Philip J. Shaller

PhD, PG, CEG

Senior Managing Consultant

As a member of the Civil/Structural Engineering practice, Dr. Shaller investigates a wide variety of geologic and engineering geologic phenomena. He has 35 years of experience investigating floods, alluvial fan flooding, landslides, earthquake-related structural damage, groundwater migration, ground subsidence, sinkhole formation, dam failure, pipeline failure related to excessive external loads, coal combustion, horizontal directional drilling, and the effects of wildfire on flood intensity and sediment production. His experience also includes geological and geomorphological site characterization by means of field mapping, areal photo analysis, analysis of LiDAR topographic data, landslide remediation, and the logging of subsurface borings. He also has extensive experience in the areas of foundation construction and earthwork observation. He has been named as an expert in numerous legal matters and has testified in deposition, arbitration, mediation, and in court proceedings in numerous U.S. jurisdictions.

Prior to joining ESi, in 2018, he worked for 18 years as a consulting scientist at Exponent, Inc. There his work focused on flood hazard studies, insurance investigations, and forensic investigations in his areas of expertise.

Dr. Shaller is active in many technical and professional societies and has prepared and presented over 70 presentations, abstracts, and publications in refereed journals and conference proceedings. He has been a participant in panel discussions on alluvial fan flood hazards and wildfire hazards. He appeared in a BBC programme about long-runout landslides, “The Runaway Mountain,” in 1996.

Education

PhD, Geology, California Institute of Technology (Caltech), 1991

MS, Geochemistry, Montana Tech, 1985

BS, Geochemistry, Occidental College, 1983

Licenses & Certifications

- State of California, Professional Geologist, License 6132
- State of California, Certified Engineering Geologist, License 1912

Contact Information

pjshaller@engsys.com

(949) 910-9001

ESi Santa Ana

Areas of Specialization

- Geologic Mapping and Subsurface Characterization
- Air Photo and Terrain Analysis
- Landslides and Slope Stability
- Flood Hazard Analysis
- Dam Failure
- Retaining Wall Failure
- Commercial & Residential Structures
- Wildfire Investigations
- Coastal Processes, Flooding and Sand Migration
- Ground Motion and Seismic Hazards
- Insurance
- Construction Defect Investigations

- State of Washington, Registered Geologist, License 261
- State of Arizona, Registered Geologist, License 54316

Positions Held

Engineering Systems Inc., Orange County, California

- Senior Managing Consultant, 2018 – Present

Exponent, Inc., Irvine, California

- Senior Scientist to Senior Managing Scientist and Head of Geo Group, 2000 – 2018

Bing Yen and Associates, Irvine, California

- Project Geologist, 1999-2000

Woodward-Clyde Consultants, Santa Ana, California

- Senior Staff Geologist to Project Geologist, 1991-1999

Professional Affiliations/Honors

Geological Society of America

- Member since 1985

Association of Environmental & Engineering Geologists

- Member since 2000
- Moderator (with MW Hart), Symposium on Long-Runout Landslides and Rock Avalanches, 52nd Annual Meeting of Association of Engineering Geologists, Lake Tahoe, CA, September 23, 2009

Seismological Society of America

- Member since 2001

American Society of Civil Engineers (ASCE) San Diego Section

- Trieste Drive Emergency Slope Repairs – Outstanding Geotechnical Project Award, 2025

California Institute of Technology, Division of Geological and Planetary Sciences

- Robert P. Sharp Graduate Teaching Award, 1990

Association of State Dam Safety Officials (ASDSO)

- Member since 2026

Project Experience

Representative Investigations

Construction

- Participated in numerous phases of construction of the Getty Center, Los Angeles, California, 1992-1995. Work performed included logging of borings and test pits, geologic mapping of bedrock cuts, observations of footing excavations and large-diameter caissons, downhole logging of large-diameter borings, installation of hydraugers, tunnel construction observations, installation of rock anchors, preparation of maps and cross sections, slope stability analysis, post-Northridge earthquake reconnaissance, and report preparation. Geologist of record for the Funicular Rail System.
- Geologist of record for the remedial grading of the Morning Sun Landslide, Diamond Bar, California, 1995-1996. Work performed included observation of emergency grading activities, geologic mapping, planning and overseeing emergency backcut stabilization, preparing maps and cross sections, and report preparation.
- Logged rock core borings and prepared geologic cross sections for the Hollywood Reservoir Water Quality Improvement Project (HWQIP), Los Angeles Department of Water and Power, Los Angeles, California, 1996.
- Performed geologic reconnaissance and prepared report concerning identification and prioritization of geologic hazards along the Pacific Coast Highway (Highway 1) between Santa Monica and Point Dume, California, for the California Department of Transportation, 1998.
- Performed slope stability analysis, prepared a summary report, designed repair, logged caissons, and oversaw field construction activities for the Trieste landslide repair, 2024.

