

Grant F. Miller, PG, CEG, QSP

Principal Geologist



Education

- B.A. Geology, Humboldt State University, 1980

Registration and Certification

- Professional Geologist, California, 1987, #4188
- Certified Engineering Geologist, California, 1988, #1397
- 40-Hour OSHA Trained, 29 CFR 1910.120(e)(2)/8 CCR 5192
- 24-Hour MSHA Trained
- Certified QSP

Experience

33 years

With AES

17 years

Professional Activities

Member, Geological Society of America

Mr. Grant Miller has 33 years experience as an engineering geologist specializing in geologic, geotechnical, hydrogeologic and environmental investigations for a variety of projects, including municipal solid waste landfills; residential, commercial and industrial developments; highways, bridges and tunnels; and dams, reservoirs and pipelines. For these projects, he was responsible for planning, coordinating and implementing site characterization studies that have involved complex subsurface exploration programs. His field expertise includes interpreting geophysical survey records; logging test pits, trenches, and boreholes; evaluating cone penetration test (CPT) soundings and designing, constructing and testing groundwater monitoring wells, piezometers, vibrating wire piezometer arrays, and slope inclinometers. Also, he has applicable experience with a wide variety of drilling methods, including hollow-stem auger drilling, large-diameter bucket auger drilling (and downhole geologic logging), direct- and reverse-circulation air- and mud-rotary drilling, wire-line rock coring, and hammer drilling (dual-wall percussion and ARCH).

Applying this experience, he served as Lead Field Geologist during several tunneling projects and was responsible for coordinating field work during geotechnical investigations of the 14,000 foot long tunnel section of the proposed Metro Red Line tunnel crossing the Santa Monica Mountains, the 6 ½ mile Eastside Extension and 13-mile San Fernando valley segment of the Metro Red Line tunnels and stations. He also served as Lead Field Geologist during onshore exploration activities in support of feasibility and preliminary design phases of the proposed JWPCP Tunnel and Ocean Outfall for the County Sanitation Districts of Los Angeles County.

Grant's experience also includes work as Lead Geologist for over 30 landfill projects where he has led large field exploration programs for geotechnical and hydrogeologic evaluations. Grant has provided geologic mapping, subsurface investigations and slope stability support on several landfill projects including about a dozen projects at Puente Hills Landfill and at Calabasas, Scholl Canyon and Palos Verdes Landfills in Los Angeles County; FRB, Prima Deshecha, and Santiago Canyon Landfills in Orange County; Lamb Canyon, Edom Hill and Badlands Landfills for Riverside County; San Timoteo, Colton, Landers, and Victorville Landfills in San Bernardino County; and the Mesquite regional landfill in Imperial County.

His relevant experience includes:

- **Bakersfield Landfill, Kern County, California**
Lead Geologist during a geotechnical characterization of the existing interim cover and proposed borrow sources. Responsible for logging backhoe test pits excavated through the existing cover and bucket auger borings in the potential borrow areas.
- **Lost Hills Landfill, Kern County, California**
Lead Geologist during geotechnical characterization of the existing interim cover and borrow source. Responsible for logging backhoe test pits excavated through the existing cover and in the existing borrow site.

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- **Calabasas Landfill, Los Angeles County, California**

Lead Geologist during characterization of 95 acres of existing side slope monolayer cover. Responsible for logging and sampling 48 auger borings each drilled to depths of up to 10 feet. Also described the condition of the existing vegetation, including root penetration depth and relative coverage of various vegetation types.

Lead Geologist during a geotechnical investigation of the proposed Southeastern cut expansion area. Responsible for implementing a subsurface exploration program consisting of 25 borings continuously cored/sampled to depths ranging from 21.5 to 540 feet, 2 piezometers, 5 trenches and 8 test pits.

Lead Geologist during a hydrogeologic investigation and evaluation monitoring program involving installation and development of 6 monitoring wells, 2 extraction wells and 6 piezometers constructed to depths ranging from 34.5 to 230 feet. Prepared hydrogeologic geologic cross sections to model subsurface conditions for hydrogeologic analyses.

Project Manager and Supervising Geologist during a piezometer installation project at the P-Cut area of the landfill. A total of 9 piezometers were constructed in borings continuously cored to depths ranging up to 205 feet.

Project Manager for the Subsurface Barrier No. 6 CQA project. Supervised work that included documentation of geologic conditions exposed during excavation of the slurry wall trench and construction QA during installation of groundwater monitoring and extraction wells placed to depths ranging from 60 to 109 feet.

