

Douglas Hamilton, P.E., D.WRE
Principal Engineer

Professional Profile

Mr. Douglas Hamilton is a Principal Engineer in Exponent's Civil Engineering practice. He has extensive experience in water resources, hydrology, and natural hazards in arid environments. He has developed and applied a wide range of analytical techniques in order to explain the hydrologic impacts of natural hazards. He is also an expert in the application of sediment transport, geomorphic and hydrologic principles to natural systems, and to the design of constructed facilities.

Prior to joining Exponent, Mr. Hamilton worked for the Hydrologic Engineering Center (HEC), which provides consulting and technology services to the civil works and military missions of the U.S. Army Corps of Engineers. While in the Research Branch of HEC, Mr. Hamilton was responsible for conducting flood hazard, sedimentation, and debris flow studies for Mount St. Helens, Washington, and for the Wasatch Front Range, Utah. He was also in charge of the computer program HEC-6, Sediment Transport in Rivers and Reservoirs. Mr. Hamilton has held lead engineering positions in the consulting firms Simons, Li & Associates, and Rivertech. For eight years prior to joining Exponent, Mr. Hamilton operated his own hydrologic consulting firm. He has taught a number of professional courses for hydraulic and sediment transport analysis techniques. He is a cooperating partner with the Chinese Academy of Sciences, Institute of Mountain Disasters and Environment (Sichuan, China), and has served as a committee member for the National Research Council's Water Science and Technology Board.

Academic Credentials and Professional Honors

M.S., Civil Engineering, University of California, Davis, 1984
B.S., Engineering, Harvey Mudd College, 1983

National Research Council's Water Science and Technology Board: Committee on the Evaluation of the National Flood Insurance Program Policy for Alluvial Fan Areas (member)

U.S. Delegation, International Conference on Natural Disaster Reduction, Yokohama, Japan, 1994 (observer); Sedimentation Technical Committee; American Society of Civil Engineers (past chair); Consultant to the California Governor's Task Force on Flooding; Trade Partner of the Year 2005 Pulte Homes, Del Webb; Technical Consultant to the California Governor's Alluvial Fan Flooding Task Force; Metropolitan Water District; Mobil Land Development; Pacific Ocean Division of the U.S. Army Corps of Engineers; Saddleback Valley Unified School District; Safeco Insurance Company; Santa Fe Railroad; and the World Bank; Technical Consultant to the California Governor's Alluvial Fan Flooding Task Force; Metropolitan Water District; Mobil Land Development; Pacific Ocean Division of the U.S. Army Corps of Engineers; Saddleback Valley Unified School District; Safeco Insurance Company; Santa Fe Railroad; and the World Bank

Licenses and Certifications

Registered Professional Civil Engineer, California, #42210; Licensed Professional Engineer, South Carolina, # 23305; Diplomate, Water Resources Engineer, American Academy of Water Resources Engineers, 2008

Publications and Presentations

Cydzik K, Hamilton D, Stenner H, Cattarossi A, Shrestha PL. Natural hazard public policy implications of the May 12, 2008 M7.9 Wenchuan earthquake, Sichuan, China. American Geophysical Union 2009 Fall Meeting, San Francisco, CA, December 14–18, 2009.

Cydzik K, Shrestha PL, Hamilton D, Rezakhani M, Scheffner NW, Lenaburg RT. Numerical modeling to support floodplain mapping in coastal areas. American Geophysical Union 2009 Fall Meeting, San Francisco, CA, December 14–18, 2009.

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

Murillo B, Wardak S, Hamilton DL, Shrestha PL, Cydzik K, Doroudian, M. Sedimentation analysis for existing and proposed development conditions. Proceedings, International Conference on Water, Environment, Energy and Society (WEES-2009), New Delhi, India, January 12–16, 2009.

Lenaburg RT, Scheffner NW, Shrestha PL, Cydzik K, Rezakhani M, Hamilton DL. EST-based tropical storm flood mapping of the Hawaiian Islands. Proceedings, An International Perspective on Environmental and Water Resources, Bangkok, Thailand, January 5–7, 2009.

Stenner H, Hamilton D, Cydzik K, Cattarossi A, Mathieson E. Landslides and quake lakes from the M7.9 China earthquake—Are Californians in the same boat? 3rd Conference on Earthquake Hazards in the Eastern San Francisco Bay Area, October 24, 2008.

Stenner H, Hamilton D, Cydzik K, Cattarossi A. Landslide hazards of the M7.9 Wenchuan, China earthquake and geologists' role in response. Annual Association of Engineering and Environmental Geologists, New Orleans, LA, September 19, 2008.

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

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

Gangai JW, Lenaburg R, Batten B, Drei-Horgan E, Scheffner N, Hamilton D, Rezakhani M, Shrestha P. Hurricane flood insurance study for the Hawaiian Islands. ASCE-COPRI Solutions to Coastal Disasters Conference, Oahu, HI, April 13–16, 2008.

Hamilton D. Hazards on alluvial fans and their mitigation. Presentation to the California Governor's Alluvial Fan Task Force, February 8, 2008.

