



Devine Tarbell & Associates, Inc.
Consulting Engineers, Scientists, & Regulatory Specialists

Richard R. Boothby
Senior Environmental Technician

Education

University of New Hampshire – U.S. Army Corps of Engineers Wetland Delineation Certification, 2000
Portland School of Art - Graphic Design, 1977
University of Maine - Graphic Arts, 1974
University of Maine - Engineering studies, 1962-1963

SUMMARY OF EXPERIENCE

Mr. Boothby has over 34 years of experience in drafting, graphic design, photo-simulations, wetland delineations, water quality sampling, GPS, and technical assistance for a broad range of environmental and engineering disciplines. Areas of expertise include technical support in site planning, area-wide resource evaluations, land use studies, environmental assessments, licensing/permitting studies, solid/hazardous waste studies, water/wastewater studies, geotechnical studies, water/wastewater treatment facilities, sanitary sewer projects, wetland delineation assistance, flow assessment studies, and flood control projects. Prior to joining Devine Tarbell & Associates, Inc. (DTA; formerly Framatome ANP, Inc.) in 1988, he was the manager of the Graphics/Reproduction Department at E.C. Jordan Co. in Portland, Maine (now Harding ESE). His responsibilities at E.C. Jordan included overall supervision of graphics preparation, assignment of work tasks, computer operation utilizing graphics, desktop publishing, and photo-editing software, and preparation of graphic aids for public presentations. Prior to joining E.C. Jordan in 1969, Mr. Boothby worked three years for the U.S. Department of Agriculture, Soil Conservation Service (SCS), Planning/Flood Control Division, Orono, Maine. His responsibilities at SCS included drafting, hydraulic calculations, seismic surveys, and topographic surveying.

Environmental - Aquatic Resources

Mr. Boothby has over thirteen years of experience in water quality sampling utilizing the Maine Department of Environmental Protection's Lake Trophic Sampling Protocol and the U.S. EPA's Winkler Method for quality control. Sampling has included the determination of temperature and dissolved oxygen with digital metering systems, Secchi disk readings, pH, and epilimnetic core sampling for total phosphorus, chlorophyll *a*, and suspended solids. Along with water quality sampling, he has also participated in habitat studies, instream flow determinations, and entrainment/mortality studies.

Environmental - Specialty Areas

Mr. Boothby has over 30 years experience in land use studies and associated mapping as they relate to comprehensive town plans and environmental permitting. He has been responsible for collecting existing land use data by windshield survey, aerial photographic interpretation, and literature research. He has also been responsible for preparation of photo-simulations of various project scenarios with the use of digital photo-editing software and specialized computer graphics. He is also involved with using GPS equipment in locating topographic features, bathymetric mapping, and wetland boundaries. Within the past five years, Mr. Boothby has been actively involved in assisting with wetland delineations, RTE plant identification, plan/profile surveys, and monitoring compliance with environmental regulations during construction activities.

Licensing/Regulatory

Mr. Boothby has over 30 years experience assisting in the preparation of licensing and permitting applications for hydroelectric and linear energy projects. He has been responsible for graphic input and coordinating the assembly and reproduction of numerous FERC license applications, ISCDs, state permits, relicensing applications, Army Corps permits, as well as preparation of Exhibit E and F drawings and public hearing presentation materials.

RELEVANT PROJECT EXPERIENCE

Environmental - Aquatic Resources

Eustis Hydroelectric Project, North Branch Dead River, Eustis, Maine, Consolidated Hydro, Inc. - Responsible for the collection and analyses of water quality samples to determine temperature and dissolved oxygen utilizing the U.S. EPA's Winkler Method and Secchi disk readings for water clarity as part of an environmental report. The facility consists of a 240-foot-long dam and powerhouse with a total installed capacity of 1 MW. Power is generated directly to a substation adjacent to the powerhouse. The impoundment is approximately 2.6 miles long and less than 200 feet wide. Sampling locations were located immediately upstream and downstream of the dam.