- **Joint Water Pollution Control Plant, Carson, California**

Project Manager and Lead Geologist for a combined geotechnical-environmental investigation of a planned venturi access pit excavation at the Sanitation Districts' Joint Water Pollution Control Plant. Responsible for logging both environmental and geotechnical samples obtained from a hollow-stem auger boring drilled into potentially hydrocarbon and DDT contaminated soils. Provided geotechnical parameters for the foundation design and construction of the access pit.

Lead Geologist for geotechnical and environmental subsurface assessments for the proposed expansion of the plant, which included digestion tanks, force main extension, tunnel, galleries, pipelines, railroad underpass, and associated facilities.

Coordinated subsurface exploration program including 62 hollow-stem auger borings, 20 CPTs, geophysics and Phase II environmental assessments.

- **JWPCP Tunnel and Ocean Outfall, Los Angeles County, California**

Lead Geologist responsible for planning and implementing onshore subsurface investigations during feasibility and preliminary design phases of the project. Investigations included drilling, sampling and logging 6 borings to depths varying from 250 to 450 feet, collection of continuous core, downhole geophysical logging including suspension, natural gamma, electric and acoustic televiewer, packer testing, and installation of vibrating wire piezometers.

- **Mesquite Regional Landfill, Imperial County, California**

Lead Geologist responsible for developing and coordinating a field exploration program consisting of excavation, sampling and logging of 12 test pits for a study evaluating alternative final cover systems for the side slopes and top deck of the landfill. The samples were obtained from native alluvial fan deposits occurring within the footprint of the landfill site, mine tailings dumps and ore leach pads.

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Principal Geologist

Lead Geologist during investigations to evaluate crushed aggregate products derived from onsite alluvial sources, evaluate quality and volume of in situ and stockpiled basalt for railroad ballast, evaluate soil cement mix design for erosion protection of planned drainage channels, evaluate the depth to competent material for a cutoff wall to be constructed across a natural drainage channel. Managed field crew consisting of geologists and engineers during excavation and sampling of test pits and was responsible for mapping basalt outcrops in the local hills and mapping areas of stockpiled basalt.

Lead Geologist responsible for directing and managing geologists, geophysicists, engineers, biologists and surveyors for a 5-month program of geotechnical investigations for master plan development. Investigations included material resources evaluation, landfill foundation, and seismic evaluation. The investigations included seismic refraction and electrical resistivity geophysical surveys, drilling 167 borings (over 10,000 linear feet), including bucket auger and rotary wash core borings up to 117 feet deep and 244 test pits for clay sources, sand and gravel, and landfill footprint investigations, mine waste stockpiles and heap leach pad materials. The material resources evaluation involved assessment of quantities and quality of materials for various uses, including concrete aggregate, LCRS sand and gravel, road base, and final cover materials. Interpreted aerial photographs and mapped the geologic conditions exposed within the landfill property. Co-authored five technical memoranda describing the results of field investigations.

- **Palos Verdes Landfill, Los Angeles County, California**

Lead Geologist during characterization of existing cover. Responsible for logging and sampling cover soils encountered by shallow hollow-stem auger borings drilled through the existing cover.

- **Puente Hills Landfill, Los Angeles County, California**

Lead Geologist during a geotechnical investigation to characterize a 94 acre section of the existing side slope monolayer cover. Responsible for logging and sampling 47 hand auger borings drilled to depths of up to 10 feet. Also described the condition of the existing vegetation, including root penetration depth and relative coverage of various vegetation types.

Lead Geologist during a geotechnical investigation to characterize a 72 acre section of the existing side slope monolayer cover. Responsible for logging and sampling 40 borings each drilled by a tripod auger rig to depths of up to 10 feet. Also described the condition of the existing vegetation, including root penetration depth and relative coverage of various vegetation types.

Lead Geologist during a geotechnical investigation for Basin D. Responsible for conducting subsurface investigations including 3 hollow-stem auger borings, 4 CPTs and downhole logging of 4 bucket auger borings. Prepared 5 geologic cross sections for slope stability analyses.

Lead Geologist for in-grade geologic mapping during construction of slope stabilization measures for a slope located below an existing water tank and above the PERG warehouse. Documented geologic conditions exposed during construction of a 1:1 buttress backcut slope and prepared 3 geologic cross sections to illustrate subsurface conditions of the slope following construction.

Lead Geologist for grading observations and in-grade geologic mapping during Lower Western Cut slope construction. Also documented abandonment of 15 piezometers and installation of 15, 250- and 350-foot-long horizontal drains constructed to help lower the groundwater level behind the slope. Prepared 6 geologic cross sections to illustrate subsurface conditions of the slope following construction.

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Principal Geologist

Lead Geologist during construction of the reinforced earth wall below the PERG facility. Supervised documentation of geologic conditions exposed in the subgrade during excavation. Managed field QA personnel during stabilization fill construction to ensure compliance with the plans and specifications.