Shrestha P, Hamilton D, Lyle J, Doroudian M, Shaller P. Analysis of flood hazards for a residential development. ASCE World Environmental and Water Congress, Tampa, FL, May 15–19, 2007.

McAnally WH, Teeter A, Schoellhamer D, Friedrichs C, Hamilton D, Hayter E, Shrestha P, Rodriguez H, Sheremet A, Kirby R. Management of fluid mud in estuaries, bays, and lakes. II: Measurement, modeling, and management. *J Hydr Eng* 2007; 133(1):23–38.

McAnally WH, Friedrichs C, Hamilton D, Hayter E, Shrestha P, Rodriguez H, Sheremet A, Teeter A. Management of fluid mud in estuaries, bays, and lakes. I: Present state of understanding on character and behavior. *J Hydr Eng* 2007; 133(1):9–22.

Cattarossi A, Mastrocola P, Hamilton D, Shrestha P. Hydrological potential for the restoration of the Mesopotamian marshlands. ASCE International Perspective on Environmental and Water Resources, New Delhi, India, December 18–20, 2006.

Shrestha P, Bigham G, Hamilton D, Doroudian MA. Three-dimensional model for Lake Sam Rayburn, Texas. ASCE International Perspective on Environmental and Water Resources, New Delhi, India, December 18–20, 2006.

Futornick K, Shrestha P, Sykora D, Hamilton D. Post-Katrina strategies to manage consequences of levee failure. Presentation, A&WMA 99th Annual Conference and Exhibition, New Orleans, LA, June 20–23, 2006.

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

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

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

Shrestha P, Hamilton D, Jordan, N, Doroudian M, Hong S, Proctor D. Impact of sewage line spills on pathogen levels in recreational waters. Proceedings, ASCE World Water and Environmental Resources Congress, Anchorage, AK, May 16–19, 2005.

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

Shaller P, Hamilton D, Lyle J, Medley E, Mathieson E, Shrestha P. Fire-flood-erosion sequence: analysis and mitigation. Presentation, Arid Regions 10th Biennial Conference, Restoration and Management of Arid Watercourses, Mesa, AZ, November 16–19, 2004.

Hamilton D, Shaller P, Lyle J, Doroudian M, Shrestha P. Multi-disciplinary approach to distinguishing flood hazards on alluvial floodplains. Presentation, Arid Regions 10th Biennial Conference, Restoration and Management of Arid Watercourses, Mesa, AZ, November 16–19, 2004.

Shaller P, Hamilton D, Doroudian M, Shrestha P, Lyle J, Cattarossi A. Interpretation of tectonic, fluvial, and eolian landforms in the Upper Coachella Valley, California, using aerial photography, DEM, and LiDAR technology. Poster Presentation, Geological Society of America, 2004 Denver Annual Meeting, Denver, CO, November 7–10, 2004.

Hamilton D, Cattarossi A, Polo P, Shrestha P, Nielson D. Restoration of the Mesopotamian marshlands. Presentation, Society of Wetland Scientists, 25th Anniversary Meeting, Seattle, WA, July 18–23, 2004.

Cattarossi A, Hamilton D, Shrestha P, Polo P. Macro- and micro-scale circulation modeling in the Mesopotamian marshlands of Southern Iraq. Proceedings, Arid Lands Symposium, ASCE-EWRI World Water and Environmental Resources Congress, Salt Lake City, UT, June 27–July 1, 2004.

Hamilton D, Cattarossi A, Shrestha P. The Eden again project: Restoration of the Mesopotamian Marshlands. Keynote presentation, National Society of Consulting Soil Scientists, NSCSS 17th Annual Meeting, San Diego, CA, February 5–7, 2004.

Hamilton D, Cattarossi A, Shrestha P. Numerical modeling of flows in the Iraqi Marshlands. Presented at Headwaters to Oceans (H2O) Conference, Long Beach, CA, October 23–25, 2003.

Hamilton D, Joaquin A. Urban planning for flood hazards. Inland Flooding, Cambridge University Press, New York, 2000.

Hamilton D, et al. Hydrologic computer models. In: May's Handbook of Water Resources, McGraw-Hill, New York, 1996.

Hamilton D, Ford DT. Computer models of water excess management. In: May's Handbook of Water Resources, Chapter 28, Phoenix, AZ, 1994.

Hamilton D. Reliability of sedimentation modeling for alluvial fan floodplain analysis. Modeling of Flood Propagation over Initially Dry Areas, ENEL, Milan, Italy, June 29–30, 1994.

Hamilton D, Zhang S, MacArthur RL. Debris flow velocity estimation methods for natural hazard assessment. Hydraulic Engineering, '93, pp. 334–339, Hydraulics Division of the American Society of Civil, San Francisco, CA, July 25–30, 1993.

MacArthur RC, Hamilton D, Branch WE. Assessment procedures for lahars, mudflows, debris flows, and debris torrents. Hydraulic Engineering, '93, Hydraulics Division of the American Society of Civil, pp. 210–215, San Francisco, CA, July 25–30, 1993.