Worumbo Hydroelectric Project, Androscoggin River, Lisbon Falls, Maine, Miller Hydro. - Responsible for the collection and analyses of water quality samples to determine temperature and dissolved oxygen utilizing the U.S. EPA's Winkler Method as part of post-construction water quality monitoring for the new 17 MW facility. Sampling locations were located at the upstream face of the dam, in the tailrace, and in a quiet pool downstream.

Ellsworth Hydroelectric Project, Graham Lake, Ellsworth, Maine, Bangor Hydroelectric Company - Responsible for the collection and analyses of water quality samples in the 10-mile-long Graham Lake storage reservoir as part of the compliance with relicensing conditions for Ellsworth Dam. The Graham Lake Dam consists of an earthen dike 550 feet long and a concrete gated spillway 60 feet long. Three widely spaced sampling locations along the length of the lake were used to determine temperature and dissolved oxygen utilizing digital metering systems and the U.S. EPA's Winkler Method as quality control. Collected epilimnetic core samples for determination of chlorophyll *a*, total phosphorus, and suspended solids utilizing Maine's Department of Environmental Protection Lake Trophic Sampling Protocol.

Basin Mills Hydroelectric Project, Penobscot River, Penobscot County, Maine, Bangor Hydroelectric Company - Responsible for the collection and analyses of water quality samples as part of a new license application to determine temperature and dissolved oxygen utilizing digital metering systems and the U.S. EPA's Winkler Method as quality control. Also collected epilimnetic core samples for determination of chlorophyll *a*, total phosphorus, and suspended solids. The Basin Mills project consists of a proposed new dam 1640 feet long and powerhouse with a total installed capacity of 38 MW, and an upgrade to the downstream Veazie Dam powerhouse from 8.4 MW to 16.4 MW. Assisted with the instream flow studies and substrate habitat studies at the Veazie Hydroelectric Project and was also involved with the fish entrainment/mortality studies at the West Enfield Hydroelectric Facility as part of the overall licensing project.

Basin Mills Hydroelectric Project, Piscataquis River, Penobscot County, Maine, Bangor Hydroelectric Company - Responsible for the collection and analyses of water quality samples as part of the Howland Dam Impoundment Study associated with the Proposed Basin Mills Project to determine temperature and dissolved oxygen utilizing digital metering systems and the U.S. EPA's Winkler Method as quality control. Also collected epilimnetic core samples for determination of chlorophyll *a*, total phosphorus, and suspended solids. Howland Dam is a 660-foot-long dam and powerhouse with total installed capacity rated at 1.875 MW. The impoundment is approximately 4.7 miles long. Sampling locations were immediately upstream and downstream of the dam, and 2 miles and 4.7 miles upstream.

Augusta Hydroelectric Project, Kennebec River, Kennebec County, Maine, Edwards Manufacturing Company - Responsible for the collection and analyses of water quality samples to determine temperature and dissolved oxygen utilizing digital metering systems and the U.S. EPA's Winkler Method as quality control. Also collected epilimnetic

core samples for determination of chlorophyll *a*, total phosphorus, and suspended solids. The sampling was conducted as part of the relicensing application for Edwards Dam. The project consists of a 917-foot-long dam and powerhouse with total installed capacity of 3.5 MW. The headpond is approximately 15 miles long. Sampling locations were located immediately upstream and downstream of the dam. Other locations were established 3, 6, and 15 miles upstream. Also assisted with the habitat studies and substrate analyses along with instream flow studies and sediment sampling collection.

Stillwater Hydroelectric Project, Stillwater River, Penobscot County, Maine, Bangor Hydroelectric Company - Responsible for the collection and analyses of water quality samples to determine temperature and dissolved oxygen utilizing digital metering systems and the U.S. EPA's Winkler Method as quality control. Also collected epilimnetic core samples for determination of chlorophyll *a*, total phosphorus, and suspended solids. The sampling was conducted as part of the relicensing application for Stillwater Dam. Sampling locations were located at a bridge immediately downstream of the Gilman Falls Dam, which regulates flow to the Stillwater River and is 3.1 miles upstream of the Stillwater Dam. Another bridge immediately upstream of the Stillwater Dam was the site for a second sampling episode, and a third sampling site was located in the tailrace, 200 feet from the powerhouse. The facility consists of a meandering 1,712-foot-long dam, comprised of 13 separate structures, and a powerhouse with a total installed capacity of 1.95 MW. Also responsible for the collection of sediment samples.