Lead Geologist during a geotechnical investigation for a proposed MRF. Responsible for planning and implementing a field exploration program involving 9 borings, 2 piezometers, 7 CPTs and 7 test pits. Prepared geologic cross sections for geotechnical analyses of foundation conditions.

Lead Geologist during installation of 2 groundwater monitoring wells at Subsurface Barrier No. 5 and 1 extraction well at Subsurface Barriers No. 1 constructed to depths ranging from 35.6 to 120.2 feet.

Lead Geologist during a geotechnical investigation for the Phases 2 and 3 through 5 expansion in the Eastern Canyons area. Responsible for preparing geologic cross sections used in stability analyses and supervised installation of multiple horizontal drains.

Project Manager and Lead Geologist for the stability analyses of the Nike slope area at Puente Hills Landfill. Supervised the drilling of five 142 to 150 feet deep continuously cored borings from which oriented core was obtained. Stabilization options were evaluated including caissons, pin piles, and soil nails or soil anchors. Prepared geologic cross sections to model subsurface conditions for slope stability analyses.

Project Manager for the Subsurface Barrier No. 4 CQA project. Supervised work that included documentation of geologic conditions exposed during excavation of the slurry wall trench and construction QA during installation of groundwater monitoring and extraction wells and piezometers ranging in depth from 50 to 61.4 feet.

Project Manager and Lead Geologist for the initial eastern canyons area slope stability and geotechnical characterization project. Managed and supervised the field exploration effort, installation of piezometers, in situ permeability testing, geologic mapping, fault trenching and slope stability analyses of conceptual cut, lined, and refuse fill slopes. Logged 440 feet of trench excavated across the mapped trace of the Whittier Heights fault zone to evaluate potential fault activity and prepared geologic cross sections to model subsurface conditions for slope stability analyses.

Scholl Canyon Landfill, Los Angeles County, California

Project Manager and Lead Geologist during a hydrogeologic investigation for a Corrective Action Program and installation of 5 large-diameter groundwater extraction wells installed to depths ranging up to 102 feet. Hollow-stem auger, rotary core and Stratex drilling methods were used to advance the borings through alluvium and into crystalline bedrock.

Project Manager and Lead Geologist during a deep piezometer and aquifer testing project. Piezometers were installed in coreholes drilled to depths ranging up to 275 feet in crystalline rocks and aquifer testing was performed consisting of slug tests and modified step drawdown pumping tests.

- **Spadra Landfill, Los Angeles County, California**

Lead Geologist during characterization of 125 acres of existing monolayer cover. Responsible for logging and sampling 73 hand auger borings each drilled to depths of up to 10 feet. Also described the condition of the existing vegetation, including root penetration depth and relative coverage of various vegetation types.

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Lead Geologist during monitoring well and piezometer installation and aquifer testing. Responsible for documenting the construction of 5 groundwater monitoring wells and 4 piezometers installed in boreholes drilled to depths ranging up to 95 feet. Conducted slug testing at each of the monitoring well and piezometer locations.

Field Geologist during a hydrogeologic investigation conducted for 3 proposed subsurface barrier sites. Responsible for logging a total of 22 borings drilled by hollow-stem auger and rotary wash methods to depths ranging up to 80 feet. Also conducted packer permeability tests in each of the rotary wash borings to determine the hydraulic conductivity of the bedrock formation underlying the barrier sites.

- **Re-Development, Abandonment, and Regrouting Services for Groundwater Extraction and Monitoring Wells, Various Landfills, Los Angeles County, California**

Project Manager for a project involving groundwater extraction and monitoring wells located at Calabasas, Mission Canyon, Palos Verdes, Puente Hills, Scholl Canyon and Spadra landfills. Work included re-development of extraction wells, abandonment of monitoring wells, re-grouting of monitoring wells and replacement of surface completions.

- **Frank R. Bowerman Landfill, Orange County, California**

Lead Geologist during excavation of the East Flank landslide remediation. Responsible for documenting geologic conditions exposed during grading, horizontal drain, piezometer and inclinometer installation and abandonment of previously installed piezometers and inclinometers.

Lead Geologist during construction of liner system for Phase VIIC of the landfill cell expansion. Responsible for documenting geologic conditions exposed on the side slopes and floor of the expansion area.

Lead Geologist during West Channel realignment, South Basin and Wetlands Basin construction. Responsible for documenting geologic conditions exposed during grading.

Lead Geologist during installation of Title 27 perimeter landfill gas probes. Responsible for logging each borehole during drilling and documenting the installation of each multi-level probe.

