ERIC J. NELSON, PE

Education

B.S., Geological Engineering and Geology and Geophysics, University of Wisconsin-Madison, 1997

Professional Licenses

Professional Engineer, Wisconsin

Specialty Certifications

C&D Waste Management and Recycling Accreditation, WasteCap Wisconsin, June 2005

Troxler Nuclear Gauge and Radiation Safety Officer Training

Professional Experience

Mr. Nelson has 18 years of experience as an engineer and hydrogeologist. He has diverse experience in solid waste landfill development, soil and groundwater remediation, and brownfield redevelopment. His areas of expertise include remedial action planning, cost estimating, bidding and construction documents, and construction oversight and documentation. Eric has worked with private property owners and developers, solid waste facility owners/operators, and electric utilities.

Electric Utilities

Prepared final design and bid documents for a composite liner expansion at a dry coal combustion residuals (CCR) landfill. The project involves the design of new cell access and perimeter storm water diversion features. Bid documents include specifications, drawings, and a construction quality assurance manual.

Performed hydrogeologic and geotechnical site investigation of a proposed dry CCR landfill expansion. The project involves the site assessment of an expansion area over existing CCR settling ponds. The expansion also includes an overlay onto an existing permitted landfill and an adjacent bluff. Work includes the development of investigation work plans, all drilling activities, geotechnical analysis, baseline groundwater monitoring, and reporting.

Managed construction administration and documentation for a 9-acre dry CCR landfill liner expansion. The project involves the expansion of a Subtitle D composite liner and leachate collection system as well as all supporting infrastructure. Site improvements include new access roads, storm water management features, construction of approximately ¼-mile of rerouted streambed for mitigation of an existing stream eliminated by the expansion, and construction of 2.4 acres of mitigation wetland. Construction activities span approximately 80 acres and involve a total of 1 million cubic yards of earthwork. Construction services include administrative duties for review of all contractor submittals and change requests, documentation surveying, full-time construction oversight, and documentation report preparation.

Performed site investigation, design, and permitting for dry CCR landfill expansion. Project involved planning and implementation of field investigations for the assessment of existing environmental conditions. Field investigations included archaeological/cultural resource assessments, wetland delineation and stream assessments, endangered species and habitat assessments, hydrogeologic/geotechnical drilling/monitoring programs, and the geophysical assessment of potential historic coal mines. Design services included surveying, site grading for new infrastructure and landfill liner/cover, leachate and CCR runoff collection/management systems, geotechnical, storm water management, wetland mitigation, and stream mitigation from preliminary through permit-level deliverables for a phased expansion over an estimated 40-year site life. Construction-level design deliverables and bidding documents were completed for the first phase of the expansion. Permitting activities included a solid waste permit amendment for the phased expansion, federal/state permits for phased wetland and stream impacts, and National Pollutant Discharge Elimination System permit for construction site erosion control and storm water management.

Managed options feasibility analysis for dry CCR landfill expansion. Project involved the identification and evaluation of landfill expansion options to meet long term disposal needs for generating facilities utilizing the landfill. Expansion options were discussed with regulatory agencies and review for environmental conditions based on desktop resources. Preliminary grading was completed to develop preliminary disposal capacity and construction earthwork estimates. Expansion option costs estimates were completed and modeled to compare development costs over time and multiple phases of construction.

Oversaw the assessment of bottom ash for use as a drainage media in municipal and industrial waste landfills under state regulations. The project involved the analysis of bottom ash samples for grain size distribution and permeability. Lab data was compared to regulatory requirements for municipal, industrial, and CCR landfill drainage media.

Acted as Project Manager for the permitting and oversight of repairs to a closed CCR landfill final cover system. The project involved the development of a repair plan and regulatory approvals to address final cover damage due to erosion and traffic when the cap was utilized as a construction laydown area during a project at the generating station. Work included construction oversight and all surveying and documentation reporting to obtain agency approval of completed repairs.

Managed options feasibility analysis for dry CCR landfill expansion. The project involved the assessment of on-site expansion and off-site disposal options for a generating facility preparing to install a dry flue gas desulfurization scrubber. Expansion options analysis included preliminary designs to develop disposal capacity and earthwork quantity estimates. The feasibility of each option was assessed based on disposal capacity, technical feasibility, permitting complexity, and cost.

Acted as Project Manager for the assessment of developing a solar photovoltaic (PV) system on a closed CCR landfill. The project involved the assessment of site specific solar radiation, site feature shading, steam plume shading, distribution grid interconnection, PV system interactions with landfill closure design, PV system efficiency, and PV system financial performance.

