

BEAU HODGE, PG

**hydrogeology, site investigation
DNAPL characterization & remediation
In situ remediation design & implementation
vapor intrusion assessment & mitigation
closure strategy**

EDUCATION

B.S., Geology, Washington and Lee University, Lexington, Virginia, 1984

REGISTRATIONS AND CERTIFICATIONS

Professional Geologist, North Carolina #1243

Registered Site Manager, NC Registered Environmental Consultant Program

CAREER SUMMARY

Mr. Hodge has over 27 years of experience with environmental site investigation and remediation with a focus on metals and recalcitrant compounds including chlorinated solvents, creosote, and coal tars. He is a professional geologist with expertise in developing assessment, remediation and closure strategies. He is a Registered Site Manager (RSM) under the North Carolina Registered Environmental Consultant (REC) Program, the voluntary remediation program for hazardous waste sites in North Carolina.

Mr. Hodge has worked at hazardous waste sites, former wood treating sites, manufactured gas plant sites, electric utilities, former scrap yards and other industrial facilities under USEPA CERCLA and RCRA programs and state programs in North and South Carolina, Georgia, Florida, Tennessee, Alabama, Montana, and Virginia. Technical expertise includes high resolution site characterization (HRSC) approaches using various techniques, and the design, implementation and operation of in situ chemical oxidation, bioremediation, thermal, as well as traditional remediation techniques, in both porous and fractured media. Mr. Hodge also has extensive experience with the assessment and mitigation of vapor intrusion issues. He has experience managing multiple stakeholders in the PRP, legal and regulatory arenas.

REPRESENTATIVE EXPERIENCE

MGP Portfolio Evaluation, 14 Sites, North Carolina

Mr. Hodge serves as the Project Director for evaluating risk-based closure options for 14 former Manufactured Gas Plants (MGP) sites in North Carolina that have had various levels of remedial actions taken over the decades. Geosyntec developed a risk matrix to score sites based on North Carolina risk-based criteria and ranked the sites based on potential to move the site toward closure using recent regulatory updates. Three sites are currently being moved toward closure pathway.

Former Phosphoric Acid Plant and Steam Generating Station, Mount Holly, North Carolina

Mr. Hodge is serving as the Project Director for the assessment and risk-based remediation of a former phosphoric acid plant and steam generating power station. Heavy metals and PCBs are the principle chemicals of concern at the site. The PCBs will be addressed under TSCA and the remaining constituents will be addressed through the Inactive Hazardous Site Branch of the Division of Waste Management.

Former Combined Cycle Generator Decommissioning, Wilmington, North Carolina

Mr. Hodge serves as Project Director for a decommissioning project for a public utility. Significant fuel oil and the form of LNAPL is present around the above ground storage tanks, conveyance piping, and generators. Using a combination of rapid assessment techniques, assessment and remedial approaches were evaluated simultaneously to address LNAPL and integrate approach to the Corrective Action Plan.

Crompton and Knowles Assessment and Remediation, Lowell, North Carolina

Mr. Hodge serves as the Project Director for the assessment and remediation of the former dye manufacturing facility near Charlotte. NCDEQ has contracted Geosyntec to be their consultant for the site. The focus is to direct the limited bankruptcy funds (~\$2MM) toward risk-based clean up of the site while working concurrently with the Brownfields Section in support with the developer.

Cape Fear Wood Preserving Superfund Site, Fayetteville, North Carolina

Mr. Hodge serves as the Project Director to support NCDEQ with the operation and maintenance of the OU2 groundwater remediation system at the former wood treating facility. Over the course of 17 years, Mr. Hodge has been interacting with USEPA and NCDEQ on this orphan site to optimize the groundwater remediation at the site. To date, the equivalent of 13,300 gallons of creosote has been recovered from the site.

Woodlake Dam Emergency Response and Mitigation Design, Vass, North Carolina

Mr. Hodge serves as the project manager for emergency response and design of mitigation measures following implementation of the Emergency Action Plan in response to Hurricane Matthew. Geosyntec prepared design documents for temporary breach and interim remedies for submittal to the NC Department of Environmental Quality (NCDEQ), Dam Safety Division.