Lead Geologist during a geotechnical investigation conducted for the design of a cut slope to mitigate slope instability occurring on slopes to the east of a large landslide occurring on site. Responsible for coordinating and supervising subsurface exploration activities including corehole drilling and the installation of slope inclinometers and vibrating wire piezometers.

Lead Geologist during a geotechnical investigation conducted for the design of a landslide backcut excavation. Responsible for logging test pits and bucket auger borings and preparing geologic cross sections for slope stability analyses.

Lead Geologist during construction of liner system for Phase VIIB of the landfill cell expansion. Responsible for documenting geologic conditions exposed on the side slopes and floor of the expansion area.

Supervising Geologist during construction of liner systems for Phases VIIA of the landfill cell expansion. Also monitored installation of nested landfill gas monitoring probes installed in boreholes over 300 feet deep and a 300 feet deep replacement groundwater monitoring well. Prepared as-built reports documenting monitoring probe and well construction for submittal to the local enforcement agency.

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Field Geologist for site characterization studies and design of groundwater protection measures to meet Subtitle D and Chapter 15 requirements of the California Code of Regulations for landfills. Responsible for detailed geologic mapping of the site, logging exploratory trenches, test pits and borings, and documented construction of groundwater monitoring wells ranging in depths ranging up to 210 feet. Preparation of geologic map and CQA for initial phases of earthwork construction.

- **Prima Deshecha Landfill, Orange County, California**

Lead Geologist and Field Manager during the geologic/geotechnical investigation of the zones 1 and 4 expansion areas. Responsible for interpreting aerial photographs, performing detailed geologic mapping, supervising bucket auger drilling, obtaining samples for laboratory testing and conducting downhole geologic logging. Prepared geologic cross sections to model subsurface conditions for slope stability analyses.

- **Santiago Canyon Landfill, Orange County, California**

Lead Geologist during construction of 9 nested landfill gas monitoring probes installed in boreholes ranging up to 297 feet deep. Responsible for logging boreholes drilled by air rotary methods and documenting probe construction. Also documented the abandonment of 4 existing landfill gas monitoring probes.

- **South Region Landfills, Orange County, California**

Lead Geologist and Field Manager during the geologic/geotechnical investigation of the zones 1 and 4 expansion areas at the Prima Deshecha Landfill. Responsible for interpreting aerial photographs, performing detailed geologic mapping, supervising and conducting downhole logging of bucket auger borings and logging of test trench and test pit excavations, obtaining samples for laboratory testing. Also, prepared geologic cross sections to model subsurface conditions for slope stability analyses.

Lead Geologist for the on-call geotechnical and geological services project. Responsible for evaluating slope damage from winter rains along the La Pata Road section approaching the Prima Deshecha Landfill, on the slope above the landfill scales, and on a cut slope above a landfill retention basin. Also responsible for supervising piezometer installation at Prima Deshecha Landfill and a geotechnical investigation of perimeter drainage channel damage at Coyote Canyon Landfill.

- **Badlands Landfill, Riverside County, California**

Lead Geologist responsible for conducting an investigation to evaluate cracks occurring on a cut slope located below the landfill office compound and parking lot. Investigations included geologic mapping, interpretation of aerial photographs and historic topographic maps and drilling, sampling and logging of 7 bucket auger borings, of which 5 were downhole logged. Prepared 3 geologic cross sections for slope stability analyses.

Lead Geologist responsible for documenting geologic conditions during the geotechnical investigation and slope stability evaluation of the subgrade design for the Canyon 3 expansion area. Downhole logged 11 large-diameter boreholes drilled to depths ranging from 46 to 111 feet.

- **Blythe, Mecca II and Coachella Landfills, Riverside County, California**

Lead Geologist responsible for performing seismicity analyses and slope stability analyses to provide design recommendations for stable cut slopes in alluvium under static and seismic loading conditions. A ground acceleration was calculated for each landfill site resulting from a Maximum Probable Earthquake (MPE) occurring on nearby faults. Field work included excavation, logging and sampling of test trenches.

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Lead Geologist responsible for documenting geologic conditions exposed on subgrade slopes and floor of the expansion area during grading prior to liner system construction, documenting abandonment of three groundwater monitoring wells constructed to depths ranging up to 200 feet.

- **Coachella Landfill, Riverside County, California**

Project Manager and Lead Geologist to evaluate the potential fault rupture hazards and seismic assessment for a proposed structure at the Coachella Landfill. Reviewed geologic data, historic seismicity and active and potentially active faults within 60 miles of the site area. Reviewed literature, interpreted aerial photographs, performed field geologic mapping and logging of an exploratory trench, and prepared a geologic report for submittal to the County of Riverside.

