

## PAUL BOVITZ

### *Qualifications Summary*

- Over 28 years of professional experience.
- More than 25 years of technical experience in ecological assessment and natural resources management in public, private, and academic sectors, engaging in both theoretical and applied aspects of ecological research and encompassing a variety of geographic regions, habitats, and taxa.
- Management of remedial investigation studies focusing on contaminated sediment, principal investigator of ecological risk assessment studies, EIAs, permitting, and technical reports. Projects ranged from wetland delineation reports for private clients to risk assessments of Superfund sites for federal agencies.
- Project management, field supervisory experience, expert testimony, proposal preparation, client negotiation, and budget management.
- LEED AP
- International experience in ecological assessment.

**(732) 417-5815 (W)**

### **Registration**

Certified Professional Wetland Scientist, Society of Wetland Scientists (1995);  
LEED AP (2009)

### **Fields of Competence**

Ecological assessment and natural resources management; impacts of contamination on ecological receptors; risk assessment; environmental impacts influencing dredged material management; wetland delineation; functional assessment; permitting; mitigation design; wildlife habitat evaluation; preparation of environmental impact assessments (EIAs); and environmental permitting.

### **Education**

M.S., Ecology—Rutgers University (1992)  
B.S., Wildlife Biology—Colorado State University (1982)

### **Credentials**

Habitat Evaluation Procedures (HEP) Training (2002)  
New Jersey Comparative Risk Assessment Project, Invited Panel Member, NJDEP (2002)  
40-Hour Hazardous Waste Site Training Course, OSHA 29 CFR 1910.120(e)(3), WESTON (1990)  
8-Hour Hazardous Waste Refresher Course, OSHA 29 CFR 1910.120(e)(8), WESTON (2005)  
Site Health and Safety Coordinator Course, OSHA 29 CFR 1910.120(e)(4), WESTON (1993)  
Bloodborne Pathogens Training Course, OSHA 29 CFR 1910.1030, WESTON (2005)  
U.S. Coast Guard /State of New Jersey Boating Safety Certificate  
Society of Ecotoxicology and Environmental Chemistry  
Society of Wetland Scientists  
Society of American Military Engineers

## Employment History

1990-Present WESTON  
1988-1990 The Hudson Partnership, Inc.  
1985-1988 Rutgers University  
1984-1985 Digital Equipment Corp., Inc.  
1983 Mariah Associates, Inc.  
1982-1983 Colorado State University  
1981-1982 U.S. Fish and Wildlife Service  
1980-1981 Colorado State University  
1980 Colorado Division of Wildlife  
1979-1980 Colorado Cooperative Wildlife Research Unit  
1979 U.S. Fish and Wildlife Service  
1978 U.S. Forest Service

## Key Projects

**Environmental Assessment for Wind Turbine Development, U.S. Coast Guard, Cape May, N.J. Project Manager.** Project manager and primary author of NEPA EA for placement of two 2-MW wind turbines at the USCG TRACEN installation in Cape May. Assessed ecological impacts including potential impacts on birds and bats within a major migratory corridor of national significance. Worked with USCG in evaluating alternatives and selecting the preferred design, and with reviewing agencies to develop mitigation strategies for projected impacts. The EA was well received by the public.

**Ecological Assessment, Rahway River Fish Ladder Investigation.** Conducted investigation of the potential for implementation of a fish ladder at the United Water Dam in Rahway River. Performed baseline inventory of anadromous fish populations, and evaluated feasibility of different design alternatives from the perspectives of stream biology, engineering, logistics and cost.

**Ecological Risk Assessment, Atlantic City Reservoir, U.S. Army Corps of Engineers, New York District.** Reviewed existing site information and developed work plan to supplement prior ecological and human health risk assessments by collecting background data on sediment and fish tissue mercury concentrations in order to facilitate risk management decisions at the site. The site is an existing reservoir and risk management decisions are necessary in order to evaluate the feasibility of different remedial alternatives for addressing mercury-contaminated sediment.

**Ecological Restoration, Wall Township, NJ, Confidential Client, Project Manager.** Served as Project Manager for site cleanup of a forested wetland contaminated with polychlorinated biphenyls (PCBs). Responsible for delineation of the extent of contamination, assisting with development and negotiation of a remedial action work plan acceptable to NJDEP, and preparation of wetland restoration plans and permit application documents for the excavation and restoration of 6.5 acres of forested wetlands impacted by PCB contamination. The wetland was restored to the satisfaction of NJDEP in year 1 of the 5-year monitoring period, and the project is now closed.

## Key Projects (Continued)

**Ecological Restoration, Hatco-Grace Site, Fords Township, N.J.** Task leader for wetlands restoration portion of the project, which will involve remediation and restoration of 6.5 acres of forested and emergent wetlands at the site. Permit applications are in progress that will greatly reduce the amount of capped area proposed, and as a result greatly reduce the amount of permanent impacts to wetlands. Under the new approach, all wetlands will now be restored in kind on site; remedial and restoration activities are slated to commence this fall.

**Ecological Assessment, Gloucester County Improvement Authority, Paulsboro Marine Terminal, Paulsboro, N.J.** Conducted environmental assessment evaluating the existing quality of wetland and aquatic habitats potentially impacted by different port redevelopment alternatives for inclusion in the NEPA EIS document and calculation of state and federal wetland mitigation requirements.

