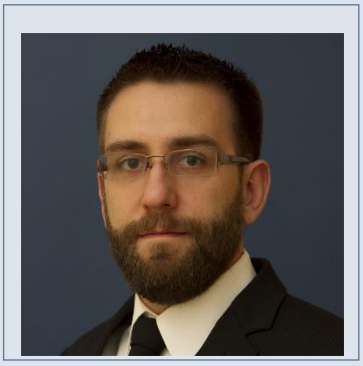

CONTACT

14908 Ritchie Road
Centreville, VA 20120
980.226.6519
cruhl@eotllc.net

EDUCATION

BSCE – Bucknell University (2005)

MSCE – University of North Carolina – Charlotte (2015)

REGISTRATIONS

PE, Alabama (PE54176)
PE, Georgia (PE052324)
PE, Maryland (45953)
PE, North Carolina (036320)
PE, Pennsylvania (PE086522)
PE, South Carolina (31800)
PE, Tennessee (130215)
PE, Virginia (402054084)

Certified CQA Geosynthetic Materials and Compacted Clay Liner Inspector (GCI-ICP 603-15)

CEDRIC H. RUHL, P.E.

FOUNDER / CHIEF DEVELOPMENT OFFICER – EOT, LLC

Mr. Ruhl founded EOT, LLC in 2024 with approximately 19 years of civil engineering consulting experience encompassing design, analyses, permitting, construction management (CM), and construction quality assurance (CQA) for solid waste management facilities, stormwater structures, dams, mines / quarries, and solar facilities.

Design experience includes engineering analyses, construction drawings, technical specifications, construction bid packages, construction cost estimates, and project management. Engineering analysis experience includes a variety of geotechnical, geosynthetic, and stormwater management design calculations. Mr. Ruhl has experience with preparation of design and permit documents including design reports, operations and maintenance plans, closure and post-closure maintenance plans, storm water pollution prevention plans, erosion and sediment control plans, stormwater management plans, and siting plans.

Engineering analysis and design qualifications are complemented by practical knowledge of construction means and methods gained through a variety of CM and CQA projects. CM experience encompasses preparation of bid documents, contractor procurement, schedule/budget evaluation, contractor submittal review, construction administration, developing and implementing change orders, and project closeout. CQA experience encompasses monitoring of geosynthetics installation and developing Construction Certification and CQA reports.

PROFESSIONAL EXPERIENCE – EOT, LLC

Solar Development and Engineering Support – X-ELIO
Multiple States | 2024
Lead developer for multiple utility-scale solar projects in the PJM Independent System Operator (ISO) territory. Job responsibilities include ensuring continuity of site control, leading preparation and submittal of interconnection applications, facilitating vendor preparation of site studies and discretionary permitting, assisting with site layouts, meeting with regulatory officials, coordinating and leading public meetings, and managing project budgets and schedules. Assisted with evaluating project purchase opportunities within the PJM market.

Engineering support includes performing desktop evaluations of potential solar sites, evaluating flood and inundation risks, and assisting other developers with engineering challenges.

Contractor Landfill Bid Support – Confidential
Mid-Atlantic USA | 2024
Prepared detailed engineering documentation to support a Contractor's proposed methodology for operating a coal combustion residual (CCR) landfill for a closure site in a mid-Atlantic state as part of the Contractor's bid for the clean closure project. Engineering documentation consisted of a detailed narrative, figures, and calculations to demonstrate that the proposed multi-step landfill filling plan is compliant with the permit documents. If the Contractor is awarded the bid additional services are anticipated to include site visits, reviewing monthly landfill surveys to evaluate compliance with the facility's Run-On and Run-Off Control Plan, attending weekly landfill operations meetings, and general engineering support.

Hurricane Helene Preliminary Assessment – Confidential
Southeast USA | 2024
Performed a site visit to assist a mining client with preliminary assessments related to damage from Hurricane Helene.

Product Substitution Calculation – Confidential
Mid-Atlantic USA | 2024
Prepared an engineering calculation to demonstrate that a Contractor's proposed drainage trough configuration was equivalent to the Design Engineer's drainage trough configuration.