MacArthur RC, Hamilton D, Brunner GW. Numerical methods for simulating debris blockage failures and mudflows. Proceedings, National Conference on Irrigation and Drainage, American Society of Civil Engineers, Honolulu, HI, July 1991.

Umble A, Hamilton D. Development of alluvial floodplains. American Society of Civil Engineers, Orange County Branch, Hydraulics and Hydrology Technical Group, May 1991.

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Hamilton D. Scour stability design of San Sevaine wash levee. San Bernardino County, CA, 1989.

MacArthur RC, Chamber DR, West MH. Verification of a generalized mudflow model. Proceedings, Hydraulic Engineering National Conference, American Society of Civil Engineers, Williamsburg, VA, August 1987 (co-author).

Schamber DR, MacArthur RC. Numerical modeling of arid region floods hazards. Computational Hydrology '87, Proceedings, First International Conference, Computational Hydrology Institute, Anaheim, CA, July 1987 (co-author).

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Hamilton D. Two-dimensional hydrodynamics and sediment transport for estuaries. Taiwan Water Conservancy Bureau, Republic of China, 1987.

Hamilton D. A hydrologic perspective on geomorphic hazards related to the 1993 floods in the San Diego, California and Tijuana, Mexico regions. Geological Society of America Conference, San Bernardino, CA, 1993.

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MacArthur RC, Harvey MD, Kekaula HW. Analyses of special hazards and flooding problems in tropical island environments. Water Forum, '92, American Society of Civil Engineers, Baltimore, MD, August 1992 (co-author).

MacArthur RC, Schamber DR. Numerical and physical modeling of debris flows. 4th International Symposium on River Sedimentation, International Research and Training Center for Erosion and Sedimentation, Beijing, People's Republic of China, June 5–9, 1989 (co-author).

MacArthur RC, Schamber DR, West MH. Generalized methodology for simulating mudflows. Water Forum '86, American Society of Civil Engineers, Long Beach, CA, July 1987 (co-author).

MacArthur RC. The Corps of Engineers efforts in modeling mudflows. Western States High Risk Flood Areas Symposium, Association of State Floodplain Managers, Las Vegas, NV, 1986 (co-author).

MacArthur RC, Li R-M. Coincident frequency approach to fire/flood problems. Western States High Risk Flood Areas Symposium, Association of State Floodplain Managers, Las Vegas, NV, 1986 (co-author).

Hamilton D. A Comprehensive approach to the mitigation of special flood hazards in the Western United States: Debris flows, mudflows and hyperconcentrated flows. 2nd National Conference on Debris Flows, Chinese Academy of Sciences, Chengdu, Sichuan, People's Republic of China, October 1986.

Reports

MacArthur RC, Harvey MD. Urban flooding and debris flow analysis for Niu, Aina Haina, and Kuliouou Valleys. U.S. Army Corps of Engineers, Pacific Ocean Division, Contract No. DACW83-91-P0055, 1991 (co-author).

MacArthur RC, Brunner GW. Numerical simulation of a hypothetical failure of the Castle Lake blockage near Mount St. Helens, Washington. The Hydrologic Engineering Center, U.S. Army Corps of Engineers, Special Projects Report 89-04, May 1989 (co-author).

MacArthur RC. Incorporating the effects of mudflows into flood insurance studies on alluvial fans. The Hydrologic Engineering Center, U.S. Army Corps of Engineers, Special Projects Report 86-4, August 1988 (co-author).

MacArthur RC. Review of the U.S. Army Corps of Engineers involvement with alluvial fan flooding problems. The Hydrologic Engineering Center, U.S. Army Corps of Engineers, Davis CA, Technical Paper No. 124, December 1988 (co-author).

MacArthur RC, Li R-M. Analysis of flows on alluvial fans—State of the art. U.S. Department of Transportation, Federal Highway Administration, Report No. FHWA-AZ88-802, October 1988 (co-author).

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Hamilton D. Computation of unit weight of debris flow. Simons, Li & Associates, Inc., Technical Note for OR-COE-02, August 1986.

MacArthur RC, Schamber DR. Toutle River mudflow investigation, Mount St. Helens, Washington. The Hydrologic Engineering Center, U.S. Army Corps of Engineers, Davis, CA, Special Projects Report 85-3, July 1985 (co-author).

Book Chapters

Slosson JE, Hamilton D, Shuirman G. American sedimentation law and physical processes. In: Sedimentation Engineering: Processes, Measurements, Modeling, and Practice. ASCE Manuals and Reports on Engineering Practice No. 110, ASCE Task Committee for the Preparation of the Manual on Sedimentation, ASCE, Garcia MH (ed), Reston, VA, 2008.

Hamilton D, et al. Sedimentation law. In: Sedimentation Engineering, American Society of Civil Engineers, New York, 1997.

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Hamilton D, Ford DT. Computer models of water excess management. Chapter 28. In: May's Handbook of Water Resources. Phoenix, AZ, 1994.