**Port Authority of New York and New Jersey, Program Manager.** Acted as program manager overseeing eight call-in contracts, including one for Ecological Services, the other for Lead/Asbestos Design Services, each with a capacity of \$1.5M. Responsibilities also included oversight of a Bioassay contract under which Weston completed several task orders involving collection and analysis of sediments within the New York Harbor area. Supervised staff in management of various projects ranging from underground storage tank investigations, remedial investigations of contaminated sediment and soil, evaluation of stormwater impacts and flood hazard area permitting, preparation of stormwater pollution prevention plans, wetland delineations, mitigation and permitting, evaluation of potential wetland mitigation banking sites in New York and New Jersey, NEPA consulting, air quality impacts from harbor dredging operations, development of an electronic environmental compliance monitoring system, and consulting regarding emissions offsets and purchase of carbon credits to offset air quality impacts from port operations.

**Remedial Investigation (RI) and Ecological Risk Assessment, Edison, NJ, U.S. Army Corps of Engineers (USACE), New England District (CENAE), Project Manager.** Directed focused RI and baseline ecological risk assessment (BERA) of the former Raritan Arsenal, a 3,200-acre site in Edison, NJ, located along the tidal Raritan River. All work was conducted under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and in accordance with New Jersey Department of Environmental Protection (NJDEP) technical requirements for site remediation. Directed extent of contamination study of surface water and sediment and prepared physical characterization report for the Phase II remedial investigation/feasibility study (RI/FS) for the site, which described contaminant migration patterns and potential bioavailability of surface water and sediment. Directed screening level ecological risk assessment (SLERA) of all media used to identify contaminants of potential concern (COPCs), and integrated it with site-specific ecological data from the site to develop a conceptual model of ecological exposure pathways. Directed the BERA, which evaluated over 30 areas of concern (AOCs) divided among 8 different drainage areas. The BERA included field studies of potential impacts of contaminated sediment, surface water, and soil on ecological receptors. Field studies included bioassay testing of freshwater and tidal sediments, histopathology of fish and mammal tissue, benthic macroinvertebrate community analysis, and

## Key Projects (Continued)

tissue analysis of fish, amphibian, and mammalian receptors used for food chain modeling of contaminant impacts. The study also evaluated impacts of contaminated site sediment and surface water on the Raritan River, and vice versa. Directed implementation of database integrating over 330,000 data points. Also, as Project Manager for the RI, directed investigations including delineation of 8 groundwater plumes, supplemental soil RIs, preparation and execution of remedial action work plans (RAWPs) for contaminated soil removal activities, investigation of vapor intrusion impacts to site buildings from contaminated groundwater, and issuance of no further action (NFA) letters for over 20 AOCs.

### **RI and Natural Resources Damage Assessment, Confidential Client, Woodbridge, NJ.**

Developed work plan approach for delineation of contaminated sediment at the site, which is an industrial facility that produces plasticizers and other industrial chemical products. Conducted review of pertinent site information and data, and performed an analysis of wetland impacts attributable to historical development to develop a baseline upon which to derive estimates of contamination-related injuries to the site.

**Project Management, Various Locations, USACE, New York District (CENAN), Biological, FS and Integrated Environmental Assessment, New Jersey Intracoastal Waterway, New Jersey, USACE, Philadelphia District (CENAP), Project Manager.** Directed identification of dredged material placement alternatives, habitat restoration sites, and beneficial reuse options for maintenance dredging of approximately 70 miles of New Jersey's Intracoastal Waterway. Major project tasks included evaluation of existing data (e.g., sediment quality, land use, bathymetry, aerial photographs); coordination with regulatory agencies including NJDEP, U.S. Fish and Wildlife Service (USFWS), and National Marine Fisheries Service (NMFS); and development of geographic information system (GIS) maps for potential restoration sites. Identified viable habitat creation, restoration, and enhancement opportunities to improve degraded ecological conditions on historic dredge spoils sites and potentially upgrade water quality in the project area. WESTON also continued development of a GIS-based site selection model that incorporated multiple site selection criteria simultaneously.

**Environmental, and Cultural Resources (BECR) Contract, Project Manager.** Managed several projects, including environmental site assessments (ESAs) under the hazardous, toxic, radioactive waste (HTRW) and Defense Environmental Restoration Program – Formerly Used Defense Sites (DERP-FUDS) programs, community relations plans for site cleanups, wetland mitigation studies and plans, and assessment of environmental impacts.

**Environmental Impact Assessment (EIA), Meadowlands Mills Development, USACE, New York District, Project Manager.** Directed preparation of draft and final environmental impact statements (EISs) on behalf of the USACE, New York District, evaluating impacts of a proposed 206-acre wetland fill project in the Hackensack Meadowlands District as part of a larger proposal to build a mixed-use regional retail/office/entertainment center (“megamall”). Critical technical issues evaluated by WESTON included compliance with Section 404(b)1 guidelines and National Environmental Policy Act (NEPA); the accuracy of the Indicator Value Assessment method as a means of functional assessment of wetlands on the site; the derivation of appropriate mitigation ratios for the site; the potential success of the applicant's mitigation plan in offsetting

## Key Projects (Continued)

potential development impacts; and the evaluation of wildlife habitat, including threatened and endangered species, avian studies, water and sediment quality of tidal creeks and the adjacent lower Hackensack River, flood storage and hydrological and hydraulic modeling, management of contaminated sediment, and other wetland values under existing and proposed alternative conditions.