PROFESSIONAL EXPERIENCE – PRIOR FIRMS

LANDFILLS AND CCR UNITS

Lincoln County Landfill Air Curtain Incinerator Permitting
Lincoln County, NC | 2023-2024
Project manager and civil engineer for air quality and solid waste permitting for a new air curtain incinerator at the landfill.

McGuire Landfill No. 1 Closure – McGuire Nuclear Station, Duke Energy
Mecklenburg County, NC | 2022
Performed peer review of landfill closure design and permitting documents.

Landfill Construction – Roxboro Steam Station, Duke Energy
Roxboro, NC | 2021-2022
Engineer of Record for Construction: Assisted with design, permitting, bid, and construction support for a 80.9 acre landfill expansion with a gross capacity of 34.3 million cubic yards. Provided construction engineering support included reviewing submittals, responding to RFIs, and addressing design questions during construction.

Landfill Design and Construction – Mayo Steam Station, Duke Energy
Roxboro, NC | 2020-2022
Engineer of Record for Design and Construction: Provided design, permitting, bid, and construction support for a new 42.1 acre landfill with a capacity of 5.1 million cubic yards. Design duties included performing or assisting with the design of landfill construction, landfill operations, and landfill closure, including phased grading plans, leachate collection and storage design, landfill construction and operations, stockpile management, landfill capacity, and slope stability. Oversaw design of corresponding electrical, mechanical, and process systems for the leachate collection pump and storage system. Permitting duties included developing reports, drawings, calculations, and specifications, assisting with client meetings and client review, and project planning. The following permits were obtained for the landfill: Erosion and Sediment Control, Site Suitability, Permit to Construct, and Permit to Operate. Bid duties included development of Issued for Bid packages including drawings, specifications, and a bid worksheet; and responding to bidder questions. Construction duties included reviewing submittals, responding to RFIs, and preparing Construction Certification Reports for regulatory concurrence.

Leachate Generation Evaluation – EPRI
Various Locations | 2020-2021
As Associate Engineer, provided a leachate generation evaluation for the Electric Power Research Institute (EPRI). The project objectives were to review and analyze available leachate generation and rainfall information at four landfill sites to evaluate whether quantitative answers can be developed for typical measured leachate generation rates, impact of rainfall on leachate generation, and development of a predictive model for leachate generation volume.

Landfill Design – AEP Glen Lyn Facility
Glen Lyn, VA | 2020-2022
Engineer of Record: Prepared a landfill siting study for four alternative landfill locations for a new 60-acre CCR landfill. Performed detailed design for two landfill alternatives. Design duties include developing drawings, calculations, specifications, and supporting reports for a Construction Permit Application.

Landfill Development Standards – Duke Energy
Various Locations, NC | 2019-2020
Associate Engineer: As Project Manager and lead author, developed a landfill specification guidance document to support Duke Energy's efforts to standardize landfill design and material selection. The document, which Duke uses fleet-wide, is similar to a specification for landfill design items and material components. Duke Energy utilizes the specification to promote landfill design consistency, regardless of the design originator, and to establish a baseline for what should be considered in a landfill design scope of work.

Landfill Design – Cliffside Steam Station, Duke Energy
Mooresboro, NC | 2018-2019
Associate Engineer: Provided design and permitting services for a lateral expansion of an existing coal ash landfill. Performed review of calculations related to landfill design to support a Construction Permit Application.

CERCLA Landfill and Capping – Riegelwood
Honeywell, NC | 2018-2022
Associate Engineer: Provided design and permitting services for an on-site landfill and in-situ capping of contaminated soils. Due to mercury and PCB contamination, the landfill was designed in accordance with CERCLA (Super Fund) and Toxicity Substances Control Act (TSCA) requirements. As lead design engineer, assisted with developing of the Pre-Design Investigation Work Plan (PDIWP) and the Remedial Design Investigation Work Plan (RDWP) for the project. Served as Engineer of Record for design and permitting documents for the on-site landfill and capping of in-situ material for approval by the EPA.