Dam Safety

- Lead field investigator for landslide assessment, Matahina Reservoir, New Zealand, 1996. Directed excavation and logged test trenches on the southern slopes of the reservoir to assess past occurrence of large, rapid landslides with potential to enter the reservoir and cause catastrophic downstream flooding.
- Logged rock core borings, prepared geologic cross sections, and prepared a report for the design of a large stormwater detention dam at the Sunrise Mountain Landfill, Las Vegas, Nevada, 2002.
- Investigated catastrophic failure of the Ka Loko Dam, Kauai, Hawaii, 2006. Logged borings, performed geologic mapping, collected samples, directed chemical testing, evaluated drought and rainfall conditions preceding the failure, and developed geologic maps and cross sections.

Landslides and Slope Stability

- Modeled the high-speed movement of the catastrophic La Conchita Landslide, Ventura County, California, 2005, using commercial FLO-2D modeling software.
- Performed field investigation, evaluated rainfall conditions, developed cross sections, and performed slope stability analysis, Oso Landslide investigation, Oso, Washington, 2014.

- Characterized a landslide below Trieste Drive in Carlsbad, California, by means of subsurface investigation, installation and monitoring of inclinometers and piezometers, and development of geologic cross sections, 2020-2024.

Pipeline Safety

- Investigated slope failure-induced oil pipeline rupture, Pyramid Lake, CA, 2006. Evaluated rainfall records, developed geologic maps and cross sections, performed slope stability analysis, and prepared a summary report.
- Investigated slope failure-induced gas pipeline rupture near Pittsburgh, PA, 2020-2024. Evaluated construction methods, rainfall records, and historical patterns of landslide activity, developed geologic maps and cross sections, performed slope stability analysis, and prepared a summary report.
- Investigated causes of oil pipeline failure, Weld County, Colorado, 2025. Evaluated soil conditions and finite element evaluation of pipeline and traffic loads.

Retaining Walls

- Investigation of MSE wall failures, oil sands facility, northern Alberta, Canada, 2021. Reviewed construction records, wall design, finite element analysis of key components, boreal winter construction methods, weather records, and timing of failure to determine probable root cause of failures.

Flood Hazards

- Indian Bend Wash, Scottsdale, AZ, 2008. Performed hydrological, hydraulic, geological and geotechnical evaluation of existing flood control levee system to assist local flood control district levee accreditation efforts.
- Rey Wildfire Damage Assessment, Santa Barbara County, California, 2021. Performed field investigation, aerial photo analysis, and rainfall analysis to evaluate the effects of the wildfire on Forest Service roads in and adjacent to the fire area.

Publications

"The Eureka Valley Landslide: Evidence of a Dual Failure Mechanism for a Long-Runout Landslide. "**Shaller PJ**, Doroudian M, Hart MW., Lithosphere 2020; 1:1–26. doi: https://doi.org/10.2113/2020/8860819. Extended version also available at: https://www.engsys.com/media/1043-eureka-valley-lithosphere-8860819-extended.pdf

"July 2019 Ridgecrest earthquake sequence observations from a post-earthquake reconnaissance." Cydzik K, **Shaller P**, Doroudian M, Jirschefske J., ESi White Paper, California, December 2019.

"Rapid In Situ Conversion of Late-Stage Volcanic Materials to Halloysite Implicated in Catastrophic Dam Failure, Hawaii." **Shaller P,** Sykora D, Doroudian M, Churchman GJ., Clay Minerals 2016; 51:499–515.