**RI and Ecological Risk Assessment, Former Nansmond Naval Ordnance Depot, USACE, Suffolk, VA, Project Manager.** Directed RI and ecological risk assessment of three major AOCs: the Horseshoe Pond, Steamout Ponds, and James River beachfront areas. Prepared work plans and study design under CERCLA for investigation of metals, polycyclic aromatic hydrocarbons (PAHs) and pesticide-contaminated soils and sediments as a result of former U.S. Department of Defense (DOD) activities, with EPA oversight. Field studies involved investigation of contaminated sediment and evaluation of potential ecological risks, including field studies using aquatic bioassay testing of sediments, analysis of benthic macroinvertebrate community structure, and collection of frog, fish, and mammalian tissue used for food chain modeling of contaminant impacts. Results were used in an FS evaluating remedial action alternatives for stabilizing the James River beachfront, and to support a determination of no further action (NFA) for the two pond areas of the site.

**Ecological Risk Assessment, Suffolk, VA, Former Nansmond Ordnance Depot, CENAB, Task Manager.** Directed preparation of a screening level ecological risk assessment (SLERA) for remaining areas of concern on the former military site that were contaminated by metals and organic compounds. Currently preparing a work plan for a BERA that will assess risks from metals and organic contaminants to the ecological communities present, including the Horseshoe Pond and Main Burning Ground areas.

**RI and Ecological Risk Assessment/Wetlands Restoration, New Jersey, Precision Roll Products, Inc., Principal Scientist.** Directed preparation of a BERA and derivation of ecologically based site cleanup criteria for remediation of forested wetland soils contaminated with metals and PCBs. Negotiated site cleanup levels and risk management decisions with NJDEP based on risk assessment results. Developed a site restoration plan for contaminated sediments within an adjacent stream and cooling pond that recommended in situ capping of sediments. Directed preparation of necessary wetland and stream encroachment permit applications and wetland/stream restoration plans for three forested wetland areas of the site that required excavation of contaminated soil and sediment.

**Remedial Investigation/Feasibility Study (RI/FS) and Natural Resources Damage Assessment, Corfu, NY, Confidential Client, Principal Scientist.** Conducted baseline RI of saline impacts from a pipeline rupture that resulted in a brine spill over 3.5 acres of forested wetlands in western New York. Collected sufficient samples to delineate the extent of saline contamination in the wetland, sampled adjacent potable wells, measured salinity levels in surface water, and prepared a report summarizing the extent of project impacts. Subsequently evaluated remedial alternatives from the perspectives of regulatory requirements, long-term likelihood of success, logistical considerations, and costs. Prepared a natural resources assessment

## Key Projects (Continued)

summarizing the extent of damages from the loss of trees at the site, and different methods of ascertaining damages.

**Dredged Material Management Plan, Preliminary Assessment (PA), and Feasibility Study, Baltimore Harbor and Approach Channels, Maryland and Virginia, USACE, Baltimore and Norfolk Districts, Principal Scientist.** Identified and analyzed dredged material placement alternatives, habitat restoration sites, and beneficial reuse options for the Port of Baltimore, MD. Coauthored sections of the Dredged Material Management Plan (DMMP), with specific focus on the Virginia approach channels. The DMMP study identified, evaluated, screened, prioritized, and will ultimately optimize placement alternatives resulting in the recommendation of a plan for the placement of dredged materials for at least the next 20 years. Major project tasks included communication and coordination with federal, state, and local regulatory agencies; evaluation of existing data (e.g., historical reports, bathymetry, sediment characteristics and chemistry, aerial photographs, degraded wetlands, fisheries data, benthic surveys, and water quality data); identification of potential beneficial-use placement sites; and development of a matrix of placement alternatives.

**Sediment/Soil Characterization and Dredging Permitting, Norfolk Naval Shipyard - Pier 3 and Dry Dock 8, Virginia, U.S. Navy, Project Manager.** Directed environmental investigations to address issues posed by proposed redevelopment of a large pier and drydock, in order to accommodate larger aircraft carriers. The investigation included soil and sediment sampling to characterize material to be removed from beneath existing pier and dry dock surfaces or beneficially reused as part of activities to reconstruct the existing pier. Also directed screening and data analysis of constituents found in the sampled soil and developed cost and volume estimates for soil and sediment removal and disposal options. Prepared specifications drawings for multiple hazardous waste streams (e.g., toxicity characteristic leaching procedure [TCLP] lead, asbestos, and PCBs) as well as general environmental controls. Prepared permit applications (USACE/VMRC/VADEQ Joint Permit, Federal Coastal Consistency Determination, etc.) necessary to conduct the reconstruction activities associated with the pier renovation.

