

STATEMENT OF QUALIFICATIONS

PROFESSIONAL ENVIRONMENTAL CONSULTING SERVICES



Updated March 2022



**Lexington, Kentucky
(859) 294-5155**

**Louisville, Kentucky
(502) 493-0305**

<i>Introduction</i>	1
<i>Site Assessments</i>	2
<i>Environmental Due Diligence</i>	3
<i>Site Characterization</i>	4
<i>Remediation Consulting</i>	5
<i>Remediation Engineering</i>	6
<i>Wastewater Treatment</i>	7
<i>Air Permitting Services</i>	8
<i>Tank Management</i>	9
<i>Industrial Compliance</i>	10
<i>Drilling Services</i>	11
<i>Other Related Services</i>	12
<i>Personnel Listing</i>	13
<i>Professional Registrations</i>	14

Our Mission

Strive, Seek, Serve, and Safety. The “S” in our corporate logo not only stands for Shield, it also denotes these objectives as an important aspect of our business. Our corporate Mission Statement defines how we perform our daily business and supplies the necessary vision to create a legendary company. In everything we do Shield will:



The Vision of a Legendary Company...

As an employee-owned firm, our vision is to create a legendary company where our associates provide our customers with a “**client-first**” level of service. This goal is reflected in our commitment to client satisfaction by providing consistent, responsive service that delivers superior value to our clients.

The strength of the firm is and always has been our employees, as demonstrated by our goal to continually attract and retain highly qualified and motivated senior-level individuals.

A legendary company must also be able to demonstrate and create financial strength, which we have done by consistently achieving financial goals and capitalizing on smart growth opportunities that maintain a stable balance sheet and provide an equitable return to our shareholders. The achievement of these goals has allowed our firm to continue to grow and enabled our reaching the ENR Top 200 list.



A Tailored Service

Shield recognizes that each assessment project must be tailored to suit the client's individual circumstances. Therefore, a phased program is typically developed to address the expected site conditions and client requirements. This phased approach allows for a cost-effective progressive evaluation of each site as information is obtained and allows for program revisions based upon actual findings. The environmental site assessment includes the following typical phases:

Phase I

The site assessment follows guidelines established by the American Society for Testing and Materials (ASTM) the American Society of Engineering Firms Practicing in the Geosciences (ASEF), various lending criteria, and includes state and local records review, a visual inspection of current site conditions, personal interviews and site use evaluations. Currently, Shield reports conform to the All Appropriate Inquiry standard and ASTM Practice E1527-13.

Phase II

If the Phase I assessment indicates the potential for contamination exists, a more detailed phase would be implemented to confirm whether contamination is present. The Shield audit team utilizes a combination of investigative techniques such as sampling and analyzing soil and groundwater, asbestos, lead, PCB's, and the integrity of on-site tanks.

Phase III

Once it is determined that contamination is indeed present, an additional investigative effort, which is more detailed than the Phase II, is conducted to delineate the extent of contamination. Shield then makes recommendations as to the technical, regulatory, and economic feasibility of remedial (cleanup) alternatives. Remedial program costs can be estimated and are often used in transaction negotiations that may lead to escrow provisions or cleanup prior to the transfer of title.

Subject to the requirements of the responsible party, Shield can continue the site assessment through remediation. Shield has the necessary resources and experience to implement a site-specific cleanup effort and to provide verification testing and post-cleanup monitoring.

Led by experienced project managers who are directly responsible to the client, Shield's project teams combine their experience in industrial and hazardous waste management, process engineering, industrial hygiene, air emissions, hydrogeology and environmental risk assessment. Beyond the technical competence and experience required to recognize significant site issues, our personnel have experience in working with lenders, attorneys, buyers and sellers that can make the difference in completing a property transaction and successfully limiting owner liabilities.

Providing Quality, In-depth Assessments

The environmental site assessment (ESA) has become a pivotal element in today's complex real estate transactions. In particular, the purchase or sale of industrial and commercial properties is a complex process due in large part to existing environmental regulations and ongoing changes to state cleanup standards and remedial programs.

Shield has found that providing high-quality, in-depth surveys promotes client confidence that the due diligence requirements will be met. As a result of this commitment, Shield has developed a strong list of repeat clientele and has performed assessments in 28 foreign countries and in 43 of the 50 United States.

Shield offers a wide range of due diligence services that provide buyers, sellers, developers, insurers, and lenders with the information necessary to effectively evaluate environmental risks associated with industrial property transactions.



A typical environmental due diligence assessment includes the following steps:

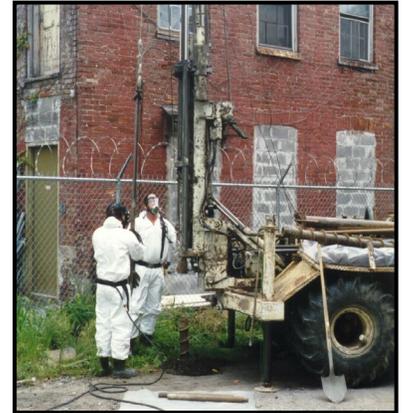
- ▶ ***Visual Assessment of Site Conditions*** – Typically, a limited number of on-site personnel will have knowledge of an impending transaction. As such, Shield employees are trained to operate in a “below the radar” status as to the actual reason for the assessment.
- ▶ ***Development of Historical Property Uses*** – Current and historical site maps, production layouts and chemical or waste storage areas are critical in evaluating potential environmental risks. In addition, the age of the structures, former occupants, and major infrastructure changes are reviewed as part of this task. Finally, reviews of current or former sumps, underground/aboveground tanks, supply piping, and the type of materials utilized or stored on site is conducted.
- ▶ ***File Reviews*** – A detailed file review is conducted including current and historical waste manifests; wastewater, stormwater, and air permits along with required submittals; notices of violations; internal and external audit reports and memos; spill incident reports; and other pertinent documents. In addition, local and state regulatory files are reviewed and compared to on-site documents.
- ▶ ***Operational Audit of Production and Material Handling Activities*** – All areas identified as “at risk” due to wet process, waste treatment, or chemical storage are audited. During this task, Shield's audit team inspects housekeeping practices; reviews general facility conditions; evaluates the condition of all interior drains and sumps; reviews the hazardous waste labeling, storage and disposal practices; inspects exterior storm drainage basins and outfalls; and observes conditions on neighboring property. In addition, OSHA compliance, general liability insurance, and fire insurance coverages may be reviewed.
- ▶ ***Conclusions*** – Results from all of the tasks are evaluated and compiled in a formal report, which includes recommendations, if necessary, and costs to be expected for future investigative tasks.