"Conceptual site model for Newark Bay – Hydrodynamics and sediment transport.**"** Shrestha PL, Su SH, James SC, **Shaller PJ**, Doroudian M, Firstenberg CE, Thompson CT., Journal of Marine Science and Engineering 2014; 2(1):123–139.

"Estimating the storm surge recurrence interval for Hurricane Sandy," Shrestha PL, James SC, **Shaller PJ**, Doroudian M, Peraza DB, Morgan TA., Proceedings, World Environmental and Water Resources Congress 2014: Water without Borders, ASCE-EWRI, Portland, OR, pp. 1906–1915, 2014.

"Comment on: When landslides are misinterpreted as faults: Case studies from the western United States." Hart MH, **Shaller PJ**, Farrand GT, Biek RF., Environmental & Engineering Geoscience 2013 Feb; 19(1):95–97.

"When landslides are misinterpreted as faults: Case studies from the western United States." Hart MH, **Shaller PJ**, Farrand GT., Environmental & Engineering Geoscience 2012 Nov; 18(4):313–325.

"Numerical modeling of the 2005 La Conchita landslide, Ventura County, California." **Shaller P**, Shrestha P, Doroudian M, Sykora D, Hamilton D., In: Flood Hazard Identification and Mitigation in Semi- and Arid Climates. French R, Miller J (eds), College Press (London), 2012.

"Needs and benefits of co-operation." French R, Fuller JE, **Shaller P**, Shrestha P., In: Flood Hazard Identification and Mitigation in Semi- and Arid Climates. French R, Miller J (eds), College Press (London), 2012.

"The 2005 La Conchita landslide, California: Part 1 – Geology." **Shaller PJ**, Shrestha PL, Doroudian M, Sykora D, Hamilton D., In: 5th International Conference on Debris-Flow Hazards Mitigation: Mechanics, Prediction and Assessment, Padua, Italy, June 14–17, 2011. Italian Journal of Engineering Geology and Environment, Genevois R, Hamilton D, Prestininzi A (eds), GeneCasa Editrice Università La Sapienza, Rome, Italy, 2011; 745–750.

"The 2005 La Conchita landslide, California: Part 2 – Modeling." Shrestha PL, **Shaller PJ**, Doroudian M, Sykora D, Hamilton D., In: 5th International Conference on Debris-Flow Hazards Mitigation: Mechanics, Prediction and Assessment, Padua, Italy, June 14–17, 2011. Italian Journal of Engineering Geology and Environment, Genevois R, Hamilton D, Prestininzi A (eds), GeneCasa Editrice Università La Sapienza, Rome, Italy, 2011; 751–758.

"Flood hazard analysis and mitigation," Shrestha PL, Hamilton DL, Cydzik K, Wardak S, Jordan N, **Shaller PJ**, Doroudian M., Proceedings, International Conference on Water, Environment, Energy and Society (WEES-2009), pp. 699–706, New Delhi, India, January 12–16, 2009.

"Sedimentation analysis in an open channel network for existing and proposed development conditions," Wardak S, Murillo B, Hamilton D, Shrestha PL, Doroudian M, Cydzik K, Medellin J, **Shaller PJ**., Poster, ASCE-EWRI World Environmental & Water Resources Conference, Honolulu, HI, May 12–16, 2008.

"Proposed revision of marine terrace extent, geometry, and rates of uplift, Pacific Palisades, California." **Shaller P**, Environmental & Engineering Geoscience 2004 Aug; X(3):253–275.

"Review of proposed mechanisms of Sturzstroms (long-runout landslides)." **Shaller P**, Shaller A, Abbot PL, Seymour DC (eds). pp. 185–202. In: Sturzstroms and Detachment Faults, Anza-Borrego State Park, California, South Coast Geological Society, Annual Field Trip Guidebook No. 24, October 1996.

"Landslides on Mars." **Shaller P**, Komatsu G., In: Landslide News 1994; 8:18–21.

"Analysis of a large moist landslide, Lost River Range, Idaho, U.S.A.**"** **Shaller P.**, Canadian Geotechnical Journal 1991; 28:584–600.

Presentations

"The expert witness – An unexpected journey: Overcoming adversity and finding fulfillment as an expert witness," **Shaller PJ**, abstract presented at GSA Connects 2024, Anaheim, CA, USA, Sep. 23, 2024.