**Call-In Contract for Environmental and Engineering Services, Port Authority of New York and New Jersey, Project Manager.** Directed several environmental investigations involving evaluation of contaminated soils and groundwater within the proposed corridor of the Second Lead Rail project on Bay Avenue in Port Elizabeth, and the Corbin Street Rail and Realignment project at Port Newark. In addition, directed wetland investigations at Teterboro Airport, Ports Newark and Elizabeth as a basis for permit applications filed on behalf of the Port Authority for proposed projects. Evaluated potential sites within the vicinity of Port Newark for potential use as a wetland mitigation bank. Potential sites were screened and ranked by multiple parameters, i.e., size, location, suitability for a mitigation bank, assessed real estate value, ownership, site use, type of wetland community, accessibility, and elevation range. A summary report was prepared including recommendations for preferred sites and restoration potential.

**Sediment Quality Investigation, Baseline Ecological Inventory, Essential Fish Habitat (EFH) Investigation, and Wetland Restoration, Delaware River, PA, Confidential Client, Task Manager.** Directed a baseline aquatic resources survey for a 50-acre area adjacent to an oil

## Key Projects (Continued)

refinery consisting of tidal mudflat, adjacent tidal emergent wetlands, and open water areas. The study consisted of a year-long investigation of sediment quality, fisheries, benthos, and other aquatic resources in the immediate vicinity of the refinery to be used as a basis for evaluating potential environmental impacts associated with different dredged material management alternatives presently under consideration at the site. The study involved collection of over 20,000 fish using a variety of methods, as well as characterization of benthic macroinvertebrate community structure, ecological screening of sediment analytical data, and comparison of fish stomach contents to available benthos as a measure of habitat quality using the Benthic Resources Assessment Technique (BRAT) model developed by USACE. Analyzed results and presented them to reviewing agencies in a final report. The baseline data will also be used to develop conceptual design plans for a proposed tidal wetland creation project.

**Risk Assessment, Nyanza Superfund Site, Sudbury, MA, USACE, CENAB, Project Manager.** Directed preparation of a baseline ecological and human health risk assessment addressing potential risks to Sudbury River biota from organic compounds and metals present in groundwater. Initially prepared a screening level risk assessment (SLRA) that identified contaminants of concern (COCs) in groundwater entering the river. Subsequently worked with reviewing agencies on behalf of USACE to develop a work plan/study design to address toxicity of groundwater using bioassay tests. Subsequently analyzed the data and prepared a report that formed the basis of a follow-up work plan to address in situ toxicity of groundwater entering the river via pore water. Integrated results with hydrogeological data to develop a conceptual model of ecological exposure, and prepared a final report used by USACE and EPA Region 1 to evaluate remedial alternatives for contaminated groundwater at the site.

**RI and Ecological Risk Assessment, Housatonic River Superfund Site, MA, U.S. Environmental Protection Agency (EPA), Principal Scientist.** Assisted in study design and coauthored soil, sediment, and surface-water sampling plans for CERCLA RI of PCB-contamination along a 30-mile stretch of the Housatonic River. Developed sediment sampling methodology using hand-held corers to a depth of 4 feet, and directed its implementation. Prepared sampling plans for collection of biota tissue (e.g., frogs and soil invertebrates) for use in the risk assessment, including literature reviews of PCB effects. Directed field activities for collection of frog tissue. Assisted in field processing of fish tissue for over 900 individual fish caught along the river.

**Environmental Impact Assessment (EIA) and Permitting, Philadelphia, PA, Metro Machine Corporation, Project Manager.** Conducted an assessment of potential environmental impacts from a proposed 100,000-cubic yard (yd<sup>3</sup>) dredging project at the Philadelphia Naval Yard. Directed collection of core samples used to characterize sediment quality via chemistry and elutriate testing. Prepared permitting documents, interfaced with federal and state regulatory agencies, and successfully received applicable permits. Conducted an evaluation of disposal alternatives for dredged material, and received approval for disposition of the material at a confined disposal facility operated by USACE.

**EIA and Ecological Restoration, Clarkstown, NY, Town of Clarkstown, Principal Scientist.** Conducted assessment of environmental impacts associated with dredging a section of the

## Key Projects (Continued)

Hackensack River, including floodplain effects and wildlife habitat impacts. Designed and executed study plan for investigation and characterization of sediment quality within the river. Developed stream bank stabilization/restoration plan, and provided input/recommendations regarding nature trail construction and recreational potential of the riverine corridor.

**EIA and Permitting, Biogenesis Soil Washing Pilot Demonstration Project, Permitting Coordinator.** Evaluated environmental impacts and obtained necessary permitting documents for a pilot-scale soil washing facility for treatment of contaminated dredged material from the New York-New Jersey Harbor.

**RI, Risk Assessment, New Jersey, Confidential Client, Task Manager.** Directed ecological risk assessment of two approximately 30-acre forested wetland sites and one 5-acre site impacted by paint waste from a former manufacturing facility. The sites encompass several streams within the same watershed that have been contaminated with metals and organic compounds. Prepared ecological and human health risk assessment portions of the Phase I RI report, and made recommendations regarding remedial design alternatives.

**EIA and Permitting, Bronx, NY, American Marine Rail, Principal Scientist.** Conducted assessment of sediment quality and environmental impacts associated with dredging and construction of a proposed marine transfer solid waste handling facility on the East River. Prepared sampling and analysis plan for sediments to be dredged, evaluation of potential aquatic habitats and estuarine biota affected, final report, and environmental assessment (EA) for the facility. Coordinated with regulatory review agencies (USACE and New York City Department of Environmental Protection [NYCDEP]).

