



Section 4

Technical Ability



TABLE OF CONTENTS

4.0	TECHNICAL ABILITY	4-1
4.1	Prior Experience.....	4-1
4.2	Personnel.....	4-1

ATTACHMENT

Attachment 4-1 Resumes

4.0 TECHNICAL ABILITY

4.1 Prior Experience

Canton Mountain Wind, LLC (CMW) is being developed by Patriot Renewables, LLC (Patriot), a wind development company affiliated with Jay Cashman, Inc. (Cashman). Cashman is a well-established heavy civil and marine construction contractor with significant operations in Massachusetts and construction experience throughout the United States. Cashman is a privately held firm with annual revenues of approximately \$150 million.

For the past five years, the Cashman companies have worked to establish a position in the wind energy industry by gaining experience in both the development and construction of wind projects. Patriot has successfully permitted the Spruce Mountain Wind Project in Woodstock, Maine and the Saddleback Ridge Wind Project in Carthage, Maine. Patriot's affiliate Eco Industries, LLC (Eco) has also constructed multiple wind projects. Eco is currently overseeing the construction of Spruce Mountain Wind, a 20 MW project set to come online by the end of 2011. Eco also constructed Beaver Ridge Wind, a 4.5 MW project in Freedom, Maine, and designed and constructed a single-turbine project at the Massachusetts Maritime Academy in Bourne, Massachusetts. Beaver Ridge Wind and Spruce Mountain Wind share common ownership with Patriot and CMW, and both projects are operated by Patriot.

Including the Canton Mountain Wind Project (Project), Patriot has over 130 MW of wind energy in development in New England. Information about these projects can be found at www.patriotrenewables.com.

CMW selected several consultants to provide their experience and expertise to the development of the Project, nearly all of them Maine-based. In addition to CMW, Patriot, and Cashman, the project team consists of the following companies:

- Tetra Tech – wildlife and protected species impact and resource assessments, and archaeological resources, shadow flicker assessment, and permitting assistance
- Boyle Associates – vernal pool and wetlands delineation in 2010 and 2011
- Engineering & Management Services, Inc. – civil design
- RLC Engineering, LLC – electrical engineering design
- Terrence J. DeWan & Associates – visual impact assessment
- RSG, Inc. – sound assessment
- Albert Frick Associates – soils and septic design
- Public Archaeology Laboratory (PAL) – historical architecture survey

4.2 Personnel

Resumes for key members of the project team are included in Attachment 4-1.



Attachment 4-1 Resumes



TODD PRESSON Chief Operating Officer

PROFESSIONAL EXPERIENCE

Chief Operating Officer, Patriot Renewables, LLC, 2006 – Present

- Team leader for development of commercial-scale wind energy projects in New England, including site prospecting, landowner negotiations, public outreach, permitting, interconnection, power purchase agreements, and operations.
- Manage interconnection process and interface with ISO New England and local utilities.
- Arranged financing and power sales agreement for 4.5 MW Beaver Ridge Wind project located in Freedom, ME and the 20 MW Spruce Mountain Wind project in Woodstock, ME.
- Manage operations and maintenance activities for 4.5 MW Beaver Ridge Wind project.

Director, Eolectric, Inc., 2003 – Present

- Member of Board of Directors for this privately held wind power development and consulting company located in Brossard (Quebec) Canada.

Developer, Ameresco, 2004 – 2006

- Developer for this leading energy services company headquartered in Framingham, MA.
- Evaluated opportunities for small wind projects at numerous locations in the U.S.
- Sited and secured grant award for 600 kW turbine in Illinois, which led to successful project completion in 2007.
- Negotiated landowner lease options, secured preliminary wind study, wrote and submitted proposal to provide a turnkey 18.9 MW wind project to a Midwest utility.
- Conducted market assessment, mapping work, site selection, landowner negotiations and preliminary discussions with local authorities for a large wind project in the northeast.

Developer, enXco, 2001 – 2004

- Developer for this Palm Springs-based wind energy development and operations company.
- Managed overall development activities for a \$40 million Hoosac wind project in western Massachusetts, including relations with landowners, town officials, media and permitting agencies. Led public meetings and hearings resulting in permitting of wind measurement towers and wind turbines on private and public land in two towns. Formed and led a team of professionals providing engineering, environmental, permitting, power sales, interconnection and public outreach activities in support of overall project development.

Vice President and Investment Manager, KMS/Mountain Energy, Inc., 1997 – 2001

- Directed key due diligence, asset optimization, and general management activities for independent power investments in eastern North America, including fuel procurement strategies, operating margin analysis, contract negotiation, and new project development.
- Researched new technology applications in the emerging distributed generation market, including micro-power and renewable energy. Developed a refined project acquisition and development market strategy, and co-authored company business plan.
- Worked-out and facilitated the sale of \$10 MM energy conservation investment in New Jersey.

- Managed due diligence, negotiation, deal structuring, closing and oversight of a \$2 MM venture capital investment in a Massachusetts industrial wastewater treatment company. Active board member during critical growth period leading to a ten-fold improvement in revenue.

EDUCATION / CERTIFICATIONS

Rensselaer Polytechnic Institute (RPI), Troy, NY

MBA, Management & Technology, 1997

University of Vermont, Burlington, VT

Graduate courses in Statistics, 1992-1995

B.S., Mechanical Engineering, 1986

Tau Beta Pi National Engineering Honor Society

Licensed Professional Engineer



ANDY NOVEY Lead Project Developer

PROFESSIONAL EXPERIENCE

Lead Project Developer, Patriot Renewables, LLC, 2008 – Present

- Manage the development of wind energy projects from inception of through construction, interconnection, commercial close and operation with emphasis on development and permitting.
- Manage permitting at the local, state and federal levels including management and coordination of environmental, civil and electrical engineering and other third party technical consultants.
- Negotiate and manage land rights acquisition after research and sitting.
- Determine project goals, schedule and budget covering development requirements, company objectives, market dynamics, turbine supply, PPA availability, construction timing and resource requirements.
- Manage GC and interface with all contractor subs to maintain project compliance and schedule while under construction.
- Lead Project Developer of 20 MW Spruce Mountain Wind Project in Woodstock, ME. Maine Site Law Permit and NRPA Permit received October 5, 2010 and USAC authorizations received October 13, 2010. Local municipal approval in November 2009. Construction start June 2011 and on time for COD December 2011. PPA executed and financing in place.
- Lead Project Developer 33 MW Saddleback Ridge Wind Project in Carthage, ME. Maine Site Law and NRPA permits October 6th, 2011.

Project Manager, Jay Cashman, Inc., 2005 – 2008

- Lead acquisition and project developments from contracting property to following development procedures, including planning, permitting, management, financial modeling and estimating
- Project manager for island resort project in Panama, Central America.
- Successfully managed Jay Cashman portfolio properties through real estate venture Horizon Partners and oversaw and implemented acquisition and liquidation of portfolio properties
- Advised on the disposal and workout of entire Modern Continental Construction Co. property portfolio
- Worked directly with Cashman management to develop projects in Central America for heavy civil, dredge, and marine construction work, and oversaw bid management for a number of public bids
- Bid, won, and managed job as independent contractor for Mass Housing and Finance Agency to manage and stabilize delinquent 40B project in Yarmouth, MA

Professional Captain, 2000 – 2005

Sales Assistant, Smith Barney, 1998 – 2000

- Series 7 Registered Sales Assistant

EDUCATION / CERTIFICATIONS

University of Vermont, Burlington, VT

B.S. Community Development and Applied Economics, 1998



ANDREW GOLDBERG **Chief Financial Officer**

PROFESSIONAL EXPERIENCE

Chief Financial Officer, Patriot Renewables, LLC, 2009 – Present

- Accountable for the day to day financial operations of a renewable energy company with a pipeline of approximately 125MW or \$300M of wind transactions
- Responsible for transaction structure, tax benefits, sourcing financing, and procuring and negotiating power purchase agreements
- Developed and implemented financial analysis tools used to evaluate current and prospective transactions
- Negotiate turbine supply and third party agreements

Principal - Finance, Boston Financial (formerly MMA Financial & Lend Lease), 2008 – 2009

- Involved in the day to day financial operations of a real estate investment firm with more than \$10 billion in assets under management throughout 120 funds consisting of 1,500 properties
- Developed and implemented financial planning and analysis models used to evaluate the financial performance of the company's business lines
- Provide strategic consulting services to Fund Management, Asset Management, and Fund Accounting groups
- Developed and implemented process redesign initiatives that increased transparency, cohesiveness, and reduced redundant tasks throughout each division
- Support senior management in the analysis, diligence and execution of acquisitions and third party contracts including preparation of quarterly reports to the Board of Directors
- Creation and implementation of corporate Accounting and Treasury functions
- Promoted five times during my ten year tenure with the firm

Principal - Acquisitions, Boston Financial (formerly MMA Financial & Lend Lease), 2001 – 2008

- Accountable for tasks relating to origination and execution of low-income housing complexes including: deal structuring & negotiation, investor communications, financial modeling, due diligence and investment committee presentation and approval process
- Acquired over 70 properties with total development costs exceeding \$1 billion
- Generated over \$25 million in transaction fees for the firm
- Integrated our debt and equity platforms to increase cross-selling, productivity, and profitability
- Developed a sophisticated transaction pricing model and committee package for the organization that has been used for over 200 transactions representing \$25 billion in development costs
- Reviewed individual equity investments for the Acquisitions group prior to fund closings
- Trained and mentored approximately 25 professionals
- Financially engineered investment transactions to maximize investor return while satisfying client requirements in a competitive market

Associate – Asset Management, Boston Financial (formerly MMA Financial & Lend Lease), 1999 – 2001

- Managed a portfolio of low-income housing complexes (apx. 5,000 units)
- Reviewed and analyzed property financial statements, quarterly, for all assets in my portfolio
- Prepared reports to investors detailing fund performance each quarter

Mutual Fund Accountant, Scudder Kemper Investments, 1998 – 1999

- Responsible for the transaction accounting, daily reconciliation and periodic financial reporting of four municipal bond mutual funds.

EDUCATION / CERTIFICATIONS

Bentley University, Waltham, MA

B.S., Finance & Economics, 1998

WILLIAM D. SPIELVOGEL, P.E.

Chief Operating Officer

Treasurer

Jay Cashman, Inc.

EXECUTIVE SUMMARY

William Spielvogel has over twenty-five years of experience in highly complex heavy construction projects, including highways, bridges, utilities and underground work. Having recently completed several major projects on Boston's Central Artery/Third Harbor Tunnel, which included cut and cover tunnels, roadways and utility construction, Mr. Spielvogel is currently the Chief Operating Officer overseeing field operations and estimating for Jay Cashman, Inc. Mr. Spielvogel has extensive experience and expertise in estimating, purchasing, scheduling, permitting, contract administration and negotiation, design and construction management.

Mr. Spielvogel has successfully managed large scale, fast-track projects which have been complicated by proximity to high volume traffic (road, rail, air, or all three) in densely populated urban settings. Mr. Spielvogel has established sound working relationships with local labor unions and with engineering and project management officials in state agencies.

Mr. Spielvogel's comprehensive understanding of all aspects of construction work is based on hands-on experience that has taken him through literally every stage of the business, from laborer through field engineer, superintendent, and project manager, to his current role in senior management. Mr. Spielvogel has experience in fixed-cost design/build contracts, negotiated contracts, joint ventures, and public bid processes.

Areas of expertise:

- estimating
- utility construction
- viaduct and bridge construction
- grouting, soil stabilization, and ground improvement
- underground and underwater construction
- railroads and highways
- slurry wall construction and groundwater cut-off wall construction
- tunneling
- pier and building rehabilitation
- complex excavation support: caissons, piling, underpinning, sheeting, tangent caisson walls, tiebacks, bracing, and facade support systems
- marine work: piers, jetties, shore protection, outfalls,
- building construction (both structural steel and concrete frame)

PROJECT EXPERIENCE

Jay Cashman, Inc. (JCI) - Boston, MA 1990 to Present

Chief Operating Officer – Current duties include: Oversight of field operations for JCI heavy division. Private client procurement. Estimating department oversight. Oversight of JCI subsidiary company operations: *Stoughton Recycling*, a C&D facility and landfill capping operation; *Preload LLC*, a national water storage tank construction firm; *UTEC*, an oil cooled transmission line construction firm with two directional drilling projects underway in Florida. Oversight of current JCI wind turbine construction projects, recently completing a 10 – 2MW wind turbine installation in Woodstock, ME. In addition, managed the closeout and construction of several Modern Continental and Roads Corporation projects for Surety, St. Paul/Travelers: Wantagh Bascule Bridge in Long Island NY, Fountain Avenue Landfill Closure in Bronx NY, Griffith Water Treatment Facility in Fairfax VA and Central Artery D-Street Utility and Surface Roads Project in Boston MA.

Senior Vice President – *Old Colony Railroad Rehabilitation Project, Transportation Improvements to the Greenbush Line Corridor*. Principal in responsible charge for the design/construction team overseeing the daily operations and final disposition of the project for the joint venture team. Reconstruction of over 18 miles of commuter rail line and integration to the active commuter rail system. The project involves extensive bridge construction, new track and signal construction, utilities, roadwork, wetlands replication, construction of 2 tunnels, new station construction, retaining and noise walls, landscaping and restoration. Special work includes: pile driving, slurry wall/soil mix construction, soil nailing, drilled shaft construction and large-scale earthworks. This project is the first design/build contract awarded by the Massachusetts Bay Transportation Authority. In addition to facility construction, the design/build team is responsible for permitting, facility design, quality control and assurance, historic preservation and mitigation, property acquisition case folders, wetlands replication and endangered species protection measures. Client: Massachusetts Bay Transportation Authority
(Project Value: approximately \$340 million)

Senior Vice President – *C15A2 Central Artery Tunnel Project, Causeway Street to New Chardon Street*. Principal in responsible charge for the construction team overseeing the daily operations and final disposition of the project for the joint venture team. Construction of a large cut and cover tunnel for the mainline Central Artery Tunnel in Boston Massachusetts. Construction of North and South bound Tunnels as well as two stacked connector tunnels. Work included the construction of a boat section transition structure, which connects the tunnel structure to Boston's signature Zakim Suspension Bridge at the Charles River. This project included construction of approximately 450,000 square feet of slurry wall installed through heavily obstructed fills and rock, drilled shaft construction, load bearing element construction, driven piling, curtain grouting, jet grouting, approximately 10,000 tons of lateral earth support bracing, the installation of approximately 10,000 tons of structural steel used to underpin the existing elevated Central Artery viaduct, temporary surface street decking and bridges, utility bridges, structural steel construction, approximately 180,000 cubic yards of reinforced concrete construction, utility construction and roadwork. All work performed in a sensitive urban community and under a fast track schedule. Work operations were performed 24 hours a day, seven days a week for over two years. Throughout this labor-intensive project, an excellent safety record was consistently maintained earning safety incentive awards from the Central Artery Project's owner controlled insurance program. Client: Massachusetts Turnpike Authority
(Project Value: \$350 million)

Senior Project Manager – *Massachusetts Turnpike Interchange No. 10A, Millbury, Massachusetts*. Company authorized representative in responsible charge for the construction of a new interchange, linking the Massachusetts Turnpike to the City of Worcester via Routes 20 and 146. This project

involved large-scale earthworks and road building, extensive pile-driving, and the construction of caissons, six bridges, approximately four miles of roadway and ramps with associated retaining walls and utilities. In addition, the project included construction of significant wetlands restoration areas and a new park-and-ride facility to accommodate approximately 270 vehicles. Client: Massachusetts Turnpike Authority.