Served as Project Manager for the long-term planning for the phased development of a dry CCR landfill. The project involves the analysis of phasing options for liner and final cover construction over approximately 50 remaining permitted acres of the site. The phasing analysis includes the development of phased cost estimates to model site life costs under different development scenarios. The project also includes the evaluation of disposal options for landfill site overburden soils. A clay borrow source for liner system construction for the remaining site life is also being identified, investigated, and permitted under non-metallic mine regulations.

Developed a sustainable projects feasibility assessment at a dry CCR landfill. Project assessments include prairie restorations, solar photovoltaic system installation, wind generating facility installation, and operational waste management minimization.

Managed the design and permitting of a CCR pond final cover system. The project involves the design of a soil cap for a series of four CCR settling ponds located beneath an interstate bridge. The soil cap system incorporates a geosynthetic clay liner (GCL) in select locations where structural elements of the bridge limited the placement of fill materials. Structural fill limitations required that the design incorporate a new, smaller pond in the interior or the final cover area that discharged via an outlet swale to an adjacent wetland. A geotechnical investigation and evaluation of closure stability resulted in a proposed monitoring program to evaluate soil pore pressures and adjacent structure movement during the placement of fill material during closure construction. Permitting activities include state approvals from the Department of Natural Resources and Department of Transportation for the closure design and state/local approvals for construction site and long-term erosion control and storm water management.

Performed CCR pond closure options analysis. The project involved developing CCR pond closure options and assessing each option using a feasibility assessment developed with project stakeholders. The closure options analysis included the collection and review of information on the existing and historic site conditions using available desktop resources and field assessments of wetlands, threatened and endangered species, and cultural resources. Preliminary designs for each closure option were developed to assess applicable regulatory requirements, constructability issues, post-construction issues, future development potential, long-term liabilities, and implementation costs.

Closed CCR management facilities during initial coal-fired power plant decommissioning activities. The project involved the permitting and implementation of a final closure plan for CCR management facilities including sluice ponds and a dry CCR landfill. Permitting work included solid waste and wastewater closure plan approvals, state/local erosion control and storm water management permits, and local zoning permits for work within shore land and airport zoning districts. The project also included the development of specifications and drawings for closure construction bidding, assisting the owner with obtaining and evaluating bids, and construction oversight.

Managed closure assessment of CCR management facilities during initial coal-fired power plant decommissioning activities. Project involved the development of plans for the abandonment of CCR sluice ponds, plant waste water treatment ponds, and a coal yard runoff pond; excavation of coal/coal-impacted soil from the former coal yard and CCR storage areas; and final closure of the on-site dry CCR landfill.

Completed dry CCR landfill permit documents for the installation of new aboveground fuel tanks at the facility. The project involves updating the site operations plan and emergency response plans for the new ASTs and developing a Spill Control, Containment, and Countermeasures (SPCC) plan.

Designed numerous oil containment systems for oil-filled electrical equipment at electric power distribution substations. These projects involve the sizing of containment systems, selection of containment system materials, and development of construction drawing and specifications.

Managed dry CCR landfill assessment of groundwater quality in surrounding private water supply wells.

Acted as Project Manager for dry CCR landfill storm water runoff evaluation and design of a repair/new facility to capture CCR contact runoff. The project involved an assessment of existing drainage patterns and an analysis of runoff from active landfill and adjacent areas. Our analysis was used to design diversion features and collection/storage facilities for runoff from active landfill areas not currently captured by the leachate collection system.

Performed dry CCR landfill survey and airspace calculations. Projects involve ground surveying of active landfill cell, calculation of airspace consumed and remaining, calculation of waste density, and preparation of remaining site life estimate.

Served as Project Manager for dry CCR landfill liner assessment. The project involved the planning and execution of a field investigation for the assessment of seasonal freeze/thaw impacts on a 5-foot-thick clay liner system that was constructed and not covered with CCR for 2 years of seasonal freeze/thaw cycles.

Managed site operational planning and permit assistance for a dry CCR landfill. The project involved supporting local zoning permit negotiations, leachate management planning, storm water management and diversion planning, storm water sedimentation basin sediment quality assessment, state regulatory agency permit support, and site improvement costs estimate preparation.

Completed dry CCR landfill operations plan updates. Project involved the review of contract landfill operator procedures for the site owner and preparation of an updated operations plan. Operating plan updates provided procedures acceptable to the contract operator while ensuring solid waste permit compliance.

