

ANNE P. CAVAZOS, R.G.

EDUCATION

1984 Bachelors Degree in Geology, Franklin and Marshall College, Lancaster, Pennsylvania

PROFESSIONAL REGISTRATIONS AND CERTIFICATIONS

California State Registered Geologist, License No. 6425
Hazardous Materials Management Certificate, University of California, 1993
OSHA 40-hour Hazardous Waste Operations and Emergency Response
OSHA 8-hour Hazardous Waste Operations and Emergency Response Annual Refresher
Transportation of Hazardous Material and Dangerous Goods (DOT)
DOE Q Security Clearance (Inactive)

EXPERIENCE

Ms. Cavazos is a California Registered Geologist and the Principal of Cavazos Environmental Consulting. She has almost 20 years of professional experience conducting hydrogeologic investigations and managing projects for government, municipal, and commercial clients.

She also has over 16 years experience in managing and training staff level personnel and in managing multiple subcontractors including drilling firms, construction firms, analytical laboratories, geophysical firms, utility locators, surveyors, and federal governmental agencies.

Anne is currently providing Project Management to a client for \$3 million worth of environmental services at National Park Service sites located in the western United States. For investigations conducted at the Oakland Army Base located in Oakland, California, she served as Project Manager for environmental services, managed \$4 million worth of petroleum site closures, and served as a Geologist for several investigations.

Her experience also includes preparing technical reports and plans and conducting field investigations

Selected Environmental Site Investigations and Assessments

Environmental Services, National Park Service and U.S. Army Corps of Engineers. Since September 2002, Ms. Cavazos has served as the Project Manager for environmental services at National Park Service sites located in western United States. She has overseen projects at Yosemite National Park and Lassen National Park. Projects have included investigations at waste accumulation areas, groundwater sampling at a gasoline LUST site and former landfill, monitoring well abandonment, and removal and installation of USTs and ASTs.

Environmental Site Investigations, Oakland Army Base and U.S. Army Corps of Engineers. Ms. Cavazos worked on environmental site investigations at Oakland Army Base as directed by the U.S. Army Corps of Engineers, Sacramento District from 1994 through 2002. She has overseen investigations at 35 petroleum sites, removal of twelve petroleum storage tanks, remediation at five petroleum sites, and closure of 25 UST sites since she began working at Oakland Army Base. In the process, she has developed a good working relationship with clients and regulatory agencies including San Francisco Bay RWQCB and Alameda County Department of Environmental Health.

Ms. Cavazos is served as the Project Manager during the final phases of a \$16 million Total Environmental Restoration Contract (TERC) for Oakland Army Base. For the past five years, Ms. Cavazos managed a \$4 million project under this TERC to provide closures of 25 petroleum sites at Oakland Army Base. Her responsibilities have included development of work scopes and budgets, management of field investigations, management of tank removals and site remediation,

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management of staff and subcontractors, preparation of requisitions and work scopes for subcontractors, and cost and schedule reporting. She has managed preparation of documents including a Tier 1 Risk-Based Corrective Action Evaluation, a Tier 2 RBCA Assessment for both toxic constituents and TPH components of petroleum fuel, UST and AST Closure Investigation and Feasibility Study Work Plans, Tank Closure Investigation Reports, Corrective Action Work Plans and Reports.

In addition, to her duties as manager of petroleum sites, Ms. Cavazos managed the Base-wide groundwater sampling program and the monitoring well closure program at OARB. She was responsible for integrating the sampling plans for petroleum sites and Operable Unit investigations; soliciting and integrating comments from the client and regulatory agencies; managing staff and subcontractors; ensuring that the data collection, sampling, and waste disposal is conducted properly; and preparing reports on the results of groundwater monitoring and sampling. She has also conducted evaluations of the natural attenuation processes at several tank sites and at Operable Unit 7, which, is contaminated with chlorinated hydrocarbons.

Prior to 1997, Ms. Cavazos served as project geologist and project chemist for petroleum site and Operable Unit investigations at Oakland Army Base. As a project geologist, Ms. Cavazos prepared work plans and coordinated field activities for soil and groundwater investigations. She conducted three-phase QC reviews, obtained necessary borehole and well installation permitting, supervised utility clearances, and arranged for appropriate disposal of soil and groundwater wastes. She also maintained Daily Quality Control Summary Reports for all field activities and ensured that staff and subcontractors conducted quality work and implemented health and safety procedures.