(Project value: \$50 million)

Senior Project Manager – MBTA South Station Ramp Project. Company authorized representative in responsible charge for the construction of the first “steel tub girder” bridge in Massachusetts. This compound curve steel bridge viaduct was the winner of the AISC National Bridge Competition for the Short Span Category. The project work involved: cofferdam construction, concrete pile driving, caisson construction, reinforced concrete construction, structural steel construction, commuter rail platform reconstruction and utility relocations. The structure was constructed over an active high-speed highway ramp and over an active commuter rail station with multiple tracks. Further, the project required special inter-agency coordination since the structure was owned by the Massachusetts Highway Department and contracted by the Massachusetts Bay Transportation Authority. Client: Massachusetts Bay Transportation Authority.

(Project value: \$28 million)

Senior Project Manager – Boston Central Artery/Tunnel Project, Porter Street Outfall. Company authorized representative in responsible charge for the construction a difficult job located at Logan Airport, and interfacing with airport operations, airport businesses, and adjacent Central Artery/Tunnel contracts. The work involved the construction of two large below grade concrete culverts. One 14 ft. x 15 ft. box culvert measuring 3,100 ft long and another 17 ft. x 15 ft. box culvert measuring 2,230 ft long. In addition, approximately 130 ft of the culvert was designed and constructed as a bridge structure, which spans the future Ted Williams Tunnel. Other major work included the relocation of Logan Airport’s jet blast wall and helicopter pad, major utility relocations and roadwork. The work took place on and directly adjacent to active airport runways and taxiways. A contractor initiated value-engineering proposal redesigned the culvert structures from cast in place concrete structures to post-tensioned precast structures. This Value engineering proposal resulted in a cost and schedule savings to the Owner. The work included: sheet pile driving, braced excavations, utility bridges, caisson construction and cement-bentonite ground water cutoff wall construction. Client: Massachusetts Highway Department.

(Project value: \$36 million)

Senior Project Manager – Boston Central Artery/Tunnel Project, Soil Stabilization Test Program. Company authorized representative in responsible charge for the Project. Performed horizontal and vertical grouting; testing various processes such as chemical grouting, compaction grouting and jet grouting. The work was performed within braced sheet pile cells where the grout columns were excavated and inspected in order to evaluate their soil stabilization characteristics. Client: Massachusetts Highway Department

(Project value: \$2 million)

George Hyman Construction Company – Bethesda, MD 1985 to 1990

Foundation Manager – 222 Berkeley Street Boston, Massachusetts – The George Hyman Construction Company. Design, management and construction of a deep mat foundation for a high-rise building in Boston’s Back Bay area. Work included the design and construction of a sheet pile earth support wall braced with pipe raker and corner braces and re-groutable tiebacks installed during excavation. This 85 million dollar high-rise project was constructed by the George Hyman Construction Company for the developer Gerald D. Hines. Responsibilities included estimating,

design and management of the lateral earth support system. In addition, managed the excavation and mud-slab operations and later stayed on as lead project engineer for the building structure and skin.

Foundation Manager – Suffolk County House of Corrections – Massachusetts – The George Hyman Construction Company. Work included estimating and management of a pre-cast pile foundation consisting of 1,221 – 50 ton friction piles and 195 – 135 ton end bearing piles.

In addition, served as the foundation department representative and manager for foundation work in the Boston office. Responsibilities included excavation support and foundation design, pre-construction services, design/build projects, estimating, purchasing, project management and pursuing heavy construction work in the New England area.

Foundation Engineer – The George Hyman Construction Company – Washington, D.C. office. Responsibilities included estimating, purchasing, design and project management. Worked on several building foundations such as:

1350 Eye Street, Franklin Square, 325 Seventh Street, The Homer Building and the Johns Hopkins Parking Garage in the Washington D.C./Baltimore MD area.

In addition, served as field engineer for a 145 million dollar reinforced concrete frame hotel building (chief of party for site work, paving, and interior layout of hotel; completed project as Assistant Superintendent coordinating finish trades and project close-out).

Geotechnical Field Technician - Haley and Aldrich - Cambridge, Massachusetts

Laborer/Mason Tender – Turner Construction Company – New York, New York

EDUCATION

B.S., Civil Engineering
The University of Vermont
Burlington, Vermont

PROFESSIONAL CERTIFICATIONS

Registered Professional Engineer
Massachusetts

PROFESSIONAL AFFILIATIONS

President, Foundation and Marine Contractors Association of New England
Executive Committee Member, Labor Relations Division of the Construction Industries of Massachusetts
Management Trustee, I.O.U.E. local 4 Health and Welfare Fund
Company Representative, Boston Chamber of Commerce
Member, The Moles
Member, American Society of Civil Engineers
Member, Boston Society of Civil Engineers

PAPERS

“Multiple Foundation Systems for the Porter Street Outfall Relocation for the North Approach,” presented at the Deep Foundations Institute national annual conference, 1994

DREW A. REYNOLDS

Jay Cashman, Inc.
549 South Street
Quincy, MA 02169
Office: (617) 890-0600
Cell: (617) 908-9863
dreynolds@jaycashman.com

PROFESSIONAL PROFILE

Drew has extensive experience in highly complex heavy construction projects, including highways, bridges, utilities and underground work. He has successfully managed large scale, fast-track projects which have been complicated by proximity to high volume traffic (road, rail, or both) in densely populated urban settings. Over the years, Drew has established sound working relationships with engineering and project management officials in state agencies and local union workforces. His comprehensive understanding of all aspects of construction work stems from his on hands-on experience and proper education that has allowed him to achieve highly and rise quickly in the construction field.

PROFESSIONAL EXPERIENCE

Project Superintendent, Jay Cashman Inc., Quincy, MA

- Manages and oversees field operations for large scale civil, marine, and construction projects
- Helps plan field operations for particular projects to ensure work is carried out effectively, on schedule and on budget

Project Superintendent, Modern Continental Construction,

- Performed such daily activities as scheduling, budget analysis, equipment and manpower organization, subcontractor coordination, and project owner relations
- Supervised a variety of projects for which he was directly responsible for the planning and execution of utility work, excavation, material placement, and road construction
- Oversaw all utility work including the installation and relocation of water, gas, sewer, drain, steam, electrical, and telephone lines

EDUCATION / CERTIFICATIONS

Wentworth Institute of Technology, Boston, MA

Bachelor of Science in Construction Engineering

- Construction Supervisor's License (MA)
- Concrete Technician License (MA)
- Hoisting Engineer License (MA)
- BWSC Drain Layers License (MA)
- 40 Hour Hazmat
- 30 Hour OSHA
- 10 Hour OSHA
- Confined Space Entry
- Cpr/First Aid Trained



RELEVANT PROJECT EXPERIENCE

Project: Spruce Mountain Wind Project – Woodstock, ME (2011)

Owner: Spruce Mountain Wind, LLC
Value: \$35 million
Position: Project Superintendent / Manager
Responsibilities: Managing and overseeing the daily operation of the construction of ten 2MW Gamesa wind turbines
Highlights: Project included over 18,500 linear feet of load critical temporary road construction, miles of sediment and erosion control, approximately five miles of overhead transmission line, mass concrete foundations, and turbine erection. All work was performed in an environmentally sensitive area; in close proximity to multiple wetlands. These ten Gamesa G90 wind turbines produce over 60,000,000 kilowatt-hours (kWh).

Project: Longboat Key Beach Nourishment - Sarasota, FL (2011)

Owner: Cashman Dredging and Marine Costruction
Value: \$6 million
Position: Project Superintendent / Manager
Responsibilities: Managing and overseeing the daily beach nourishment operation
Highlights: Project included the dredging of over 300,000 CY of sand offshore with the hopper dredge "The Atchafalaya". Sand is pumped from the dredge to the shore over a mile away. Sand is placed on the beach with heavy equipment.

Project: Wonderland Garage – Revere, MA (2010)

Owner: MBTA
Value: \$50 million
Position: Project Superintendent / Manager
Responsibilities: Managing and overseeing the installation of roadways and utilities
Highlights: Superintendent in charge of roadway and utility work for the project.

Project: Stoughton Landfill - Stoughton, MA (2009)

Owner: MBTA
Value: \$8 million
Position: Project Superintendent / Manager
Responsibilities: Daily oversight of Construction and Demolition Debris Facility and Adjacent Landfill
Highlights: Manage the 45,000 SF C & D facility – capable of processing up to 800 tons of commercial debris per day. Mr. Reynolds also supervised the placement of fines on a landfill adjacent to the C & D facility and management of the landfill closure.

Project: Beaver Ridge Wind Turbine – Freedom, ME (2008)

Owner: Patriot Renewables, LLC.
Value: \$12 million
Position: Project Superintendent / Manager
Responsibilities: Managing and overseeing the daily operation of the construction of three 1.5MW GE wind turbines
Highlights: Project included over 6000 linear feet of load critical temporary road construction, miles of sediment and erosion control, approximately eleven miles of overhead transmission line, mass concrete foundations, 6000 linear feet of underground collector system, and turbine erection. All work was performed in an environmentally sensitive area; in close proximity to multiple wetlands and agricultural fields. These three General Electric 1.5 SLE wind turbines produce approximately 12,500,000 kilowatt-hours (kWh) of emission-free electricity each year, enough to power about 2,000 homes.



Project: Washington St. / Harrison Ave. Bridge Decks – Boston, MA (2006 – 2008)

Owner: Massachusetts Turnpike Authority
Value: \$7.8 million
Position: Project Superintendent
Responsibilities: Planning and overseeing all field operations for a multi-deck bridge replacement job located over the Massachusetts Turnpike and Amtrak overhead line commuter rail
Highlights: Work included temporary shielding under bridge, bridge bearing replacement, demolition of existing deck and structural members, structural steel repair and replacement, substructure foundation repair, and new concrete deck placement. Both bridges are four span bridges with two spans crossing the Massachusetts Turnpike and two spans crossing Amtrak property. All project work was executed in very close proximity to live traffic, both road and rail.

Project: NSTAR Harbor walk – Boston, MA (2007)

Owner: NSTAR Electric Company
Value: \$850,000
Position: Project Superintendent
Responsibilities: Managing and overseeing all field operations for a section of the Boston Harbor walk located in South Boston
Highlights: Project included rebuilding approximately 600 lf of granite sea wall, rip rap installation, grading and shaping of landscape features, sub-grade and pavement of 1200 lf of new walkway, ornamental concrete features, and misc. park furnishings.

Project: Cooper River Bridges Demolition – Charleston, SC (2005 - 2007)

Owner: South Carolina Department of Transportation
Value: \$61 million
Position: Project Superintendent
Responsibilities: Managing the reconstruction of five blocks of city streets in the foot print of the old bridge approaches after bridge demolition was complete.
Highlights: Bridge sections were removed via both explosive demolition and lowering by jacks into barges. Reconstruction work included installation of thousands of feet of new drain line, multiple utility relocations, new curb, sidewalk, and pavement. Work was performed in a sensitive urban community utilizing fast-track scheduling. All activity was completed in phases allowing traffic flow to maintain throughout the project.



Education: University of Maine, College of Forest Resources, Orono, Maine
Degree: BS, Natural Resource Management
 Graduate Studies in Plant and Soil Science
 University of Massachusetts

Professional Registrations and Certifications

Certified Wetland Scientist: NH (NHCWS 179, 2000)
 Licensed Site Evaluator: ME (SE 229, 1987)
 Certificate in Alternate Dispute Resolution (ADR) 2000
 Maine Notary Public (since 1987)

Professional Summary

With over 25 years of environmental consulting experience, Ms. Miller offers senior-level project management, technical and regulatory compliance expertise. She has performed comprehensive environmental regulatory permitting/compliance for numerous large energy projects throughout the United States. Ms. Miller has extensive experience working with wind energy developers and their engineers to site project facilities to avoid and minimize impacts to protected resources and to develop creative compensation plans for unavoidable impacts.

Experience on Comparable Projects

Project Manager, Canton Mountain Wind Project, Canton, Maine – Ms. Miller is currently serving as Project Manager responsible for comprehensive regulatory compliance for development of the Canton Mountain Wind Project proposed in Canton, Maine.

Deputy Project Manager, Saddleback Ridge Wind Project, Carthage, Maine – Ms. Miller served as Deputy Project Manager responsible for wetlands, waterbody, and vernal pool regulatory permitting for the approximately 33 MW Saddleback Ridge Wind Project proposed in Carthage, Maine.

Deputy Project Manager, Spruce Mountain Wind Project, Woodstock, Maine – Ms. Miller served as Deputy Project Manager responsible for local level regulatory permitting and state and federal regulatory compliance for

PROJECT MANAGER

Kathleen R. Miller

Special Qualifications:

- ✓ 25 Years in Environmental Consulting
- ✓ Nationwide Energy Project Regulatory Compliance Experience
- ✓ Proven Ability to Integrate Technical and Regulatory Issues
- ✓ Experience Working with Wind Energy Developers Nationwide

wetlands, waterbody, and vernal pool regulatory permitting issues for the approximately 20 MW Spruce Mountain Wind Project proposed in Woodstock, Maine.

Project Manager, Peaked Wind Project, Hancock County, Maine – Ms. Miller is serving as Project Manager for the preparation of a comprehensive Critical Issues Analysis (CIA) and regulatory permitting assessment for the approximately 20 MW Peaked Wind Project located in Hancock County, Maine.

Project Manager, Mount Waldo Wind Project, Waldo County, Maine – Ms. Miller is serving as Project Manager for the preparation of a comprehensive Critical Issues Analysis (CIA) and regulatory permitting assessment for the approximately 8 - 15 MW Mount Waldo Community Wind Project located in Frankfort, Maine.