- **Edom Hills Landfill, Riverside County, California**

Lead Geologist during a preliminary geotechnical investigation to evaluate the suitability of a proposed transfer station site located in close proximity of the south branch of the San Andreas fault. Conducted investigations that included aerial photograph interpretation, geologic mapping, logging of a 415 foot-long trench to investigate faulting potential and logging of 3 hollow-stem auger borings ranging in depth up to 30 feet for foundation investigation purposes.

Lead Geologist during a geologic/geotechnical assessment of a site for support facilities for a transfer station to be built on an adjacent site. Investigations included aerial photograph interpretation, geologic mapping, logging of a 1,800 feet of trenches to investigate the faulting potential across the site, and logging of 5 hollow-stem auger borings drilled to depths ranging up to 30 feet for foundation investigation purposes.

- **Lamb Canyon Landfill, Riverside County, California**

Lead Geologist responsible for documenting geologic conditions exposed in interim cut slopes occurring within the Phase 2, Stage 3 expansion area. Prepared 13 geologic cross sections through planned Phase 2, Stage 3 subgrade cut slopes and refuse fill slopes for slope stability analyses.

Lead Geologist responsible for documenting geologic conditions exposed in interim cut slopes for the Phase 2, Stage 2 expansion area.

Lead Geologist responsible for documenting geologic conditions exposed on subgrade slopes and floor of the Phase 2, Stage 1 expansion area during grading prior to liner system construction. Also observed and documented the abandonment of a 250-foot deep groundwater monitoring well.

Project Manager and Lead Geologist during geotechnical characterization of planned subgrade slopes for the Phase 2 expansion. Responsible for mapping geologic conditions of the entire 95-acre expansion area and a similarly sized area to the west. Evaluated the potential for the presence of Holocene faults and directed and supervised subsurface exploration activities, including downhole logging of 8 large-diameter bucket auger borings to depths up to 120 feet and logging of 455 linear feet of trenches to investigate lineaments interpreted from aerial photographs.

- **Big Bear Sanitary Landfill, San Bernardino County, California**

Lead Geologist during the installation of Title 27 perimeter LFG probes. Responsible for logging each boring and documenting the installation of the multilevel monitoring probes.

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Principal Geologist

- **Colton Sanitary Landfill, San Bernardino County, California**
Field Geologist responsible for implementing a field exploration program to characterize the existing final cover capping the landfill. Logged test pit excavations to investigate the interim final cover thickness and prepared geologic cross sections illustrating the subsurface conditions across the landfill site.
- **Lenwood-Hinkley Sanitary Landfill, San Bernardino County, California**
Lead Geologist during the installation of six perimeter LFG probes and ten LFG vents. Responsible for logging each boring and documenting the installation of the probes and vents.
- **Milliken Landfill, San Bernardino County, California**
Senior Construction Manager for the CM and CQA services for the final closure construction. The closure included construction of 3-foot thick moncover for this 75-acre landfill including 50 acres of side slopes and 25 acres of deck areas. The project involved construction of cover materials, drainage structures, LFG improvements and erosion control measures.
- **San Timoteo Landfill, San Bernardino County, California**
Lead Geologist for geotechnical investigation for landfill expansion including slope stability evaluation, seismicity and faulting studies, materials resources evaluation, and preparation of geotechnical report for regulatory agency review.
- **Victorville Sanitary Landfill, San Bernardino County, California**
Project Manager for abandonment of groundwater monitoring wells including securing well abandonment permits, field supervision and logging and preparation of as-built reports for regulatory approval.
- **Landers, Mid-Valley and Victorville Landfills, San Bernardino County, California**
Project Manager during installation of Title 27 perimeter landfill gas monitoring probes. Responsible for coordinating the installation of multi-level monitoring probes in borings drilled to depths of up to 400 feet by air rotary casing hammer drilling method.
- **NWRCAPs for Various Landfills, San Bernardino County, California**
Principal Geologist responsible for preparation of Non-Water Release Corrective Action Plans and associated cost estimates for eight landfills, including Apple Valley, Baker, Lucerne Valley, Milliken, Morongo Valley, Newberry Springs, Phelan and Yermo sanitary landfills, under various on-call task orders.
- **Barker Way Ground Settlement, Long Beach, California**
Lead Geologist for an assessment of ground cracking occurring in a Long Beach neighborhood. Evaluated historical aerial photographs and documented the locations of existing cracks.
- **Operating Industries Inc. (OII) Landfill – North Parcel, Monterey Park, California**
Lead Geologist during geotechnical investigation for proposed retaining wall alignments. Supervised subsurface exploration program consisting of hollow-stem auger borings and backhoe test pits.
- **Alamitos Reservoir, Long Beach, California**
Project Manager and *Lead Geologist* for a geotechnical investigation and slope stability analysis of cut and fill slopes below a graded hilltop housing 23 aboveground water storage tanks located within the Newport-Inglewood structural zone. Responsible for downhole logging 5 bucket auger borings drilled to depths ranging up to 90 feet, and documenting installation of 2 groundwater monitoring wells placed to depths ranging up to 234 feet.