Plant Demolition and Ash Basin Closure, Confidential Energy Client
Confidential, GA | 2017-2020
Senior Engineer: Assisted with a design-build solution for decommissioning and demolition of a coal-fired power plant in Georgia, and associated support structures. Responsibilities consisted of assisting with closure design for three on-site coal ash ponds including development of design documents consisting of drawings, calculations, and reports; attending meetings with client stakeholders; and preparing permit documents.

Ash Basin Stormwater Diversion – Dan River Steam Station, Duke Energy
Eden, NC | 2016-2018
Project Manager and Engineer of Record: Developed design, permit, and bid documents to divert stormwater away from an ash basin at an inactive steam station. Permitting responsibilities included development of drawings, calculations, and permit documents for an Erosion and Sediment Control Plan and coordinating 401/404 Individual Permitting for wetlands impacts. Provided construction support including reviewing submittals, responding to requests for information, performing field visits, attending weekly construction meetings, and reviewing construction quality assurance documentation. Provided a Construction Certification Report documenting construction compliance with design drawings and specifications upon completion of construction.

Monitoring Well Installation and Reporting – Dan River Steam Station, Duke Energy
Eden, NC | 2017
Project Manager: Provided design, field oversight, and post-installation documentation for two monitoring well networks at a coal combustion residual landfill for a North Carolina-based Steam Station. Provided semi-annual reporting services to satisfy state permit requirements.

Landfill Design and Ash Basin Closure – Dan River Steam Station, Duke Energy
Eden, NC | 2014 - 2021
Project Manager and Engineer of Record: Provided design, permitting, bid, and construction support for a new 23.3 acre brownfield landfill with a capacity of 2.1 million cubic yards, closure of two high hazard ash basins with

a footprint of approximately 51 acres and capacity of 1.8 million cubic yards, and closure of two ash fills with a capacity of approximately 1.6 million cubic yards. The new landfill was located in the footprint of Ash Fill 1, requiring a phased grading plan for both ash removal and landfill construction to accommodate the project schedule. The ash basin decommissioning plan consisted of a three-phase grading approach to eliminate gravity discharge, remove the ash, and lower the embankment in stages.

Design duties included performing or assisting with the design of landfill construction, landfill operations, landfill closure, and ash basin closure components including phased grading plans, leachate collection and storage design including a 1 million gallon open-air tank with secondary containment, contact and non-contact stormwater management during ash removal and landfill construction and operations, stockpile management, landfill capacity, and slope stability. Oversaw design of corresponding electrical, mechanical, and process systems for the leachate collection pump and storage system.
Permitting duties included developing reports, drawings, calculations, and specifications; assisting with client meetings and client review; and project planning. The following permits were obtained for the landfill: Erosion and Sediment Control Plan, Site Suitability, Permit to Construct, Permit to Operate, and Notification of Closure. The following permits were obtained for each of the three phases of dam decommissioning: Certificate of Authorization to Repair.

Bid duties included development of Issued for Bid packages including drawings, specifications, and a bid worksheet; responding to bidder questions; attendance of a pre-bid meeting; and assisting the Owner with evaluation of bids. Provided construction administration and on-site construction quality assurance (CQA) services during landfill construction, operations, and closure; and dam decommissioning. During landfill construction the firm provided full-time on-site CQA and developed a 3-stage Construction Certification Report for each of the three landfill cells (nine total reports) to facilitate regulatory review. During landfill operations the firm provided full-time on-site CQA and prepared monthly landfill operations reports documenting quantity and type of waste placement, amount of leachate and leakage generated, compliance with Run-On and Run-Off Control Plan requirements, and testing results. During landfill closure the firm provided full-time on-site CQA and prepared a Construction Certification Report documenting landfill closure. During dam decommissioning the firm provided full-time on-site CQA and prepared a Construction Certification Report documenting dam decommissioning.

