

John H. McGrane, P.E.
Senior Professional



John McGrane is a Professional Engineer with technical and management experience in infrastructure operations and related capital projects. Having served in engineering and construction administration positions with both private and public sector entities, Mr. McGrane has a unique perspective on implementation of infrastructure projects. Mr. McGrane also has an extensive background in street and utility engineering; urban and suburban land development; and electric power plant construction.

Prior to joining GEI in April, 2011, Mr. McGrane held positions with the City of Hartford, CT Department of Public Works, most recently as its Assistant Director/City Engineer, and Director of the Greater Hartford Flood Commission. As City Engineer, Mr. McGrane managed DPW's Capital Improvement Program, which had a budget of up to \$40 Million annually. This included authority for infrastructure design and construction, contract administration, and long-range capital planning for streets, drainage, bridges, and flood control projects. As lead technical professional in Connecticut's capital city, Mr. McGrane had a visible presence in the general public, and achieved a sound reputation for integrity, accurate project representation, and effective public communications.

PROJECT EXPERIENCE

Levee Civil Work Repair Project, Town of East Hartford, East Hartford, CT. Mr. McGrane served as GEI's project manager for three separate construction administration contracts for Rehabilitation of Flood Control Pump Stations, Connecticut River Sheet Pile Bulkhead and Tie-back Installation, and General Levee Civil Works Repairs. This also included management of several separate contracts designed to meet directives by the U.S. Army Corps of Engineers for compliance reasons. These services included piezometer installation and long term monitoring of ground water levels using data loggers to track levee under-seepage; and monitoring of floodwall crack progression and long term movement of floodwalls.

New London Hurricane Barrier FEMA Certification, City of New London Dept. of Public Works, New London, CT. Mr. McGrane served as GEI's project manager for the accreditation of the New London, CT Hurricane Barrier in 2011. This project was completed in an expedited manner to meet a looming FEMA deadline, and resulted in an accreditation being granted without interruption of flood protection status afforded by the hurricane barrier. Mr. McGrane subsequently managed an effort that was successful in appealing a proposed FEMA flood zone map revision that had potential negative impacts on many properties behind the hurricane barrier and in other unprotected areas.

Murphy Pond and Bell Pond Dams Hydro Power Study, Town of Wethersfield, Wethersfield, CT. Mr. McGrane completed a

EDUCATION

M.S., Management, Rensselaer Polytechnic Institute
B.S., Civil Engineering, University of Connecticut

EXPERIENCE IN THE INDUSTRY
36 years

EXPERIENCE WITH GEI
3 year(s)

REGISTRATIONS AND LICENSES
Professional Engineer, CT No. 13678

feasibility study for two hydroelectric installations on the Goff Brook in Wethersfield, CT. Goff Brook contains a number of old mill dams which were historically used for water powered equipment. Although the equipment has long since ceased to be in service, the dams remain and it is the desire to utilize at least two of the dams for generation of hydroelectric power for resale onto the existing power grid. The report included flow duration and head information, opinions of cost, extent of permitting involvement, and estimates of the overall economic feasibility based on projected payback periods for the options considered.

Clean Water Project - Geotechnical Services, Metropolitan District Commission, Multiple, CT. Mr. McGrane has served as Project Manager for various tasks that GEI has performed under this agreement including environmental pre-characterization of excavation sites to determine degree and type of contamination prior to construction; geotechnical evaluations relating to pipe settlements, building vibrations, and other impacts related to utility construction. Mr. McGrane also managed the preparation of construction contract documents for handling and disposal of contaminated soils generated by prospective contractors working within the City of Hartford on Clean Water Project construction activities. Mr. McGrane also provided expert guidance in relation to proposed construction activities that required technical evaluation relating to the City of Hartford's adjacent flood control infrastructure.

PREVIOUS EXPERIENCE

Flood Control Infrastructure Management

Mr. McGrane served as Director of the Greater Hartford Flood Commission which has authority for regulation of flood plain development and stewardship of Hartford's extensive Flood Protection System, the largest of its kind in New England. This system consists of major earthen and concrete levees, multiple stormwater pump stations, and major hydraulic conduits. Mr. McGrane successfully managed a multi-year program which secured critical FEMA Levee Accreditation, and a favorable U.S. Army Corps of Engineers rating of the system. As a key representative of the City of Hartford, Mr. McGrane also served an important role as Hartford's primary liaison with the U.S. Army Corps of Engineers, Federal Emergency Management Agency, the Metropolitan District Commission, and State of Connecticut agencies including the Department of Environmental Protection and Department of Transportation.

Street Infrastructure Design, Maintenance, and Operation

As Hartford's City Engineer, Mr. McGrane had authority for urban infrastructure functions including reconstruction and rehabilitation of streets and bridges; underground utility reconstruction impact mitigation; and maintenance functions needed to optimize component life cycle. Similar positions held in suburban municipalities in Greater Hartford included serving in public works director capacities for the Towns of Farmington, CT, and Glastonbury, CT. In these positions, Mr. McGrane was also extensively involved in municipal land use planning, local regulatory permit approval processes, and evaluation of environmental and public impacts associated with development projects.

Sewage Treatment Facility Operation and Management

As Director of Public Works & Development Services for the Town of Farmington, CT, Mr. McGrane had overall management authority for its sewage treatment facility and associated collection system consisting of gravity sewers a series of pump stations. This included management of the system's overall operation, capital improvement projects, and other activities undertaken for operational needs and regulatory compliance. Mr. McGrane has continued his involvement in a stewardship role, currently serving as a member of the Farmington Water Pollution Control Authority.

Other Municipal Public Works Operations

Mr. McGrane also had extensive involvement in the management of ongoing operational functions including solid waste collection and disposal programs; street and highway maintenance efforts; building and grounds maintenance; and building inspection and enforcement activities.

Power Generation Facilities

During construction of the Millstone Unit 3 Nuclear Power Station in Waterford, CT, Mr. McGrane was employed by its owner, Northeast Utilities, in a construction engineering and construction management capacity. Projects included primarily structural, piping, and pressure vessel installations. Mr. McGrane was also involved in major retrofit projects on the Millstone Unit 1 and Unit 2 power plants pursuant to Nuclear Regulatory Commission mandates. Also under management in this position were various projects on hydro-electric and fossil fuel power generation facilities.

Private Consulting Engineering- Land and Site Development

Mr. McGrane began his career in the private consulting field, and worked with the Connecticut based civil engineering firms of Dicesare-Bentley Engineers, Inc., and Kratzert-Jones Engineers, Inc. Mr. McGrane gained fundamental experience with these firms which concentrated in the areas of land development engineering, regulatory permit approval assistance for private developers, and design of related infrastructure including roadways, drainage, sewers, and other site components.

PROFESSIONAL ASSOCIATIONS

Town of Farmington Water Pollution Control Authority

American Society of Flood Plan Managers

Peter M. Heynen, P.E.
Geotechnical Manager Atlantic Region



Peter Heynen is the Geotechnical Engineering Manager for the Atlantic Region with more than 35 years' experience. Mr. Heynen's experience includes geotechnical and hydrogeological investigations; analysis and design of dewatering methods, instrumentation and monitoring, building underpinning, pile foundations, dynamic compaction, slope stability, ground stabilization, and braced excavations; construction inspection; laboratory testing; test boring inspection; groundwater modeling; environmental audits; Phase I and II ESAs, CAR's and RAP's; dam investigation, design, and construction administration and observation.