Storage Project, West Branch Penobscot River, Penobscot County, Maine, Great Northern Paper, Inc. - Assisted in the instream flow studies and substrate assessments for Caucomgomoc Stream and Ragged Stream as part of the Delphi team approach used during the relicensing studies. Also responsible for full photographic and video documentation for the various flow rates at these streams. The Storage Project consists of four storage facilities: Seboomook Lake and dam, Ragged Lake and dam, Caucomgomoc Lake and dam, and Canada Falls Lake and dam. They are part of Great Northern's overall 11-dam hydro system that supplies power to its paper mills located in Millinocket and East Millinocket.

Environmental - Specialty Areas

115 kV Chester-Millinocket Tie Line Project, Penobscot County, Maine, Great Lakes Hydro

America, LLC and Bangor Hydro-Electric Company - Responsible for re-delineating of wetlands along a proposed 115 kV transmission line corridor from an existing substation in Millinocket, Maine to a new substation near East Millinocket, Maine (7.1 miles) and then to a new substation in Chester, Maine (17.5 miles). All waterbody crossings were also flagged for vegetated buffer zones within 25 feet of normal high water elevations. Following clearing of the right-of-way, wetlands and waterbody crossings were again marked and signed prior to start of construction. Other responsibilities also included assisting the third party inspector in assuring that Maine DEP, Maine DOT, and Land Use Regulatory Commission permits were in compliance with construction procedures.

Southern York County, Transmission Improvement Project, Eliot, Kittery, and York, Maine, Central Maine Power Company - Responsible for the delineation and GPSing of wetlands along 9.3 miles of a new proposed transmission line corridor from York Harbor substation in York, Maine to Bolt Hill substation in Eliot, Maine. Delineations also included the expansion of existing substation areas and a new substation to be located in Kittery. Photodocumentation of all wetlands and stream crossings were also conducted. Located and GPS'd RTE plant species. Prepared presentation materials for public hearings in each of the three towns.

Patriot Extension Project, Tennessee, Virginia, North Carolina, East Tennessee Natural Gas - Responsible for the delineation of wetlands, photodocumentation and data collection at stream crossings, and access road assessments along a 90+ mile long proposed natural gas pipeline project.

Wetland Constraints Analysis, First Roach Pond, Maine - Identified wetland constraints in a field reconnaissance of several large parcels of land around First Roach Pond. Wetland features were located by GPS and presented on GIS database maps identifying wetland and soils constraints along with jurisdictional subdistricts of the Maine Land Use Regulation Commission (LURC).

Pine Tree Waste Regional Waste Transfer Campus, Westbrook, Maine - Assisted with wetland delineations and GPS'd delineated wetlands on a 100-acre parcel for the development of a solid waste transfer facility, municipal recycling center, maintenance garage, and corporate offices, to be constructed on a 40-acre campus.

115 kV Transmission Line Project, Millinocket, Maine, Great Northern Paper Co., Millinocket, Maine. - Responsible for locating centerline of proposed 115 kV transmission line from Chester to Medway, Maine utilizing GPS. Follow-up included the delineation of wetlands and GPSing their boundaries.

Maritimes & Northeast Phase II Pipeline Project, State of Maine, Maritimes & Northeast Pipeline, L.L.C. - Participated in wetland delineations and GPS field capture of wetland locations along 200 ± miles of pipeline route, two compressor stations, and 147 ± miles of associated laterals and spurs from Westbrook, Maine to the St. Croix River in Baileyville, Maine. Conducted photo-documentation of stream and river crossings prior to construction. Assisted with the identification of RTE plant species along various segments of the routes, and conducted environmental impact assessments for permanent and temporary access roads. Performed a quality control walk-over of selected portions of the route to determine accuracy of mapped wetland sites, and observed and noted any wetlands or stream crossings that were initially overlooked. Monitored environmental inspection compliance during the pipeline and access road construction phase. Currently involved in a five-year monitoring program to determine wetland regeneration along a 65 ± mile portion of the pipeline from Bradley, Maine to the St. Croix River at the Maine-Canada border.