Assessment and Remediation of PCBs, Metals, PAHs, and VOCs, Former Shulimson Brothers Scrap Yard North Carolina REC Site, Asheville, NC.

Mr. Hodge is the Project Director and RSM for this REC site. Norfolk Southern Railway Company (NSRC) previously leased a six-acre site in Asheville, North Carolina to a scrap yard. The historical metal scrap yard operations impacted groundwater with volatile organic compounds (VOCs) and soil with metals, polyaromatic hydrocarbon, and polychlorinated biphenyls (PCBs). The site entered into an Administrative Agreement with the North Carolina Department of Environmental Quality (NCDEQ) to conduct a Registered Environmental Consultant (REC)-directed voluntary remedial action. Geosyntec was contracted in 2014 to carry out a groundwater Remedial Action Plan (RAP) and develop a RAP for soil. Geosyntec addressed data gaps identified in the previous consultant's

Remedial Investigation (RI) and conducted additional soil and groundwater sampling. Geosyntec submitted an addendum to the RI that incorporated a risk evaluation to support the RI addendum conclusions and establish remedial goals. Consistent with new site characterization and risk assessment requirements imposed by NCDEQ, Geosyntec conducted a focused assessment of PCB congeners in site soils. Using fingerprint characterization, we identified PCB levels and compositions outside the fence boundaries that were consistent with urban background. Because of the supplemental assessment work conducted at the site and associated risk evaluation, Geosyntec was able to substantially reduce the anticipated remedial footprint. Currently, Geosyntec is preparing a Feasibility Study so that a RAP for soil can be finalized and implemented.

Asheville Mechanical Facility Aboveground Storage Tank Site, Asheville, NC. The Mechanical Facility Aboveground Storage Tank (AST) site is located within NSRC's railyard in Asheville, North Carolina. The site is comprised of a 300,000-gallon diesel AST area and an area adjacent to the locomotive inspection pit which includes an 8,000-gallon lube oil AST and an underground diesel supply line. Geosyntec collected groundwater samples for analyses of extractable petroleum hydrocarbons (EPH) and volatile petroleum hydrocarbons (VPH). To gather data for a potential risk-based closure to include both soil and groundwater, NCDEQ recommended collecting soil samples from previously impacted areas on the site to be analyzed for PAHs and EPH. Geosyntec collected the requested soil samples and gauged the presence of free product in the groundwater monitoring wells in November 2017. While laboratory analytical results from the soil samples showed minimal impacts to groundwater. NSRC have negotiated with the NCDEQ, UST Section to discontinue groundwater sampling and abandon the monitoring wells in the LIP area (if no free product is present after one gauging event). Free product gauging will continue in wells adjacent to the AST. In the absence of free product after a period of time, a risk-based closure for the site can be negotiated. Geosyntec's efforts and regulatory negotiations on behalf of NSRC have accelerated the closure process which is anticipated to be less than two years for a two-decade old NCDEQ UST site.

Site Assessment for Asheville Town Branch Site, Asheville, NC. The NCDEQ contacted Geosyntec and NSRC in December 2016 regarding a sheen observed on a portion of Town Branch which lies within the NSRC Asheville Railyard, and subsequently issued a Notice of Violation (NOV) to NSRC. As part of the NOV, the NCDEQ, Division of Water Resources (DWR) requested booms be deployed and maintained in Town Branch and that NSRC develop a strategy to assess and abate petroleum sheen observed in the stream. Geosyntec was then contracted by NSRC to address the required responses outlined in the NOV, which consisted of surface water sampling, stream inspections, and site assessment activities. Geosyntec performed a site assessment to evaluate groundwater, soil, and sediment impacts and concluded that an obvious source area/remedial treatment zone had not yet been identified. Geosyntec prepared a remedy screening table, which identified and evaluated remedial technologies that could potentially abate the petroleum sheen at the site. Geosyntec recommended an additional phase of assessment to address data gaps and develop an effective remedial strategy. A workplan to collect the additional data was

recently submitted to and approved by NCDEQ, DWR. Because the site is situated near the location of a former AST, the NCDEQ, UST Section has also been involved with this project. Geosyntec's immediate response to mitigation of the sheen, timely response to the requirement set forth in the NOV, and regulatory communications have resulted in no fines or penalties issued to NSRC by NCDEQ.