Mr. Heynen was responsible for the analysis and design of earth and concrete dams including inspection and report preparation of over 100 Phase I dam repairs for the Army Corps of Engineers and performed numerous geotechnical engineering services for hundreds of buildings, bridges and other structures. Mr. Heynen was responsible for the investigation of numerous groundwater and soil remediation project analyses, construction implementations, operations and forensic investigation of major structure failures for highways, dams, and construction cofferdams.

PROJECT EXPERIENCE

Chappaqua, New York. Investigated 2 dams, remedial repair of both dams, final design, Construction Observation.

Rochester Gas and Electric, Station 5, Rochester, New York. Performed dam inspection and prepared inspection report, engineering plans and specifications for rehabilitating the 100 foot long and 17 foot high sector gate. Rehabilitation consisted of new steel and concrete construction with mechanical modifications.

Carmel Lake Dam, Carmel, New York. Performed topographic survey and underwater inspections and prepare engineering report and plans and specifications for existing 50 foot long and 22 foot high existing concrete spillway with 250 foot long earth embankment.

Sagamore Dam, Carmel, New York. Performed topographic survey, subsurface explorations, hydrologic analysis, hydraulic analysis, stability analysis, and underwater inspections for 45 foot long by 20 foot high existing concrete spillway with 250 foot long by 20 foot high earth embankment. Prepared engineering report, engineering plans, and specifications. Performed construction inspection and testing.

Snow Lake Dam, Indian Lake New York. Performed topographic survey hydraulic analysis, stability analysis, and underwater inspections for 150 foot long by 27 foot high concrete spillway. Prepared engineering report, engineering plans and specifications.

EDUCATION

B.S., Civil Engineering, New England College

EXPERIENCE IN THE INDUSTRY

36 years

EXPERIENCE WITH GEI

5 years

REGISTRATIONS AND LICENSES

Professional Engineer, FL No. 42843
Professional Engineer, NH No. 6787
Professional Engineer, RI No. 4985
Professional Engineer, VA No. 9394
Professional Engineer, NY No. 54671
Professional Engineer, PA No.
PE022723E
Professional Engineer, CT No. 9618

Beaver Pond Dam, Bedford, New York. Performed topographic survey for 250 foot long by 12 foot high stone masonry dam. Prepared engineering report, engineering plans and specifications.

Rye Playland, Rye, New York. Performed underwater video inspection of over 450 timer piles on Long Island Sound.

Lake Beseck Dam, Middlefield, Connecticut. Performed explorations through the crest of the 35-foot high masonry arch structure, design drawings for installation of an upstream low permeable barrier and construction inspection services.

Dam, Rochester, New York. Performed sector gate failure investigation for a \$4.5 million dollar project for Rochester Gas and Electric.

Bell Shop Pond Dam, Higganum, Connecticut. Performed inspection, investigation, Survey, recommendation, and final design.

Pinewood Lakes, Trumbull, Connecticut. Performed dam failure update, dam break analysis, remedial design, installation and observation for slope protection.

Turner Pond Dam, Hamden, Connecticut. Performed Survey, Construction Observation, As-Builts.

Bell Shop Pond Dam, Higganum, Connecticut. Performed dam inspection, topographic survey, hydrologic analysis, and hydraulic analysis. Prepared inspection report, engineering plans and specifications for repairing the 115 foot long and 21 foot high stone masonry dam. The 150 year old dam has a 36 foot hydraulic head. Performed a feasibility study to determine the capacity and assessed FERC requirements for producing electricity.

Pine Island Pond Dam, Manchester New Hampshire. Performed topographic survey, subsurface explorations, hydraulic analysis, stability analysis, and underwater inspections for existing masonry spillway. Prepared engineering report, plans and specifications, emergency action plan, operation and maintenance plan and performed construction inspection and testing for a 67 foot long by 17 foot high stone masonry spillway.

Sebec Hydro Project, Sebec, Maine. Performed independent consultant inspection in accordance with FERC guidelines for the Swift River Company of Boston Massachusetts. The 320 foot long and 17 foot high run of the river dam is a wood crib design with concrete and stone masonry abutments and a 327-square-mile drainage.

Besek Lake Dam, Middlefield, Connecticut. Performed topographic survey, subsurface explorations, stability analysis, and underwater inspections. Prepared engineering report, engineering plans, specifications, and operation and maintenance plan for 166 foot long by 40 foot high existing stone masonry arch spillway.

Natick Pond Dam, West Warwick, Rhode Island. Performed topographic survey, hydrologic analysis, hydraulic analysis, stability analysis, and underwater inspections. Prepared engineering report, plans, and specifications, and emergency action plan for 180 foot long by 38 foot high existing stone masonry spillway.

Lee's Lower Pond Dam, Danbury, Connecticut. Performed topographic survey and underwater inspections for 185 foot long by 8 foot high concrete dam with stone masonry spillway. Prepared an engineering report, engineering plans and specifications. Performed construction inspection and testing for 185 foot long by 8 foot high concrete dam with stone masonry spillway.

Swan Lake Dam, Oxford, Connecticut. Performed topographic survey, hydrologic analysis, and hydraulic analysis for 270 foot long by 16 foot high earth embankment dam with 60 foot long emergency spillway. Prepared engineering report, engineering plans and specifications.

Paper Mill Pond Dam, Vernon, Connecticut. Performed hydraulic analysis for 25 foot long by 17 foot high concrete spillway with sluiceway. Prepared engineering report, emergency action plan, and operation and maintenance plan.

Killingworth Dam, Killingworth, Connecticut. Performed subsurface explorations, hydrologic analysis, hydraulic analysis, and stability analysis. Prepared engineering report, engineering plans and specifications for 75 foot long by 25 foot high new earth embankment dam.

Cedar Swamp Dam, Wolcott, Connecticut. Performed topographic survey and underwater inspections. Prepared engineering report, engineering plans and specifications. Performed construction inspection and testing for 375 foot long by 18 foot high existing earth embankment dam.

Wright's Pond Dam, Westbrook, Connecticut. Performed topographic survey, subsurface explorations, hydrologic analysis, hydraulic analysis, stability analysis, and underwater inspections for 80 foot long by 15 foot high existing stone masonry spillway with 23 foot high earth embankment. Prepared engineering report, engineering plans and specifications. Performed construction inspection and testing.

Chestnut Hill Dam, Wolcott, Connecticut. Performed hydrologic analysis for 350 foot long by 45 foot high earth embankment with a 5 foot high by 8 foot wide concrete spillway. Prepared emergency action plan and operation and maintenance plan. Performed construction inspection and testing.

Witches Wood Dam, Woodstock Valley, Connecticut. Performed topographic survey, hydrologic analysis, and hydraulic analysis for 800 foot long by 20 foot high earth embankment dam. Prepared engineering report, engineering plans, and specifications and performed construction inspection and testing.