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- **Nu-Way Arrow Pit, Irwindale, California**

Lead Geologist for a geotechnical investigation to evaluate the nature and quality of inert debris fill at the former gravel pit to determine the suitability of the existing inert debris fill to support a proposed industrial/retail development at the site.

Responsible for mapping the distribution and describing the characteristics of backfill materials placed during reclamation of the pit as exposed in three test excavations.

- **Class 1 Landfill, Imperial County, California**

Evaluated seismic hazards associated with a Class I disposal facility located in the Imperial Valley. Work included evaluating fault rupture potential and ground shaking hazards and calculating the ground acceleration resulting from the maximum credible earthquake (MCE) occurring on the nearby Superstition Hills fault zone.

- **Coastal Access, Orange County, California**

Lead Geologist for a foundation investigation for proposed stairway systems to provide public access to beaches at the base of coastal bluffs. Responsible for performing detailed geologic mapping, interpreting results of seismic refraction surveys and logging and sampling borings. Also evaluated beach erosion potential, bedrock excavatability and slope stability.

- **Communications Facility, San Pedro Hill, California**

Lead Field Geologist during a geotechnical investigation to evaluate foundation conditions and slope stability for a proposed communications facility. Responsible for conducting geologic mapping and downhole logging of boreholes.

- **Cowan Heights Landslide, Orange County, California**

Lead Geologist for a investigation and mitigation of a landslide that threatened residential structures and caused the closure of a public road. Responsible for reviewing historical aerial photographs, geologic mapping, and coordinating subsurface exploration by large diameter borings and backhoe test pits.

- **Former Golden Eagle Refinery, Carson, California**

Lead Geologist during a remedial investigation of a 76-acre former refinery site. Responsible for developing and implementing a subsurface exploration program that included borings and installation of groundwater monitoring wells to delineate soil and groundwater contamination.

- **ICBM Siting Studies, Arizona, New Mexico, Nevada and Utah**

Field Geologist during preliminary field investigations in eastern New Mexico. Responsible for logging 19 rotary wash borings each drilled to a depth of 350 feet. Geologic units encountered included alluvial and eolian deposits overlying the Pliocene Ogalla Formation and Triassic Dokum Group. Documented construction of monitoring wells installed in 11 of the borings and monitored downhole seismic velocity surveys conducted in 5 of the borings.

Field Geologist responsible for mapping the distribution of basin-fill deposits in several valleys located in Nevada and Utah. Aerial photographs were used to map the distribution of the deposits and the resulting maps were field verified. Collected samples of representative materials for laboratory testing.

Field Geologist during an investigation to classify basin-fill deposits for suitability as road-base and concrete construction materials at military facilities located in Arizona and New Mexico. Compiled and mapped the distribution of basin fill deposits and performed ground reconnaissance of potential and known or proven aggregate sources. Obtained samples of potentially usable sources for laboratory testing.

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Principal Geologist

- **Lake Hughes Residential Development, Los Angeles County, California**

Project Manager and Lead Geologist for evaluating the potential fault rupture hazard for the Lake Hughes residential development in accordance with the Alquist Priolo Special Studies Zone Act of 1972. A portion of the site occurs within a special studies zone established along the San Andreas fault in the area. In order to span the width of the tract within the special studies zone, approximately 760 feet of trench was excavated into granite bedrock and surficial soils and logged. Responsible for overall project management and direction of field personnel. Provided technical guidance during trenching and inspected trench exposures and reviewed log prepared by field geologist.

- **Long Beach Aquarium of the Pacific, Long Beach, California**

Lead Geologist during geotechnical investigation for the foundation design of the proposed oceanfront aquarium structure.

- **Metro Red Line, San Fernando Valley Segment, Los Angeles County, California**

Lead Field Geologist for a Limited Preliminary Geotechnical Investigation of a 14-mile long subway alignment. Investigations included borings, CPTs, and installation of groundwater monitoring wells and piezometers.

- **Metro Red Line, Eastside Extension, Los Angeles, California**

Lead Geologist responsible for supervising and coordinating field activities during preliminary and final design-level geotechnical investigations and Phase I and II environmental assessments conducted for the proposed 6-mile long Eastside Extension of the Metro Red Line subway project. Subsurface exploration consisted of 174 borings and 37 cone penetration test (CPT) soundings. Also designed and monitored construction of 50 groundwater monitoring wells and piezometers, and performed 3 pump tests during geotechnical investigations.