Emergent Issues - Dan River Steam Station, Duke Energy
Eden, NC | 2015-2019
Project Manager and Engineer of Record: Provided on-call consulting services that included coordination of natural resources services, development of design and permit documents for removal of coal combustion residuals (CCRs), performing slope stability analyses, development of documentation required by federal regulations, retrofitting existing valve vaults with a wireless leak detection system, and coordinating state-of-the-art laboratory testing to evaluate the efficacy of phragmites roots to develop methane in a coal ash landfill environment.

Pond Liner Repair – CF Industries
Cofield, NC | 2012
As Project Engineer, coordinated design, contractor procurement, and CQA activities for a venting system retrofit of an existing lined pond.

Ash Basin Closure – Weatherspoon Steam Station, Duke Energy
Lumberton, NC | 2012-2014
As Project Engineer, performed stormwater and slope stability calculations and assisted with development of drawings, reports, and specifications for an ash basin closure design.

Craig Road Landfill Expansion – Belews Creek Steam Station, Duke Energy
Belews Creek, NC | 2011-2014
As Project Engineer, assisted with and was Engineer of Record for the Site Study, Construction Plan Application, bid documents, and Application for Permit to Operate for expansion of an existing industrial landfill. The proposed expansion increased the landfill footprint from approximately 32 acres to approximately 156 acres and provided an additional approximately 24 years of capacity.
As Project Manager, coordinated review of Contractor bid documents, developed Issued for Construction documents, developed an Erosion and Sediment Control Plan, performed construction administration and coordinating CQA activities, and developed Application for Permit to Operate. Issued for Construction and Application for Permit to Operate were approved by the North Carolina Department of Environment and Natural Resources (NCDENR) with no comments. Duties included performing or assisting with the design of landfill components including subgrade and cover system grading plans, leachate collection system design, interim and final stormwater management, stockpile management, landfill capacity, and landfill stability. Duties also included development of permit documents including reports and drawings, assisting with client meetings and client review, and project planning.

Industrial Landfill No. 1 Expansion – Marshall Steam Station, Duke Energy
Terrell, NC | 2012
As Project Engineer, performed design calculations, developed specifications, and prepared an Erosion and Sediment Control Plan for a landfill expansion project.

DuPont Landfill – DuPont
New Johnsonville, TN | 2012
As Project Engineer, performed global and cover veneer static and pseudo-static slope stability analyses for an industrial landfill cover system, and analyzed the required drainage flow capacity for the drainage layer.

Owl's Den Landfill Corrective Action Plan – Lincoln County, North Carolina
Lincoln County, NC | 2010
As Project Engineer, performed design and permitting services for minor corrective actions at a closed MSW landfill site. Duties included design of erosion and sediment control measures, preparation of drawings, and material quantity estimates. Assisted with the development of a Grading Plan and was Engineer of Record for an Erosion and Sediment Control Plan.

Industrial Landfill No. 1 – Marshall Steam Station, Duke Energy
Terrell, NC | 2010
As Staff Professional, performed calculations and plan preparations for the design and permitting of an ash landfill located on a Brownfield site. Responsibilities included analyzing slope stability, designing the leachate collection system, and preparing an erosion and sediment control plan.

Edgecombe County Landfill – Edgecombe County, North Carolina
Edgecombe County, NC | 2009
As Staff Professional, performed global and cover veneer static and pseudo-static slope stability analyses for a construction and demolition (C&D) landfill cover system.

Alcoa Landfill Expansion – Alcoa
Friendsville, TN | 2009
As Staff Professional, performed global and cover veneer static and pseudo-static slope stability analyses for a municipal solid waste (MSW) landfill cover system, and analyzed the required drainage flow capacity for the drainage layer.

Pine Hall Road Ash Landfill Closure – Belews Creek Steam Station, Duke Energy
Belews Creek, NC | 2008
As Staff Professional, assisted the Project Manager with the construction administration of an ash landfill cover system. Duties included coordinating development of a CQA application for the iPhone, coordinating and reviewing CQA testing for earthworks and geosynthetics, participating in periodic construction meetings with the owner and the contractor, preparing design changes, reviewing submittals, and preparing a Construction Certification Report.