Woodtick Reservoir Dam, Wolcott, Connecticut. Performed subsurface explorations, stability analysis, and underwater inspections and prepared engineering report for 125 foot long by 43 feet high existing dam with 25 foot high by 1050 foot long spillway.

Bushy Pond Dam, Ivory, Connecticut. Performed inspection and prepared engineering report for 200 foot long by 25 foot high earth embankment.

Thomas Property Dam, East Haddam, Connecticut. Performed inspection and prepared engineering report for 1500 foot long by 25 foot high stone masonry spillway.

Congdon Dam, Montville, Connecticut. Performed topographic survey, hydrologic analysis, hydraulic analysis, stability analysis, and underwater inspections. Prepared engineering report, emergency action plan, and operation and maintenance plan for 150 foot long by 35 foot high stone faced earth embankment dam with 60 foot penstock.

Sperry Pond Dam, Middlebury, Connecticut. Performed topographic survey for 550-foot long by 8 feet high earth embankment dam. Prepared engineering report, engineering plans and specifications, and performed construction inspection and testing.

Rogers Dam, Rogers, Connecticut. Performed stability analysis and underwater inspections and prepared engineering report for 600 foot long by 25 foot high stone filled timber crib dam.

Walker Pond Dam, New Canaan, Connecticut. Performed topographic survey, hydrologic analysis, hydraulic analysis, stability analysis, and underwater inspections, and prepared engineering report for 80 foot long by 8 foot high concrete dam.

Stamford Hurricane Protection Barrier, Stamford, Connecticut. Principal for the evaluation of the 2 mile long hurricane and shore protection system in Stamford, Connecticut. The system includes, earth embankments, I and T walls, and a navigation gate. The project consisted of providing documentation that the system meets the design criteria specified in accordance with 44 CFR Section 65.10 of the National Flood Insurance Program and a third party review of a development project built on a federally protected hurricane protection and flood control system off the Long Island Sound. The project involved working closely with the United States Army Corps of Engineers (USACE). Responsibilities included the review of historical and development design documents, developing a subsurface exploration program, implementing a laboratory testing program, embankment stability and seepage evaluations, settlement evaluations, floodwall and sheet pile evaluations, freeboard evaluation, evaluation of new construction to the hurricane barrier, and preparing documents for the accreditation of the system in accordance with Title 44, Section 65.10 of the Federal Code of Regulations.

R. Lee Wooten, P.E.

Vice President/Division Manager

Lee Wooten is the Design Division Manager and a civil engineer specializing in the area of dam engineering and soil mechanics. The Association of State Dam Safety Officials (ASDSO) awarded their first *Innovative Rehabilitation Designer of the Year* award for the remedial designs prepared by Mr. Wooten for the Blue Ridge Parkway Dams. ASDSO awarded GEI the *2009 National Rehabilitation Project of the Year* for Lake Burnt Mills Dam for the remedial designs and dam safety modifications prepared by Mr. Wooten. He joined GEI in 1980 and has served as the director of the laboratory in addition to his work as a geotechnical engineer and project manager.

In his capacity as an engineer and Senior Project Manager at GEI, Mr. Wooten has managed and performed a broad range of engineering tasks associated with earth embankment and concrete gravity dams. His experience includes inspection and stability analyses of existing dams, evaluation of embankment and foundation soil properties, development of conceptual designs for remedial measures, development of final designs and specifications for embankment dam construction, and construction observation of dam modifications. He has evaluated and prepared remedial dam designs for the hazards of slope failure, seismic events, and internal erosion due to piping, overtopping, and external erosion.

PROJECT EXPERIENCE

Winsor Dam Follow Up Investigation, Metropolitan District Company - Boston, Ware/Belchertown, MA.

Managed investigations and design of safety modification to this 170-foot-high embankment dam that impounds Quabbin Reservoir, the primary water source for metropolitan Boston. Designed safety modifications include relining of a deteriorated corrugated metal pipe (CMP) foundation drain, replacing tile pipe drain, grouting the main spillway weir, and replacing instrumentation.

Granville Reservoir Dam Remediation, City of Westfield,

Granville, MA. Managed seepage and stability investigation and analysis for conceptual design of remedial measures for this 80-foot-high, 900-foot-long water supply embankment dam. Project included field investigations with test pits, borings, and piezometers, video surveys of the drainage system, and a topographic survey; computer modeling of the seepage flow and pressures; embankment stability analyses; and evaluation of piping potential. Conceptual designs were provided for a filtered seepage collection system and for seepage flow measurement.

Dam Failure Analysis and Inundation Mapping Multiple Dams, Massachusetts Water Resources Authority, Various, MA.

Provided evaluation of the hypothetical failures, flood wave routing and inundation mapping for seven high hazard dams using HEC-RAS and GIS. The inundation analyses included the structures impounding



EDUCATION

M.S., Geotechnical Engineering,
Massachusetts Institute of Technology
B.S.E., Civil Engineering, Duke University

EXPERIENCE IN THE INDUSTRY

37 years

EXPERIENCE WITH GEI

33 years

REGISTRATIONS AND LICENSES

Professional Engineer, NJ No.
24GE05083100
Professional Engineer, NY No. 083227-1
Professional Engineer, FL No. 69727
Professional Engineer, CT No. 24808
Professional Engineer, VA No. 22134
Professional Engineer, SC No. 13692
Professional Engineer, NC No. 16049
Professional Engineer, MA No. 31830-C

the largest MWRA reservoirs – Quabbin and Wachusett. The evaluations were performed in accordance with federal and state guidelines. The GEI team modeled over 200 miles of streams and rivers and created detailed GIS-based inundation mapping for the emergency action plans. The GEI team also revamped and rewrote the EAPs for each dam making the documents and maps more user-friendly.

Flat Ledge Quarry Dam, Town of Rockport, Rockport, MA. Managed conceptual design and feasibility study for proposed 55-foot-high, 100-foot-long dam to create a water supply reservoir in an abandoned granite quarry. GEI's team identified a site and a construction method, roller-compacted concrete (RCC), which appears to offer a low-cost means of constructing the dam. This ongoing project has involved a geotechnical investigation (borings, packer tests, seismic refraction study, bedrock mapping) and conceptual designs of alternatives (RCC, conventional concrete, rockfill) for the dam in order to evaluate the cost and feasibility of the proposed water supply impoundment.

Dam Periodic Inspections and Assessments, USACE New England District, Various CT, NH & VT, MA. Managed multitask contract with the USACE NED. Task orders included installation and monitoring of instrumentation at Ball Mt. Dam (piezometers and inclinometers) and Knightville Dam (piezometers), Instrumentation Reports for nine NED dams, evaluation of motion and damage models for the Cape Ann Earthquake event, and subsurface probe investigation of sediment depth in the Union River. Responsibilities included administration of contract and quality control of task projects. Also provided technical consulting and task management on selected task orders.