Conducted civil site development of an electric power distribution substation. The project involved geotechnical investigation and design recommendations for drilled pier and shallow foundation design, wetland delineation, site grading design, development of erosion control and storm water management plans, and permitting. Permits were obtained for erosion control, storm water management, wetland impact, and driveways.

Acted as Project Manager for dry CCR landfill leachate pond accumulated sediment assessment. The project involved field surveying of accumulated sediment surfaces, soundings for estimation of sediment depth, and accumulated sediment volume calculations.

Developed erosion control and storm water management plans and local permitting associated with an electric power distribution substation expansion.

Managed CCR liner expansion design upgrades and construction documentation for a Subtitle D compliant composite liner system enhanced with a geosynthetic clay liner to accommodate regulatory agency recommendations prior to the disposal of dry flue gas desulfurization byproduct from a spray dryer absorber system. The project involved final design, identification and permitting of a clay source, preparation of construction bid drawings, preparation of construction specifications, field oversight and material testing, documentation surveying, and preparation of a construction documentation report.

Developed design and construction drawings for the final closure of an ash disposal landfill. Project included construction of a composite GCL and geomembrane cover system and storm water management/ treatment facilities. Managed documentation and reporting for cap construction.

Municipal Waste

Completed annual reports to meet landfill requirements for air emissions, leachate recirculation, organic stability, and Research, Design, and Demonstration Plans.

Produced numerous plans of operation modifications for landfills, solid waste transfer stations, and solid waste processing facilities in Wisconsin.

Prepared a feasibility analysis and remediation costs estimates for removing all waste from a Superfund landfill site in Wisconsin and constructing a Subtitle D landfill expansion in the former Superfund landfill footprint.

Completed multiple engineering designs for permitting of solid waste landfill expansions in Wisconsin.

Assisted a municipal solid waste landfill owner with leachate release cleanup. Conducted post-excavation and post-treatment leachate-impacted surface water sampling. Prepared documentation reports for regulatory review and approval.

Conducted post-excavation soil screening for residual contamination following the exhumation of a former demolition debris landfill in Wisconsin.

Performed construction observation and documentation for gradient control and composite liner systems as part of municipal waste landfill expansions in Wisconsin. Projects have included construction material sampling, field testing, field engineering, and geomembrane quality assurance for 18-acre, 10-acre, 9-acre, and 1-acre expansions.

Conducted construction observation, documentation, clay soils testing, and surveying for a 13-acre compacted clay cover system at a municipal waste landfill in Wisconsin.

Performed construction observation and documentation for the installation of the geomembrane component of an 11-acre cap at a municipal waste landfill in Wisconsin.

Brownfield Redevelopment

Managed site investigation and contaminated material management during the redevelopment of a former fill site and leaking underground storage tank site in West Allis, Wisconsin. Project included Phase 1 and 2 environmental site assessments, the development of an historic fill site exemption request and material management plan and its implementation, and design of a passive sub-slab soil vapor mitigation system.

Directed site investigation and contaminated material management during the redevelopment of a former bulk oil storage facility at the Wisconsin Air National Guard facility at Truax Field in Madison, Wisconsin. Project included pre-construction site investigation, development of a petroleum-contaminated material management plan, and the oversight of contaminated soil excavation activities during redevelopment construction.

Served as project engineer for redevelopment of an oil terminal into a joist manufacturing facility, 84 Lumber, in McFarland, Wisconsin. Project also included material management planning for soil, groundwater, and vapors, as well as brownfield grant reporting. Completed design, implementation, and operation & maintenance phases of soil remediation activities following facility demolition, which included petroleum piping removal, excavation, on-site soil management, capping, sub-slab vapor mitigation systems, and active remediation system construction.

Oversaw site investigation and remediation of an abandoned industrial facility as project engineer for the Cudahy Business Park in Cudahy, Wisconsin. Remediation included removal and disposal of petroleum-impacted soils and polychlorinated biphenyl-impacted concrete. Groundwater remediation included site capping and natural attenuation of chlorinated solvents.

Acted as project engineer for a residential redevelopment of a former power plant property in St. Francis, Wisconsin. Completed Phase 2 investigation, contaminated soil and fill management planning, remediation, and site closure of lead, arsenic, polynuclear aromatic hydrocarbons, sulfate, and boron impacts to soil and groundwater from former plant operations and fly ash fill deposits.

Served as project engineer for the redevelopment of a mini warehouse facility on a 9-acre former municipal landfill for Cudahy Self Storage in Cudahy, Wisconsin. Project work included environmental and geotechnical investigations; site development cost estimating; passive landfill gas extraction system design; utility layout and design; preparation of design and bidding documents; project bidding; and construction contract administration for dynamic compaction of waste materials, landfill gas system installation, utility installation, site grading and paving, and storm water management contracts.