Lead Geologist evaluating the nature of the Coyote Pass escarpment and related parallel anomalous topographic features that potentially impact the proposed Eastside Extension of the Metro Red Line. Responsible for implementing the field program, supervising field geologists and coordinating with Dr. Kerry Sieh, a recognized expert on the seismotectonics of the Los Angeles Basin and southern California. Work included drilling and logging 89 closely-spaced borings located across the escarpment and anomalous features at 8 different locations, performing 30 CPT soundings at one location and excavating and logging trenches across the escarpment and linear features interpreted from aerial photographs and historic topographic maps.

- **Metro Red Line, Santa Monica Mountains Tunnel, Los Angeles, California**

Lead Field Geologist for the geotechnical investigation of the 14,000-foot long section of the proposed Segment 3 of the Metro Red Line tunnel crossing the Santa Monica Mountains. Responsible for mapping the geologic conditions exposed along the tunnel alignment, supervising geologists, coordinating multiple drill rigs, and preparing a detailed subsurface geologic profile for the tunnel alignment. A total of 18 coreholes were drilled to depths ranging up to 890 feet and piezometers were installed in 3 of the coreholes. Geologic units encountered included alluvium, Tertiary and Cretaceous bedrock formations consisting sandstone, shale, conglomerate, and basalt and Mesozoic granodiorite.

Field Geologist responsible for conducting a field study to locate and characterize the Hollywood fault zone on the southern side of the Santa Monica Mountains at its intersection with the Metro Red Line tunnel alignment. The scope of the study was to locate the fault trace, characterize the alluvium-rock interface where the tunnel heading will encounter the fault trace, and assisted in evaluation the character and age of faulting. The study consisted of drilling and continuously sampling 24 closely-spaced core holes and hollow-stem auger borings and downhole logging of bucket auger borings all located along city streets to depths ranging from 50 to 240 feet.

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- **Mission Viejo and Aliso Viejo, Orange County, California**
Supervised geologic investigations and performed in grading geologic observation and documentation for several large hillside residential developments. Projects involved site investigations, grading plan reviews submitted for county review, in-grade geologic mapping and as-built geotechnical reports. Identified geologic constraints and helped prepare solutions for mitigation.
- **MWD Inland Feeder System, San Bernardino County, California**
Characterized the geologic conditions along the water conveyance system. Work included geologic mapping of the crystalline metamorphic and igneous rock that occur along the alignment, detailed geologic mapping of portal areas and pipeline routes, drilling program including vertical, horizontal and inclined coreholes drilled to depths ranging up to 850 feet using conventional wire-line methods, geophysical surveys, fault investigations and groundwater investigations.
- **MWD San Diego Pipeline No. 6, Riverside County, California**
Field Geologist during geotechnical investigation for a proposed 6.8-mile long pipeline from the Skinner filtration plant to Anza Road. Investigations included geologic mapping, drilling, sampling and logging 37 hollow-stem auger and rotary wash borings, installation of piezometers, performing seismic refraction geophysics for rippability assessment and excavating and logging trenches to evaluate the faulting potential.
- **Naval Fuel Depot, Los Angeles County, California**
Field Geologist responsible for conducting a fault investigation of an area planned for housing. Performed aerial photograph interpretation, geologic mapping and trench logging.
- **Newport Boulevard Retaining Wall, Orange County, California**
Lead Geologist for a geotechnical investigation for the design of a 110-foot long by 16-foot high retaining wall at the toe of an unstable slope. Responsible for developing a subsurface exploration program that included borings located at the edge of the road.
- **North Embarcadero Project, San Diego, California**
Lead Geologist responsible for performing a literature-based geotechnical assessment of a proposed oceanfront development. Identified potential geotechnical constraints and geologic hazards, and recommended design-level geotechnical investigations.
- **North Island Naval Air Station, San Diego, California**
Lead Geologist for a preliminary geotechnical review and field reconnaissance for proposed dredging along an existing quaywall and turning basin. Responsible for reviewing available geologic data and identification of potential geologic hazards such as the presence of active faulting.
- **O'Neill Regional Park, Orange County, California**
Lead Geologist for a foundation investigation for a sewer lift station located at the toe of a 90-foot high native slope. Responsible for geologic mapping and designing a subsurface exploration program consisting of backhoe test pits and borings to evaluate foundation conditions at the proposed structure site and stability of an adjacent native slope.
- **Orange County Gateway, Placentia, California**
Lead Geologist for a Phase II hazardous materials site investigation conducted along an existing railroad corridor in support of an EIR/EIS. Investigations included review of available information; preparation of work plan; drilling and soil sampling; groundwater monitoring well installation, development and sampling; and analytical laboratory testing of soil and groundwater samples.