RAB Landfill – Allen Steam Station, Duke Energy
Gaston County, NC | 2007-2009
As Staff Professional, performed calculations, prepared bid documents, assisted with bid review, and performed geosynthetics CQA of an ash landfill located on a brownfield site. Responsibilities included analyzing slope stability for construction, post-construction, and pseudo-static conditions, analyzing settlement using a GIS-based approach, designing the leachate collection system, preparing bid documents, assisting in bid review and contractor selection, and performing geosynthetics CQA during construction of Cell 1.

Craig Road Ash Landfill – Belews Creek Steam Station, Duke Energy
Belews Creek, NC | 2006
As Staff Professional, performed leachate basin re-design to include a leakage detection system and performed CQA during installation of geosynthetic liner system.

SOLAR FACILITIES

Solar Site Conceptual Design and Permitting – EOR
Mecklenburg County, VA | 2023-2024
As Project Manager and Engineer of Record led the conceptual design and permitting for a proposed utility-scale solar site in Mecklenburg County, VA.

Geotechnical Due Diligence for Utility-Scale Solar Projects – Duke Energy
Multiple Sites, NC | 2023-2024
As Project Manager coordinated geotechnical due diligence including pile load testing for several potential utility-scale solar sites.

Solar Plant Erosion Control - Hollyfield, Dominion Energy
King William County, VA | 2017-2018
Engineer of Record: Provided design and permit documents supporting an Erosion and Sediment Control Plan for construction of a new 17 MW, 220 acre solar power facility.

Solar Plant Erosion Control - Puller, Dominion Energy, VA
Middlesex County, VA | 2017-2018
Engineer of Record: Provided design and permit documents supporting an Erosion and Sediment Control Plan for construction of a new 15 MW, 120 acre solar power facility.

STORMWATER MANAGEMENT AND EROSION CONTROL

Erosion and Sediment Control – Eagle Trace, Dominion Energy North Carolina
Wake County, NC | 2024
As Project Manager and Engineer of Record prepared an Erosion and Sediment Control Plan for installation of approximately ¾ mile of a natural gas distribution pipeline.

Erosion and Sediment Control – Asheboro Laydown Yard, Troy Construction
Asheboro, NC | 2024
As Project Manager and Engineer of Record prepared an Erosion and Sediment Control Plan for a 40-acre laydown yard that had received a Notice of Violation (NOV) for not having a valid E&SC Permit.

Stormwater Plan Review – Buncombe County
Buncombe County, NC | 2023
As Project Engineer performed a review of a Stormwater Plan for a tire facility expansion project on behalf of Buncombe County.

Environmental Permitting – ARSEAL
Hanover County, VA | 2022-2024
As Project Manager and Permitting Engineer obtained a Site Plan permit for proposed infrastructure improvements at an existing pumping station.

Erosion and Sediment Control – Belews Creek Steam Station, Duke Energy
Belews Creek, NC | 2022
Engineer of Record: Provided design and permitting services for an Erosion and Sediment Control Plan supporting installation of Corrective Action Plan (CAP) wells at Duke Energy's Belews Creek Steam Station.

Pond Embankment Repair – Ridings at Blue Spring
Loudoun County, VA | 2020
Associate Engineer: Provided design and construction quality assurance (CQA) services for repair of a pond embankment that was damaged due to beaver activity. Design services consisted of developing technical specifications and exhibit figures showing the repair areas. CQA services consisted of performing field density testing and daily field reports, culminating in a letter-based construction repair document.

Erosion and Sediment Control – Belews Creek Steam Station, Duke Energy
Belews Creek, NC | 2020
Engineer of Record: Provided design and permitting services for an Erosion and Sediment Control Plan supporting installation of pilot wells for a Corrective Action Plan (CAP) at Duke Energy's Belews Creek Steam Station.

BMP Conceptual Design – NAVFAC Indian Head Base
Indian Head, MD | 2020-2021
Engineer of Record: Provided conceptual stormwater BMP design for a channel retrofit at NAVFAC's Indian Head Base. Services included developing conceptual-level drawings and calculations and overseeing performance of supporting field activities including geotechnical evaluation and surveying.