"The expert witness – An unexpected journey," **Shaller PJ**, presented at GSA Connects 2024, Anaheim, CA, USA, Sep. 23, 2024.

"Evaluating sediment dynamics in waterways," Shrestha PL, **Shaller PJ**, Doroudian M, Cydzik K., Proceedings, 10th International Conference on Scour and Erosion (ICSE-10), pp. 237–250, October 18–21, 2021 (Virtual).

"Construction, Operation, and Failure of Ka Loko Dam, Kauai, Hawaii," **Shaller PJ**, Doroudian M, Cydzik K, Shrestha P., Association of Engineering Geologists 2020 Annual Meeting, Dams and Levees Lessons Learned Symposium, Part 1, September 17, 2020.

"Post-fire planning, policy, and natural hazards mitigation: lessons learned during recovery from wildfires in the state of California, USA, 2015–2019," Cydzik K, **Shaller PJ**, Shrestha P, Doroudian M., American Geophysical Union 2019 Fall Meeting, San Francisco, CA, December 9–13, 2019.

"Post-wildfire consequences on watershed hydrology and the environment," **Shaller PJ**, Shrestha PL, Deardorff TL, Wren J., Poster, SETAC North America 36th Annual Meeting, Salt Lake City, UT, November 1–5, 2015.

"Arid Regions: Unique risks in the arid region," **Shaller PJ**, Miller J, Summers S., Panel discussion, Floodplain Management Conference in conjunction with ASFPM Arid Regions Conference, Floodplain Management Association, Rancho Mirage, CA, September 8–11, 2015.

"Joint panel on alluvial fans: Mapping a moving target," Lancaster J, Miller J, McKibbin S, Fuller J, **Shaller PJ**., Panel discussion, Floodplain Management Conference in conjunction with ASFPM Arid Regions Conference, Floodplain Management Association, Rancho Mirage, CA, September 8–11, 2015.

"Adverse hydrologic and ecologic impacts of wildfires in western watersheds," **Shaller PJ**, Shrestha PL, Deardorff TL, Wren J., Proceedings, World Environmental and Water Resources Congress 2015: Floods, Droughts, and Ecosystems, ASCE-EWRI, Austin, TX, pp. 2501–2509, May 15–21, 2015.

"Risk factors and ecological disturbances that contribute to the occurrence of catastrophic wildfires in California," Deardorff TL, Semenova S, **Shaller PJ**, Shrestha PL., Presentation, World Environmental and Water Resources Congress 2015, ASCE-EWRI, Austin, TX, May 15–21, 2015.

"The Eureka Valley Landslide, Martian Analogs and the Mechanics of Long-Runout Landslides," **Shaller PJ**, Invited Presentation, Baylor University, Waco, TX, January 16, 2015.

"An evaluation of post-wildfire mitigation measures on flood hazard potential in Southern California," **Shaller PJ**, Wren J, Shrestha PL, Sama M, Doroudian M., Poster, World Environmental and Water Resources Congress 2014, ASCE-EWRI, Portland, OR, 2014.

"Conceptual Site Model for Newark Bay – Hydrodynamics and Sediment Transport," Shrestha PL, Su SH, James SC, **Shaller PJ**, Doroudian M, Firstenberg CE, Thompson CT., Presented at the 13th International Conference on Estuarine and Coastal Modeling, San Diego, CA, November 4–6, 2013.

"The geology and geomorphology of alluvial fans: A primer," **Shaller PJ**, Presented at 13th Triennial ASFPM Arid Regions Conference, Scottsdale, AZ, October 17, 2013.

"The Station Fire revisited, projected versus realized flood impacts 2009–2013," **Shaller PJ**, Cydzik K, Sama M, Wren J, Shrestha P., Presented at 2013 Floodplain Management Conference, Anaheim, CA, September 4, 2013.

"The Station Fire revisited, projected versus realized flood impacts 2009–2013," **Shaller PJ**, Cydzik K, Sama M, Wren J, Shrestha P., Presented at 2013 Wildland Fire Litigation Conference, Monterey, CA, April 21, 2013.

"Application of semi-empirical liquefaction-induced lateral displacement model to regional hazard mapping," Faris A, **Shaller PJ**., Presented at 2013 Seismological Society of America Annual Meeting, Salt Lake City, UT, April 17, 2013.

