Lindsay Hughey
Project Hydrogeologist

Professional Experience

Ms. Hughey has seven years of experience in hydrogeology and environmental work. She has experience working on a diverse set of environmental mining projects and in groundwater fate and transport models. As a Project Hydrogeologist, Ms. Hughey specializes in groundwater flow and transport simulation, GIS, database management, hydrogeologic support for dewatering open pit and underground mines, and support for environmental permitting. Lindsay's current area of expertise is groundwater modeling in MODFLOW SURFACT to characterize aquifers, design dewatering systems, predict contaminant transport, predict environmental impacts of mine dewatering and water supply pumping, and simulate the recovery of pit lakes and backfilled pits.

Education

M.S., Hydrogeology, University of Nevada, Reno, 2012

B.S., summa cum laude, Environmental Science, University of Notre Dame, 2010

Certifications and Registrations

MSHA Part 48, 40-hour and Annual 8-hour, Surface Miner Training

Affiliations, Participation and Training

American Exploration & Mining Association (Member since 2015)

Nevada Water Resources Association (Member since 2011)

Select Project Experience

Groundwater Flow and Transport Modeling, Mine Dewatering, and Environmental Permitting

- **Round Mountain Gold Corporation, Round Mountain Mine, NV** – Project hydrogeologist involved in supporting the client's dewatering operations and environmental permitting efforts to expand mining operations. Tasks included analysis of dewatering data (flow monitoring and water levels) to create quarterly reports containing AutoCAD and ArcGIS figures, which monitor effects of mine dewatering and provide recommendations for future dewatering activities. Tasks also included compilation of flow monitoring data, water levels, and discharge quality data for groundwater model inputs. The project included an update to the 3D-MODFLOW SURFACT groundwater model with a revised geographic datum, including converting all model inputs and proposed pit designs to the desired datum. The project also included the update and calibration of a 3D-MODFLOW SURFACT groundwater fate and transport simulation for arsenic and fluoride in support of renewal of the Nevada Division of Environmental Protection (NDEP) Water Pollution Control Permit (WPCP) to continue operation of the rapid infiltration basin (RIB).
- **Rio Tinto Minerals, Borax Mine, CA** – Project hydrogeologist responsible for performing hydrogeologic analysis to support the client's geotechnical work and open pit mine planning. Tasks included extracting the proposed mine plan from AutoCAD along pit cross-sectional traces and simulating pore pressures along the cross-sectional traces utilizing SVFlux 2D

modeling. The pore pressures were provided to the geotechnical team to support their mine planning efforts.

- **Coeur Rochester, Inc., Rochester Mine, NV** – Project hydrogeologist responsible for providing hydrogeologic support for the groundwater quantity and quality portion of an Environmental Impact Statement (EIS) for expanding the client's mine operations. Project tasks included updating the conceptual groundwater model, hydrogeologic characterization of the site including analysis of water level, pumping, and aquifer test data, completing hydrostratigraphic modeling utilizing tools from AutoCAD and ArcGIS to generate layer surfaces, thicknesses, and extents, expanding and calibrating a 3D-MODFLOW SURFACT groundwater model, completing predictive simulations for hydrologic impacts analysis, and creation of a report detailing predicted hydrogeologic impacts for use in the EIS process.
- **Pershing Gold Corporation, Relief Canyon Mine, NV** – Project hydrogeologist involved in providing hydrogeologic support for baseline data collection, hydrogeologic characterization of the site, and conceptual groundwater model development. Tasks also included assimilating data for a hydrostratigraphic model, initial construction of a 3D-MODFLOW SURFACT groundwater model, and incorporation of the hydrostratigraphic model into the groundwater model.
- **The Sentient Group, Rincon Lithium, Jujuy, Argentina** – Project hydrogeologist responsible for providing hydrogeologic support in order to estimate lithium reserves dissolved in brine and to create a mine plan for extraction of the lithium brine. Project tasks included assisting with hydrologic studies for the 43-101 reserve estimates for dissolved lithium, hydrogeologic characterization of the site, interpreting aquifer tests to provide information about extraction of the resource, and updating and calibrating a 3D-MODFLOW SURFACT groundwater fate and transport model to be used as a tool for mine planning and operations.
- **Robinson Nevada Mining Company, Robinson Mine, NV** – Project hydrogeologist responsible for providing the client with hydrogeologic support to predict impacts of a tailings storage facility expansion in support of NEPA permitting. Project tasks included site hydrogeologic characterization, conceptual model development, developing and calibrating a 3D-MODFLOW SURFACT fate and transport groundwater model to predict the impacts of the expansion, and creating presentations and reports to support permitting efforts.
- **Premier Gold Mines Limited, Cove Helen Exploration Project, NV** – Project hydrogeologist involved in providing the client with hydrogeologic support to assess feasibility of an underground mine plan. Project tasks included utilizing a 3D-MODFLOW SURFACT groundwater model to complete dewatering estimates for underground exploration efforts. Tasks also included completion of a sensitivity analysis of the dewatering rates due to potential fault structures that may intersect the proposed underground mine plan to assist the client with preparations for both permitting and exploration.