As a project chemist, she conducted a three-phase QC review of the laboratory program and prepared detailed data validations of laboratory reports to meet stringent USACE Sacramento District standards for UST investigations. At the conclusion of the work, she prepared a Quality Control Summary Report to report the data validation summary.

Ms. Cavazos has prepared several planning documents for Oakland Army Base including investigation work plans, Field Sampling Plans, Quality Assurance Project Plans, and Sampling and Analysis Plans according to USACE Sacramento District guidelines. Reports she has prepared include groundwater monitoring reports, reports for soil and groundwater investigations, and UST closure reports. She also managed and developed portions of the chemical and hydrogeologic database for OARB environmental data.

In addition to site investigations, Ms. Cavazos has managed and prepared a revision of an Installation Natural Resource Management Plan for the OARB according to U.S. Army regulations. The plan included discussion of land use and transportation routes and resource management of vegetation, historical sites, recreation activities, and endangered species.

Fort Irwin National Training Center, Fort Irwin, CA. Ms. Cavazos served as the Project Manager for closure of petroleum sites at Fort Irwin National Training Center as directed by the U.S. Army Corps of Engineers, Sacramento District. She has prepared responses to comments from the DTSC on Closure Reports for 14 petroleum sites and will be directing future field investigations to fill in the remaining data gaps.

Sacramento Municipal Utility District, Fass Metal Site, Richmond, CA. Ms. Cavazos served as the Project Manager for a contract at a former metal scrap facility that dismantled PCB-containing transformers. For five years, she managed the groundwater sampling program and preparation of a report that includes reporting of operation and maintenance activities in support of the active containment system in-place at the site. She has also prepared a Five-Year Review Work Plan for submittal to DTSC for evaluation of the active containment system and managed preparation of the Five-Year Review Report in 1999. DTSC reduced the groundwater monitoring from quarterly to semi-annually based on their review of the Five-Year Report.

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UST Closures, American Canyon, CA. Ms. Cavazos managed a \$300,000, 3-year project to close USTs at an active lumber yard. She conducted site investigations, prepared investigation reports, developed a Remedial Action Plan, and prepared a Tier 2 Risk Based Corrective Action evaluation for UST sites in American Canyon, California. She developed a good working relationship with the client and with regulatory personnel at Napa County Department of Environmental Management during her involvement at the site.

Ms. Cavazos was the responsible person in charge of preparing work plans and reports for soil investigations and groundwater monitoring program for diesel and gasoline UST sites. In her duties as a geologist, she also coordinated and conducted field activities; obtained necessary permit and utility clearances; directed staff in conducting field activities; assisted client in appropriate disposal of groundwater waste; evaluated hydrogeologic and analytical data; and made conclusions and recommendations for direction of future work at the site. To evaluate various cleanup methods in terms of feasibility and cost, Ms. Cavazos prepared a Remedial Action Plan for the site. She then supervised aquifer testing that was conducted to evaluate groundwater pump and treatment as a remedial method and she developed a groundwater sampling program for investigating the presence of natural biodegradation in the subsurface. Finally, using ASTM Guidelines, Ms. Cavazos prepared a Tier 2 RBCA evaluation for the UST site. As result of the evaluation, she was able to recommend and obtain case closure for the UST sites.

Landfill Investigations, Various Locations. Ms. Cavazos managed a \$100,000 project to monitor Berkeley Landfill during two years of the 30-year post-closure period. She managed field investigations and prepared reports for groundwater monitoring program. In addition, she conducted an annual erosion study and made recommendations for necessary repairs to the landfill cover.

She also supported projects at other landfills sites including preparing geology and hydrogeology sections of a Closure Report for a landfill in Eureka, California and conducting a vapor survey to investigate landfill gases for compliance with Title 9 regulations. For a proposed landfill in Campo, California, she developed detailed responses to public comments on an EIS and revised the geology and hydrogeology EIS text.