**Environmental Permitting and Compliance, New York, Consolidated Edison, Principal Scientist.** Researched, developed, and prepared Corporate Environmental Procedures, General Environmental Instructions, and Technical Bid Specifications for the client's corporate environmental policy. Prepared corporate documents summarizing regulatory issues and corporate procedures in several areas: wetlands and dredging impacts and permitting; fish and wildlife impacts; and State Pollutant Discharge Elimination System (SPDES) permitting, including construction dewatering and pesticide application.

**Ecological Restoration, Clarkstown, NY, Town of Clarkstown, Principal Scientist.** Conducted investigation of watershed impacts on Swartout Lake, an approximately 24-acre lake within a suburban/rural environment. Conducted lake sampling, survey of aquatic vegetation and habitat types, and watershed analysis, including impacts of non-point source pollution sources. Provided recommendations regarding lake restoration.

**Brownfields Development, Staten Island, NY, Confidential Client, Principal Scientist.** Conducted a field wetlands delineation and preliminary environmental survey to identify issues and provide recommendations pertaining to future development of an industrial site, including stormwater management and wetlands restoration along a tidal creek.

**Environmental Impact Assessment (EIA), New York City, New York City Department of Sanitation (NYCDOS), Task Manager.** Prepared or directed the preparation of several documents in support of the 6 NYCRR Part 360 permit application for the Fresh Kills Landfill.

## Key Projects (Continued)

Provided technical direction and preparation of the natural resources and water resources sections of the draft EIA, including supervision of staff in data collection, analysis, and review; interpretation of data and impacts analysis; client/agency negotiation; and authoring report sections. A major focus of the analysis was on impacts of the landfill to sediment and surface water in the adjacent tidal water bodies of Fresh Kills and the Arthur Kill. Provided direction/preparation of the draft and final surface-water quality/wetland sections of several major permitting documents. These tasks involved extensive data interpretation and summary of results of water quality and sediment data, including relationships between surface-water quality and contaminant hydrogeology; study design for environmental monitoring; review of water quality modeling results and integration with surface-water quality data; preparation and review of reports for consistency with federal, New York State, and New York City regulations; and integration of report sections with other disciplines (e.g., human health risk assessment, land use, landfill engineering, and surficial geology).

**Hurricane Ike Emergency Response, Lafayette, LA, U.S. Environmental Protection Agency (EPA) Region 6, Superfund Technical Assessment and Response Team (START), Senior Wetland Scientist.** Directed technical approach and preparation of work plans for removal activities associated with extraction of tanks, drums, and chemical totes from freshwater and tidal wetlands along the southern coast of Louisiana. Worked with Louisiana Department of Environmental Quality (LADEQ) and EPA in a planning meeting to ensure that wetland impacts were avoided and minimized to the maximum extent practicable. Assisted teams in field reconnaissance by road and airboat in locating tanks and other objects, and advised teams on appropriate removal procedures in conjunction with LADEQ representatives.

**Hurricanes Katrina and Rita Emergency Response, Kiln, MS, Plaquemines Parish, LA and Lake Charles, LA, EPA Regions 4 and 6, START, Team Member.** Primary duties involved field reconnaissance and identification of environmental hazards posed in the wake of the two hurricanes, which hit the Gulf Coast in 2005. Performed vehicle, airboat, and helicopter surveys in search of debris. Trained field crews on the use of Personal Digital Assistants (PDAs) used to collect data. Provided recommendations to EPA regarding the handling and extraction of tanks posing environmental risks within sensitive wetland habitats, including the Sabine National Wildlife Refuge.

**Columbia Shuttle Recovery, Nacogdoches, TX, EPA Region 6, START-2, Team Member.** Field duties included directing field crews in locating shuttle debris using a grid system superimposed on topographic maps and aerial photography; logging debris onto evidence tag and into logbook; and entering related data into handheld computer (PDA). Data included latitude/longitude, evidence and picture number, type of debris, and comments relating to debris.

**Ecological Assessment, Tennessee, EPA/Environmental Response Team (ERT).** Directed field ecological assessment of contaminant risks at a former charcoal-producing facility. Studies focused on effects of polynuclear aromatic hydrocarbons (PAHs) and metals on soil invertebrates and small mammals in order to determine cleanup levels.

## Key Projects (Continued)

**Ecological Assessment, New Jersey, EPA/ERT, Task Leader.** Developed standard operating procedures (SOPs) for small mammal trapping and tissue processing for use by EPA.

**Ecological Assessment, Tennessee, EPA/ERT, Task Leader.** Conducted ecological risk assessment modeling of contaminant risks using the Hazard Quotient Method at a former landfill site. Identified contaminants of concern (COCs) and indicator species, derived lowest-observed-effect level (LOEL) data from the literature, and determined potential toxicological effects in order to establish site soil cleanup levels.

**Wetland Assessment/Mitigation, New Jersey, EPA/ERT, Project Team Member.** Provided development and oversight of a wetlands mitigation plan for the Zshiegner Refining Company Superfund site. Characterized site vegetation, delineated wetlands, and helped develop site soil removal and revegetation plan.

**Ecological Assessment, Wisconsin, EPA/ERT, Subtask Leader.** Developed sampling design and directed extent of contamination study of surficial soils at a former wood-treating facility. Collected baseline data for ecological risk assessment.