Hydrogeologic Characterization and Water Supply

- **Barrick/Newmont Joint Venture, Turquoise Ridge Mine, NV** – Project hydrogeologist involved in baseline data collection in support of a pre-feasibility study for mine expansion. Project tasks included collecting and managing water level data in support of the baseline effort.
- **Coeur Rochester, Inc., Rochester Mine, NV** – Project hydrogeologist responsible for a variety of hydrogeologic support activities in order to characterize the hydrogeology of the mine site and to drill a new production well. Tasks included supervising production well drilling for

potable use and testing to ensure nitrate fell into a potable use range. Tasks also included hydrogeologic characterization of the site utilizing historic pumping data, water levels, and geologic logs and completion of an aquifer test in the field to collect hydrogeologic property data.

- **NV Energy, North Valmy Generating Station, NV** – Project hydrogeologist involved in providing hydrogeologic support to improve the client's production well field. Tasks included providing field supervision for drilling of several new production wells, field supervision for existing well rehabilitation, and field oversight of pumping tests and data collection.
- **Pershing Gold Corporation, Relief Canyon Mine, NV** – Project hydrogeologist involved in completing hydrogeologic services in support of the client's baseline data collection efforts for mine expansion. Tasks included field supervision of vibrating wire transducer installation to support baseline data collection.
- **NV Energy, Chuck Lenzie Generating Station, NV** – Project hydrogeologist responsible for providing hydrogeologic support to improve the client's production well field. Tasks included providing field supervision and data collection during a performance pumping step test, analyzing performance pumping data and manufacturer specifications for pump efficiency, and compiling a summary of well rehabilitation field work and recommendations for further steps to improve production.
- **Robinson Nevada Mining Company, Robinson Mine, NV** – Project hydrogeologist involved in providing support to the client's ongoing dewatering operations and future mine planning. Task included hydrogeologic characterization of the site utilizing historic pumping data, water levels, chemistry data, and geologic logs.
- **Desert Research Institute, NV** – Research assistant participating in an ongoing statewide effort to assess crop yield and justify transfer of water rights. The project involved application of crop water use models for irrigated agriculture in Nevada using the METRIC (Mapping Evapotranspiration at High Resolution Using Internalized Calibration) approach and Landsat imagery. Master's thesis work involved providing input for a groundwater model aimed at reducing saltwater intrusion in the water supply for the city of Cotonou, Benin. This project involved utilizing remote sensing evapotranspiration estimation methods and MODIS satellite imagery to estimate evapotranspiration for the well field, testing well water quality, and providing hydrologic training and education for students in Benin in the field.

Mine Environmental

- **Barrick Gold, Nevada, USA and Perth, Australia** – Intern participating in various environmental activities in support of gold mining operations. Projects included creating an interactive map of available renewable energy opportunities at each North American mine site utilizing Google Earth, developing legal compliance databases of environmental obligations using Intelex and RIMS, producing maps of abandoned mine lands to prepare for closure, and researching the feasibility of sequestering carbon dioxide from processing activities to produce biofuels. Tasks also involved a variety of projects relating to environmental compliance monitoring, impact minimization, incident response, and awareness training; air quality; dewatering; stormwater and hazardous waste management; reclamation; and cultural resources surveying.