Remedial Investigations, King Salmon Air Force Installation, Fairchild Air Force Base, and Wright Patterson Air Force Base. Ms. Cavazos has served as a project geologist for investigations conducted at two Air Force Bases. She prepared a groundwater monitoring report and RI/FS report sections for King Salmon Air Force Installation in Alaska for U.S. Air Force. She logged borings and installed groundwater monitoring wells at Fairchild Air Force Base and Wright Patterson Air Force Base. In addition, she evaluated and prepared a report on pump test data and developed a Community Relations Plan for the King Salmon Air Force Installation.

Environmental Compliance Assessment System (ECAS), U.S. Army Corps of Engineers. Ms. Cavazos evaluated sites and prepared environmental compliance field assessments and reports for the Army National Guard based on 17 major environmental and health and safety regulatory areas under ECAS. Regulatory areas include CERCLA/SARA, RCRA, NEPA, Clean Air Act, Safe Drinking Water Act, TCSA, Asbestos Management, Radon Abatement, and Hazardous Materials Management. She interviewed Army National Guard staff at over 100 sites in seven states concerning environmental regulatory compliance issues for assessment and reporting purposes.

Remediation Projects

Hunter's Point Naval Shipyard, Hunter's Point, California. Ms. Cavazos served as the lead for installation of a phytoremediation system at Hunter's Point Naval Shipyard. She coordinated the conceptual design process and work plan preparation. The project will entail planting approximately 100 trees in a two-acre area with the purpose of replacing an extraction system that is currently lowering the water table.

Site Investigations at Nuclear Facilities

High Level Nuclear Waste Repository, Yucca Mountain, Nevada, Department of Energy. Ms. Cavazos served in several capacities on the high-level nuclear waste repository project at Yucca Mountain, Nevada. She prepared annual \$20 million dollar budget plans and long-range schedules for geology and hydrology investigations. She directed Yucca Mountain Project scientists in planning for field testing and facilitated communication between DOE and subcontractors consisting of various government agencies (LLNL, LANL, SNL, USGS). In addition, she managed development of database to aid in planning and implementation of field activities.

Nuclear Testing Containment Program, Nevada Test Site, Department of Energy. Ms. Cavazos served as a field geologist for the nuclear testing containment program at the Nevada Test Site. She prepared site characterization reports for nuclear containment considerations; interpreted and described stratigraphy, structure, and chemical compositions; and planned drilling programs and monitored drill rig operations that advanced boreholes with diameters ranging from 8 to 12 feet to depths of over 2,200 feet using reverse circulation dual string drilling methods. She also described lithologies from examination of borehole samples and interpretation of geophysical logs including natural gamma, neutron, resistivity, density, and caliper. Based on interpretations of borehole and geophysical logs, she created and managed a geologic database. She mapped surface fractures created by detonation of underground nuclear devices and prepared a report on investigation of hydrogeologic conditions in testing area.

EMPLOYMENT HISTORY

Cavazos Environmental Consulting	Principal	2003-Present
ICF Kaiser/IT Corp./ Shaw Env, Inc.	Sr. Project Geologist/Project Manager	1997 to 2003
SCS Engineers	Project Geologist	1994 to 1997
Bonkowski and Associates	Geologist	1994
Science Applications International. Corp.,	Geologist and Liaison	1988 to 1994
Fenix and Scisson Inc.	Staff Geologist	1984 to 1988
Lawrence Livermore National Laboratory	Geologist	1984

PROFESSIONAL AFFILIATIONS

Association for Women Geoscientists, National President (1997-1999); Chapter President (2000-2001)
California Council of Geoscience Organizations, Treasurer (1999-current)
Groundwater Resources Association, Member

SELECTED PUBLICATIONS AND REPORTS

Evidence of Aerobic and Anaerobic Biodegradation of Comingled Gasoline Plumes, Oakland Army Base, Proceedings of Seventh International In Situ and On-Site Bioremediation Symposium, March, 2003.

Draft Monitoring Well Installation and Groundwater Monitoring Report, Operable Unit 7, May – December 2001, Oakland Army Base, Oakland, California, for USACE Sacramento District, March 2002.

Draft Final Monitoring Well Installation and Closure and Groundwater Monitoring Report, Tanks 11/12/13, 11A/12A/13A, B and C, D, F, K, and Q and Building 991 AST, May – July 2001, Oakland Army Base, Oakland, California, for USACE Sacramento District, January 2002.