Client Services Manager, 100 megawatt (MW) Indeck's Wildcat Wind Farm, Pratt County, KS – Ms. Miller served as Client Services Manager and regulatory specialist for preparation of a comprehensive Critical Issues Analysis (CIA) and regulatory permitting assessment for an approximately 100 MW wind energy generation facility proposed on approximately 44,000 acres located in Pratt County, KS.

Project Manager, 500 megawatt (MW) Keystone Wind Energy Project, Scott and Lane Counties, KS – Ms. Miller served as Project Manager responsible for comprehensive Critical Issues Analysis (CIA) and

regulatory permitting support for an approximately 78,000 acre wind energy generation facility located in Scott and Lane Counties, Kansas.

Project Manager, 750 MW Titan Wind Energy Project, Kiowa County, CO – Project Manager responsible for comprehensive critical issues analysis and regulatory permitting assessment for an approximately 103,000-acre wind energy generation facility proposed in Kiowa County, Colorado. Project involved assessment of impacts to state and federally protected species, wetlands and waterbodies, potential impacts to historic and cultural resources, noise and visual impacts, telecommunications interference and site contamination analyses and an aviation impact analysis. Also provided support for project and design and layout to avoid and minimize environmental impacts.

Project Manager, 350 MW Rattlesnake Den Wind Energy Project, Glasscock County, TX – Ms. Miller served as Project Manager responsible for a comprehensive Critical Issues Analysis (CIA) and regulatory permitting assessment for an approximately 40,000-acre wind energy generation facility located in Glasscock County, Texas. Services included evaluation of impacts to state and federally protected species, wetlands and waterbodies, historic and cultural resources, noise, visual impacts, potential telecommunications interference and preliminary site contamination analyses. Also provided support for project and design and layout to avoid and minimize environmental impacts.

Project Manager, OwnEnergy's Blackwell Wind Farm, Kay County, OK – Ms. Miller served as Project Manager responsible for comprehensive Critical Issues Analysis (CIA) and regulatory permitting for the approximately 65 MW Blackwell Wind Farm Project located on an approximately 12,000 acre site in Kay County, Oklahoma.

Project Manager, Confidential International Wind Energy Client, Standard Operating Procedures (SOP's) for Environmental Regulatory Compliance for Operating Wind Farms Nationwide – Ms. Miller acted as project manager tasked with assisting a large international wind energy company to formulate Standard Operating Procedures for

ensuring regulatory compliance during operations of wind energy generation facilities nationwide. This project included consultations with on-site personnel and preliminary site audits to evaluate existing procedures and determine how they compare to regulatory requirements for compliance, documentation and reporting.

Senior Scientist, Competitive Power Ventures, Cimarron Wind Energy Project, Gray County, Kansas. Ms. Miller served as Senior Scientist responsible for senior technical reviews of wetlands and waterbody field surveys performed in support of the design and layout of a proposed 500-MW wind energy generation project proposed on approximately 47,700 acres of land in Gray County, Kansas.

Senior Scientist, Competitive Power Ventures, Ashley Wind Energy Project, County North Dakota. Ms. Miller served as Senior Scientist responsible for technical reviews of wetlands and waterbody field survey reports and wildlife assessments for the Ashley Wind Energy Project proposed in North Dakota.

Senior Scientist, Equitrans LLP's, Sunrise Pipeline Project, West Virginia and Pennsylvania. Ms. Miller served as Senior Scientist for preparation of a federal Environmental Assessment on behalf of the Federal Energy Regulatory Commission for Equitrans' Sunrise Pipeline Project proposed in West Virginia and Pennsylvania. Ms. Miller was responsible for evaluating alternatives, in accordance with the National Environmental Policy Act, for meeting project objectives for increasing natural gas transmission capacity from the Marcellus Shale region of the United States.

Senior Scientist, National Grid, Northern Pass Electric Transmission Line Project, New Hampshire. Senior Wetland Scientist responsible wetlands, waterbody, and vernal pool field delineations performed by Tetra Tech on approximately 300 miles of electric transmission line right-of-way in New Hampshire. Responsibilities included preparation of field survey protocols, data management and processing, and quality reviews of GIS, field data forms, and photo logs collected for the project.



EXPERIENCE SUMMARY

Mr. Hengstenberg is a Certified Wildlife Biologist with 12 years of experience in wildlife biology, wind energy ecology, aeroecology studies, tropical field studies, and project management. Mr. Hengstenberg has extensive knowledge of wildlife studies and is well versed in scientific techniques and equipment including bat acoustic surveys, raptor migration studies, breeding bird surveys, avian radar ornithology, threatened & endangered species surveys, seabird & shorebird surveys, grassland bird surveys, tropical flora and fauna, and mist-netting of birds and bats. Mr. Hengstenberg has worked on natural resources projects across the country and throughout Latin America, including wildlife surveys on over 50 wind power projects. Mr. Hengstenberg has extensive range of field experience throughout New England, the Northwest, the Southwest, Puerto Rico, and Mexico. Mr. Hengstenberg is a proficient technical writer and has extensive knowledge of various word processing, presentation, and statistical analysis applications. Abbreviated experiences listed below include experience gained with employers.

EDUCATION

M.S., Wildlife & Fisheries Science, Mississippi State University

B.S., Interdisciplinary Studies/ Wilderness Research Administration, Plymouth State University

ADDITIONAL TRAINING

Certified Wildlife Biologist- The Wildlife Society
Airport Wildlife Hazard Management
Bilingual in English and Spanish
OSHA HAZWOPER Certification and Refresher
Basic and Advanced Erosion & Sediment Control Course
Red Card Certification (Wildland Firefighter)
CPR and First Aid Certification

REPRESENTATIVE PROJECTS

Saddleback Ridge, Spruce Mountain, and Canton Mountain Wind Projects, Maine – Patriot Renewables. As Senior Wildlife Biologist, managed and conducted pre-construction avian surveys including a spring and fall avian radar survey, bat acoustic survey, raptor migration survey, migrant stopover survey, RTE species survey, and breeding bird survey as part of the permitting process. Developed and negotiated pre and post-construction monitoring plans with state and federal agencies, authored proposals, designed field studies, and prepared reports and memos.

Stetson Mountain and Mars Hill Wind Projects, Maine – First Wind. As Project Scientist, conducted bat acoustic and raptor migration surveys to establish a pre-construction baseline of bat and avian resources on the site. Helped delineate and geo-referenced the wetland areas of the project area. Authored sections of the site law application, environmental assessment report, and avian and bat report.

Kibby Mountain Wind Farm, Maine – Trans Canada. As Project Scientist, conducted bat acoustic and avian surveys to establish a pre-construction baseline of bat and avian resources on the site. Co-authored the avian and bat sections of final reports and risk assessments.

Deerfield Wind Energy Facility, Vermont – PPM Energy. As Project Scientist, conducted raptor migration, breeding bird, avian radar and bat acoustic surveys to establish a pre-construction baseline of bat and avian resources on site. Authored the avian and bat sections of final reports.

Allegany Wind Power Project, New York – Everpower Renewables. As Project Scientist, conducted pre-construction studies at the proposed wind power development. Negotiated avian and bat studies work plans with the New York Department of Environmental Conservation. Participated in raptor migration surveys, breeding bird surveys, avian radar surveys, and bat acoustic surveys. Prepared avian and bat reports, analyzed data, and collaborated with other regulatory agencies.

U.S Marine Reserve, New York – U.S. Navy. As Senior Wildlife Biologist, managed and conducted a one year study of seasonal point counts, avian acoustic surveys, bat acoustic surveys, migrant stopover surveys, RTE species surveys, and breeding bird surveys as part of the permitting process. Developed and negotiated work plans with state and federal agencies, authored proposals, designed field studies, and prepared reports and memos.

Naval Station Newport, Rhode Island – U.S. Navy. As Senior Wildlife Biologist, managed and conducted a one year study of seasonal point counts, avian radar, bat acoustic surveys, migrant stopover surveys, RTE species surveys, and breeding bird surveys as part of the permitting process. Developed and negotiated work plans with state and federal agencies, authored proposals, designed field studies, and prepared reports and memos.

PUBLICATIONS

- Vilella, F.J. and D.W. Hengstenberg. 2006. Broad-winged Hawk movements and habitat use in a moist limestone forest of Puerto Rico. *Ornithologia Neotropical* 17(4): 563–579.
- Hengstenberg, D.W. and F.J. Vilella. 2005. Nesting ecology and behavior of Broad-winged Hawks in moist karst forests of Puerto Rico. *Journal of Raptor Research* 39: 404–416.
- Hengstenberg, D.W. and F.J. Vilella. 2004. Reproductive biology, abundance, and movement patterns of the Broad-winged Hawk in a limestone forest of Puerto Rico. Final Report, USGS Cooperative Fish and Wildlife Research Unit, Cooperative Agreement No. 14-45-009-1543-59. MS State.
- Hengstenberg, D. W. 2003. Reproductive biology, abundance, and movement patterns of the Puerto Rican Broad-winged Hawk in a limestone forest of Puerto Rico. M.Sc. Thesis. Mississippi State University, MS. USA.
- Lopez-Ortiz, R., E.A. Ventosa-Febles, L.R. Reitsma, D. Hengstenberg, and W. Deluca. 2002. Increasing nest success in the Yellow-shouldered Blackbird (*Agelaius xanthomus*) in southwest Puerto Rico. *Biological Conservation* 108: 259–263.

PRESENTATIONS

- Hengstenberg, D.W. and A. Gravel. 2007. Radar ornithology and nocturnal migrants at wind power projects in the Northeast and Appalachians. Northeast Fish and Wildlife Conference, Connecticut.
- Hengstenberg, D.W. and R. Roy. 2006. Research techniques used to study bird and bat impacts at wind power projects. Northeast Fish and Wildlife Conference, Vermont.
- Hengstenberg, D.W. 2003. Reproductive biology and movement patterns of Broad-winged hawks in Puerto Rico. Neo-tropical Ornithological Conference, Chile.
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EXPERIENCE SUMMARY

With over 30 years of professional archaeological and consulting experience in New England and the northeast, Dr. Eldridge is a Registered Professional Archaeologist (RPA) with senior-level project management and technical skills, in addition to a comprehensive knowledge and understanding of cultural resources regulatory compliance. He has in-depth experience coordinating linear energy related projects involving federal, state, and local agencies, and is able to effectively facilitate communication between regulators, interested parties, and federal agencies responsible for undertakings on complex technical and regulatory issues and concerns.

EDUCATION

Ph.D., Anthropology, University of Pennsylvania

M.A., Anthropology, University of Pennsylvania

B.A., Honors in Anthropology, Bates College

ADDITIONAL TRAINING

1980-2011 State of Maine Prehistoric Archaeological Certification, Level 2 (Phase I-III certified)

2000-2011 Member, Register of Professional Archaeologists

2003 ACHP Section 106 Review Course, Heritage Resources Management Program, University of Nevada at Reno

2008 Ohio Department of Transportation Section 106 Training, ODOT Office of Environmental Services

REPRESENTATIVE PROJECTS

Saddleback Ridge, Spruce Mountain, and Canton Wind Energy Projects, Franklin and Oxford Counties, Maine.

Principal Investigator Archaeological Investigation (Phase 0/IA/IB) for three wind energy projects for Patriot Renewables, LLC.

Maine Public Service Transmission Line 6910 Upgrade Project, Mars Hill and Presque Isle, Maine,

Principal Investigator Archaeological Survey (Phase IA/IB) for Maine Public Service Corporation for a 12.3-mile transmission line project.

Portland Natural Gas Transmission System/North Pipeline Project, Maine and New Hampshire,

Project Prehistorian for archaeological survey (Phases I - III) for a 158-mile pipeline transect for El Paso Energy Corporation/PNGTS Operating Company.

Kingfield Bottling Plant and Waterline Projects, Kingfield, Maine,

Principal Investigator Archaeological Survey (Phase 0 and IA/IB) for Wright-Pierce Engineers, Inc. and Nestlé, Inc.

Northern Utilities Natural Gas Distribution Pipeline Project, Lewiston, Maine,

Principal Investigator Archaeological Survey (Phase IA/IB) for NiSource.

Route 111 Pipeline Relocation Project, Biddeford, Maine,

Principal Investigator for archaeological survey (Phase IA) for Granite State Gas Transmission, Inc.

South Berwick Pipeline Abandonment./Replacement Project, South Berwick, Maine,

Principal Investigator for archaeological survey (Phase IA) for Granite State Gas Transmission, Inc.



STUART A. ELDRIDGE
Principal Investigator

DHP Archaeologist for the State of Vermont, Presently serving, per MOA between Vermont Division for Historic Preservation (DHP) and the Vermont Electric Company (VELCO), as DHP Archaeologist and compliance/review specialist for the VELCO East Avenue Loop Project in Chittenden County, Vermont.

Cultural Resources Services for Central Vermont Public Service Corporation. Principal Investigator Archaeological Surveys (Phase IA/IB), HPMP generation, and ongoing cultural resources support for multiple FERC hydro project re-licensing and recreation plan/construction projects for Central Vermont Public Service Corporation.

VELCO Northwest Vermont Reliability Project, Chittenden and Addison Counties, Vermont, Project Manager, Third Party Compliance Monitoring for Archaeological Resources and Erosion and Sedimentation Control Systems for multiple substation construction projects and a 30-mile, 115kV transmission line project for the Vermont Public Service Board.

Londonderry Pipeline Replacement Project, Massachusetts and New Hampshire, Task Manager and QA/QC for archaeological survey (Phase IA and IB), historic site inventory, stone wall survey and inventory, CRM support and employee cultural resources training coordination, construction phase cultural resource monitoring for a 23-mile pipeline transect for Tennessee Gas Pipeline Company.

Replace Water Distribution System at Fort Tilden Project, Gateway National Recreation Area (GATE), Queens, New York, Principal Investigator Archaeological Survey (Phase I) for United States Department of the Interior, National Park Service, Northeast Region Archaeology Program and Gateway National Recreation Area

Fort Erie Alternative Pipeline Project, New York and Pennsylvania, Task Manager for completion of Phase I cultural resource investigations and preparation of FERC Resource Report 4 for a 144-mile pipeline transect for National Fuel Gas Supply Corporation.

Cultural Resources Services for Green Mountain Power Corporation. Principal Investigator Archaeological Surveys (Phase IA/IB and II) and ongoing cultural resources support for Green Mountain Power Corporation hydro related projects.

West Exeter Gas Meter Station Project, West Exeter, New Hampshire, Principal Investigator for Phase I cultural resources investigation for NiSource/Granite State Gas Pipeline Corporation.

Steuben Gas Storage Project, Canisteo, New York, Principal Investigator for Phase I cultural resources investigation for El Paso Gas Pipeline Corporation.

Town of Nichols Gas Franchise Project, Nichols, New York, Principal Investigator for Phase I cultural resource investigation for a 2-mile gas pipeline extension for New York State Electric & Gas Corporation.