Conklingville Dam Repairs, Hudson River-Black River Regulating District, Conklingville, NY. Managed field investigations and geotechnical analyses for the Hudson River-Black River Regulating District to investigate stability and seepage issues for 1,100 feet long by 100 feet high earthen embankment with a low permeability core placed by semi-hydraulic fill methods. GEI conducted field investigations to identify the top elevation of the embankment core and install additional piezometers at the dam. GEI also modeled and assessed groundwater flow through the embankment, evaluated the potential for piping or internal erosion, evaluated the embankment slope stability, and developed recommendations for threshold and action levels for the piezometers, weir, and settlement monuments. Based on the results of the investigations and analyses, GEI made recommendations for additional monitoring and instrumentation. GEI also recommended extending a training wall to prevent erosion of a rockfill berm at the downstream toe of the embankment and potential measures to reduce seepage.

Katrina Litigation Support, Washington Group International, New Orleans, LA. Providing expert geotechnical engineering services for litigation support of the defense in a class action complaint civil law suit alleging damages due to negligence, fault and/or strict liability of the United States Army Corps of Engineers, Washington Group International, Inc., the Board of Commissioners of the Orleans Parish Levee District, St. Paul Fire and Marine Insurance Company, and The Board of Commissioners of the Lake Borgne Basin Levee District. Services included expert opinions about the sources of water causing damages and potential contributing causes.

Mill Pond Dam Safety Modifications, Town of Rockport, Rockport, MA. Managing remediation repairs to historic stone masonry dam that failed by overtopping. Repairs include rebuilding dam as reinforced concrete structure with masonry facade capable of passing floods safely.

Horn Pond Dam Safety Inspection, City of Woburn, Woburn/Medford, MA. Performed emergency dam inspections for the Massachusetts Department of Emergency Management, which experienced overtopping during the October 1996 flood events. The October 1996 flood was about a 50-year-return period event that caused localized flooding and high water levels. Provided on-site emergency recommendations during overtopping of Horn Pond Dam to prevent a possible breach failure. Performed follow up inspection and provided recommendations for remedial measures to reduce potential for future overtopping breach failures and for upgraded maintenance.

Walden Pond Emergency Inspection, Department of Conservation & Recreation, Saugus, MA. High water levels caused active erosion of the Walden Pond Dam spillway channel with the potential for a breach failure. Recommended measures to lower flood pool, ready emergency responders, observe the dam full time, and preposition repair materials (boulders and equipment).

Quabbin, Wachusett & Winsor Dam Safety Evaluation, Massachusetts Water Resources Authority, Ware, MA. Managed investigations and design of safety modification to this 170-foot-high embankment dam that impounds Quabbin Reservoir, the primary water source for metropolitan Boston. Designed safety modifications include relining of a deteriorated corrugated metal pipe (CMP) foundation drain, replacing tile pipe drain, grouting the main spillway weir, and replacing instrumentation.

Ball Mountain Dam Inclinator Readings & Survey, USACE New England District, Jamaica, VT. Managed multitask contract with the USACE New England District. Task orders included installation and monitoring of instrumentation at Ball Mt. Dam (piezometers and inclinometers) and Knightville Dam (piezometers), Instrumentation Reports for nine NED dams, evaluation of motion and damage models for the Cape Ann Earthquake event, and subsurface probe investigation of sediment depth in the Union River. Responsibilities included administration of contract and quality control of task projects. Also provided technical consulting and task management on selected task orders.

Hadlock Pond Dam Failure Investigation, Burke, Scolamiero, Mortati & Hurd, LLP, Fort Ann, NY. Dam engineering expert for design engineer's defense. Dam filled on first filling. Damages claimed by downstream property owners, upstream lake abutters, and dam owner (Town of Fort Ann). Litigants: 120 property owner plaintiffs, Town of Fort Ann v. Kubricky Construction, HTE Northeast, Atlantic Testing Laboratories Limited, and Town of Fort Ann.

Mattapoisett Neck Channel, Epsilon Associates, Inc., Mattapoisett, MA. GEI's project manager for preparation of design drawings, specifications, and cost estimates for tidal wetland restoration of the abandoned section of Mattapoisett Neck Road. This section of roadway not only impinged on tidal wetland but also blocked flows to the upstream wetlands because of the culvert restriction across the tidal channel. The restoration design replaced the culvert with an open channel to match the adjacent waterway. The design also removed the abandoned section of the roadway embankment to provide for restoration of tidal marsh covered by the roadway, riprap, fill, and non-tidal vegetation.

Browns and Grupes Reservoir Remediation, City of Norwalk, Norwalk, CT. Managed investigation, evaluation, and conceptual design for modifications to two high hazard water supply dams: Browns Reservoir Dam (45-foot high, embankment dam) and Grupes Reservoir Dam (24-foot high, earth and stone masonry dam). Investigations included review of historical records, site observations, numerous borings, and underwater inspections. Conceptual design alternatives for each dam addressed inadequate spillway capacities, stability concerns, and structural deficiencies. Options evaluated included dam raises and lowerings, parapet walls, labyrinth weirs, fuse gates, inflatable dams, overtopping protection, and slope flattening.

Deerfield River FERC Part 12 Inspections, US Gen New England, Inc., Monroe and Florida, MA. Managed the investigation and evaluation of seepage and slope stability for the reconstructed embankment slopes at the downstream end of Canal 2, an earthen canal conveyance system that transports water to the downstream power station. Project included borings and piezometer installation, seepage analyses, stability evaluations, and reporting to FERC.

Dam Safety, Springfield Water & Sewer Commission, Russell/Blandford/Knights Corner, MA. Performed engineering dam safety inspections for three of the Springfield Water and Sewer Commission (SWSC) dams. Recommended various repair and maintenance activities for each dam and prepared Monthly Visual Inspection Checklist forms for use by SWSC staff for Cobble Mountain and Knights Pond Dams.

Auburn Water District Dam Inspections & EAP, Auburn Water District, Auburn/Worcester, MA. Managed dam safety inspections, evaluations, and development of a consolidated Emergency Action Plan for this system of four dams. Managed design of safety modifications for Upper Stoneville Reservoir and Lower Stoneville Pond Dams. Modifications at Upper Stoneville Reservoir Dam provide for safe overtopping and seismic protection by installation of a downstream berm with a 6-foot-thick layer of riprap. First published application of new overtopping riprap design method developed by U.S. Bureau of Reclamation (USBR) and Colorado State University (CSU) researchers. Modifications at Lower Stoneville Pond Dam provide for safe overtopping by covering downstream areas with gabion protection.

USACE Clearwater Dam Remediation Review, USACE New England District, Poplar Bluff, MO.

Provided foundation drilling and grouting test program recommendations for remediation of seepage and potential piping or internal erosion under or through this U.S. Army Corps of Engineers flood control dam founded over karst (dolomite) bedrock. Test program was developed to reduce potential for piping or internal erosion following formation of a sinkhole on the upstream slope of the dam.

Stony River Dam Dam Safety Modification Design, Westvaco Corporation, Grant County, WV. Provided geotechnical investigation and recommendations for improvement of existing recreation facilities. Investigated thickness and lateral extent of peat and organic silt samples to determine compressibility's. Design fill heights were recommended for the playfield improvements such that desired grades would be reached after long-term settlements of the peat.

