platte River Watershed Study, Laramie County, Wyoming. This project has included developing a thorough and comprehensive evaluation of alluvial and bedrock aquifers, groundwater use, and their influence streamflow and aquifer recharge. Geologic structures and aquifer characteristics control groundwater availability and potential for additional development. Improving the understanding of surface water and groundwater interactions was based on analyses of streamflow, climate conditions, and aquifer responses. Water balance estimates including aquifer recharge due to areal precipitation, infiltrating streamflow, and agricultural irrigation return flow were developed. These findings are supporting watershed management plans focused on maintaining a sustainable water supply for agricultural and domestic uses.

Groundwater and Surface-water Interactions, Pima County, Arizona. This project investigated potential impacts to perennial stream reaches, riparian vegetation, and endangered aquatic species. Streamflows are supported by infrequent stormwater runoff/infiltration, the localized, shallow alluvial aquifer, and the regional, deeper bedrock aquifer. Understanding the interactions between these components was critical to predicting the potential impacts from dewatering the bedrock aquifer.

The investigation included monitoring, analyses, and modeling that considered streamflow, precipitation, stream-channel soil moisture profiles, riparian vegetation, isotope ratios, water quality, depth to bedrock, hydraulic characteristics, and groundwater levels of fractured bedrock and stream channel alluvium. Analyses and modeling supported the Environmental Impact Statement and Biological Opinion. This project involved collaboration with aquatic biologists, botanists, ecologists, surface-water engineers, NEPA specialists, environmental managers, and environmental attorneys.