"Assessment of alluvial fan flooding hazards and proposed mitigation, Thousand Palms, California," **Shaller PJ**, Shrestha PL, Hamilton DL, Jordan N, Rezakani M., Presented at 2010 Floodplain Management Association Annual Meeting, Henderson, NV, November 3, 2010.

"Assessment of flood hazard, Travertine Point Area, Southeastern California," **Shaller PJ**, Shrestha PL, Doroudian M, Rezakani M., Presented at 2010 Floodplain Management Association Annual Meeting, Henderson, NV, November 3, 2010.

"The January 10, 2005 La Conchita landslide," **Shaller PJ**, Shrestha PL, Doroudian M, Hamilton DL, Sykora DW., Presented at 2010 Geological Society of America Cordilleran Section and Pacific Section AAPG Meeting, Anaheim, CA, May 29, 2010.

"An introduction to long-runout landslides," **Shaller PJ**, Presented at 52nd Annual Meeting of Association of Engineering Geologists, Lake Tahoe, CA, September 23, 2009.

"The Travertine rock avalanche, southern Santa Rosa Mountains, southeastern California," **Shaller PJ**, Mathieson B, Okubo S., Presented at 52nd Annual Meeting of Association of Engineering Geologists, Lake Tahoe, CA, September 23, 2009.

"Reconnaissance of long-runout rock avalanches in eastern California," Hart MW, **Shaller PJ**, Farrand GT, Olson B., Presented at 52nd Annual Meeting of Association of Engineering Geologists, Lake Tahoe, CA, September 23, 2009.

"Inland flood hazard analysis and mitigation," Shrestha PL, Hamilton D, Jordan N, Lyle JE, Doroudian M, **Shaller PJ**, Wardak S, Cydzik K, Medellin J., ASCE-EWRI World Environmental & Water Resources Conference, Honolulu, HI, May 12–16, 2008.

"Dig or drill? Weighing options for robotic planetary surface exploration missions," **Shaller PJ**, Presented at ASCE Aerospace Division, International Earth and Space Conference, Long Beach, CA, March 3–5, 2008.

"Out of the frying pan and into the mud — The fire-flood sequence in southern California," **Shaller PJ**, Presented at Orange County Coastal Coalition Meeting, Newport Beach, CA, September 27, 2007.

"The fire-flood-erosion sequence in California — A recipe for disaster," **Shaller PJ**, Hamilton D, Lyle J, Mathieson E, Shrestha P., Presented at ASCE World Environmental and Water Resources Congress, Omaha, NE, May 21–25, 2006.

"Investigation of flood and debris flow recurrence — Andreas Canyon, San Jacinto Range, Southern California," **Shaller PJ**, Hamilton D, Shrestha P, Lyle J, Doroudian M., Presented at ASCE World Environmental and Water Resources Congress, Omaha, NE, May 21–25, 2006.

"Investigating subsurface conditions in bouldery terrain," **Shaller PJ**, Presented at ASCE Aerospace Division International Earth & Space Conference, Houston, TX, March 5–8, 2006.

"Investigation of flood hazards on alluvial floodplains," **Shaller PJ**, Shrestha P, Hamilton D, Doroudian M, Lyle J, Cattarossi A., Presented at ASCE World Water and Environmental Resources Congress, Anchorage, AK, May 16–19, 2005.

"2005 landslides: Observations from the trenches," **Shaller PJ**, Wren J., Presented at MCLE Seminar Series, California Club, Los Angeles, CA, May 11, 2005.

"Investigating flood hazards on alluvial floodplains," **Shaller PJ**, Hamilton D, Shrestha P, Lyle J, Doroudian M., Presented at Alluvial Fan Flood Hazard Management Symposium, Phoenix, AZ, April 20–22, 2005.

"Investigating the ups and downs of the geology of Las Vegas, Nevada," **Shaller PJ**, Presented at Pomona College, Pomona, CA, February 21, 2005.

"Interpretation of tectonic, fluvial and eolian landforms in the Upper Coachella Valley, California, using aerial photography, DEM and LIDAR technology," **Shaller PJ**, Hamilton D, Lyle J, Doroudian M, Shrestha P., Geological Society of America, Abstracts with Programs, Vol. 36, No. 5, p. 299, November 2004.