Operable Unit 3 (OU3) Groundwater Monitoring Report for Former Tank 18 and Former Building 648 Hydraulic Lifts, Addendum 3, Operable Unit 3 Remedial Investigation Report, Oakland Army Base, Oakland, CA, for USACE Sacramento District, November 2001.

Corrective Action Implementation Report for Petroleum Tanks Sites, Oakland Army Base, Oakland California, for USACE Sacramento District, March 2001.

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- Revision 1 of Monitoring Well Closure Work Plan for Oakland Army Base, Oakland, California, for USACE Sacramento District, March 2001.*
- Removal Report for Underground Storage Tanks, Oakland Army Base, Oakland California, for USACE Sacramento District, January 2001.*
- Closure Investigation Report, Underground Storage Tanks, Oakland Army Base, Oakland California, for USACE Sacramento District, November 2000.*
- Corrective Action Work Plan for Petroleum Tank Sites, Oakland Army Base, Oakland California, for USACE Sacramento District, May 2000.*
- Work Plan for Five-Year Review of Operation and Maintenance of Active Containment System at Fass Metal Site, Richmond, California, Submitted to Sacramento Municipal Utility District, March 1999.*
- Closure Investigation Report for USTs 10, B, C, D, F, M, K, L, and Q and ASTs in BRAC Parcels 4 and 5, Oakland Army Base, Oakland California, for USACE Sacramento District, March 1998.*
- Above-Ground Storage Tank Investigations at BRAC Parcels 4 and 5 Sampling and Analysis Plan Addendum, Oakland Army Base, Oakland California, for USACE Sacramento District, August 1998.*
- Underground Storage Tank Closure Investigation and Feasibility Study Work Plan and Sampling and Analysis Plan, Oakland Army Base, Oakland California, for USACE Sacramento District, May 1998.*
- Monitoring Well Completion Report, Selected UST Sites, Oakland Army Base, Oakland, California, for USACE Sacramento District, 1995.*
- Integrated Natural Resource Management Plan for Oakland Army Base, Oakland, California, for USACE Sacramento District, 1995.*
- UST Closure Report for Tank Sites TK1, TK2, TK3, TK14, TK16, TK17, and TK18, Oakland Army Base, Oakland, California, for USACE Sacramento District, 1996.*
- Field Sampling Plan for Investigation of UST Sites with Unknown Status, Oakland Army Base, Oakland, California, for USACE Sacramento District, 1996.*
- Quality Assurance Project Plan for Investigation of UST Sites with Unknown Status, Oakland Army Base, Oakland, California, for USACE Sacramento District, 1996.*
- Technical Report, Investigation of UST Sites with Unknown Status, Oakland Army Base, Oakland, California, for USACE Sacramento District, 1997.*
- Sampling Event No. 7, Oakland Army Base, Oakland, California, for USACE Sacramento District, 1995.*
- Installation Restoration Program Report: Groundwater Monitoring and Analysis, King Salmon Airport, Alaska, for U.S. Air Force, July 1992.*
- Technical Report: Remedial Investigation/Feasibility Study, King Salmon Airport, Alaska, for U.S. Air Force, October 1992.*
- Quarterly and Semi-Annual Groundwater Monitoring Reports, Golden State Lumber, American Canyon, California, November 1994 through May 1996.*
- Risk-Based Corrective Action Tier 2 Evaluation Report, Golden State Lumber, American Canyon, California, June 1997.*
- Lithology and Stratigraphy of Drill Holes Completed during 1986 in Los Alamos National Laboratory (LANL) Use Areas of Yucca Flat, Nevada Test Site with S. L. Drellack, Jr., W. T. Hughes, P.H. Thompson, Geologic Report, Volume VIII, DOE/NV/10322-22, 1987.*
- Selected Stratigraphic Contacts for Drill Holes in Los Alamos National Laboratory Use Areas of Yucca Flat with S. L. Drellack, Jr., NTS, DOE/NV/10322-26, 51 pgs. 1987. (database)*
- Geologic and Hydrologic Investigations at the Aleman Site, and Other Sites in Yucca Flat, Nevada Test Site, with W. L. Hawkins and P. H. Thompson in Proceedings of the Fourth Symposium on Containment of Nuclear Explosions (Volume 2), September 21-24, 1987, p. 387.*