Preliminary Site Assessments, NCDOT Monroe Bypass, Monroe, NC. Mr. Hodge served as Principal-in-charge over nine separate assessments of properties along the Highway 74 proposed bypass. The types of properties vary from retail gas stations to former auto junk yards. He evaluated multiple contaminants of concern including petroleum hydrocarbons, volatile organic compounds and metals. He incorporated proposed construction plans into the assessment plan and conducted preliminary background metals evaluation to assess potential risk at site.

Risk Mitigation, Former RTUS Site, Graham, NC. Mr. Hodge serves as Principal-in-charge for a former commercial dry cleaning operation in the Piedmont of North Carolina. Mr. Hodge has helped negotiate voluntary remediation in lieu of a consent order with the NCDEQ. Vapor intrusion and potable water supply wells in the vicinity of the site are the drivers for this site. Dissolved chlorinated hydrocarbons have migrated more than 1,500 feet from the source area and there are over 45 interested properties and stakeholders. Geosyntec canvassed surrounding properties and gathered data to develop a conceptual site model than incorporated and prioritized risk factors from vapor intrusion and potable wells. In addition to implementing vapor mitigation systems, Geosyntec is also assessing the source area to evaluate feasibility of remedial options for longer-term strategic planning.

Remedial Investigation/Vertical Profiling, Ram Leather Superfund Site, Charlotte, NC. Mr. Hodge serves as the project manager for the detailed investigation of groundwater flow in the Piedmont transition zone for the Remedial Investigation/Feasibility Study at a former dry cleaning site being conducted under the Remedial Action Contract for Region 4 EPA. The approach used unique sampling techniques through partially weathered rock to characterize vertical distribution of chlorinated VOCs and hydraulic characteristics at the bedrock interface and assisted the feasibility study.

High Resolution Site Characterization, Confidential Client, Rocky Mount, NC. Mr. Hodge services as technical director for the assessment of NAPL source areas at a RCRA closure site. The use of membrane interface probe (MIP), hydraulic profiling tool (HPT) and mobile laboratory in conjunction with direct push techniques (DPT) allowed the collection of hundreds of data points over the course of two weeks allowed for a highly refined conceptual site model. The refined CSM allowed us to reduce the total volume estimate of impacted media to be remediated from several acres to less than 10,000 square feet. Mr. Hodge assisted in negotiating an alternative closure agreement with the NCDEQ RCRA Division.

Focused Feasibility Study, Cape Fear Wood Preserving Site, Fayetteville, NC. Mr.

Hodge serves as the Principal-in-charge for conducting high-resolution site characterization using TarGOST at the former wood treating facility. A detailed 3-dimensional model was developed to revise the Conceptual Site Model. Thermal remediation was evaluated as a remedial option. Mr. Hodge also serves as the project manager for conducting bench scale tests for *in situ* stabilization at the site.

CCR Investigation, Confidential Client, Chapel Hill, NC. Mr. Hodge serves as Project Manager for the remedial investigation of coal combustion residuals (CCR) impacts at a cogeneration facility providing steam and power. CCR materials were identified during construction activities and were tied to past operations at the plant. Geosyntec developed the Remedial Investigation Work Plan to conduct work under North Carolina's voluntary remediation program. Highlights of the investigation include a tiered visual assessment program to determine the extent and magnitude of CCR impacts. Geosyntec also utilized incremental sampling techniques to determine a mean concentration for the risk assessment reducing the number of samples needed for laboratory analysis and reducing the potential for outlying sample results.

Assessment and Remediation of PCB Contamination, Confidential Rail Client, Asheville, NC. Mr. Hodge serves as Principal-in-charge for assessment and remediation of former scrap yard impacted with PCBs, metals, and PAHs. Mr. Hodge is leading project through the North Carolina voluntary remediation program and is serving as the Registered Site Manager, in which he acts as consultant and regulator. Mr. Hodge developed remedial strategy to manage wastes from multiple wastes streams under different regulatory closure scenarios.