Central Maine Power Company 345 kV Transmission Lines, Cumberland, Androscoggin, Sagadahoc, Lincoln, and Kennebec Counties, Maine, E-Pro - Conducted profile surveys of selected sections of 345 kV transmission lines to determine conductor clearances above ground elevation. The project covered 80 ± miles from Buxton, Maine to Windsor, Maine. The data is to be used to determine where potentially dangerous conductor sag would occur and need readjusting once transmission line voltages are increased when the Maine Independence Station generating facility goes on-line.

Maine Independence Station, Veazie, Maine, Casco Bay Energy Company - Assisted with a conventional topographical and structure location survey of a 50 ± acre inactive oil-fired electrical generating facility. The site is the area for a 500 MW gas-turbine generating plant. Also responsible for the location of wetland areas using GPS equipment. Prepared final graphic materials for presentation at public hearings during the licensing process.

MEPCO Transmission Line Intertie, Penobscot County, Maine, Great Northern Paper, Inc. - Responsible for photo documentation of various potential visual impacts at road and stream crossings for a proposed 115 kV or 345 kV transmission line along two existing transmission line corridors in the towns of Chester, Woodville, Medway, East Millinocket, Millinocket, and the unorganized townships of T2R9, and TAR7, Maine. Was responsible for creating photo-simulations of the proposed transmission line at various locations of greatest visual impact that were presented at the public hearings during the permitting process. Was also responsible for locating wetland areas along the 40.5 miles of existing corridors, 5.5 ± miles of two proposed alternate routes, and six proposed substation sites using GPS equipment.

Umbazooksus Lake Wetland Enhancement, T6R13 WELS, Piscataquis County, Maine, Great Northern Paper, Inc. - Performed bathymetric survey of the 1,600 acre lake and located shoreland wetlands, topographic features, tributary channels, and the upper limit of flooding during full pond using GPS equipment. This was part of the Wetland Enhancement Plan prepared to comply with FERC license conditions contained in the Ripogenus and Penobscot Mills Hydroelectric Project licenses.

Proposed 115 kV Transmission Line, Penobscot and Hancock Counties, Maine, Bangor Hydroelectric Company - Responsible for the preparation of photo-simulations of the proposed 21-mile transmission line at two major road crossings where significant visual impacts would be a factor. These were presented at the public hearings during the permitting process.

Embankment Stabilization, Pilgrim Creek Park, Noxon, Montana, Washington Water Power - Responsible for the preparation of six photo-simulations depicting the proposed embankment stabilization methods to be used to eliminate shoreline erosion at a community park located at the confluence of Pilgrim Creek and the Clark Fork River. Each scenario used a combination of stabilization techniques employing, either singularly or in combination, the use of rip-rap, gabions, timber crib, and vegetative construction. Also included in the photo-simulations was the addition of boat ramps and timber walkways.

Lakes Management Study, Coffee Pond, Casco, Maine, and Forest Lake, Gray-Cumberland-Windham, Maine - Maine Department of Environmental Protection, - Responsible for the

graphics input and production of socioeconomic and environmental studies of two pilot project lakes. Prepared multiple colored acetate overlays to depict land use patterns, topography, soil types, soil suitability for septic disposal, wetland habitats, and visual aesthetics allowing potentially environmentally sensitive development areas to be quickly located.

Dickey-Lincoln Hydroelectric Project, Transmission Line Corridor, Maine, New Hampshire, Vermont, Department of Energy - Responsible for preparing maps depicting socioeconomic data, land use (interpreted from aerial photographs) and environmental impacts of a proposed transmission line corridor traversing western Maine and northern New Hampshire and Vermont. Also responsible for field verification of land uses by aerial flyover. The work was part of a proposed hydroelectric facility and associated 2,700-square-mile impoundment proposed on the St. John River in Dickey-Lincoln, Maine.