Clemson Dam Remediation Design, USACE - Savannah District, Clemson, SC. Managed seismic stability evaluation and remedial designs of these two 80-foot-high, 2,000- to 3,000-foot-long earthfill dams. Evaluated potential for liquefaction stability of upstream and downstream slopes for maximum credible earthquake (0.19 g). Steady-state strengths, peak strengths, and triggering strains of foundation alluvial soils were estimated from laboratory tests. Analyses included evaluation of static slope stability with steady-state strengths and dynamic Newmark type analyses of slope and foundation movements to evaluate potential for strains that would trigger liquefaction. Designed seismic stability remediation which entailed installation of a series of deep soil-mix shear walls across downstream slopes. Soil mix columns were overlapped to create nominal 3-foot-thick, 50-foot-long, ~50-foot deep transverse shear walls oriented perpendicular to the axis of the dam.

Southbridge Reservoirs Dams Rehabilitation, Weston & Sampson Engineers Inc,

Southbridge/Sturbridge, MA. Managed evaluation of geotechnical instrumentation for this U.S. Corps of Engineers 78-foot-high flood control earthfill dam for fifth periodic inspection report. GEI's evaluation report summarized data from crest monuments and piezometers and presented the data with contours, vectors, cross sections, time histories, and correlations with pool elevator to allow evaluation of the data. We concluded that the dam and the instrumentation were performing suitably relative to crest movements and seepage.

Massachusetts Audubon Society Dams, Massachusetts Audubon Society, Barre, MA. Mr. Wooten is the senior project manager for a safety study of two dams in Barre, Massachusetts for the Massachusetts Audubon Society. Both dams have serious safety deficiencies and have been recommended for removal by GEI. GEI is working with the Commonwealth of Massachusetts River Restore Program to determine the most suitable course of action for removal of the dams. Removal plans have been prepared for one of the dams.

PUBLICATIONS

"Field Reconnaissance of Geotechnical Aspects of October 2012 Hurricane Sandy along the US East Coast," Hashash, Youssef M.A.; Nikolaou, Sissy; Sukumaran, Beena; Sacks, Aaron; Burlingame, Michael; Baxter,, Geo-Engineering Extreme Events Reconnaissance Association Report GEER-032, 2013.

"Lake Burnt Mills Dam Rehabilitation," Turner, Kenneth R. and Wooten, R. Lee, Journal of Dam Safety, Volume 8, Issue 1, 2010.

"Reconnaissance of the New Orleans Hurricane and Storm Damage Risk Reduction System after Hurricane Gustav," Wooten, R. Lee, Gilbert, Robert B., Marcuson, William F., Harder, Jr., Leslie F., and Nicholson, Pet, Association of State Dam Safety Officials Dam Safety 2009 Proceedings, 2009.

"Post-Hurricane Gustav Reconnaissance of the New Orleans Hurricane and Storm Damage Risk Reduction System," Wooten, R. Lee, Gilbert, Robert B., Marcuson, William F., Harder, Jr., Leslie F., and Nicholson, Pet, Geo-Strata, 2009.

"Reconnaissance of the New Orleans Hurricane and Storm Damage Risk Reduction System after Hurricane Gustav," 5. Wooten, R. Lee, Gilbert, Robert B., Marcuson, William F., Harder, Jr., Leslie F., and Nicholson,, Geoenvironmental Extreme Events Reconnaissance (GEER) Association, GEER-015, sponsored by the National Science Foundation, 2009.

"Preliminary Report on the Performance of the New Orleans Levee Systems in Hurricane Katrina on August 29, 2005," 6. Seed, R.B., Nicholson, P.G., Dalrymple, R.A., Battjes, J.A., Bea, R.G., Boutwell, G.P., Bray, J.D., Preliminary Report, 2005.

"Seismic Modeling and Triggering Analyses For The Clemson Upper And Lower Diversion Dams," 8. Wooten, R.L., Castro, G., Finn, W.D.L., Foreman, B., Proceedings of the 2004 Annual Conference, Association of State Dam Safety Officials, 2004.

"Deep Soil Mixing for Seismic Remediation of the Clemson Upper And Lower Diversion Dams," 7. Wooten, R.L., and Foreman, B., Technologies to Enhance Dam Safety and the Environment, 25th Annual United States Society on Dams Conference, 2004.

"Evaluation and Design of Seismic Remediation for the Clemson Upper and Lower Diversion Dams," 9. Wooten, R.L., Castro, G., Gregory, G., Foreman, B., Proceedings of the 23rd Annual United States Society on Dams Conference, 2003.

"Throwing Rocks at the ½ PMF," 10. Wooten, R.L., Wood, K.E., Proceedings of the 2002 Annual Conference, Association of State Dam Safety Officials, 2002.

"Evaluation and Design of Remedial Measures for the City of Norfolk's Western Reservoir Dams," 11. Wooten, R.L., Fortin, P.S., and Walker, M.P., Proceedings of the 1997 Annual Conference, Association of State Dam Safety Officials, 1997.

"Pipe Jacking to Avoid Contaminated Groundwater Conditions," 12. Boscardin, M.D., Wooten, R. L., and Taylor, J. M., Proceedings, 13th Rapid Excavation and Tunneling Conference, SME, 1997.

"Pressure Balance Shield Pipe Jacking to Avoid Contamination," 13. Boscardin, M.D., Wooten, R. L., and Taylor, J. M., Trenchless Pipeline Projects, Practical Applications, Boston, Massachusetts, ASCE, 1997.

"Construction of CCM Overtopping Protection on Three Parkway Dams," 14. Wooten, R.L., Whiteside, S.L., Welsh, R., and Wirkus, K.E., Geotechnical Practice in Dam Rehabilitation, American Society of Civil Engineers, 1993.

"CCM Design and Construction-Overtopping Protection on Three Blue Ridge Parkway Dams," 15. Wooten, R.L. and Whiteside, S.L., Abstracts-1992 Southeastern States Dam Safety Conference and Public Awareness Workshop, 1992.

"Dams Going Safely Over the Top," 16. Wooten, R.L., Powledge, G.R., and Whiteside, S.L., Civil Engineering, January, 1992, American Society of Civil Engineers, New York, 1992.

"Overtopping Protection of Three Blue Ridge Parkway Dams," 17. Powledge, G.R., Wooten, R.L., and Whiteside, S.L., Proceedings of the 1991 Annual Conference, Association of State Dam Safety Officials, 1991.

"CCM Overtopping Protection on Three Parkway Dams," 18. Wooten, R.L., Powledge, G.R., and Whiteside, S.L., Proceedings for 1990 Hydraulic Engineering Division Conference, American Society of Civil Engineers, New York, 1990.

PROFESSIONAL AFFILIATIONS

ASCE member, USSD member, ASDSO member

PROGRAMS AND COMMITTEES

ASCE Embankments, Slopes, and Dams Committee 2003–Present

Geo-Institute Levee Assessment Team 2005

Boston Society of Civil Engineers Geotechnical Group Executive Committee 1983–1988, Chairman 1987–1988

PAST EMPLOYMENT

U.S. Navy – Line Officer (Lieutenant) on USS Caloosahatchee and USS La Salle

AWARDS

ASDSO First (1992) Innovative Rehabilitation Designer of the Year award (Blue Ridge Parkway Dams)
ASDSO 2009 National Rehabilitation Project of the Year (Lake Burnt Mills Dam)

Glunt, P.E.
Geotechnical Project Manager



Mr. Glunt is a Geotechnical Project Manager based out of the Glastonbury, CT office. His experience in geotechnical design and construction covers a wide range of sectors including transportation (including design/build), higher education, dams and levees, heavy industrial, and the nuclear power industry. His particular areas of specialty include seismic evaluations (including site-specific response), project management, deep foundation systems, innovative methods for subsurface investigation, geotechnical instrumentation, and pavement design.