Managed site investigation and contaminated material management during the redevelopment of a former auto dealership and petroleum distributor in La Crosse, Wisconsin. Project included the development of a material management plan and its implementation, as well as the removal and assessment of hydraulic lifts and an underground storage tank.

Completed Phase 1 and 2 environmental site assessments, contaminated material management planning, and site closure for a residential/commercial redevelopment in West Allis, Wisconsin. Contaminated soil and fill material was reused on site to minimize the associated costs.

Developed remedial objectives using Illinois TACO procedures for the City of East Moline U.S. Environmental Protection Agency Brownfield Grant project. Prepared a remedial objectives report, remedial action plan, and soil management plan.

Soil and Groundwater Remediation

Investigated and remediated historic petroleum contamination associated with fuel storage and transfer facilities at the Wisconsin Air National Guard Truax Field. Projects included the development of remedial alternatives, remediation design, material management planning, construction oversight, and documentation. Contaminated soil management was incorporated into construction plans and specifications to minimize costs and potential delays due to contaminated soil encountered during construction.

Managed a due diligence review of existing environmental conditions and developed remedial alternatives and remediation cost estimates for an oil refining facility in Superior, Wisconsin.

Prepared a feasibility analysis and remediation cost estimates for the mining and relocation of a Superfund solid waste landfill in Wisconsin with chlorinated solvent contamination in soil and groundwater.

Designed a replacement water supply well due to contamination present in the existing facility supply well. Project elements included review of regional water resource data, review of area municipal and private water supply well construction, replacement well and seal design, variance requests, cost estimating, and bidding for replacement well installation.

Acted as Project Engineer or Project Manager on over 30 petroleum, chlorinated solvent, and agrichemical remediation projects. Prepared remedial action plans, remedial action cost estimates, active remediation system designs, and bid documents. Completed project bidding and remediation oversight for soil excavation, waste management, and remediation system construction. Operated, maintained, troubleshot, and monitored various remediation systems including multiphase extraction, soil vent, air sparge, groundwater extraction, and active bioremediation.

Civil Engineering

Managed civil and environmental compliance for the development of multiple new electrical substations in Wisconsin. Prepared access design, grading plans, erosion control and storm water management plans, site work specifications, and oil containment system designs. Managed geotechnical and structural subconsultants.

Served as Project Manager for preliminary geotechnical investigation of a potential warehousing facility development. Project included quick-turn drilling activities and geotechnical evaluation.

Prepared bidding and construction documents for the installation of a high capacity water well and accessory facilities. Project work included the preparation of bid documents, specifications, and drawings for well installation and site work contracts. Additional task work included zoning permit preparation, erosion control and storm water permitting, survey coordination, and easement preparation.

Performed field oversight, material testing, and construction documentation for various earthwork projects at a landfill facility. Oversaw work including excavation, filling, grading, access road construction, building and material storage pad construction, and storm water management/treatment features construction.

Directed construction oversight, documentation, field testing, surveying, sampling of construction materials, and field engineering for municipal roadway reconstruction.

Environmental Management

Completed oil containment system evaluation and design for SPCC compliance at various electrical substations and wind farms in Wisconsin, Illinois, Michigan, and Utah. Designed oil containment systems using a geosynthetic clay liner and oil solidifying polymer product to reduce capital and maintenance costs from that of typical concrete pit systems.

Prepared Wisconsin Pollutant Discharge Elimination System permit application and reporting documents for contaminated groundwater treatment, site development, and water supply well construction / testing project discharges.

Developed an SPCC Plan template and Spill Contingency Plan for substation and maintenance facilities owned by an electric utility cooperative with a two-county service territory in Illinois.

Conducted facility/site inspections and prepared SPCC Plans for numerous sites in Wisconsin, Illinois, Iowa, and Connecticut.

Air Quality

Prepared construction and operating permit applications, emission inventories, and annual emissions reports for landfill, manufacturing, and power generation facilities in Wisconsin.

Completed Best Available Control Technology analysis for the control of formaldehyde emissions from a food processing facility in Wisconsin.

Publications and Presentations

"Ash Pond Closure as One Aspect of Plant Decommissioning," Electric Power Research Institute Plant Decommissioning Workshop, Cedar Rapids, IA, October 21, 2014.

Instructor – "How to Bring Your Municipal Electric Utility into Compliance with U.S. EPA's Revised SPCC Rules," Municipal Electric Utilities of Wisconsin, Stevens Point, WI, November 2007.