Oil Refinery, Sanford, Maine, New England Energy Company - Responsible for gathering existing land use information and preparing maps depicting socioeconomic data, land use, and environmental impacts of a proposed oil refinery and related pipeline connection at Portland, Maine.

201 Facilities Plan, Greenville, Maine, Moosehead Sanitary District - Responsible for gathering of existing land use information and preparation of multiple colored maps depicting socioeconomic data and land uses for a proposed spray irrigation waste disposal facility.

Land Cover Mapping, Cumberland County, Maine, Greater Portland Council of Governments - Responsible for preparation of reproducible land cover maps for the entire area of Cumberland County, Maine, utilizing aerial photographs and random field verifications by windshield survey.

Comprehensive Town Plans, Various Locations, Maine - Responsible for gathering land use information by windshield survey, conducting road sufficiency studies, and preparing multiple colored maps depicting land use, topography, zoning, soil suitability, road classifications, and water classifications for the communities of Raymond, Jay, Buxton, Mattawamkeag, Madawaska, and Presque Isle.

Licensing/Regulatory

Phase II Pipeline Project, State of Maine, Maritimes & Northeast Pipeline, L.L.C. - Responsible for the preparation of numerous graphics and charts submitted with the permit application to the Federal Energy Regulatory Commission, the Maine Department of Environmental Protection, and the Land Use Regulation Commission for an underground gas pipeline encompassing 347 miles of mainlines, laterals, and spurs. Calculated number, type, length, and acreages of wetlands crossed utilizing topographic maps and aerial photographs. Determined number of streams and rivers crossed, and ascertained types of land uses within the proposed rights-of-way. Also maintained and updated the project maps files as reroutes and alternate routes were revised.

New England Wind Energy Station, Franklin-Somerset Counties, Maine, Kenetech Windpower, Inc. - Responsible for overseeing and assisting in the preparation of reproducible aerial photographic mylars depicting locations of proposed wind turbine strings, power collection lines and 115 kV transmission lines for inclusion in the permit application submitted to the Maine Land Use Regulation Commission and Maine Department of Environmental Protection. The proposed project is rated at 210 MW and consists of 640 wind turbines scattered along numerous ridgelines in the western Boundary Mountains section of Maine. Prepared visual exhibits for public hearings.

Augusta Hydroelectric Project, Kennebec River, Augusta, Maine, Edwards Manufacturing Company - Responsible for the graphics input and report production coordination of the five-volume Application for License submitted to the Maine Department of Environmental Protection and Federal Energy Regulatory Commission. The project consists of a 917-foot-long dam and powerhouse with total installed capacity of 3.5 MW. The headpond is approximately 15 miles long.

Second 345 kV Tie Line to New Brunswick, Canada, Penobscot-Hancock-Washington Counties, Maine, Bangor Hydroelectric Company - Responsible for graphic representation and report production coordination of the State Permits and Environmental Reports of an 85-mile transmission line corridor from Orrington, Maine to New Brunswick, Canada.

Second 345 kV Electric Transmission Tie Line to New Brunswick, Canada, Penobscot-Hancock-Washington Counties, Maine, Bangor Hydroelectric

Company - Conducted environmental assessments of two alternative routes presented by interveners prior to the State of Maine Board of Environmental Protection public hearings. Assessments included field studies to determine wetland and waterway impacts, and to determine the location of access roads and their associated impacts. Field studies also included identifying visual and aesthetic impacts of the transmission line structures along the two routes compared to the preferred route presented by Bangor Hydro. Also prepared colored photomosaics of all routes from aerial photographs depicting approximate centerline layouts, major land ownership, annotation of major streams, rivers, roads, towns, and environmental resources of special significance. The photomosaics comprised 17 panels (40" x 60" at a scale of 1" to 1000'). They were presented at the Board of Environmental Protection public hearings as reference material for the general public, interveners, and attorneys representing Bangor Hydro and the interveners.