Cobleskill Gas Franchise Extension Project, Cobleskill, New York, Principal Investigator for Phase I cultural resource investigation for a 3.5-mile gas pipeline extension for New York State Electric & Gas Corporation.

Keuka Lake Hydroelectric Project, Keuka, New York, Principal Investigator Archaeological Survey (Phase IB) for New York State Electric & Gas Corporation.

Saranac River Hydroelectric Project, Saranac River, Clinton County, New York, Principal Investigator Archaeological Survey (Phase I) for New York State Electric & Gas Corporation.



Boyle Associates, Environmental Consultants
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Phone: 207.591.5220
Fax: 207.591.5220
www.boyleassociates.net

Boyle Associates Staff Resumes:

James Boyle, President: PWS, LPF

Dave Brenneman, Environmental Scientist and Master Pesticide Applicator: MPA

Richard Jordan, Senior Wetland Scientist/Mitigation Specialist: PWS, CPESC

Rodney Kelshaw, Senior Wetland Scientist/Wildlife Biologist: LSE, PWS, CPESC, AWB

Heather Storlazzi Ward, Senior Wetland Scientist: NHCWS, CPESC

JAMES BOYLE (PWS, LLPF)

Boyle Associates – President
Email: jboyle@boyleassociates.net
Mobile Phone: (207) 756 – 2928

EXPERIENCE:

- Boyle Associates*, Gorham, Maine 1996 – Present
President/Senior Wetland Scientist/Senior Project Manager
- Provide clients with full environmental assessment services, including: wetland delineation, vernal pool surveys, wetland functional assessment analyses, and mitigation sequencing and monitoring.
 - Negotiate, complete and acquire local, state and federal environmental permits including utility location permits.
 - Conduct on-site environmental training and inspection services for construction projects.
 - Monitor proposed legislative changes; provide oral and written comments on proposed changes to federal, state and local wetland and zoning laws.
 - Create and manipulate GIS data for mapping and land-use analyses.
- Central Maine Power Company*, Augusta, Maine 1990-1996
Environmental Siting Coordinator
- Perform office and field analysis of the impacts of facility development on natural and cultural resources including wetlands and other waterbodies, fish and wildlife habitat, endangered and threatened species habitat, archaeology, aesthetics, erosion and sedimentation control, and noise.
 - Obtain federal, state and local permits for new facilities and serve as environmental inspector to ensure compliance with permits and other regulatory restrictions during facility construction.
 - Completed safety training for Hazardous Waste Operations and Emergency Response in accordance with OSHA 29 CFR 1910.120.
 - Conduct environmental assessments.
 - Design and supervise installation of company landscape projects.
 - Chair of CMP Land & Water Resource Stewardship Task Team.
- Patten Corporation*, Freeport, Maine 1986-1990
Senior Project Director
- Provide feasibility analysis; property location, appraisal, negotiation, and purchase; site planning and design; construction planning and supervision; and marketing preparation.
 - Design and implementation of waterfront buffer zone management plans, and supervision of timber harvesting contractors and landscaping crews.
 - Work with planning boards, municipal officials, and state and federal agencies to secure regulatory approvals and permits.
 - Coordinate the work of construction contractors, surveyors, engineers, attorneys, soil scientists, foresters, botanists, wildlife biologists, and hydrogeologists.
- Champion International Corporation*, Lincoln, Maine 1984-1986
Forester
- Timber inventory in boreal and northern forest cover types in northern Maine, including Spruce-fir, northern hardwoods, White pine-mixed hardwoods, Black spruce swamps, and Northern white-cedar swamps.
 - Stand prescription and harvest area layout, road layout, TSI layout and inspection, timber marking, LURC zone layout, contractor cut inspection, and prescribed burning.
 - Tree planting, regeneration surveys, bridge construction and maintenance, and forest cover type map updating.
 - Sole programmer for Maine Region Operations (735,000 acres). Develop computer programs for cruising, operating plans, outside sales projections, wood inventory, chipper scheduling, and others.

EXPERIENCE (continued):

Rowe & Ellis Surveying & Engineering, Waterville, Maine 1983-1984

Surveyor's Assistant

- Property boundary surveys, deed research, computations and drafting, mortgage inspections, and ground control for aerial surveys.
- Startup and usage of Hewlett-Packard PC for mapping, plotting, word-processing and database.

Great Northern Paper Company, Oakfield, Maine 1982

Temporary Forester

- Re-measurement of permanent growth plots in northern Maine forest cover types. Complete evaluations were made on each sample tree including condition, form, size, product, and potential, as well as data on the site.
- Assist the Forester with road layout, bridge, road, and cut inspections, map work, and other duties.
- Supervision and inspection of work done by 19 company employees and 15 contractor employees.
- Inventory of areas planted to determine spacing and quality of seedlings planted.
- Work independently on experimental tree planting, seed cone collection, regeneration surveys, and mapping.

EDUCATION:

- University of Maine, Orono, Maine
B.S. Degree: Forest Management

May, 1980

CERTIFICATIONS:

- Certified Wetland Scientist (#202), *New Hampshire Joint Board of Licensure*
- Maine Licensed Forester (#2074), *Maine Board of Licensing*
- Professional Wetland Scientist (#1258), *Society of Wetland Scientists*
- Certified Contractor in Erosion Control Practices, *Maine Department of Environmental Protection*
- Certified Professional in Erosion and Sediment Control, *IECAA & Soil & Water Conservation Society*

MEMBERSHIPS:

- Maine Association of Wetland Scientists (MAWS)
- Society of Wetland Scientists
- Association of State Wetland Managers
- Small Woodlot Owners Association of Maine
- Soil and Water Conservation Society

ACHIEVEMENTS AND ACTIVITIES:

- Chairperson: MAWS Wetland Certification Subcommittee 2008-present
- President: Maine Association of Wetland Scientists 2000-2002

FORMAL AND PROFESSIONAL TRAINING:

- Wetland and Vernal Pool Identification and Delineation
- Soil Taxonomy
- Erosion & Sedimentation Control
- Plant Identification
- Global Positioning Systems (GPS)
- Computer Aided Drawing and Design (CAD)
- Geographic Information Systems (GIS)

DAVID R. BRENNEMAN (Master Pesticide Applicator)

Boyle Associates – Environmental Scientist

Email: dbrenneman@boyleassociates.net

Mobile Phone: (207) 751 - 3053

EXPERIENCE:

Boyle Associates, Gorham, Maine

April, 2008 – Present

Environmental Scientist

- Provide clients with full environmental assessment services, including: wetland delineation, vernal pool surveys, wetland functional assessment analyses, and wetland mitigation monitoring.
- Negotiate, complete and acquire local, state and federal environmental permits.
- Design, implement and monitor plant management plans, including invasive species control and native plant management.
- Create and manipulate GIS and CAD data for mapping and land-use analyses.
- Conduct feature field mapping using Trimble Geo-XT and Geo-XH GPS units with sub-meter accuracy in real time.

Mid-Coast Growers, Bowdoin, Maine

May, 2003 – October, 2007

Grower

- Formulate pest management program including coordination of pesticide safety regime and application of insecticides, fungicides, herbicides, and other pesticides.
- Promote the sale of native and non-invasive plant materials.
- Manage production of all mass-produced crops.

University of Maine MAFES Facility, Orono, Maine

May, 2002 - May, 2003

Student Laborer

- Maintained renowned Lyle E. Littlefield cold hardiness trial gardens.
- Participated in cataloguing of pesticides and hazardous materials.

EDUCATION:

University of Maine, Orono, Maine

B.S. Degree: Landscape Horticulture: Design (Botany minor)

May, 2003

CERTIFICATIONS:

Licensed Master Pesticide Applicator (Aquatics and General Vegetation Management), *Maine*

MEMBERSHIPS:

Maine Association of Wetland Scientists

Friends of Casco Bay – Water Quality Monitoring Volunteer

FORMAL AND PROFESSIONAL TRAINING:

Computer Aided Drawing and Design (CAD)

Geographic Information Systems (GIS)

Global Positioning Systems (GPS)

Plant Identification and Taxonomy

Soil Taxonomy

Wetland and Vernal Pool Identification and Delineation

Invasive Plant Identification and Management

RICHARD JORDAN, JR. (PWS, CPESC)

Boyle Associates – Manager of Field Operations: Senior Wetland Scientist and Mitigation Specialist

Email: rjordan@boyleassociates.net

Mobile Phone: (207) 671 - 2760

EXPERIENCE:

Boyle Associates, Gorham, Maine May, 2000 – Present

Senior Wetland Scientist and Mitigation Specialist

- Provide clients with full environmental assessment services, including: wildlife assessment, wetland delineation, vernal pool surveys, wetland functional assessment analyses, and mitigation sequencing.
- Negotiate, complete and acquire local, state and federal environmental permits.
- Design wildlife and plant management plans.
- Conduct on-site environmental training and inspection services for construction projects.
- Create and manipulate GIS data for mapping and land-use analyses.

U.S. Forest Service, Tofte, Minnesota March – April, 2000

Research Assistant, Wildlife Biology

- Conducted owl population surveys in Superior National Forest.
- Trapped and banded owls for telemetry study and population data.
- Collected data on boreal owl (*Aegolius funereus*) habitat and breeding habits.

Northern Ecological Associates, Portland, Maine June, 1999 – January, 2000

Environmental Scientist

- Conducted vegetation surveys on 300-mile natural gas pipeline to assess health of construction-impacted natural resources.

EDUCATION:

- University of Southern Maine, Gorham, Maine
B.A. Degree: Environmental Science and Policy: Applied Ecology May, 1999

CERTIFICATIONS:

- Professional Wetland Scientist (#1517), *Society of Wetland Scientists*
- Certified Professional in Erosion and Sedimentation Control (#3645), *IECA and the Soil and Water Conservation Society*
- Apprentice Wetland Scientist (#3), *New Hampshire Joint Board of Licensure*

MEMBERSHIPS:

- Maine Association of Wetland Scientists (President-Elect & Chair of the MAWS Vernal Pool Technical Committee)
- New Hampshire Association of Natural Resource Scientists
- Society of Wetland Scientists
- Maine Association of Professional Soil Scientists
- The Maine Chapter of The Wildlife Society
- The Soil and Water Conservation Society
- Maine Audubon
- Falmouth Land Trust

ACHIEVEMENTS AND ACTIVITIES:

- President-Elect of MAWS 2011-2012
- Chairperson: MAWS Vernal Pool Technical Committee 2009-present
- USM Department of Environmental Sciences: Outstanding Alumnus Award 2008

FORMAL AND PROFESSIONAL TRAINING:

- Wetland and Vernal Pool Identification and Delineation
- Aerial Photography Interpretation and Remote Sensing
- Natural Gas and Electric Transmission Environmental Permitting and Inspection
- Soil Taxonomy
- Erosion & Sedimentation Control
- Plant Identification & Covertypes Mapping
- Wildlife Identification & Assessment
- Stream Assessments and Macroinvertebrate Identification
- Wildlife Monitoring
- Invasive Species Control and IPM
- Global Positioning Systems (GPS)
- Computer Aided Drawing and Design (CAD)
- Geographic Information Systems (GIS)

RODNEY D. KELSHAW (PWS, AWB, CPESC, LSE)

Boyle Associates – Senior Wetland Scientist & Wildlife Biologist

Email: rkelshaw@boyleassociates.net

Mobile Phone: (207) 944 - 6776

EXPERIENCE:

Boyle Associates, Dedham, Maine April, 2007 – Present

Senior Wetland Scientist and Lead Wildlife Biologist

- Provide clients with full environmental assessment services, including: wildlife assessment, wetland delineation, vernal pool surveys, wetland functional assessment analyses, site evaluation (septic design), and mitigation sequencing.
- Negotiate, complete and acquire local, state and federal environmental permits.
- Conduct on-site environmental training and inspection services for construction projects.
- Create and manipulate GIS and CAD data for mapping and land use analyses.

Moyse Environmental Services, Inc., Bangor, Maine January, 2000 – April, 2007

Wetland Scientist/Wildlife Biologist

- Conduct wetland delineations, functional assessments, and wetland mitigation design.
- Provide clients with wildlife habitat review and impact assessments.
- Provide site evaluation, septic design and inspection services.

New Jersey Dept. of Inland Fisheries, Lebanon, New Jersey 1999

Field Technician – Fisheries and Wildlife Management

- Work in fish stocking program, provide water quality assessments, conduct oversight at state-run deer check station, conduct freshwater angler creel survey, and conduct seine and gillnetting to assess fishery health.

EDUCATION:

- University of Maine, Orono, Maine
B.S. Degree: Wildlife Ecology

May, 1997

CERTIFICATIONS:

- Professional Wetland Scientist (#1518), *Society of Wetland Scientists*
- Certified Professional in Erosion and Sedimentation Control (#4625), *IECA & the Soil and Water Conservation Society*
- Associate Wildlife Biologist, *The Wildlife Society*
- Maine Licensed Site Evaluator (LSE #371)
- Maine Onsite Subsurface Wastewater Disposal System Inspector (#162)

MEMBERSHIPS:

- Maine Association of Wetland Scientists
- Society of Wetland Scientists
- Maine Association of Professional Soil Scientists
- Maine Association of Site Evaluators
- The Maine Chapter of The Wildlife Society
- National Wild Turkey Federation
- Ducks Unlimited

ACHIEVEMENTS AND ACTIVITIES:

- Chairperson: Town of Dedham Planning Board 2007 - Present
- Chairperson: Town of Dedham Comprehensive Planning Committee 2005 - Present
- Chairperson: Maine Association of Wetland Scientists Legislative Committee 2009-2011

FORMAL AND PROFESSIONAL TRAINING:

- Wetland and Vernal Pool Identification and Delineation
- Erosion & Sedimentation Control
- Soil Taxonomy
- Plant Identification (including aquatic plants)
- Wildlife Identification
- Water Quality Assessments
- Fish Surveys: Gill & Seine Netting & Electroshock Fishing
- Global Positioning Systems (GPS)
- Computer Aided Drawing and Design (CAD)
- Geographic Information Systems (GIS)

HEATHER STORLAZZI WARD (NHCWS, CPESC)

Boyle Associates – Senior Wetland Scientist

Email: heather@boyleassociates.net

Mobile Phone: (207) 317 - 6630

EXPERIENCE:

Boyle Associates, Kennebunk, Maine November, 2006 – Present

Senior Wetland Scientist

- Provide clients with full environmental assessment services, including: wetland delineation, vernal pool surveys, wetland functional assessment analyses, and mitigation sequencing.
- Negotiate, complete and acquire local, state and federal environmental permits.
- Conduct on-site environmental training and inspection services for construction projects.
- Create and manipulate GIS data for mapping and land-use analyses.
- Provide clients with post-construction environmental assessment and monitoring of wetlands and other sensitive areas per project requirements.
- Remote sensing for wetland identification and classification and site selection/alternatives analysis process.