Mr. Glunt is responsible for geotechnical services for project scoping, directing the field exploration, forming recommendations and compiling geotechnical report, and construction QA/QC.

PROJECT EXPERIENCE

Gallup Pond Dam Inspection, North Stonington, CT. Phase 1 inspection services and Emergency Action Plan (EAP) for 22-foot high stone masonry dam (Class B - Significant Hazard).

Algonquin Incremental Market (AIM) Project: Geotechnical Evaluation of Compressor Station Upgrades, Chaplin, CT. Project involved new gas compressors at existing stations associated with the Algonquin Gas Incremental Market (AIM) Expansion project. Served as geotechnical project manager, scoping and directing the field exploration and providing geotechnical reports for design of new compressor facilities to EPC client.

Connecticut DOT Bridge Liaison, Connecticut Department of Transportation, Various, CT. *Rt. 8 NB/SB Bridges over Capitol Avenue and Lindley Street, Bridgeport, CT* - Project involves replacement of four multi-lane bridges with infilling of an existing viaduct. Project has been chosen as a pilot design-build project by CTDOT and will incorporate accelerated bridge construction (ABC) techniques. Performed geotechnical evaluations of the existing and proposed structures and provided writeup for geotechnical portion of RFP package.

Rt. 1 over Metro-North RR, Stratford, CT. Project involves replacement of four-lane US 1 bridge over active railroad ROW. Directed the subsurface exploration and currently providing geotechnical evaluation. Project is expected to be first use of geosynthetic-reinforced abutments (GRS-IBS) by CTDOT.

Rt. 156 over Black Hall River, Old Lyme, CT. Project involves replacement of single span bridge over the Black Hall River near its confluence with Long Island Sound. Directed the subsurface exploration and provided geotechnical recommendations in LRFD and CTDOT format for new pile-supported integral abutments and wingwalls.

EDUCATION

M.S., Civil Engineering, Rensselaer Polytechnic Institute
B.S., Civil Engineering, Lehigh University

EXPERIENCE IN THE INDUSTRY

11 years

EXPERIENCE WITH GEI

1 year(s)

REGISTRATIONS AND LICENSES

Professional Engineer, CT No. 0029702
Professional Engineer, SC No. 26993

CERTIFICATIONS

Rt. 234 over Anguilla Brook, Stonington, CT. Project involves replacement of single span bridge over the Anguilla Brook near Stonington, Connecticut. Directed the subsurface exploration and currently performing geotechnical evaluation in LRFD and CTDOT format for new pile-supported integral abutments and wingwalls.

Conklin Hall Renovation, Farmingdale, NY. The project consists of renovating the interior and exterior of Conklin Hall for use as an annex to the nearby student center. The renovations will include, among other items, an elevator shaft through the interior of the structure and a new retaining wall to the west of the existing basement entrance. Prepared design drawings and specifications for underpinning of existing footings as required for new construction.

Saluda Dam Remediation, Columbia, SC. *Winner of the 2006 ASCE Outstanding Civil Engineering Project award.* Project involved large-scale remediation of the 1.5-mile long Saluda Dam. The hydraulic-fill dam built in the 1930's was deemed unsafe if a seismic event were to occur. Remediation scheme included a rockfill and RCC "backup" berm to retain Lake Murray after the event. Managed day-to-day operation of an \$8M earth monitoring system with manual and real-time reading capability. Purpose of instrumentation was to assess stability during excavation at toe of large earthen dam and monitor function of dewatering systems within the dam. Assisted in preparing a post-construction permanent monitoring plan for the existing earthen dam and new rockfill and RCC berms.

Congaree River Flood Control Levees, Columbia, SC. Re-evaluation of 25,000 lf of proposed levee system modifications along Congaree River to withstand 500-year design flood. Directed subsurface exploration and performed slope stability and through-seepage evaluation of existing and proposed levee cross-section and provided conceptual drawings.

V.C. Summer Units 2 & 3 Geotechnical Borings, Jenkinsville, SC (Shaw Constructors/CB&I). New nuclear construction (Westinghouse AP1000 units). Field exploration manager for auxiliary plant facilities and on-call exploration contract, including several thousand feet of conventional soil test borings, wireline rock coring, observation well installation, cone penetration test (CPT), seismic CPT, and plate load testing. The purpose of the borings and soundings was to characterize the subsurface conditions for design of support facilities associated with the new units, including the intake structure, offsite water treatment system, wastewater discharge area, cooling towers, temporary construction units, and support facilities in the main plant area. Provided full-time observation and logging of one drilling crew and coordinated all field activities. Provided reports to EPC client at conclusion of testing.

PUBLICATIONS

Scott Newhouse, P.E., Elena Sossenkina, Matt Glunt, E.I.T., "A Dangerous Place to Dig: Excavation at the Toe of Saluda Dam", Proceedings: Fifth International Conference on Case Histories in Geotechnical Engineering, 2004.

Scott Newhouse, P.E., Elena Sossenkina, Matt Glunt, E.I.T., Joe Mann, E.I.T., "Listening to the Dam: Instrumentation and Monitoring Program – Saluda Dam Remediation", Dam Safety in the Southeast (ASDSO) – 2004.

Elena Sossenkina, Matt Glunt, E.I.T., Joe Mann, E.I.T., "Instrumentation Data Acquisition and Management at Saluda Dam", United States Society on Dams (USSD) Annual Meeting & Conference, 2005.

PROFESSIONAL ASSOCIATIONS

American Society of Dam Safety Officials (ASDSO), Member

Connecticut Society of Civil Engineers, Member

American Society of Civil Engineers, Member

e . er n, P.E.
Project Manager



James Nickerson is a registered civil engineer as well as a geotechnical engineer with a wide range of experience including foundation engineering, earth retaining structures, slope stability, seepage and settlement analysis, subsurface explorations, laboratory testing programs, and pavement design.

Mr. Nickerson has completed geotechnical studies for transportation projects, levee and dam projects, commercial developments, parking garages, industrial facilities, and utility infrastructure. He has provided design recommendations for construction in a variety of geologic conditions including soft marine soils, residual soils, and rock. Mr. Nickerson also has experience in drilled shaft design, construction, and load testing.

PROJECT EXPERIENCE

East Hartford Levee Toe Drain Design, Phase 2, Town of East Hartford, East Hartford, CT.

Briscoe-Desimone Levee Floodwall Design, City of Kent, Kent, WA. Served as the assistant project manager for the design of the Briscoe-Desimone Levee floodwall design. The project includes developing design calculations, drawings and specifications for design of a sheet pile floodwall to reinforce about 3,000 linear feet of existing levee. The floodwall will be installed along the current levee alignment and will serve to increase stability of the existing levee and raise the level of protection by about 3 feet. Work includes reviewing existing documents, record drawings, performing geotechnical test borings and completing both geotechnical and structural engineering evaluations to support the floodwall design.