Assessment of Coal Ash Ponds, Confidential Client, Multiple Locations, NC. Technical lead for the hydrogeology and geochemical aspects, including flow modeling of potential impacts to soil and groundwater due to storage of CCRs in large ash ponds throughout central and eastern North Carolina. Mr. Hodge is helping the client negotiate with NCDEQ to reduce multiple regulatory jurisdictions into a single agency unit for a portion of one site.

MGP Assessment and Remediation, Confidential Client, Augusta, GA. Technical Director for assessment and remediation of a former Manufactured Gas Plant in Augusta, GA focusing on development of the conceptual site model and demonstrating monitored natural attenuation outside the zone of active remediation.

Vapor Intrusion Mitigation, Confidential Client, Union, SC. Project Manager and technical lead for the design of a positive pressure system to mitigate intrusion of chlorinated solvents. Mr. Hodge worked with the Brownfields Section of SCDHEC and led regular meetings with counsel and regulators throughout the redevelopment of an industrial complex. Served as technical lead for assessment of CVOC impacted soils around former degreaser.

DNAPL Assessment and Feasibility Study, Cherokee Magnolia, Charleston, SC. Mr.

Hodge served as Project Manager for assessment and risk mitigation for multiple parcels under Voluntary Cleanup Contracts (VCC) under South Carolina voluntary cleanup program. The overall site is composed of three CERCLA sites, one former wood treating site and two former fertilizer manufacturers. The complex site involved assessment of creosote and metals impact over a large areas including wetlands and shore protection for redevelopment of a multi-use parcel. Mr. Hodge's technical focus was DNAPL assessment and remediation along with vapor intrusion mitigation.

Thermal Modeling, Superfund Site, USEPA 4 RAC, Tampa, FL. Project Manager and technical lead for development of predictive models that would simulate several thermal remediation approaches at a chlorinated solvent site. Both Electric Resistance Heating (ERH) and in situ Thermal Destruction (ISTD) were simulated to develop the remediation action plan for EPA Region 4.

Remediation of Chlorinated Solvents, Confidential Client, Greensboro, NC. Project Manager and RSM for the development and implementation of a remedy on a large-scale TCE plume with DNAPL at a textile manufacturer in both porous and fractured media. Developed site conceptual model and piloted in situ reductive dechlorinated under the REC program in North Carolina.

Remediation of Creosote Extended Plume, USEPA 4 RAC, Brunswick, GA. Project manager for implementation of an ozone injection pilot study at a former CERCLA wood-treating site in Brunswick, GA. Ozone used in combination with in-situ bioremediation to apply barrier approach to extended groundwater plume for EPA Region 4.

Remediation of Creosote DNAPL, USEPA 4 RAC, Fayetteville, NC. Operate and maintain a complex groundwater treatment system for treatment of contaminated groundwater at a former wood treating facility. Initiated system enhancement to increase system uptime and contaminant recovery. Directed the execution of DNAPL characterization using laser induced fluorescence (LIF) techniques, particularly TarGOST. Evaluated benefits of using enhanced DNAPL removal approaches including thermal remediation, surfactant flushing, barrier containment, and in-situ chemical oxidation to accelerate site cleanup. Mr. Hodge interacted with both NCDEQ and EPA during various phases of the remedial alternatives analysis and implementation.

Remedial Investigation, Salisbury, NC. Project Manager and RSM for the implementation of Remedial Investigations (RI) of two separate manufacturing facilities in Salisbury, NC under the REC program. Subject sites involve characterization of chlorinated solvents in fractured bedrock.

INVITED PRESENTATIONS

Hodge, B. 1997, Guided Horizontal Drilling for Treatment of Xylenes: Florida Remediation Conference: Orlando, Florida, 1997.

Hodge, B. 2012, The Benefits of Developing a Conceptual Site Model to Refine Full Scale Strategy: Battelle Conference on Remediation of Chlorinated and Recalcitrant Compounds, Monterey, California, April 2012.