Gove Environmental Services, Inc., Exeter, New Hampshire

1998 – November 2006

Wetland Scientist/Project Manager

- Construction oversight and third party sediment and erosion control inspections.
- Provide clients with full wetland services, including wetland delineation, boundary mapping using GPS and GIS, functional assessment analyses, permit preparation and acquisition, and mitigation design and monitoring.
- Conduct on-site environmental inspection services at various general development construction projects.
- Permitting and regulatory advising; Preparation of federal and state permit applications; Clean Water Act Secs. 401/404 and 404(b)(1) Analyses.
- Remote sensing for wetland identification and classification and site selection/alternatives analysis process.
- Wetland delineations, functional analysis, impact assessments, and resource protection.
- Wetland mitigation location search, mitigation design and monitoring.
- Vernal pool documentation, wildlife habitat evaluations and conservation easement documentation.
- Documentation for avoidance and minimization in project design and assists in the preparation of both on site and off site alternatives analysis.

Northern Ecological Associates, Portland, Maine

1997 – 1998

Wetland Scientist

- Provide clients with full wetland services, including wetland delineation, boundary mapping using GPS and GIS, functional assessment analyses, permit preparation and acquisition, and mitigation design and monitoring.

EDUCATION:

- University of Maine, Orono, Maine

B.S. Degree: Natural Resources: Natural History and Ecology

May, 1994

CERTIFICATIONS:

- New Hampshire Certified Wetland Scientist (#206), *New Hampshire Joint Board of Licensure*
- Certified Professional in Erosion and Sedimentation Control (#3220), *IECA and the Soil and Water Conservation Society*

MEMBERSHIPS:

- Maine Association of Wetland Scientists
- New Hampshire Association of Natural Resource Scientists

FORMAL AND PROFESSIONAL TRAINING:

- Assessments of Diverse Habitats
- Wetland and Stream Restoration and Construction
- Natural History of Maine
- Entomology
- Conservation Biology
- Ecology
- Wetland and Vernal Pool Identification and Delineation
- Soil Taxonomy and Soil Science
- Erosion & Sedimentation Control
- Plant Identification and Taxonomy
- Global Positioning Systems (GPS)
- Geographic Information Systems (GIS)

ROBERT S. CUMMINGS, P.E.

Principal

SUMMARY

Mr. Cummings is a civil/environmental engineer with more than 34 years of experience in civil engineering, water resources management and solid and hazardous waste management. Mr. Cummings business activities included: facilities, residential, industrial and commercial site engineering; hydrology and hydraulic design; land use planning, permit analysis and assistance in obtaining permits; roadway designs; coastal engineering and permitting; stormwater management, conveyance, and disposal system design; water supply planning, distribution, storage and treatment engineering; sewage collection, treatment and disposal systems engineering; hazardous waste management and engineering; solid waste management and engineering; air pollution control systems permitting and design. In addition, he has provided expert witness testimony in several judicial proceedings.

PROFESSIONAL EXPERIENCE

**September 2002 to Present:
Engineering & Management
Services, Inc.**

Mr. Cummings is presently a principal of Engineering & Management Services, Inc., a civil/environmental consulting engineering. In September 2003, Mr. Cummings incorporated Engineering & Management Services, Inc., to provide consulting services to clients in the areas of civil/environmental engineering.

Recent projects include:

Design and environmental permitting relative to construction of the Spruce Mountain and Saddleback Ridge wind projects in Woodstock and Carthage, Maine.

Environmental permitting services relative to construction phase of the Hudson River PCB remediation project, Glen Falls, NY.

Engineering and permitting relative to quarry restoration projects in Saugus and Peabody, MA.

Environmental permitting relative to construction of the Beaver Ridge wind project in Freedom, Maine.

Engineering and environmental consulting services pertaining to the construction of a 300 MW wind power project in Buzzards Bay for Patriot Renewables, LLC.

Engineering and construction oversight services for the closure of the Town of Marion sanitary landfill and for the construction of a new solid waste transfer and recycling area.

Consulting services relative to the expansion of a major solid waste landfill in central Massachusetts.

Engineering and construction oversight services for the closure of the Attleboro Landfill, Inc. sanitary landfill.

Preparation of revised operational plans for the Mich-Lin construction and demolition debris transfer station in Cambridge, Massachusetts.

Consulting services relative to the construction of a solid waste transfer and processing facility and the closure at the former Town of Stoughton landfill.

Consulting services relative to the expansion of the Peabody Ash Monofill.

Preparation of a Site Assignment Determination of Need application for a Gypsum Wallboard recycling facility located in Cambridge, Massachusetts

Consulting services to the operators of the Marlborough Co-composting facility.

Engineering and construction oversight services for construction activities at the Granite Links at Quarry Hills, landfill re-use project; including final certification of construction.

LSP services for the construction of the MBTA's Greenbush line.

Civil and environmental consulting services to the Massachusetts Office of the Attorney General in support of various eminent domain cases.

Civil and environmental consulting services to the Massachusetts Water Resources Authority in support of various eminent domain cases.

Consulting services relative to the construction of a solid waste transfer station in western Massachusetts.

Consulting services to various law firms in support of litigation.

**September 2002 to June 2003:
University of Massachusetts,
Dartmouth, Department of
Civil and Environmental
Engineering**

Mr. Cummings substituted for a faculty member at the University. He taught courses in the areas of Fluid Mechanics, Water Resources and Ethics and Professionalism.

**April 1993 to September 2002:
East Coast Engineering, Inc.**

Mr. Cummings was a principal of East Coast Engineering, Inc., a civil/environmental engineering and consulting firm. As Principal and co-founder of East Coast Engineering, Inc., Mr. Cummings was responsible for business development and the technical and financial performance of projects completed. During his employment at East Coast, he provided designs in several solid and hazardous waste areas for municipal and private clients; provided extensive waterfront and flood control designs; provided expert witness services to several private law firms and to the Massachusetts Office of the Attorney General and to the Massachusetts Water Resources Authority; and provided plan review services to various municipalities.

Project examples include:

Engineering, permitting and construction oversight services for the construction of the Granite Links at Quarry Hills project. This project involved the use of about 11 million cubic yards of soil excavated from the Central Artery/Third Harbor Tunnel project to reshape the Town of Milton and City of Quincy landfills into a 27 hole golf course.

Engineering, permitting and construction oversight services for the construction of a 1000 ton per day transfer station and material recycling facility in Leominster, Massachusetts.

Engineering, permitting and construction oversight services for the construction of the 300 ton per day Marlborough Co-composting facility, the first facility permitted by the Massachusetts DEP for the composting of MSW and biosolids.

Engineering, permitting and construction oversight services for the construction of the 150 ton per day Nantucket Co-composting facility.

Engineering, LSP, permitting and construction oversight services for the construction of the Condor Street Urban Wild, a park constructed on a site which was contaminated with hazardous material located on Condor Street in Boston, Massachusetts.

LSP services for the construction of the MBTA commuter line "South Bay Undercrossing", involving relocation of more than 60,000 cubic yards of contaminated media.

**April 1990 to April 1993:
SAIC Engineering, Inc.**

Mr. Cummings was the president of SAIC Engineering, Inc., a wholly owned subsidiary of Science Applications International Corporation (SAIC). Founded in 1990, SAIC Engineering provides full civil, sanitary and environmental engineering planning and design services to both the public and private sector. SAIC is a 14,000 person firm with annual revenues in excess of \$1.5 billion. As president of SAIC Engineering, Inc., Mr. Cummings was responsible for business development and the technical and financial performance of projects completed relating to engineering studies or designs. He had technical and financial oversight responsibilities for all engineering studies or designs undertaken by SAIC Engineering, Inc. He has either managed or directed designs and studies or acted in a technical review capacity for:

More than 40 solid waste landfill hydrogeologic assessments, designs and closure plan preparation ranging from 2 acres to more than 220 acres in size throughout the world;

Four (4) solid waste transfer station designs, including mixed solid waste, construction debris and demolition waste;

Comprehensive Solid Waste Management studies completed for the City of Fall River, MA, the towns of Barnstable and Dartmouth, MA and for Westerly, RI;

More than 15 hazardous waste remediation projects with construction costs ranging from \$10,000. to \$2.1 million;

More than 10 RI/FS projects for private, state and federal agencies, ranging in fees from \$100,000. to more than \$1.5 million;

Six (6) wastewater treatment plant designs ranging in size from 20,000 gpd to 90,000 gpd with wastestreams including domestic waste, lithographic wastes, bakery/bottling plant wastes and sanitary landfill leachates;

Water supply treatment systems for the Marshfield, Massachusetts wellfields to remove volatile organic compounds;

Water supply distribution systems for various Massachusetts cities and towns totaling more than 30 miles of pipelines;

Design of more than 500 subsurface sewage disposal systems for sanitary wastes ranging in size from 300 gpd to 15,000 gpd.

Design of more than 100 miles of roadways of various types throughout Massachusetts;

Water resources investigations for watershed and flood plain management;

The preparation of environmental impact reports for industrial parks, office parks, sanitary landfills, waste to energy facilities, and roadway construction projects;

Design of over 1,000 acres of industrial park developments in the cities of Fall River and Woburn and towns of Dartmouth, Kingston, Hanson and Middleboro;

Design and permitting services for more than 2000 acres of various types of residential developments throughout Massachusetts;

Design of more than 10 commercial shopping centers throughout Massachusetts ranging in size from 30,000 s.f. to 250,000 s.f.

**June 1976 to March 1990:
GHR Engineering Associates,
Inc.**

Mr. Cummings progressed from an entry-level engineer to Senior Vice President and Chief Engineer of GHR. He performed a wide range of technical and administrative duties and progressed rapidly to significant levels of responsibility within the company. He managed small projects by 1978 and larger projects by 1980. In 1982, Mr. Cummings developed and managed a branch office in Plymouth, MA, which grew to a staff of 12 professionals. In 1985, the branch office was moved to Lakeville, MA and combined with other GHR functions. A Solid and Hazardous Waste division, a Water Supply division, and a Wastewater division were subsequently developed and operations overseen by Mr. Cummings. In 1987, Mr. Cummings assumed a corporate role as Chief Engineer, while also performing other functions.

Mr. Cummings was Project Engineer for the \$2.2 million hazardous waste remediation project at the Gilson Road Hazardous Waste Site in Nashua, New Hampshire. The remedial design involved a slurry wall up to 100' deep surrounding a 22-acre site. The entire site was also regraded and capped with a synthetic membrane liner. Alternative capping systems were fully evaluated as part of the design process. He prepared the design plans and specifications and acted in a construction oversight role for this project, which was completed in 1983 for the New Hampshire Water Supply and Pollution Control Commission.

Mr. Cummings prepared plans and specifications for the in-place containment of PCB's at the Aerovox industrial site in New Bedford, MA. An innovative containment system to control tidal influences was designed utilizing hydraulic asphalt and steel sheet piling. He participated in the negotiation of a Consent Decree with the Massachusetts Department of Environmental Quality Engineering and the U.S. Environmental Protection Agency.

He developed designs for landfill liner/leachate collection systems ranging from a single clay liner at the Town of Dennis Landfill in 1977, to a double soil liner at the Cohasset Heights Landfill in 1979, to composite synthetic membrane/soil liner systems at a number of recent designs.

Mr. Cummings has been recognized for his expertise in the field of solid waste management, particularly sanitary landfill design. He has testified in legal proceedings, provided expert consulting to municipalities and private concerns, and acted in an advisory capacity to the Massachusetts Department of Environmental Protection during the formulation of new operational regulations in 1988 and 1989.

He has developed operational plans for a number of large and small private and municipal facilities including the Fall River Landfill, a 1500 ton per day, 220-acre facility, presently owned and operated by Browning Ferris Industries.

Mr. Cummings has developed or has had technical oversight of designs for solid waste transfer stations. He provided all technical input and testimony for the proper assignment and subsequent permitting of a construction debris and demolition waste transfer station owned by C.J. Mabardy, Inc., in Cambridge, MA. He provided structural engineers with the building conceptual design as well as developing designs for the transfer station site. He was Principal-In-Charge for a comprehensive solid waste management study conducted for the Town of Barnstable, MA. As Principal-In-Charge, Mr. Cummings was responsible for all technical and financial oversight on the project, which involved the study of curbside collection alternatives, payment methods, and ultimate disposal site recommendations. As a follow-on to this study, a full evaluation of the Town's sanitary landfill was conducted recommending various improvements to extend the useful life and improve environmental mitigation.

Mr. Cummings was the Project Engineer for a RI/FS conducted for the U.S. Environmental Protection Agency at the Baird & McGuire Chemical plant in Holbrook, MA. As Project Engineer, he worked with the project investigator to design the investigation and to perform the Feasibility study portion of the project. Based on the RI/FS, a selected remedy with an estimated construction cost of \$50 million is presently under design by the U.S. Army Corps of Engineers.

He served as Principal-In-Charge for other RI/FS projects including the Spring Valley project completed for the New York State Department of Environmental Conservation, and the Ravenbrook Landfill in Carver, MA.

Mr. Cummings acted as Project Manager for the development of preliminary designs and pilot study specifications for a landfill leachate treatment system for the Cohasset Heights Ltd. facility in Cohasset, MA. The project required treating a waste stream of landfill leachate and groundwater to a level suitable for groundwater discharge.

He was Principal-In-Charge of the design of a wastewater treatment facility at the Pilgrim Nuclear Power Plant in Plymouth, MA. The treatment plant was designed to process 60,000 gallons per day of sewage flow from the administration building. Construction of the plant was completed in mid-1990.

Mr. Cummings was Principal-In-Charge for the design of water supply treatment systems for the Town of Marshfield. One of the systems for the Furnace Brook No.1 Wellfield was designed on a fast-track basis to accommodate summer peak water usage within the town. A liquid-phase granular activated carbon system was designed to remove volatile organic compounds from the groundwater. The entire project, from the notice to proceed with design to the start-up of the system was completed in less than 90 days. This allowed the town to put the wellfield back into service for the summer peak water usage season.

He was Project Manager and Project Engineer for the design and construction oversight of two potable water chlorination systems on the water mains feeding the Naval Education and Training Center in Newport, R.I. Plans, specifications and bid documents were developed for the systems.