Basin Mills Hydroelectric Project, Penobscot River, Orono and Bradley, Maine, Bangor Hydroelectric Company - Responsible for graphics input and report production coordination of the nine-volume set of Second Stage of Consultation documents and 14-volume set of Application for License documents for a proposed 54.4 MW hydroelectric generating facility located on the Penobscot River. The Basin Mills project consists of a proposed new dam 1,640 feet long and powerhouse with a total installed capacity of 38 MW, and an upgrade to the downstream Veazie Dam powerhouse from 8.4 MW to 16.4 MW. Prepared visual exhibits for the public hearings before the Maine Board of Environmental Protection.

Stillwater Hydroelectric Project, Stillwater River, Orono, Maine, Bangor Hydroelectric Company - Responsible for the graphics input and report production coordination of the five-volume New License Application submitted to the Maine Department of Environmental Protection and Federal Energy Regulatory Commission.

Connecticut River Riverbank Management Plan, Connecticut River, Vermont-New Hampshire-Massachusetts, Northeast Utilities Service Company - Responsible for the graphics input and report production coordination of the Riverbank Management Plan encompassing the Connecticut River from Vernon Dam in Vernon, Vermont to Turners Falls Dam in Greenfield, Massachusetts.

Messalonskee Stream Watershed Project, Messalonskee Stream, Kennebec County, Maine, Central Maine Power Company - Responsible for the graphics preparation and report production coordination of the Messalonskee Stream Watershed Project covering fishery resources, wetlands, botanical and wildlife resources, and hydrologic analyses as part of a final draft FERC Exhibit E and Environmental Studies report. The project covers a study reach of approximately 20 miles and consists of a storage dam and four hydroelectric facilities: Messalonskee Dam which impounds Messalonskee Lake, Oakland rated at 2.8 MW, Rice Rips rated at 1.6 MW, Automatic rated at 0.8 MW, and Union Gas rated at 1.5 MW.

Aroostook River Hydroelectric Project, Aroostook River, Caribou, Maine, Maine Public Service Company - Responsible for the graphics input and report production coordination of the five-volume New License Application submitted to the Maine Department of Environmental Protection and Federal Energy Regulatory Commission. The project consists of the Millinocket Lake Storage Dam, which is used as a winter peaking utility, and the Caribou Hydroelectric Dam located 92 miles downstream. The dam is 451 feet long and its powerhouse has a total installed capacity of 0.8 MW.

Evacuation Plan, Wiscasset, Maine, Maine Yankee Atomic Power Company - Responsible for the preparation of maps, report production, and public presentation materials for the Evacuation Plan involving 15 communities in the project area of an atomic power generating facility.

Dickey-Lincoln Hydroelectric Project, St. John River, Dickey, Maine, Corps of Engineers - Responsible for preparing maps depicting socioeconomic data and environmental impacts of a proposed hydroelectric facility and associated 2,700-square-mile impoundment.

Scott Paper Company, Hinckley, Maine, Maine Department of Environmental Protection - Responsible for preparing maps and overseeing report production for the Application for Site Location Permit for a new pulp and paper mill.

Flood Control Sites, Various Locations - Responsible for surveying and mapping of flood control sites, establishing benchmarks, and surveying stream cross sections on the following projects:
Arnold Brook - Presque Isle, Maine; Austin Stream - Bingham, Maine; Carrabassett River - Carrabassett

Valley, Maine; Cold River - Stow, Maine;
Dunham-Davee Brook - Dover Foxcroft, Maine; Fish
Stream - Patten, Maine; Prestile Stream - Easton,

Maine; Twenty-five Mile Stream - Unity, Maine;
West Branch Presque Isle Stream - Chapman, Maine.

Specialized Training and Certifications

University of New Hampshire – ACOE Wetland Delineation Certification Program, 2000

University of Southern Maine - Introduction to CADD, 1989

University of Southern Maine - Supervisory Management Program, 1987

J:\QUALIFICATIONS\Resumes - DTA\Boothby.doc

October 20, 2004