Channel Design – Cardinal Glen
Loudoun County, VA | 2019-2020
Engineer of Record: Provided design services for an armored channel in an area that was exhibiting erosion. Design services consisted of performing hydrologic and hydraulic calculations to evaluate existing and proposed conditions and developing task-order level construction drawings.

Pipe Video Inspection – Dresser Station, Duke Energy
West Terre Haute, IN | 2019
Engineer of Record and Project Manager: Oversaw a video inspection of a 72-inch diameter HDPE pipe that was constructed in 2017 and developed a post-inspection documentation report.

Remote Monitoring System – Darlington CT, Duke Energy
Darlington, SC | 2018-2019
Project Manager: Provided a remote monitoring system to monitor approximately 16 inputs at two active combined cycle units. As project manager coordinated meetings, subcontracting, document control, and invoicing.

Parking Lot Expansion Permitting, Jubilee Christian Center
Fairfax, VA | 2017-2018
Senior Engineer: Provided design and permitting services for a parking lot expansion at the Jubilee Christian Center in Fairfax County, Virginia. Assisted with design of pond retrofits to meet water quality and water quantity compliance criteria.

National Park Service (NPS), Shenandoah National Park Mathews Arm Campground Wastewater Treatment System, John G Waite Associates Architects
Rileyville, VA | 2017
Construction Certifying Engineer: Provided Title III services in support of the upgrade/rehabilitation of the Mathews Arm Campground wastewater treatment system (wastewater treatment facility and sanitary collection system) at the NPS Shenandoah National Park. Performed review of record drawings and made site visits in support of the construction project. Provided documentation supporting a Certificate to Operate.

Stormwater Pipe Re-Route – Dresser Station, Duke Energy
Dresser, IN | 2017-2018
Engineer of Record for Construction: As construction Engineer of Record, provided construction support including reviewing submittals, responding to requests for information, performing field visits, attending weekly construction meetings, and reviewing construction quality assurance documentation. Provided a draft Construction Certification Report documenting construction compliance with design drawings and specifications for client review.

Erosion and Sediment Control Plan – Havre de Grace, Amtrak
Havre De Grace, MD | 2016-2018
Engineer of Record: Developed permit documents to develop an Erosion and Sediment Control Plan for drainage improvements along a section of railroad track.

Micropool Extended Detention Basin – Perryville MOW, Amtrak
Perryville, MD | 2016-2019
Senior Engineer: Developed detailed design and permit documents for a stormwater Best Management Practice (BMP). The BMP is utilized for stormwater quality credit for several rail sites.

Erosion and Sedimentation Control Plan – Marshall Steam Station, Duke Energy
Sherrills Ford, NC | 2015-2016
Project Manager and Engineer of Record: Developed design and permit documents for a proposed 30-acre borrow area at an active steam station. Permitting responsibilities included development of drawings, calculations, and permit documents for an Erosion and Sediment Control Plan.

Site Soil Demand and Borrow Evaluation - Marshall Steam Station, Duke Energy

Sherrills Ford, NC | 2014
Project Manager: Provided a site soil demand and borrow evaluation for a North Carolina-based Steam Station. Following the evaluation, the firm developed an estimate of the soil demand by year based on our client's schedule of site events and the anticipated soil demand for each of the events.

Mt. Airy Substation
Pittsylvania County, VA | 2013-2014
As Project Engineer, developed design calculations and drawings for a concrete stormwater detention structure to mitigate peak stormwater flows.

Compressor Station
Roxboro, NC | 2013-2014
As Engineer of Record, designed stormwater quality conveyance swales and a bioretention area for a compressor station expansion in the Falls Lake watershed. Design documents included drawings and permit documents for an Erosion and Sediment Control Plan and a Stormwater Permit Application. The design drawings also satisfied floodplain encroachment and site plan permit requirements for client submittal. Permit application was first of its kind in Person County.