He was Project Manager and Project Engineer for the completion of roadway reconstruction projects under the Federal Urban Systems Program. He designed the 3.1 miles of Tremont Street (Rte. 118) in Rehoboth, MA. The project was subsequently constructed in 1986. Mr. Cummings has had both technical oversight and project management responsibilities for the preparation of various environmental impact reports. He was Project Manager during the preparation of an Environmental Impact Report for the expansion of the GCR Landfill in Peabody, MA. The 18-acre site was expanded vertically and horizontally, as well as in rate of receipt (700 tons per day).

He served as Project Manager in the design of 250-acre expansion to the Airport Industrial Park in Fall River, MA. This work was completed for the Fall River Office of Economic Development and involved the development of roadway and lotting schemes; detailed construction drawings for roads, water, sewer and storm drainage; construction management assistance during construction and other administrative services necessary to satisfy funding agencies (i.e., Mass. Executive Office of Transportation and Construction, Mass. Division of Water Pollution Control).

Mr. Cummings acted as Project Manager and Project Engineer on the design of various commercial shopping centers. He completed all designs (i.e., site parking storm drainage, sewage, water, grading) for the 250,000 s.f. North River Plaza in Pembroke, MA. He also completed all local permitting assistance, public meetings, state EIR processes, traffic signal permitting and other regulatory interfacing.

**February 1971 - June 1976:
GHR Engineering Assoc. Inc.**

During this time, Mr. Cummings acted as an engineering aide and survey crew member on a part time basis during active school semesters and full time summers and during vacations. He gained valuable knowledge and experience in many facets of civil and environmental engineering and land surveying.

EDUCATION

Northeastern University: M.S., Civil Engineering (Water Resources) (1988)

Southeastern Massachusetts University: B.S., Civil Engineering (1976)

REGISTRATION

Registered Professional Engineer in: Massachusetts (#30611, 1981); Maine (#4486, 1982); New Hampshire (#5277, 1982); Rhode Island (#4458, 1982); Pennsylvania (038260R, 1988) Connecticut, New Jersey and New York (#065144, 1988).

Licensed Site Professional in Massachusetts (#9033) (Inactive)

Licensed Soil Evaluator in Massachusetts (Inactive)

PROFESSIONAL MEMBERSHIPS

American Society of Civil Engineers

QUALIFICATIONS

- Thirty-six years of experience in the electric utility and power supply industry with five years devoted to customer service activities in the area of Energy Management/Demand Side Management (DSM); eight years devoted to rate and regulatory activities; and 23 years devoted to electrical engineering and engineering consulting.
- Experienced as an effective leader of technical staff.
- Experienced at Project Management.
- Experienced at medium and high voltage substation design and construction.
- Proficient at project economic analysis.
- Excellent oral and written communication skills.
- Proficient with PSLF, SKM and PSS/E power system models.
- Solid understanding of Power and Control Systems, Demand Side Management (DSM), generator interconnection systems, renewable energy resources and electric service rates and issues.
- Licensed Professional Engineer in multiple jurisdictions.

PROFESSIONAL EXPERIENCE & ACCOMPLISHMENTS

TECHNICAL

- Designed collector systems and transmission interconnections for proposed wind farms in Canada, Maine, Massachusetts, New Hampshire, New York, Texas and Vermont.
- Designed and managed construction of the electrical balance of plant facilities associated with the Norway (9 MW) and West Cape (99 MW) wind projects on Prince Edward Island.
- Designed VEC Jay #17 and Lowell substations for source upgrade from 34.5 kV to 46 kV.
- Designed 34.5 kV collector system and interconnection substation for 63 MW Kingdom Community Wind Project
- Experienced with induction generators and DFIG technology.
- Developed collector system and interconnection substation design as part of environment permit application for 34.2 MW Bull Hill Wind Project, 141 MW Oakfield 2 Wind Project in northern Maine and 63 MW Kingdom Community Wind Project in Vermont.
- Designed multiple 2.5 MVA medium voltage service additions for Procter & Gamble's Tambrands Facility in Auburn, Maine.
- Performed distribution system impact study on the 15 MW Berkshire Wind Project.
- Performed distribution system impact study on the 1.5 MW Silver Lake, 1.5 MW Pittsfield, 3.5 MW Cottage Street and 2.0 MW Indian Orchard photovoltaic projects.
- Designed, managed construction and commissioned electrical collector system and interconnection for the 4.5 MW Freedom Wind and Fox Island Wind Projects.
- Testified before the Vermont Public Service Commission relative to the electric utility system impacts of interconnecting the Kingdom Community Wind, Sheffield Wind and the Deerfield Wind Projects.
- Conducted economic due diligence reviews for Central Maine Power Company on several alternate energy projects.
- Designed and commissioned 1.7 MW Emergency Power System with automatic transfer for waste water treatment facilities at International Paper's Bucksport mill.

- Conducted an independent review of Bangor Hydro Electric Company's service quality for the State of Maine on behalf of the Public Advocate's Office.
- Designed interconnection and collection systems for 20 MW Spruce Mountain Wind Project, 33 MW Saddleback Ridge Wind Project and 20 MW Canton Wind Project.
- Developed preliminary design of 34.5 kV collector system, interconnection substation and associated 115 kV transmission line for the 132 MW Highland Wind Project.
- Developed preliminary design of 34.5 kV collector system and interconnection substation associated with the 150 MW Oakfield II Wind Project.
- Performed short circuit, protection coordination and arc flash hazard analysis of plant-wide electrical systems at the Kibby Wind Farm, the Stetson Wind Farm, The Jackson Laboratory, Procter & Gamble's Tambrands Auburn facility and Groveton Paper Board's Groveton facility
- Performed comprehensive EMF surveys and calculations for proposed power plants in Dighton, Massachusetts; Chelsea, Massachusetts; Johnston, Rhode Island; and Tiverton, Rhode Island; Middletown Connecticut; Yarmouth, Massachusetts; Meriden, Connecticut; Norwalk, Connecticut and testified before both the Connecticut and Massachusetts Facility Siting Council on the issue.
- Performed comprehensive EMF analyses for proposed high voltage transmission projects in Rochester, Southampton and Smithtown, New York and submitted testimony before the New York State Public Service Commission on the issue.
- Performed EMF surveys on over 50 residential households, municipal buildings, commercial and industrial facilities.
- Served as owner's representative for the Commissioning of Jamaica Private Power Company's (JPPC) 60 Mw diesel power plant in Kingston, Jamaica.
- Performed detailed surge protection analysis for transmission facilities at International Paper Company, AES Londonderry, Public Service of New Hampshire and Meriden.
- Conducted embedded and marginal cost of service studies and sundry rate design analyses for retail and wholesale rate cases. Developed rate tariffs, rules and regulations and applications for Maine PUC and FERC submissions.
- Testified before the Maine PUC on matters relating to retail cost of service, pole rental rates, and cost effectiveness of DSM programs.
- Conducted seminars on rate and energy management topics.

MANAGEMENT

- Served as Manager of Power System Analysis for TRC Engineers, LLC
- Served as oversight witness for interconnection relay and trip testing for Central Maine Power Company.
- Served as Project Manager of Central Maine Power Company's Generation Management System (GMS), Androscoggin Energy LLC (AELLC), Rumford Power Associates (RPA), and Bucksport Energy, LLC (BELLC) Merchant Plant Projects.
- Managed the Central Maine Power Company's power contracts and joint owner's agreements associated with Maine Yankee, Connecticut Yankee, Vermont Yankee, Yankee Rowe and Millstone Unit 3.
- Served as Director of System Engineering for Central Maine Power responsible for relay and control panel designs for line terminal and transformer panels, procurement specifications for large power transformers, uninterruptable power supplies, battery systems and other electrical components.
- Worked with clients to resolve technical questions related to rates and energy management programs.

EMPLOYMENT HISTORY

RLC ENGINEERING, LLC – Augusta, ME

2008 – present *Principal Electrical Engineer and Manager of Engineering Services*

TRC/E-PRO ENGINEERING & ENVIRONMENTAL CONSULTING, LLC – Augusta, ME

2006 – 2007 *Manager, Power Systems Studies*

1999 – 2006 *Principal Electrical Engineer*

E-PRO AND CENTRAL MAINE POWER COMPANY – Augusta, ME

1997 – 1999 *Principal Electrical Engineer*

1995 – 1996 *Director of Business Development*

CENTRAL MAINE POWER COMPANY – Augusta, ME

1994 – 1995 *Technical Coordinator, Nuclear and Interim Manager of Electrical Support Services*

1991 – 1993 *Director of System Engineering*

1986 – 1990 *Director of Energy Management Planning*

1984 – 1985 *Director of Costing and Pricing Analysis*

1975 – 1983 *Staff Engineer in the Operating and Rate Departments*

EDUCATION

B. S., Electrical Engineering, University of New Hampshire, 1974

M. S., Management, Thomas College, 1980

PROFESSIONAL AFFILIATIONS / REGISTRATIONS

- Licensed Professional Engineer, Maine, #3811, since 1978
- Licensed Professional Engineer, New Hampshire, #10409, since 2001
- Licensed Professional Engineer, Province of Prince Edward Island, #1140, since 2007
- Licensed Professional Engineer, Vermont, #69338, since 2010
- Licensed Professional Engineer, Massachusetts, #48860, since 2010
- Licensed Professional Engineer, Connecticut # 28161, since 2011

QUALIFICATIONS

- Current position as Principal Civil Engineer responsible for Project Management and civil design of substation and transmission line projects.
- Thirty seven (37) years experience in the planning, management and construction of large and medium size industrial facilities and electric power projects.
- Extensive experience managing, trouble shooting and resolving commercial issues and disputes involving large construction projects from Maine to Virginia.
- Registered Professional Engineer in the State of Maine.

PROFESSIONAL EXPERIENCE & ACCOMPLISHMENTS

TECHNICAL AND MANAGEMENT

- Two years as Principal Civil Engineer at RLC Engineering with responsibility for civil & transmission design and project management.
- Two and one half (2 1/2) years as Contracts Manager, Procurement Manager, Real Estate Manager and Manager of Construction & Procurement Planning for The Maine Power Reliability Program interfacing with all phases of the project team including the engineering, environmental, legal, real estate and planning functions.
- Nineteen (19) years experience with a large nationally prominent construction firm specializing in power, marine and heavy construction projects. Positions held included Senior Project Engineer, Project Manager, and Corporate Contracts Manager. Projects managed include microchip plant expansion (\$60 mm), paper mill machine rebuild (\$60mm), large catalog company design/build of new distribution center (\$20mm not including equipment), shipyard facility design/build demolition/construction (\$20mm), numerous hydropower generation plant construction (12MW, 25 MW) and 115kV transmission line construction.
- Ten (10) years experience as Construction Manager and Director of Construction Engineering for Central Maine Power Company. Responsibilities included engineering oversight of the construction of all generation, substation, transmission and commercial facilities.
- Extensive experience managing claim avoidance and disputes activities, including mediation, arbitration, Dispute Review Board and legal proceedings.
- Extensive experience constructing large civil site work, bridge/highway and other power plant facilities.

EMPLOYMENT HISTORY

RLC ENGINEERING, LLC – Augusta, ME

2009 – present *Principal Civil Engineer*

CIANBRO CORPORATION – Pittsfield, ME

2007 – 2009 *Contracts/Construction Manager MPRP Program*

1998 – 2006 *Corporate Contracts Manager*

1993 – 1997 *Project Manager*

WARREN CONSTRUCTION – Augusta, ME

1990 – 1992 *Construction Manager*

CENTRAL MAINE POWER COMPANY – Augusta, ME

1987 – 1990 *Director of Construction Engineering*

1980 – 1986 *Construction Manager*

STATLER TISSUE COMPANY – Augusta, ME

1976 – 1979 *Civil Engineer*

CIANBRO CORPORATION – Portland, ME

1973 – 1975 *Field Engineer*

EDUCATION

B. S., Civil Engineering, University of Maine, 1972

PROFESSIONAL AFFILIATIONS / REGISTRATIONS

- Registered Professional Engineer, Maine # 3551, Vermont # 65795

PROFESSIONAL EXPERIENCE & ACCOMPLISHMENTS

- Designed 115kV and 34.5kV transmission line generator exit leads, collector systems, and service lines for wind farm projects in Maine.
- Performed required upgrade analysis on substation structural components for several 345kV and 115kV substations across Maine.
- Supported Professional Engineers in a wide variety of geotechnical projects including deep and shallow foundations, roadways, retaining walls, detention ponds and infiltration studies.
- Construction Observations include pile driving, foundation subgrade, and artificial turf subgrade.
- Completed geotechnical reports for commercial buildings, cell towers, substations, and embankments.
- Coordinated, directed and performed subsurface investigations via borings and test pits.
- Field inspection of concrete, soil, rebar and asphalt at various construction sites throughout Maine.
- Laboratory testing of concrete, aggregates and soils.

EDUCATION

M.S., Civil Engineering, University of Maine, Orono, Maine, May 2008

B.S., Civil Engineering, University of Maine, Orono, Maine, May 2006

RELATED TRAINING

- Design of Transmission Line, Structures, and Foundations (University of Wisconsin)
- Design of Overhead Transmission Lines using PLS-CADD (Power Line Systems, Inc.)
- Advanced PLS-CADD Training - NERC FAC-008 (Power Line Systems, Inc.)
- Substation Design and Construction (University of Wisconsin)
- Introduction to Transmission Line Design (Gonzaga University)
- Project Development and Construction Methods (Gonzaga University)
- Transmission Line Design 101 & 201 (T&D World University)
- OSHA 40 hr Training in Health and Safety for Hazardous Waste Operations

EMPLOYMENT HISTORY

RLC ENGINEERING, LLC – Augusta, ME

September 2011 *Senior Civil Engineer*

2009 – 2011 *Civil Engineer*

R.W. GILLESPIE & ASSOCIATES, INC. – Saco, ME

2008 – 2009 *Geotechnical Engineer*

SUMMIT ENVIRONMENTAL CONSULTANTS – Lewiston, ME

Summers 2005 – 2007 *Geotechnical Engineer*

Summers 2003 – 2004 *Geotechnician*

DEPARTMENT OF CIVIL ENGINEERING – Orono, ME

School Years 2003 – 2007 *Lab/Graduate Assistant*

PROFESSIONAL AFFILIATIONS / REGISTRATIONS

- Licensed Professional Engineer in Maine (#12512) and Connecticut (#28299)
- American Society of Civil Engineers, Member
- American Concrete Institute, Member
- Chi Epsilon (Civil Engineering Honor Society), Member

TERRENCE J. DEWAN, ASLA
Principal

Terry DeWan has over 35 years of professional experience in landscape architecture, visual resource assessment, site planning, design guidelines, community development. His experience includes work with communities, state agencies, private developers, utility companies, and the forest products industry in New England. He has written numerous studies on community planning, visual impacts, recreation planning, water access, and highway corridor redevelopment.