Briscoe-Desimone Levee CLOMR, City of Kent, Kent, WA.

Served as the assistant project manager for the evaluation of the Briscoe-Desimone Levee evaluation for FEMA Accreditation. The project includes evaluating freeboard, embankment protection, closures, embankment and foundation stability, and settlement of the existing levee system. Work includes reviewing existing documents, record drawings, operation and maintenance manuals, performing confirmatory test borings and completing engineering evaluations to support the City's accreditation report submission to FEMA. Work also included providing preliminary design of sheet pile floodwalls to address deficiencies in four reaches of the levee.

Flood Protection Conceptual Design for Nuclear Plants, Tennessee Valley Authority, AL &, TN. Provided conceptual level design alternatives to provide flood protection systems around three existing nuclear power plants. Design alternatives included levee embankments, floodwalls, closure structures and pump stations. Developed conceptual level cost estimates for each design alternative.

EDUCATION

M.S., Civil Engineering, Worcester Polytechnic Institute
B.S., Civil Engineering, Union College

EXPERIENCE IN THE INDUSTRY
15 years

EXPERIENCE WITH GEI
10 year(s)

REGISTRATIONS AND LICENSES

Professional Engineer, CT No. 26671
Professional Engineer, WA No. 47996
Professional Engineer, IA No. 20253
Professional Engineer, VA No. 0402037083
Professional Engineer, MA No. 47761

CERTIFICATIONS

Briscoe-Desimone Levee Peer Review, City of Kent, Kent, WA. Provided peer review services for a CLOMR application for a 2.7 mile long levee system along right bank of the Green River. The CLOMR application included 30% Design drawings for a proposed sheet pile floodwall system to address deficiencies in the existing levee system.

Green River Levee FEMA Accreditation, City of Kent, Kent, WA. Served as the assistant project manager for the evaluation of the Green River Levee between SR516 and S231st Way for FEMA Accreditation. The project includes evaluating freeboard, embankment protection, closures, embankment and foundation stability, and settlement of the existing levee system. Work includes reviewing existing documents, record drawings, operation and maintenance manuals, performing confirmatory test borings and completing engineering evaluations to support the City's accreditation report submission to FEMA.

Expert Witness Hope Mills Lake Dam Sinkhole, MACTEC Engineering & Consulting, Inc., Hope Mills, NC. Provided expert support on a dam failure. The failure consisted of a seepage underneath the dam causing erosion of a large void and damage to the concrete spillway apron. Work included investigating the cause of the failure and evaluating seepage of the dam as constructed as well as potential repairs.

Dubuque Levee and Floodwall System FEMA Accreditation, City of Dubuque, Dubuque, IA. Served as the lead geotechnical engineer for the evaluation of the Dubuque Local Flood Protection Project for FEMA Accreditation. The project, located along the Mississippi River, includes about 5 miles of earth embankment and about 1 mile of floodwalls, including T-wall and I-wall sections. The evaluation consisted of seepage and stability analysis of the earth embankment and floodwalls. Work included reviewing existing documents, record drawings, operation and maintenance manuals, performing confirmatory test borings and completing engineering evaluations to support the City's accreditation report submission to FEMA.

Shoreline Levee Investigations and Design, Alameda County Public Works Agency, Hayward, CA. Served as the lead geotechnical engineer to evaluate and design improvements to an existing shoreline levee along the south east portion of the San Francisco Bay. The design included raising a 3,000 foot long section of levee founded on very soft bay mud. Work included developing a lab testing program to estimate consolidation and strength characteristics of the soft foundation soils. Design included evaluating constructability of the initial lifts of fill on the soft bay mud using geotextile reinforcement. Analysis included settlement, slope stability, and seepage analyses of the improved levee embankment.

Levee Periodic Inspections, USACE - New England District, CT and, MA. Performed periodic inspections of levee systems in 3 cities in MA and CT. The levee systems vary from relatively simple earth embankments less than to complex systems several miles long that include embankments, floodwalls, underground conduits, closure structures, and pump stations. Periodic inspections include collecting and reviewing available documentation of the system, performing a detailed field inspection, compiling a completed USACE Inspection Checklist with ratings for up to 71 items under categories such as embankments, floodwalls, pump stations and interior drainage, and preparing an inspection report. Based on the results of the inspections and GEI's recommendations, USACE will rate the levee systems.

West Springfield Flood Protection System, Town of Milford, CT, West Springfield, MA. Completing engineering evaluations of the West Springfield Flood Control System to provide documentation that the system meets the design criteria specified in accordance with 44 CRF Section 65.10 of the National Flood Insurance Program. Study includes evaluating existing documentation, site reconnaissance, subsurface exploration program, and engineering evaluations of the system. Served as the project manager with responsibility for engineering evaluations included erosion protection and riverside hydraulics.

Upper Sand Creek Basin Expansion, Contra Costa County Flood Control & Water Conservation District, Antioch, CA. Served as the lead geotechnical engineer to provide evaluation and design of a 40-foot tall, 1,800-foot-long earth embankment. The proposed dam will serve as a flood control detention basin. Analysis included seepage, slope stability, seismic stability and deformation evaluation, and downstream graded filter design. Evaluation also included settlement analysis of the embankment along the proposed centerline as well as the along the outfall structure.

Springfield Flood Control System - FEMA Accreditation, City of Springfield, MA, Springfield, MA.

Completed an engineering study of the Springfield Flood Control System to provide documentation that the system meets the design criteria specified in accordance with 44 CRF Section 65.10 of the National Flood Insurance Program. Study includes evaluating existing documentation, site reconnaissance, subsurface exploration program, and engineering evaluations of the system. Served as the in-house consultant with responsibility for review and quality assurance of the engineering study and the final accreditation report.

Levee Certification & Flood Control System, Town of East Hartford, East Hartford, CT. Completed an engineering study of the East Hartford Flood Control System to provide documentation that the system meets the design criteria specified in accordance with 44 CFR Section 65.10 of the National Flood Insurance Program. The study included evaluating existing documentation, site reconnaissance, a subsurface exploration program, and engineering evaluations of the 4-mile-long system. Serving as the Project Manager, his responsibilities include developing a subsurface exploration program, coordinating the riverside hydraulics and hydrology study, floodwall and closure structure evaluations, and embankment stability and seepage evaluations, settlement evaluations and review of the operations and maintenance manual. Also provided design services and served as the Engineer-of-Record for remedial measures where deficiencies in the flood control system were identified. Services included permitting, design drawings, construction contracts and specifications for sheet pile cutoff walls, soil-bentonite cutoff walls, floodwall and closure structure concrete repairs, riverfront bulkhead wall replacement, levee utility penetration abandonment, retaining wall replacement and renovations to mechanical/electrical/plumbing systems at the three pump stations.

Forebay Dam Dredging Upgrades, El Dorado Irrigation District, Placerville, CA. Supervised the static and seismic stability analyses of a 91-foot-high earth dam which serves as a regulating reservoir for a hydroelectric power plant. The existing dam has deficiencies related to potential excessive seismic deformations, insufficient freeboard, and reservoir siltation, and is operating under a restricted reservoir level imposed by DSOD and FERC. Modifications include a 10-foot-high dam raise and downstream buttress to resolve the identified safety deficiencies and increase reservoir capacity. The project also includes significant upgrades to the outlet works, emergency spillway, and seepage recycling system. GEI also performed alternatives feasibility evaluations and is completing the design as well as supporting EID with FERC and DSOD coordination and permitting.