"Fire-flood-erosion sequence: Analysis and mitigation," **Shaller PJ**, Hamilton D, Lyle J, Doroudian M, Shrestha P., Presented at ASFPM Arid Regions 10th Biennial Conference, Mesa, AZ, November 2004.

"Multi-disciplinary approach to distinguishing flood hazards on alluvial floodplains," **Shaller PJ**, Hamilton D, Lyle J, Doroudian M, Shrestha P., Presented at ASFPM Arid Regions 10th Biennial Conference, Mesa, AZ, November 2004.

"Geological aspects of slope stability," **Shaller PJ**, Mathieson E., Presented at Slope Stability and Landslides Short Course, UW–Madison and UCLA, 2001–2006.

"Hydrologic impacts and watershed recovery following the 1999 Lowden Ranch Fire, Lewiston Area, Trinity County, California," **Shaller PJ**, Medley E, Hamilton D, Lyle J, Mathieson E, Weirich F., Presented at Wildland Fire Impacts on Watersheds Conference, Denver, CO, October 2003.

"Meeting the challenges of characterizing subsurface conditions in bouldery terrain," **Shaller PJ**, Medley E, Sutarwala S., Geological Society of America, Paper No. 115-8, Denver, CO, October 29, 2002.

“New approaches to evaluate and explain recurring geotechnical issues in litigation cases, Part 3: InSAR,” **Shaller PJ**, Wren J, Sykora D., Presented at 7th Annual ASCE Forensic Engineering Meeting, UC Irvine, CA, May 10, 2002.

“Gujarat Earthquake reconnaissance,” **Shaller PJ**, Gupta A, Saraf V., Web page for Exponent, Spring 2001.

“Geologic work at the Getty Center, Los Angeles: A study in geologic complexity,” **Shaller PJ**, Presented at 43rd Annual Meeting of AEG, San Jose, CA, September 2000.

“Age and failure style of a large landslide complex at Matahina Reservoir, New Zealand,” **Shaller PJ**, McSaveney M, Gillon M, Beetham R, Freeman T., Presented at 40th Annual Meeting of AEG, Portland, OR, October 1997; and Geological Society of America Abstracts, Vol. 29, p. 64, May 1997.

“Reinterpretation of wave-cut marine terraces west of Castellammare Mesa, Pacific Palisades, California,” **Shaller PJ**, Heron C., Geological Society of America, Abstracts with Programs, Vol. 29, p. 19, May 1997.

“Review of proposed mechanisms of Sturzstroms (long-runout landslides),” **Shaller PJ**, Presented at 24th Annual South Coast Geological Society Field Trip, October 1996.

“Folds, faults and fills: The geology and geotechnical engineering of the Getty Center, Brentwood, California,” **Shaller PJ**, Rapp L., Presented at AEG Southern California Section Meeting, Los Angeles, CA, June 1996.

“Mechanics of long-runout landslides,” **Shaller PJ**, Presented at AEG Southern California Section Meeting, Los Angeles, CA, February 1996.

“The runaway mountain,” **Shaller PJ**, Television appearance on *Horizon* (BBC), 1996.

“Last motion on the Benedict Canyon Fault, Santa Monica Mountains, California,” **Shaller PJ**, Sabins E., Geological Society of America, Abstracts with Programs, Vol. 26, p. 185, October 1994.

“3rd Caltech/U.S.S.R. Schmidt Institute of Earth Physics Conference on Long-Runout Landslides,” **Shaller PJ**, Murray B, Ivanov B., *Landslide News*, No. 5, pp. 37–38, 1991.

“Long-runout landslides on Mars,” **Shaller PJ**, Presented at USSR Academy of Sciences, Schmidt Institute of Earth Physics, Moscow, October 1990.

“A large composite landslide/debris flow, Lost River Range, Idaho,” **Shaller PJ**, Murray B, Albee A, Shelton J., Geological Society of America, Abstracts with Programs, Vol. 21, p. 344, October 1989.

“Subaqueous landslides on Mars?” **Shaller PJ**, Muray B, Albee A., Presented at 20th Lunar and Planetary Science Conference, pp. 990–991, October 1988.