Maine Licensed Landscape Architect #6

EDUCATION

State University of New York, School of Environmental Sciences and Forestry, cum laude

VISTA Training, University of Colorado

Visual Assessment Procedures, University of Southern Maine

PROFESSIONAL EMPLOYMENT

1988-Present	TJD&A, Yarmouth, ME Principal
1977-1988	Mitchell-DeWan Associates Portland, ME Partner
1976-1977	Center for Natural Areas South Gardiner, Maine Landscape Architect
1973-1976	Moriece and Gary of Maine Portland, ME Landscape Architect
1971-1973	The Architects Workshop Philadelphia, PA VISTA/Landscape Architect
1969-1970	Rocky Mountain Development Council, Helena, Montana VISTA Volunteer
1968-1969	Peter G. Rolland and Associates, Rye, NY

PROFESSIONAL AFFILIATIONS

Maine State Board for Licensure of Architects, Landscape Architects, and Interior Designers, 1986-present, Secretary
Public Art Committee, Maine Arts Commission
American Society of Landscape Architects
Boston Society of Landscape Architects
Council of Landscape Architects Registration Boards, Board of Directors

SELECTED PROJECT EXPERIENCE

VISUAL IMPACT ASSESSMENT

Bull Hill Wind Project, First Wind. T16 MD, ME. Visual Impact Assessment for a 19 turbine wind project.

Spruce Mountain Wind Project, Patriot Renewables, Woodstock, ME. Visual Impact Assessment for 11 turbine wind project.

Saddleback Mountain Wind Project, Patriot Renewables, Carthage, ME. Visual Impact Assessment for 19 turbine wind project.

Maine Power Reliability Program. Visual Impact Assessment for 352 miles of new 115 kV and 345 kV transmission line corridor system upgrades in 82 Maine towns, for Central Maine Power.

Stetson I & II Wind Project, Evergreen Wind V, LLC, Washington County, ME. Visual Impact Assessment including 3D Modeling and photosimulations for a 28 turbine wind project and 17 turbine expansion.

Pinnacle Wind Project, West Virginia Visual reports in support of state permitting applications for US Wind Force.

Cape Wind Energy Project, Nantucket Sound, MA. Peer review of Draft Environmental Impact Statement prepared by MMS.

Maine Governor's Task Force on Wind Power Development. Consultant to Task Force.

Maine DEP / Visual Assessment Rules. Consultant to DEP in the formulation of Chapter 315 Regulations: Assessing and Mitigating Impacts to Existing Scenic and Aesthetic Uses. Served on DEP Task Force for the development of the rules.

Hudson Landing, Kingston, NY A review of the VIA and Development Guidelines for a 1,750-unit community on the Hudson River. Hudson River Heritage.

St. Lawrence Cement, Hudson, NY Evaluation of visual impacts of proposed cement plan in a historic Hudson Valley community for Scenic Hudson, The Olana Partnership, and Hudson Valley Preservation.

Black Nubble Wind Farm, Redington Township, ME. VIA for 18 wind turbine project near Sugarloaf and Saddleback Mountains for Maine Mountain Power.

Downeast LNG, Robbinston, ME. VIA for LNG terminal. Downeast LNG, Inc.

Maine DEP: West Old Town Landfill. Peer review of VIA for an expanded landfill.

MaineDOT: Bath-Woolwich Bridge. Assessment of potential visual impacts to the historic U.S. Custom House in Bath.

Bath Iron Works, Land Level Transfer Facility, Bath, Maine. VIA and mitigation plan for BIW's \$250M modernization plan.

Bangor Hydro-Electric. 345 kV Transmission line from Orrington, ME to New Brunswick.

New England Wind Energy Station, Boundary Mountains of Western Maine. Kenetech Windpower, Livermore, California.

Stiles Road Quarry, Torrington, CT. VIA of a proposed quarry expansion in an historic community in southern Connecticut.

Recreation Plan, Visual Assessment, and Relocation Study for Golden Road, 'Big A' Hydroelectric Facility, Great Northern Paper, Millinocket, Maine.

Recreation, Land Use, and Visual components for Relicensing of Ripogenus Dam and Penobscot Mills, Great Northern Paper, Millinocket.

AES-Harriman Cove Co-generation Project, Bucksport, Maine. Visual assessment of a coal-fired power plant on Penobscot River.

Route 27 Scenic Byway Corridor Management Plan. MDOT. Long-term plan for 45 miles of Route 27 between Kingfield and Canada.

Preliminary Facilities and Interpretive Media Plan, Kancamagus Scenic Byway. White Mountain National Forest. Demonstration forest, hiking trails, interpretive exhibits, overlooks, outdoor amphitheater.

SELECTED PUBLICATIONS

DeWan, Terrence J. **Scenic Assessment Handbook.** Maine State Planning Office. 2008.

DeWan, Terrence J. **A Vision for the Moosehead Lake Region.** Natural Resources Council of Maine. 2006.

DeWan, Terrence J., and Brian Kent. **The Great American Neighborhood, A Guide to Livable Design.** Maine State Planning Office. 2004.

DeWan, Terrence, J. **Scenic Inventory, Islesboro, North Haven, Vinalhaven, Maine.** ME State Planning Office Critical Areas Program. 1992.

DeWan, Terrence, J., and Don Naetzker. **Scenic Inventory, Mainland Sites of Penobscot Bay.** Maine State Planning Office. 1990.

SELECTED PRESENTATIONS

Social Acceptance of Wind Energy: Addressing Visual Impacts. ASLA Annual Meeting, San Diego. 2011.

Scenic Inventory Training. Maine State Planning Office. 2009.

Halifax Regional Municipality Planning Presentation. 2008.

Photoshop as a Design Tool. ASLA Annual Meeting. Portland, OR. 1998.

Chattahoochee Riverway Plan. ASLA Meeting. Atlanta, GA. 1997.

Los Angeles River Plan. ASLA Annual Meeting. Los Angeles, CA. 1996.

Cleveland Computer Design Charrette. ASLA Annual Meeting. Cleveland, OH. 1995.

Scenic Assessments Methods along the Maine Coast. 20th Annual Natural Areas Conference, Orono, Maine. 1993. Moderator.

Visual Assessment Standards and Technology Conference: Case Studies in Visual Assessment Techniques. SUNY, Syracuse, New York 1992.

AWARDS AND DISTINCTIONS

American Society of Landscape Architects: Council of Fellows.

Council of Landscape Architects Registration Boards. Presidents Awards.

Boston Society of Landscape Architects Excellence Award for outstanding professional practitioner

Merit Award for Planning: 'From the River to the Bay' A Parks, Recreation, and Open Space Plan for Brunswick, Maine
Merit Award for Landscape Analysis and Planning – Park Planning: Coastal Maine Botanical Gardens, with EDAW.

North American / United Kingdom Stewardship Exchange, Exmoor NP, North Devon, England.

American Planning Association, NNE Chapter: Outstanding project of the year award:

Kancamagus Scenic Byway Facilities and Interpretive Plan (with White Mountain National Forest).

Knightville-Mill Creek Vision Plan, South Portland A Guide to Livable Design.

ASLA Merit Award for Communications: Los Angeles River Project and Chattahoochee River Greenway, Atlanta.

Kenneth H. Kaliski, P.E., Managing Director Environment, Energy and Acoustics

Biographical Summary

Mr. Kaliski is the Director of Resource Systems Group's Environmental Division. Mr. Kaliski has been with the firm since its founding in 1987. He manages projects and has served as an expert witness in the areas of noise, air pollution, and transportation. His Environmental Services Division takes on projects in community noise, architectural acoustics, greenhouse gas measurement and verification, mobile and point source air emissions modeling, and quantification of emissions offsets from renewable fuels. His projects include work throughout the U.S. Mr. Kaliski is the co-holder of Patent 7,092,853 for an Environmental Noise Monitoring System.



Education

- B. E. Engineering, Dartmouth College, NH (2002)
- A.B. Biological Sciences and Environmental Studies, Dartmouth College, NH (1985)

Selected Responsibilities and Relevant Engagements

- *Noise Forecasting for a Wind Turbine Demonstration Project, VT* – conducted noise measurements and modeling for a proposed 12-tower wind turbine project by the Green Mountain Power Company in Searsburg, Vermont. Used the NTerrain model to quantify the effects of atmospheric loss, vegetation, wind, and terrain features on octave-band noise levels in the area.
- *Deerfield Wind Farm, VT* – Prepared a noise study for Vermont's Section 248 filing on a 34 MW wind power project proposed for southern Vermont. The project included background sound monitoring, sound propagation modeling of the wind turbines and substation, and preparation of reports and exhibits. Sound modeling included analyses of 8760 hours of meteorology. A report was prepared and testimony was presented to the Section 248 Board
- *Noise Forecasting for a Wind Turbine Demonstration Project, VT* – conducted noise measurements and modeling for a proposed 12-tower wind turbine project by the Green Mountain Power Company in Searsburg, Vermont. Used the NTerrain model to quantify the effects of atmospheric loss, vegetation, wind, and terrain features on octave-band noise levels in the area.
- *Wind Turbine Noise Impact Study, MA* – Conducted a noise analyses and feasibility study a 20-turbine wind farm in Western Massachusetts.
- *Wind Farm Noise Analysis, MA* – Conducted a study of the noise impacts of the Brodie Mountain Wind Project specifically with respect to a nearby condominium development. Sound levels were monitored continuously over several days and these monitored levels were then correlated against ridgeline wind speed. A report was issued. The project is ongoing.
- *Review of Wind Turbine Impact Study, ME* – For the Maine Land Use Regulatory Council, reviewed the noise impacts for a proposed 580 turbine, 210 MW wind farm in the Boundary Region in western Maine.
- *Wind Farm Noise Impact Analysis, VT* – Conducted a study of the noise impacts from a proposed 30 to 45 MW wind farm in southern Vermont. The analysis included correlation of hub height wind speed with background sound levels measured at seven locations around the proposed facility, modeling of 8,760 days of meteorology, preparation of a report, and testimony to the Public Service Board.
- *Northern Vermont Wind Turbine Noise Review, VT* – Reviewed the noise impacts of a 52 MW wind turbine in Northern Vermont. Analyzed both monitoring and modeling data to determine whether the project conformed with the Public Service Board's Section 248 criteria.

- *Plains Wind Farm Noise Analysis* – Conducted an analysis of the noise impacts of a proposed wind farm in the Midwestern U.S. The project includes community sound monitoring over a 14-day period in the winter and summer, and modeling sound levels against a “relative” standard. This wind farm is expected to generate approximately 150 MW of power. The project is ongoing.
- *Wind Farm Substation Noise, NY* – analyzed the noise impacts from a large utility substation associated with a wind farm in northern New York.
- *Kansas Wind Farm Study* – Conducted sound propagation modeling for a proposed 100 MW wind farm in Kansas. Measured background sound levels at several locations around the proposed site. Calibrated the sound model using measurements at an operating wind farm in Kansas. Prepared a report comparing the impacts to a noise standard and suggested mitigation necessary to meet the standard.

Selected Publications

- Kaliski, K., Wilson, D.K., Vecherin, S., Duncan, E., “Improving Predictions of Wind Turbine Noise Using PE Modeling,” *Proceedings of the 2011 Institute of Noise Control Engineers NOISECON 2011*
- Kaliski, K., “Topics in Public Acceptance, Human Impacts: Sounds and Shadow Flicker,” New England Wind Energy Education Project Conference *Wind Energy in New England: Understanding the Issues Affecting Public Acceptance*, 2011
- Kaliski, K., “Wind Turbine Noise Regulation,” (webinar) New England Wind Energy Education Project, 2010
- Kaliski, K., and Duncan, E. “Calculating Annualized Sound Levels for a Wind Farm,” *Acoustical Society of America, Proceedings of Meetings on Acoustics*, Vol. 9, 2010.
- Kaliski, K. “Calibrating Sound Propagation Models for Wind Power Projects,” *State of the Art in Wind Siting Seminar*, October 2009, National Wind Coordinating Collaborative.
- Kaliski, K. and Duncan, E. “Propagation modeling Parameters for Wind Power Projects,” *Sound & Vibration Magazine*, Vol. 24 no. 12, December 2008.
- Duncan, E. and Kaliski, K. “Improving Sound Propagation Modeling for Wind Turbines,” *Acoustics 08*, Paris 2008.
- Kaliski, K. “Sound Advice: Evaluating Noise Impacts in a Changing Landscape,” American Wind Energy Association Fall Symposium, November 2008.
- Kaliski, K., and Duncan, E. “Propagation Modeling Parameters for Wind Turbines,” *Proceedings of the 2007 Institute of Noise Control Engineers NOISECON 2007*.
- Hathaway, K., and Kaliski, K. “Assessing Wind Turbines using Relative Noise Standards,” *Proceedings of the 2006 Institute of Noise Control Engineers INTERNOISE 2006*.

Licenses and Certifications

- Qualified Environmental Professional, Institute of Professional Environmental Practice
- Licensed Professional Engineer (PE), States of Vermont, New Hampshire, Massachusetts, and Michigan
- Board Certified, Institute of Noise Control Engineering

Memberships/Affiliations

- Acoustical Society of America
- Air and Waste Management Association
- Institute of Professional Environmental Practice
- Institute of Transportation Engineers
- Institute of Noise Control Engineering, Vice President for Board Certification
- Tau Beta Pi Engineering Society

Wind Power Energy Projects

Albert Frick Associates, Inc. has been a key player in the mapping of soils and site selection for wind power projects in Maine since 1994. We have worked on wind projects of all sizes throughout the State of Maine.

Our staff of Certified Soil Scientists are highly experienced and well-versed in both the site work and the permitting process of Wind Power projects and associated transmission lines, we have a long history of successful collaboration with the state agencies responsible for permitting these extremely large-scale projects (MDEP and LURC). AFA soil scientists have been instrumental in the development of new mapping (Class L) standards for long, linear projects such as transmission line corridors, access roadways, and wind power projects.

We have made a substantial commitment to be equipped with the latest GPS and GIS technologies. Our team of experienced and highly-skilled staff, ensure that interfacing with all of the various design/permitting groups involved in your project is painless. We have the manpower to mobilize several crews of mappers, all utilizing submeter GPS (Global Positioning System) technology and all terrain vehicles, to reach even the most rugged and inaccessible locations.

Albert Frick Associates is a company that thrives on the challenges presented by this new and exciting power source. We have a 20+ year history of meeting deadlines and exceeding expectations. We have worked hard to earn our reputation for efficiency and technical accuracy. Albert Frick Associates is poised to remain the leading firm for soils mapping for permitting of Wind Power projects in Maine for years to come.