**Ecological Assessment, Connecticut, Town of Stratford, EPA/ERT, Task Leader.** Coordinated field activities for an emergency response investigation focusing on the risks of asbestos and PCB contamination to local residents in the Town of Stratford. Acted as liaison with several federal agencies and their support teams, and supervised the collection and screening of soil samples. Monitored subcontracted surveying team, and assisted with the development of a base map of areas investigated.

**Ecological Assessment, Colorado, EPA/ERT, Senior Field Team Member.** Conducted an assessment of freshwater wetlands potentially affected by groundwater contamination from an abandoned industrial facility, and performed a vertebrate species inventory for use in determining if the site qualified for National Priorities List (NPL) ranking. In addition, assisted with the collection of groundwater data.

**Ecological Assessment, Michigan, EPA/ERT, Task Leader.** Prepared a quality assurance (QA) work plan and supervised the dissection, processing, and analysis of muskrat tissues collected from a potentially contaminated stretch of the Kalamazoo River. Tissue was analyzed for histopathology, metals, PCBs, and semivolatile organic compounds (SVOCs).

**Ecological Assessment, New Jersey, EPA/ERT, Task Leader.** Directed an off-site extent of contamination study of arsenic contamination in the vicinity of a former chemical plant facility to determine health risks to the public. Sampled surface and subsurface soils, as well as groundwater within residential areas potentially affected by runoff from the site. Presented results in a final report to EPA.

**Ecological Risk Assessment of Contaminated Sediment, Maryland, EPA/ERT, Task Leader.** Prepared and implemented an emergency response plan for the biomonitoring of white phosphorus release from sediment at Aberdeen Proving Ground (APG) from a major storm event. The plan was implemented in March 1993 to determine if white phosphorus was released into the water column following a winter storm and if it was available for uptake by a

## Key Projects (Continued)

representative fish species (sheepshead minnow). An in situ technique was used for this purpose. Interpreted results and presented conclusions in a final report to EPA. This plan has since been used as a contingency plan for any major storms affecting the APG area.

**Ecological Assessment, New Jersey, EPA/ERT, Task Leader.** Directed a broad-scale field investigation of the terrestrial and aquatic impacts of lead contamination at a former smelting facility. Developed and implemented the work plan, and directed a field crew in the collection of data on soils, water, and target biota (small mammals, fish, and frogs). Used an in situ technique to measure the bioaccumulation of lead in two species of earthworms. Additional responsibilities included statistical analysis and interpretation of contaminant data, interpretation of results, and preparation of a final report to EPA for use in determining ecologically relevant remedial levels. In a follow-up study, evaluated soil slated for removal using the Toxicity Characteristic Leaching Procedure (TCLP) to determine if soils met Resource Conservation and Recovery Act (RCRA) criteria.

**Ecological Assessment, Utah, EPA/ERT, Subtask Leader.** As part of a larger integrative study, conducted an inventory of small mammals present in a wetland adjacent to a former silver mine. Directed field crew members in the collection of specimens and subsequent necropsy work to determine if gross pathological effects were evident in indigenous populations. In addition, assisted with a vegetative inventory of the site. Prepared results in a final report to EPA/ERT for use in evaluating the potential ecological risks posed by the site.

**Ecological Assessment, Washington, EPA/ERT, Subtask Leader.** Directed an inventory of small mammal populations in a landfill area within a tidal wetland adjacent to Puget Sound. Collected and analyzed data aimed at describing the resident small mammal and bird communities of the site. In addition, prepared a site vegetation map.

**Ecological Assessment, New York, EPA/ERT, Project Team Leader.** Assisted with the design and analysis of seed germination and root elongation studies to measure the effectiveness of bioremediation techniques for treatment of creosote-contaminated soils.

**Ecological Assessment, New Jersey, EPA/ERT, Task Leader.** Directed a field ecological assessment of the impacts of contamination on the bog community at the Burnt Fly Bog Superfund site. Responsibilities included assisting EPA/ERT in study design; directing a field crew in the collection of small mammals, vegetation, and soils; analyzing and interpreting results; and presenting the findings in a report to EPA/ERT to be used in site remedial recommendations.

**Risk Assessment Modeling, New York, EPA/ERT, Subtask Leader.** Working independently, adapted a food chain model described in the literature to predict the effects of contamination on four selected target vertebrate species (black duck, great-blue heron, muskrat, and red-winged blackbird) inhabiting a freshwater marsh. Derived model inputs from the literature, calibrated the model, and presented the results in a report to EPA/ERT for use in site remedial recommendations.

## Key Projects (Continued)

**Ecological Assessment, New Mexico, EPA/ERT, Senior Field Team Member.** Collected data on small mammals, vegetation structure, and soils for use in an ecological risk assessment of lead contamination at the CalWest Superfund site.

**Ecological Assessment, New Jersey, EPA/ERT, Senior Field Team Member.** Conducted a study of the impacts of contamination on a freshwater tidal marsh at the Kin-Buc Landfill Superfund site, and later directed an extended investigation of the lower Raritan River watershed. Assisted with the development of a field sampling design for the collection of muskrats and sediment samples. Collected, dissected, and processed muskrats for tissue analysis. Reviewed histopathological results, and assisted with data interpretation and report review.