SWPPP Designs – South Carolina Electric and Gas
Various Locations, SC | 2011
As Project Manager, performed design and permitting services for 2 Stormwater Pollution Prevention Plans (SWPPP) for pipeline construction projects.

E&SC Plans – PSNC Energy
Various Locations, NC | 2010-2014
As Engineer of Record, performed design and permitting services for several Erosion and Sediment Control Plans for pipeline construction projects.

Wet Detention Basin – Huntersville United Methodist Church
Huntersville, NC | 2011
As Project Engineer, performed design and permitting services to convert an existing wet detention basin into an extended dry detention basin.

E&SC Permitting – Piedmont Natural Gas
Various Locations, NC | 2007-2014
As Project Manager, set up a GIS platform for design and permitting of approximately 12 Erosion and Sediment Control Plans for pipeline construction projects. As Project Manager, designed and permitted stormwater management plans for pipeline construction projects. Engineer of Record for multiple erosion and sediment control plans and stormwater management plans.

Cabarrus Compressor Station
Cabarrus County, NC | 2006
As Staff Professional, designed and permitted an Erosion and Sedimentation Control Plan for a small construction site.

MINING AND QUARRIES

South Richmond Mine Facility – Luck Stone
Richmond, VA | 2023-2024
As Project Manager and Engineer of Record oversaw subsurface exploration, laboratory testing, and slope stability analyses for a proposed mine pit expansion.

Edgefield Greenfield Mine – Luck Stone
Edgefield County, SC | 2023-2024
As Project Manager and Engineer of Record oversaw preparation of design exhibits and calculations for conceptual site layout and permitting for a new greenfield mine site.

Enoree Greenfield Mine – Luck Stone
Enoree County, SC | 2023-2024
As Project Manager and Engineer of Record oversaw preparation of detailed design permitting, issued for bid, and issued for construction documents for a new greenfield mine site and oversaw construction quality assurance (CQA) activities during facility construction. Also served as Project Manager for a geotechnical subsurface exploration and laboratory testing program to evaluate soil materials for a bottomless culvert foundation.

Freshwater Reservoir and Temporary Holding Basin – The Quartz Corp
Mitchell County, NC | 2022-2024
As Project Manager and Engineer of Record led the design and permitting for a new freshwater reservoir to provide non-turbid water for ore processing operations and a temporary holding basin that incorporated a double-liner system to temporarily store wastewater during treatment system outages. Design also included a new earthen dam to replace an 80 year old concrete weir dam and provide vehicular access across a creek.

Fairfield Greenfield Mine – Luck Stone
Edgefield County, SC | 2022-2023
As Project Manager and Engineer of Record oversaw preparation of detailed design permitting, issued for bid, and issued for construction documents for a new greenfield mine site and oversaw construction quality assurance (CQA) activities during facility construction.

DAMS

Conceptual Dam Design – Durham Ranch
Laurens and Greenville Counties, SC | 2023-2024
As Project Manager and Engineer of Record prepared a conceptual design for a 24-foot high earthen dam for a proposed development.

Lake Tomahawk Dam – ACB Evaluation
Buncombe County, NC | 2023
As Project Engineer assisted with the technical review of an Articulated Concrete Block (ACB) dam facing design.

Engineer of Record and Emergency Dam Observation Services – Moorefield East and West Pond Dams
Loudoun County, VA | 2019-2022
Engineer of Record: Performed on-call emergency observation services for two high-hazard dams in Loudoun County. Developed a training program, prepared field “go-bags”, and oversaw development of a web-based notification system. Performed annual inspections and other consulting services.

Dam Embankment Improvements – Allen Steam Station, Duke Energy
Gaston County, NC | 2014-2016
Project Manager and Engineer of Record: Provided design and permitting support for several dam embankment improvements for a North Carolina-based Steam Station. Embankment improvements included slope stability evaluation, slope stabilization design, a plan for removal of trees from an embankment, drainage improvements, and riprap stabilization. Design documents included drawings and specifications reviewed by NCDENR Dam Safety. Responsibilities also include providing a construction certification report to Dam Safety following implementation of the improvements.