Medford and Aetna Lakes - Dam Rehabilitation Design, Dewberry, Medford Lakes, NJ. Completed feasibility study and design for a Roller Compacted Concrete (RCC) replacement of two embankment dams that had failed during flooding. Evaluated costs, impacts on community, and technical feasibility for earth, concrete, and RCC alternates, and assisted in geotechnical investigations and evaluations. Prepared final design for the selected option.

Waterfront Street Rail Line Relocation, URS Corporation, New Haven, CT. A proposed railroad realignment placed railroad tracks over two critical sanitary sewer mains. Designed a system of mini-piles and prestressed concrete planks to span the pipes and support the proposed railroad tracks. Responsibilities included completing a feasibility study for horizontal support systems to span the pipes and vertical support systems to support horizontal span.

Genzyme Research Building, Genzyme Corp., Framingham, MA. Provided recommendations for foundations to support a proposed research facility and a utilities building. Completed several test borings to support jacking pits to install utilities under a high-traffic street.

Feather River Levee Repairs and Setback Levee, Three Rivers Levee Improvement Authority, Yuba County, CA. Project consisted of the evaluation of 14 miles of the east bank of the Feather River levee. Based on the evaluation, the repair project consisted of designing repairs to 8 miles of the existing levee and a 6-mile setback levee to replace a portion of the existing levee. Responsibilities included managing the subsurface exploration program consisting of conventional drilling, sonic drilling, cone penetrometer soundings, field vane shear testing, geophysics surveying, and a comprehensive lab testing program. All of the subsurface exploration data was managed with gINT software to reduce errors and allow quick visualization of the subsurface conditions. Served as the Project Geotechnical Engineer completing and managing the seepage, stability, settlement, and liquefaction evaluation for the existing levee and the proposed setback levee. Seepage evaluation included

evaluation of underseepage and through seepage, and design of seepage mitigation measures including cutoff walls, seepage berms, and relief wells. Stability evaluation included the end-of-construction, steady-state-seepage and rapid drawdown cases, and design of stability mitigation measures including stability berms. Settlement evaluation included assessment of post-construction settlements and designing camber to provide adequate freeboard and berms to protect against longitudinal cracking due to differential settlements. Liquefaction evaluation included assessing the post-seismic deformations and quantifying the potential levee seismic vulnerability.

Bear River Setback Levee, Three Rivers Levee Improvement Authority, Yuba County, CA. Project consisted of the design of a 2-mile setback levee to replace the existing levee. Served as the Project Geotechnical Engineer completing and managing the seepage, stability, and settlement evaluation for the proposed setback levee. Seepage evaluation included evaluation of underseepage and through seepage, and design of seepage mitigation measures including cutoff walls, seepage berms, and relief wells. Stability evaluation included the end-of-construction, steady-state-seepage and rapid drawdown cases, and design of stability mitigation measures including stability berms. Settlement evaluation included assessment of post-construction settlements and designing camber to provide adequate freeboard and berms to protect against longitudinal cracking due to differential settlements.

285 Columbus Ave Observation, Winn Development, Boston, MA. Provided observations in the basement, first floor, and exterior of the building looking for visual signs of distress, which may have indicated potential problems with the buildings foundations. The observations were made for a developer interested in purchasing the building during a due diligence period.

Litigation Support in M.A. DeAtley vs. US, US Department of Justice - Civil Division, Clark Fork, ID. Provided construction claim support to defense attorney. The claim involved the quality of source material used to produce aggregate for roadway construction. Responsibilities included reviewing contract documents and construction records, performing soundness testing on aggregate samples, and support during settlement meetings, deposition, and litigation.

Middlesex County Landfill, Wilentz Goldman & Spitzer, East Brunswick, NJ. Reviewed design and construction documents after a series of slope stability failures. Provided a technical opinion on the factors contributing to the slope instability.

CVS/Pharmacy Building, Sydney Associates, Inc, Belmont, MA. Observed placement of fill during construction. The onsite soils were contaminated and expensive to remove from the site due to regulations requiring it be disposed of as hazardous waste. Provided recommendations to use separation fabric and crushed stone to bridge soft soils and reduce the amount of contaminated soil being removed from the site.

Heath Hill Water Main, Green International Affiliates, Inc., Brookline, MA. Prepared special provisions for earthwork, dewatering, excavation support, and rock and boulder excavation.

Manalapan Lake Dam Rehabilitation, PMK Group, Jamesburg, NJ. Project included design of remedial measures to bring this Class I (high hazard) dam into compliance with the New Jersey Dam Safety Standards. The dam consisted of approximately 90 feet of a concrete spillway, 70 feet of earth embankment non-overflow sections, and a downstream basin/channel formed with reinforced concrete walls. Seepage flows had caused boils in the spillway channel and sinkholes outside of the channel walls. Preliminary designs to improve safety included installation of a sheet pile cutoff wall upstream of the existing dam, repair of the low-level outlet gates, grouting at seepage areas, new weep drains, and a graded filter cutoff along the right abutment wall. Responsibilities included preparing special provisions for rehabilitation improvements.

Helmetta and Manalapan Dam Rehabilitation, PMK Group, Helmetta Borough, NJ. Project included design of remedial measures to bring this earth embankment dam and spillway into compliance with the New Jersey Dam Safety Standards for a Class II (significant hazard) dam. Identified dam deficiencies were inadequate hydraulic capacity, deteriorated spillway structure, dense vegetation cover on embankments, lack of control for the outlet works, and seepage. Preliminary designs to improve safety included a temporary cofferdam, temporary stream diversion system, new concrete spillway, intake structure training walls, stilling basin, auxiliary spillway,

gated culvert, access road, graded filter, and raised embankment crest. Responsibilities included reviewing calculations for dam rehabilitation improvements including a new spillway and downstream filter blanket, as well as preparation of construction contract documents.

PRESENTATIONS

Rehabilitation of an Aging Levee System ASDSO, ASDSO Northeast Regional Conference
Levee Penetration Field Inspections , USSD Levee Workshop

PROFESSIONAL ASSOCIATIONS

American Society of Civil Engineers, Member
United States Society on Dams, Member
Association of State Dam Safety Officials, Member
Society of American Military Engineers, Member

AWARDS

Upper Sand Creek Basin Expansion, "*Project of the Year 2014*", American Public Works Association, Northern California Chapter
Feather River Levee Repairs and Setback Levee, "*Outstanding Flood Management Project 2010*", ASCE, Region 9
Feather River Levee Repairs and Setback Levee, "*Flood Control Project of the Year 2009*", ASCE, Sacramento Section
Bear River Setback Levee, "*Flood Management Project of the Year 2008*", American Society of Civil Engineers, Region 9
Bear River Setback Levee, "*Coast, Oceans, Ports, and Rivers Institute Award 2007*", American Society of Civil Engineers, Sacramento Section