**Ecological Assessment, Wisconsin, EPA/ERT, Senior Field Team Member.** Collected soil and water samples used to determine the extent of contamination and sediment toxicity in a freshwater marsh at the OECI Superfund site. Directed field activities during one phase of the project, and prepared a report for EPA/ERT based on Geosoft contour mapping of site contamination.

**Ecological Risk Assessment, Delaware, EPA/ERT, Task Leader.** Assisted EPA/ERT with study design and decision-making flow chart to ascertain potential effects of contamination from a chemical facility on sediment within a freshwater tidal marsh at the Halby Chemical Superfund site. Directed a field crew in the collection of sediments for analysis and toxicity testing. Prepared a final report for use by EPA/ERT in determining future activities on-site.

**Emergency Response/Ecological Assessment, Minnesota, EPA/ERT, Task Leader.** Provided field support to EPA/ERT in determining the extent and potential impacts of submerged drums found in Lake Superior. Used a remotely operated vehicle (ROV) to determine the number, extent, and condition of submerged drums found off-shore. Presented the results in a technical report submitted to EPA.

**Ecological Assessment, Ohio, EPA/ERT, Senior Field Team Member.** Collected small mammals and soils, mapped vegetative cover types, and delineated wetlands at the Ormet Superfund site. Assisted with report preparation.

**Wetland Delineation/Assessment, New Jersey, EPA/ERT, Task Leader.** Co-directed a wetland delineation of an area adjacent to the Lone Pine Landfill Superfund site using the federal jurisdictional procedure. Conducted a functional wetland assessment of surrounding wetlands using the Wetland Evaluation Technique (WET) modeling procedure. Provided remedial and mitigation recommendations to EPA/ERT.

**Ecological Assessment/Site Characterization, Various Locations, EPA/ERT, Field Team Member/Senior Field Team Member.** Participated in site characterization projects geared at evaluating potential threats to human health. Responsibilities included direction of field staff; establishing and implementing field sampling designs; data collection using screening measurements or techniques such as immunoassay test kits, X-ray fluorescence (XRF) spectrometry, portable magnetometer, Hach kits, etc., as well as sample collection from the following matrices: surface and subsurface soils, soil gas, surface water, and groundwater. Experienced in a variety of geographic areas throughout the continental United States.

## Key Projects (Continued)

**Wetland Delineation/Assessment, New Jersey, Probst Enterprises, Inc., Project Manager.**

Directed a large-scale wetlands delineation of a 3,000-acre site in the Pine Barrens region. Collated natural resources data assembled from several agencies with satellite and aerial photographs, collected field data to determine the wetlands boundary and state resource classification, and to made land use recommendations.

**EIA/Review, Walkill, NY, Town of Walkill, Task Manager.** Reviewed data on wetlands, wildlife, stormwater management, and vegetation impacts; and provided critical comments for the development of a shopping mall.

**EIA, New York, Saccardi and Schiff, Inc., Project Manager.** Evaluated wildlife habitat and provided a vegetation cover map for use in an environmental impact statement (EIS) for a proposed health care center in the Long Island Pine Barrens.

**Ecological Assessment, New York, RPPW, Inc., Project Manager.** Evaluated wildlife habitat, prepared a vegetation cover map, and conducted a wetlands delineation for use in an EIS for a proposed residential development on a 200-acre deciduous forested site.

**Ecological Assessment, New York, RPPW, Inc., Project Manager.** Evaluated wildlife habitat for an endangered turtle and migratory bird species, prepared a vegetation cover map, and conducted a wetlands delineation for use in an EIS for a proposed residential development in an urban forested area.

**Wetland Delineations/Assessments, New Jersey and New York, Multiple Clients, Project Manager.** Conducted or assisted with wetland delineations at more than 80 sites. Authored proposals, directed field work, managed budgets, prepared reports for clients, met with regulatory agencies, advised clients, prepared regulatory permits, and negotiated collections.

**EISs, New Jersey, Multiple Clients, Project Manager.** Prepared EISs for municipal and state agencies on several projects. Collected or assisted with the collection of data on traffic impacts, air pollution, vegetation, wildlife, wetland impacts, and infrastructure impacts. Modeled noise impacts from highway improvements.

**Ecological Studies, New Jersey, Rutgers University, Research Associate.** Working independently, designed study, trapped and mistnetted bird species, and monitored their movements and behavior using radiotelemetry to test hypotheses regarding the adaptive significance of communal roosting. Analyzed data and presented results in a thesis.

**Wildlife Damage Assessment, New Jersey, Confidential Client, Research Associate.** Assisted in the field collection of data on populations of three species of toads and assessed potential agricultural damage impacts. Censused toads by direct observation, pitfall trapping, and mark-recapture techniques.

**Environmental Education, New Jersey, Rutgers University, Educator.** Taught general biology laboratory principles and assisted with the development of new curricula for university underclassmen. Led a variety of age groups, ranging from elementary school to college groups, on field trips to the university experimental field station. Assisted with field vegetation sampling used for long-term monitoring of ecological succession of old field habitat.

## Key Projects (Continued)

**Ecological Assessment, New Mexico, Mariah Associates, Inc., Research Associate.**

Conducted habitat evaluation studies and censusing for evidence of endangered black-footed ferrets in an area proposed for coal mining. Executed nightlong spotlight checks for ferrets over a 15-square-mile area and searched prairie dog colonies for evidence of ferret intrusion.