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Principal Geologist

- **OC-Riverside Corridor Study, Orange and Riverside Counties, California**
Project Manager and Lead Geologist for a preliminary analysis of the potential hazardous materials/waste concerns associated with four transportation corridor alternatives, including a tunnel alternative.
- **Queensway Bay Commercial Development, Long Beach, California**
Lead Geologist during geotechnical investigations for an oceanfront commercial/entertainment complex and subterranean parking structure. Coordinated subsurface exploration including borings, CPTs and geophysical surveys.
- **Rio Hondo and Century Reclaimed Water Pipeline, Los Angeles County, California**
Geologist during geotechnical and environmental investigations for the 30-mile-long Rio Hondo and 31-mile-long Century reclaimed water lines. Also assessed potential areas of contamination along pipeline alignments, provided foundation recommendations for the Rio Hondo Pump Station and provided recommendations for jacking through contaminated areas and at street crossings.
- **State Route 125, San Diego County, California**
On-Site Geologist responsible for mapping of removal bottoms, cut slopes and cut areas, stability fill and buttress back cuts and keyways, bridge abutment and bent footing excavations, retaining wall footing excavations, soil nail wall cuts, and drainage structure footing excavations.
- **St. Antony Monastery, San Bernardino County, California**
Lead Geologist during a geotechnical investigation for the Phase 1 development of a monastery located in the Coyote Lake basin in the Mojave Desert. Investigations included aerial photograph interpretation, geologic mapping and logging of 7 hollow-stem auger borings drilled to depths ranging up to 66 feet.
- **Sylmar Converter Station, Los Angeles County, California**
Field Geologist during a fault investigation at a planned Los Angeles Department of Water and Power converter station site in the Sylmar area. Logged a 900-foot-long trench to evaluate the impact of faulting resulting from the 1971 San Fernando earthquake.
- **Union Carbide Plant, Torrance, California.**
Lead Geologist during an environmental assessment of soil and groundwater contamination resulting from LUSTs. Responsible for implementing a subsurface exploration program that included drilling, sampling and logging borings and installing monitoring wells.
- **Wastewater Facility Site Characterization, Los Angeles County, California**
Field Geologist responsible for conducting a preliminary geologic investigation to evaluate potential geologic hazards at two proposed wastewater facilities located near the San Andreas fault. Performed literature review and evaluation/interpretation of aerial photographs to identify anomalous landforms related to faulting or slope instability. Performed a brief reconnaissance to evaluate site conditions indicated by the literature and interpreted from the aerial photographs.
- **West Long Beach Industrial Redevelopment, Long Beach, California**
Lead Geologist during a geotechnical investigation to evaluate the liquefaction hazard and foundation conditions for a 300-acre parcel located in the vicinity of the Port of Long Beach.
- **White Pine Power Project, White Pine County, Nevada**
Field Geologist during a lineament investigation. Responsible for logging a 500-foot long trench, and interpreting an alignment of cone penetrometer soundings crossing suspected fault traces to evaluate subsurface stratigraphy.

Grant F. Miller, PG, CEG, QSP (cont.)

Principal Geologist

Publications

- Active parasitic folds on the Elysian Park anticline: Implications for seismic hazard in central Los Angeles, California: Geological Society of America Bulletin: Vol. 112, No. 5, p. 693–707, co-author with Oskin, Michael, Sieh, Kerry, Guptill, Paul, Curtis, Matthew, Payne, Marshall, McArdle, Steve and Elliot, Paul.
- Active tectonics, paleoseismology, and seismic hazards of the Hollywood fault, northern Los Angeles basin, California: Geological Society of America Bulletin, v. 109, no. 12, 1997, p. 1595-1616, co-author with Dolan, James F., Seih, Kerry, Rockwell, Thomas, K., and Guptill, Paul.
- Designing for tectonic deformation, Los Angeles Metro Rail System, in Tunnels for the people: World Tunneling Congress, Vienna, Austria: International Tunnelling Association, Volume 1, 1997, p. 37-43, co-author with Guptill, P. D., Ghadiali, B. M., and Sandberg, J. J.
- Structural geology, fault kinematics, and preliminary paleoseismic results from the Hollywood fault: New data from continuously cored borings and geotechnical trenches, Hollywood, California: Eos (Transaction, American Geophysical Union) v. 74, 1993, p.427, co-author with Dolan, James F., Seih, Kerry, Guptill, Paul, Rockwell, Thomas, K and Smirnoff, Tim.