Power Plant Cooling Reservoir and Ash Impoundment Dams – Belews Creek Steam Station, Duke Energy
Belews Creek, NC | 2009-2010
As Project Engineer, performed evaluations of an existing 160-foot tall earthen embankment impounding a 3,600-acre cooling lake and a 130-foot tall earthen embankment impounding a 300-acre sluiced combustion coal ash impoundment. Services included evaluating historic instrumentation data and current monitoring methods; providing recommendations for updates to the monitoring program; review of historic exploration and laboratory testing; performing soil test borings and CPT soundings with pore pressure dissipation and shear wave velocity measurements; laboratory shear strength and permeability testing; seismic hazard analysis; liquefaction analysis; slope stability analysis; and preparation of a recommendations report.

Poston Park Dam – Gaston County, North Carolina
Gaston County, NC | 2007
As Staff Professional, analyzed seepage and slope stability of a 40-foot earth dam embankment for construction, steady-state, and rapid drawdown analyses.

Carolina Lakes Dams – Sun City Carolina Lakes
Lancaster County, SC | 2006
As Staff Professional, performed calculations and developed permit applications for dams K, L and M. Responsibilities included assisting in design of three dams, as well as preparation of Construction Permit Application (Dam K) and Erosion and Sedimentation Control Plan Applications (Dams K, L, and M).

OTHER

Geotechnical Exploration – Norfolk Southern Bridge Settlement
Delaplane, VA | 2024
As Project Manager and Engineer of Record oversaw a subsurface exploration and laboratory testing program to evaluate settlement of a bridge bent along a Norfolk Southern main railroad line.

Multiple Engineering Services – New Indy Paper Mill
Catawba County, SC | 2022-2024
As Project Engineer assisted with a range of services including dam embankment repair design, conceptual design for an aeration stabilization basin, preparation of closure plans for sludge ponds, and preparation of a CQA Plan for an ash placement pilot project.

Vapor Barrier - Walmart
Charlotte, NC | 2013-2014
As Engineer of Record, developed design drawings, specifications, and CQA plan for a vapor barrier for a commercial building for a brown-field development site with potentially contaminated soil vapor.

FGD Scrubber – Allen Steam Station, Duke Energy
Belmont, NC | 2005
As Staff Professional, coordinated a month-long soils investigation project. Full time monitoring included soil classification, meeting coordination, and problem mitigation.

I-85 Widening – NCDOT
Rowan County, NC | 2005
As Staff Professional, monitored foundation construction. Full time monitoring included 11 drilled shafts. Part time monitoring included pile driving at several bridge locations. 2005.

PUBLICATIONS / PRESENTATIONS

2022 World of Coal Ash Conference – "A Comparison of Measured Leachate Generation to Predictive Modeling", lead author.

2022 World of Coal Ash Conference – "Searching for a Diamond in the Rough – A Case Study in Landfill Siting and Design", lead author.

2021 International Water Conference – "A Comparison of Measured Landfill Leachate Generation to Predictive Modeling", lead author.

2019 World of Coal Ash Conference – "So, You've Built a Landfill for Your Ash Pond Closure, Now What?", lead author.

2019 World of Coal Ash Conference – "Disposal of Commingled CCR and Phragmites Roots in a CCR Landfill", lead author.

2019 World of Coal Ash Conference – "A Method for Predicting CCR Landfill Leachate Generation Volume", lead author.

2019 EUEC – "From Ash to Grass: A Case Study for Decommissioning Two High Hazard CCR Surface Impoundments", lead author.

2018 EUEC – "A Method for Predicting CCR Landfill Leachate Generation Volume", lead author.

2017 World of Coal Ash Conference – "A Comparison of Actual vs. Predicted Leachate Generation", lead author.

2017 World of Coal Ash Conference – "Action Leakage Rate Calculation", supporting author.

2017 World of Coal Ash Conference – "CCR Landfill Liner System Performance Evaluation", supporting author.

2013 World of Coal Ash Conference – "CCP Landfill Leachate Generation and Leachate Management", lead author.