**Ecological Studies, Kenya, East Africa, Natural Resource Ecology Laboratory/Colorado State University (NREL/CSU), Research Associate.** Supervised field crew in the collection of data on soils, hydrology, vegetative productivity, community structure, and plant physiology. Results were input into a model of ecosystem energy and nutrient flow used to study the grazing ecology of pastoral nomads inhabiting semiarid savanna regions.

**Natural Resources Management, Colorado, U.S. Fish and Wildlife Service (USFWS), Research Assistant.** Assisted in the development of a nationwide computer-based information system on in-stream flow considerations affecting freshwater fish habitat. Contacted agency personnel nationwide, prepared abstracts of technical articles, and entered them into a database.

**Ecological Studies, New Mexico, NREL/CSU, Field Team Member.** Collected data on vegetative cover, productivity, and soils as part of a study on the effects of fire on deer and elk populations in Bandelier National Monument.

**Ecological Studies, Colorado, Colorado Division of Wildlife, Research Assistant.** Collected data on vegetative productivity as part of a long-term study on the nutritional ecology of sagebrush to large herbivores.

**Ecological Assessment, Colorado, Colorado Cooperative Wildlife Research Unit (CCWRU), Research Assistant.** Interpreted LANDSAT satellite imagery and mapped vegetation types for use in the development of habitat evaluation models for the northern Rocky Mountain region.

**Ecological Assessment, Wyoming, USFWS and Shoshone-Arapahoe Tribes, Contract Biologist.** Conducted an intensive vegetative inventory and animal census of a big game winter range on the Wind River Indian Reservation. Used a variety of vegetation sampling techniques to characterize community structure, evaluate grazing impacts, and assess habitat quality for ungulates.

**Ecological Studies, Wyoming and Montana, CCWRU, Research Assistant.** Sampled vegetation using a variety of techniques and conducted measurements of other habitat variables for use in the development of wildlife habitat evaluation models for eight indicator species in the northern Great Plains region.

**Ecological Studies, Colorado, U.S. Forest Service (USFS), Intern.** Assisted with censusing and behavioral observations of an introduced mountain goat population in the Sawatch Range. Responsibilities included hiking to and camping in remote areas, collecting data through a spotting scope, and filing monthly reports.

**Natural Resource Management, Colorado, USFS, Intern.** Assisted with the administration, planning, and public relations of winter recreation programs. Collected hydrological data and censused elk populations. Assisted with a mark-recapture study of bighorn sheep.

## **Key Projects (Continued)**

### **Publications and Presentations**

- Bovitz, P. and R. Brown. 2005. "Ecological Risk Assessment of the Former Nansmond Ordnance Depot." Society of Environmental Toxicology and Chemistry, 26<sup>th</sup> Annual Meeting, Baltimore, MD.
- Bovitz, P. and R. Brown. 2003. "An Essential Fish Habitat (EFH) Assessment of a Tidal Mudflat in the Delaware River." American Fisheries Society, 133rd Annual Meeting, Quebec City, Quebec.
- Kim, P.Y., P. Bovitz, B. Vanderveer, M. Donohue, K. Munney, and M. Sprenger. 1994. "The Use of Chemical, Histopathological, and Toxicity Evaluations To Investigate a Wildlife Kill." Society of Environmental Toxicology and Chemistry 15th Annual Meeting, Denver, CO.
- Bovitz, P. and M. Sprenger. 1993. "A Bioaccumulation Study of Earthworms at a Superfund Site." Society of Environmental Toxicology and Chemistry 14th Annual Meeting, Houston, TX.
- Sprenger, M., K. Kracko, and P. Bovitz. 1993. "An Ecological Risk Assessment for Lead Ingested by Biota at a New Jersey Superfund Site." Society of Environmental Toxicology and Chemistry 14th Annual Meeting, Houston, TX.
- Sprenger, M., R. Bennett, R. Knight, and P. Bovitz. 1991. "Assessment of Contaminant Migration into a Delaware Tidal Marsh." Society of Environmental Toxicology and Chemistry 12th Annual Meeting, Seattle, WA.
- Bovitz, P., G. Buchanan, and M. Sprenger. 1991. "A Food Chain Model of Cadmium Accumulation in a Tidal Freshwater Marsh." Society of Environmental Toxicology and Chemistry 12th Annual Meeting, Seattle, WA.
- Munney, K. and P. Bovitz. 1991. "The Use of Muskrats as Bioindicators of Environmental Contamination." Society of Environmental Toxicology and Chemistry, 12th Annual Meeting, Seattle, WA.
- Beltman, D., M. Sprenger, R. Henry, P. Bovitz, and M. Huston. 1991. "Screening Field Bioassessment Tools at a Hazardous Waste Site." Society of Environmental Toxicology and Chemistry 12th Annual Meeting, Seattle, WA.
- Munney, K. and P. Bovitz. 1991. "An Ecological Investigation of PCBs and Metals Contamination in a New Jersey Freshwater Tidal Marsh." Water Environment Federation Annual Conference, Toronto, ON.
- P. Bovitz. 1988. "Communal Roosting Behavior in American Robins and European Starlings as Related to Foraging Considerations." First International Conference of Behavioral Ecology, Vancouver, BC.