Site Work

Albert Frick Associates Wind Power Site Work

- Soil mapping of wind projects for access roads, turbine sites, maintenance buildings, substations and transmission lines
- Site selection and septic designs for O & M buildings and lay down areas
- Maine DEP & LURC Site Location Reports for Chapters 11 & 17
- Working closely with design teams for appropriate stormwater and road design, and erosion and sediment control details and applications

Projects

Redington/Black Nubble

AFA staff mapped the soils for Maine's first proposed wind power project on Mount Redington in 1994. The project was expanded to nearby Black Nubble Mountain in Coplin Plantation in 2001. The final project proposal was to be for 18 turbines with 10.6 miles of proposed new roads. The project was ultimately denied in 2007 by Maine's Land-Use Regulation Commission due to its proximity to the Appalachian Trail citing concerns over aesthetics.

Stetson Mountain Wind

Stetson Wind is the largest operational utility-scale wind farm in New England with a total of 55 turbines. The project delivers clean, renewable energy to more than 23,000 New England homes. We began mapping the soils for this project on Stetson Mountain in 2006. A second phase of 17 turbines were later added onto nearby Owl and Jimmy Mountains. The project began its first phase of operations in January of 2009 with the second phase coming online in April of 2010.

Longfellow Wind Farm

The Longfellow Wind project, located on Black Mountain in Rumford and North and South Twin Mountains in Roxbury, is proposed to have as many as 26 turbines upon completion. AFA staff began mapping the ridgetops for turbine placement in 2007. In the summer of 2010 we began mapping areas for the proposed transmission line associated with this wind farm. This project has been since put on hold by its developer.

Rollins Wind

Rollins Wind, located in the towns of Lincoln, Lee, Burlington and Winn, is a proposed 40 turbine wind project that is currently under construction. Once constructed, the project can potentially power as many as 22,600 homes. AFA staff began mapping the project in early 2007 and it was during this mapping exercise that our Certified Soil Scientists, in conjunction with Maine's State Soil Scientist, began to develop and refine the new "Class L" standard of soils mapping for linear projects.

Record Hill Wind

Record Hill Wind is a 50.6 megawatt wind project consisting of 22 turbines arrayed along the ridgeline that connects Partridge Peak, Record Hill, and Flathead Mountain in Roxbury. The electrical output of the project is estimated to be approximately 122 million kilowatt hours per year, nearly equivalent to the electricity needs of every household in Oxford County. Frick Associates staff mapped the ridgetops and proposed access roadways in the fall of 2007. The

project is currently under construction.

Evergreen Wind

The Evergreen Wind Power project, located in Oakfield, will consist of 46 turbines once construction is completed. Once the project comes online, it has the potential to power as many as 25,000 homes. AFA soil science teams began mapping the project site in the fall of 2008. Initial environmental permits were received in January of 2010, but project construction has yet to begin.

Number 9 Wind

In 2008, Frick Associates soil science teams began mapping the largest proposed wind farm so far in Maine. The Number 9 Wind Farm, located just west of Bridgewater in Aroostook County has a total of 139 proposed turbines. Mapping was completed in the spring of 2010. The project application is still in progress.

Highlands Wind

On February 23, 2011, Highland Wind LLC submitted a permit application for a proposed 117 megawatt wind energy development to be located in Highland Plantation and Pleasant Ridge Plantation, Somerset County. The project would consist of approximately 39 wind turbines. The project would be located on Stewart Mountain, Witham Mountain, Bald Mountain, Briggs Hill, and Burnt Hill. The Highland Wind project will produce the equivalent electricity usage of 44,000 homes, according to the developer. This project was mapped by AFA soil science staff in the summer of 2009.

Saddleback Ridge Wind

Saddleback Ridge Wind is a proposed 13 turbine project located in Carthage. Due to aesthetic concerns, the project's developer relocated or removed several of the originally proposed turbines in the fall of 2010. AFA staff mapped the ridgetops for this project in the summer of 2009 and then mapped the proposed transmission line in the spring and fall of 2010.

Bowers Wind

Champlain Wind, LLC, (a subsidiary of First Wind Maine Holdings, LLC) has submitted a permit application (known as the "Bowers Wind Project") to construct a wind energy project of up to 69.1 MW in Carroll Plantation (Penobscot County) and Kossuth Township (Washington County). The Bowers Wind Project would include up to 27 turbines, associated access roads, up to four permanent 80-meter meteorological towers, a 34.5-kilovolt electrical collector system, an electrical collection substation, and an Operations and Maintenance building. The project would

be constructed on three ridges in the project area: Bowers Mountain and an unnamed ridge to the south in Carroll Plantation, and Dill Hill in Kossuth Township. AFA soil science staff mapped these ridges and access road areas beginning in the spring of 2010. Champlain Wind's permit application was accepted for processing on March 14, 2011.

Bull Hill Wind

Bull Hill wind is a project proposed by Blue Sky East, L.L.C., an affiliate of First Wind of Boston, MA, for a 34.2 megawatt grid scale wind power project. Known also as the 'Bull Hill Wind Project', it is a 19 turbine wind power project proposed for Bull Hill and Heifer Hill ridges in T16 MD, Hancock County. Frick Associates staff mapped this project during the summer and fall of 2010. Blue Sky East's permit application was submitted on January 31, 2011.

Bingham Wind

Bingham Wind is a project proposed by Blue Sky West, LLC, an affiliate of First Wind in Boston. Turbine numbers and miles of access road are not yet fixed for this project. Frick Associates soil science teams mapped portions of this project in the late fall and early winter of 2010. This project remains in the preliminary stages of development.

Canton Mountain Wind

Canton Mountain Wind is a project proposed by Patriot Renewables of Quincy, Massachusetts. This project is still in the preliminary stages of planning. At the time of our soils survey in the fall and early winter of 2010, 7 turbines were proposed.

Albert Frick

EDUCATION: Master of Science 1978
University of Maine at Orono, Orono, Maine
Program: Soil Science (Resource Utilization)

Bachelor of Science 1972
Bates College, Lewiston, Maine
Program: Geology

WORK EXPERIENCE:

Apr.1985-Present **Consulting Soil Scientist. Albert Frick Associates, Inc.**
Gorham, Maine

President and Senior Consulting Soil Scientist of small consulting firm which produces high intensity soil maps, subsurface wastewater disposal system designs, environmental studies, and subdivision planning with regard to soil utilization.

Oct.1978-Apr.1985 **Soil Scientist. Division of Health Engineering, State of Maine**

Responsible for administering the Site Evaluation program for the State of Maine. Duties included licensing of Site Evaluators, review of soils, and administration of the State of Maine Subsurface Wastewater Disposal Rules.

May 1978-Oct.1978 **Consulting Soil Scientist. Self-employed**

Site evaluations, land use consultation, site selection.

Jan.1976-May 1978 **Consulting Soil Scientist. University of Maine, Orono, Maine**

Examined soil potential for land use planning in communities of Maine to develop soil potential ratings for Maine soils that are utilized as a planning tool to guide towns in land use decisions.

Research Assistant. University of Maine, Orono, Maine

Examined land application of potato wastes. Investigated nutrient movement through soil and associated ground water quality in adjacent monitoring wells. Nutrient budgets were calculated and acceptable loading rates were identified.

Albert Frick

Jan.1974-Jan.1976 **Engineer Technician. Thomas Griffin Associates**

Duties included assisting in selection and design of sanitary landfill sites, report preparation, drafting, surveying, field investigations.

June 1971-Sept.1971 **Assistant Geologist. National Science Foundation**

Member of a research team examining pollution of Lake Lillinonah, Milford, Ct. Investigated stream turbidity and sediment loading, nutrient levels in recharge water and eutrophication process.

June 1970-Sept.1970 **Assistant Geologist. Wesleyan University, Middletown, Ct.**

Investigation of aeromagnetic anomalies in western Connecticut. Correlated strike, dip, overburden, and concentration of magnetite veins with computer modeling.

PUBLICATIONS: Site Evaluation of Subsurface Wastewater Disposal in Maine (August 1983)
Maine Department of Human Services, Division of Health Engineering.

Soil Potential for Land Use Planning at a Local Level in Maine (December 1977)
Bulletin 747, University of Maine.

Life Expectancy, Systems Design and Land Use of Subsurface Wastewater Disposal Systems in Maine (December 1984)
On-site Sewage Treatment- the Fourth National Symposium on Individual and Small Community Sewer Systems.

Maine Environmental Planning Guide (1990)
Cumberland County Soil and Water Conservation District
Chairman of the Soil Advisory Committee which developed the Soil Information Chapter 2 of the Manual.

AWARDS: Fred Griffie Award 1997
Outstanding graduate student in Life Science and Agriculture College, University of Maine at Orono

PROFESSIONAL AFFILIATIONS AN ORGANIZATIONS:

Maine Certified Soil Scientist #66
Maine Licensed Site Evaluator #163
Maine Association of Professional Soil Scientists
Maine Association of Site Evaluators (Charter Director)
(Past President)
National Society of Consulting Soil Scientists (Charter Member)
Maine Association of Landscape Architects (Associate Member)
Maine Board Certification of Geologists and Soil Scientists
(Consulting Soil Scientist Board Member) Governor McKernon appointee

CAREY L. JONES

SENIOR ARCHITECTURAL HISTORIAN

EDUCATION

M.A., Cornell University,
Historic Preservation,
2004

B.A., Rutgers University,
History/Political Science,
1996

EXPERIENCE

Years with PAL: 2.0
Years Experience: 6.5

CERTIFICATION

Heartsaver First Aid –
American Heart Association

OSHA 29 CFR 1910.120(e)
40-Hour Hazardous
Waste/Emergency Response

PROFESSIONAL DEVELOPMENT:

Section 106 Essentials

Ms. Jones has worked in historic preservation and related fields for over six years. Prior to joining PAL in 2008, Ms. Jones worked at AKRF, Inc, and the Neighborhood Preservation Center, both in New York City and with the Department of Planning and Development in the City of Ithaca, NY.

Ms. Jones has a diverse educational background in history, architectural history, cultural resource management, community development, preservation planning, and geographic information systems. She received her M.A. in Historic Preservation from Cornell University in 2004 and graduated from Rutgers University with a B.A. in History and Political Science in 1996. For her graduate coursework, Ms. Jones completed a thesis on the use of geographic information systems for historic preservation planning. She is fully qualified under the Secretary of Interior's Professional Qualification Standards (36 CFR Part 61 Appendix A).

Ms. Jones has experience with projects requiring review under Section 106 of the National Historic Preservation Act, the National Environmental Policy Act, and Section 4(f) of the Department of Transportation Act. She also has experience with projects reviewed under the Expedited Permitting of Grid-Scale Wind Energy Developments, a statute enacted by the State of Maine Legislature, and the Maine Land Use Regulation Commission.

Since joining PAL, Ms. Jones has completed numerous reconnaissance level surveys and effects assessment for utility-scale wind energy developments in Maine including both phases of the Oakfield Wind Project in Aroostook County, the Highland Wind Project in Somerset County, the Bull Hill Wind Project in Hancock County, and the Bowers Wind Project in Penobscot and Washington Counties. She has also performed intensive level surveys for various properties in Maine including farmsteads, railroad-related structures, and agricultural districts.

Ms. Jones has attended training for and successfully submitted projects through the Maine Historic Preservation Commission's (MHPC) Cultural Architectural Resource Management Archive (CARMA), a new on-line database system required for all surveys in Maine. She has also completed projects using the updated MHPC Survey Report Form.

Ms. Jones is a member of the National Trust for Historic Preservation, the New York Historical Society, the Rhode Island Historical Society, and the Providence Preservation Society.

STEPHEN A. OLAUSEN

EXECUTIVE DIRECTOR/SENIOR ARCHITECTURAL HISTORIAN

EDUCATION

MA, University of South Carolina, Applied History and Historic Preservation, 1988

BA, Roanoke College, History, 1984

EXPERIENCE

Years with PAL: 14
Years Experience: 25

CERTIFICATION

Basic First Aid - American Red Cross

Adult CPR -American Red Cross

OSHA 29 CFR 1910.120(e)
40-Hour Hazardous Waste/Emergency Response

OSHA 29 CFR 1910.120(e)
8-Hour Hazardous Waste/Emergency Response Supervisor

PROFESSIONAL DEVELOPMENT

Section 106: Working with the Revised Regulations

Workshop on the New 36 CFR Part 800: Highlights of Changes

Federal Energy Regulatory Commission Section 106 Compliance Seminar

As a PAL Senior Architectural Historian and Project Manager, Mr. Olausen conducts cultural resource management projects that require the identification, evaluation, and registration of historic architectural and landscape properties. He also serves as PAL's Executive Director and oversees the administrative operations of the firm, including the information systems, production, and human resources departments. He fully meets the Secretary of Interior's Professional Qualification Standards for conducting historic architectural projects (36 CFR Part 61 Appendix A).

Olausen is expert at coordinating projects that are conducted under federal historic preservation laws, including the National Historic Preservation Act, National Environmental Policy Act, and Section 4(f) of the Department of Transportation Act, as well as the various state historic preservation laws of the New England and Mid-Atlantic regions. His experience includes the completion of hundreds of historic property identification and evaluation surveys, more than 150 successful National Register of Historic Places nominations, and a large number of HABS/HAER and state-level documentation projects. Other areas of expertise include the preparation of cultural resource management plans, Section 106 reports and a agreement documents, Section 4(f) statements, architectural design guidelines, historic preservation tax incentive certifications, and the development of public educational materials and displays. He also specializes in adapting computer applications to provide solutions for cultural resource management data collection and has a broad range of experience in computer assisted design (CAD), database management, geographical information systems (GIS), and desktop publishing.

Olausen has conducted projects for a wide variety of Federal clients, including the U.S. Army Corps of Engineers, National Park Service, U.S. Coast Guard, U.S. Department of Agriculture, Federal Emergency Management Agency, Federal Railroad Administration, National Railroad Passenger Corporation (Amtrak), General Services Administration, U.S. Army, and U.S. Navy. He has managed aboveground historic property work for PAL projects conducted for the departments of transportation in Connecticut, Rhode Island, Massachusetts, and Maine. He has also worked extensively for prominent private energy clients, including National Grid, TransCanada, and Spectra Energy.

Over the last 10 years, Olausen has managed numerous wind energy projects in Massachusetts and Maine. The work has included historic property identification and evaluation surveys, effects assessments, consultation under Section 106, and the preparation of mitigation documentation. The projects have ranged from large utility scale developments like Cape Wind in Nantucket Sound to single turbine projects. Projects conducted in Maine have included Stetson Ridge, Stetson II, Oakfield, Highland, Rollins, Bowers Mountain, Bull Hill, and Record Hill. Through this work, Olausen has acquired a solid understanding of the Maine site laws governing major wind developments and the particular requirements of the Maine Historic Preservation Commission for the review of such projects.