Impact Investigation and Delineation

Site Characterization activities are the backbone of Shield's business. Our personnel have performed these services on thousands of sites in over 40 states and in over 20 foreign countries. Our clients have ranged from small private concerns to the very top of the Fortune 500 list. Our professional staff is comprised of the many diverse scientific engineering disciplines necessary to be successful in this arena.

Shield has the depth of experience in multi-media site assessment activities needed for today's complex industrial sites. We focus on a rapid identification of the extent of contamination in soil, sediment, surface water, or ground water as applicable.

We are experienced in developing and interpreting remedial action levels for hazardous constituents addressed by different regulatory programs. This helps us develop very focused site assessment strategies that concentrate on the contaminants and media of concern so that study time and dollars are minimized. We pride ourselves on taking a practical approach to site investigations and moving the project into the remedial action phase as quickly as possible if that step is warranted.

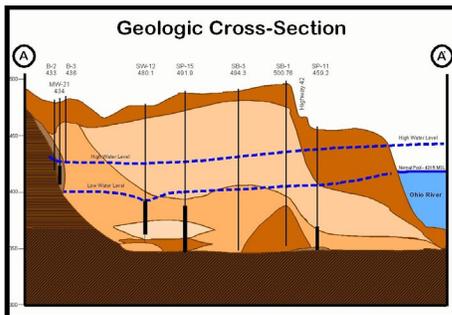


Applicable investigative services may include:

- ▶ *Visual Assessment of Site Conditions*
- ▶ *Geophysical Surveys for Buried Structures or Materials*
- ▶ *Soil-gas testing for Volatile Organics*
- ▶ *Soil Sampling Programs*
- ▶ *Asbestos, Lead Paint, and PCB's Assessments*
- ▶ *Monitor Well Installation and Testing*
- ▶ *Groundwater Sampling*
- ▶ *Contamination Assessments*
- ▶ *Ground Water Modeling*

Remedial Investigations/Feasibility Studies

Since our inception, Shield has been a recognized industry leader in providing innovative environmental remediation consulting services. Our experience includes detailed site characterizations of hazardous and toxic waste sites completed in support of comprehensive remedial investigations/feasibility studies under Comprehensive Environmental Response Compensation and Liability Act (CERCLA), Resource Conservation and Recovery Act (RCRA), Toxic Substances Control Act (TSCA), and various state-led activities.



Our services include developing cost-effective work plans, conducting site investigations, preparing human health endangerment or risk assessments, analyzing data, conducting computer modeling and statistical analyses, presenting and recommending innovative remedial actions, and ultimately clean-closing or properly containing contamination, as appropriate.

- ▶ *Remedial investigations are conducted to determine the nature and extent of contamination.*
- ▶ *Feasibility studies develop, identify and rank the potential technologies to be utilized if a corrective measure is necessary.*
- ▶ *The structure of feasibility studies will vary depending on client preferences, site-specific variables, regulatory framework, and the ultimate use of the site.*
- ▶ *The selected remedial plan depends upon various components including the nature and extent of contamination, health and safety concerns, and off-site migration.*

Meeting the challenge of rapidly changing regulations requires flexibility and the application of new technologies. Shield's multidisciplinary team of highly qualified environmental, civil, and chemical engineers; hydrogeologists; geologists; biologists; toxicologists; and environmental scientists apply their broad experience and technical expertise to identify and evaluate the most cost-effective alternative and treatment technology for each site.

Remedial Design/Remedial Action



Often industries must address contamination issues posed by past disposal practices, and when remediation is necessary Shield provides turnkey services for our clients. Our engineers and scientists have created groundwater and soil treatment designs, industrial and hazardous waste site closure plans, and corrective action plans for project sites throughout the United States.

The remedial design is highly dependent upon specific project conditions including:

- *Contaminant source(s), concentrations, and media classification;*
- *External characteristics;*
- *On-site and off-site structures;*
- *Fate and transport;*
- *Property and surrounding land use; and*
- *Specific regulations and agencies involved.*

After the project options and issues have been identified, Shield works closely with the client in selecting a remedial action plan that will accomplish the desired results. When excavation and clean closure is selected as the appropriate remedy, Shield creates a design to minimize the amount of material to be excavated and often includes waste segregation activities to further reduce treatment/disposal costs. In some cases, site containment is the selected remedy and Shield will execute a design that will include the appropriate type of cap or cover, e.g. RCRA, modified RCRA, asphalt, etc.



- ▶ *Shield's comprehensive remedial strategy is geared toward the ongoing effort to ensure the safety of on-site workers, the public, and the surrounding environment.*
- ▶ *Remediation can involve the removal of the waste/source; waste stabilization; providing innovative, cost-effective corrective actions; and ultimately clean-closing or properly containing contamination, as appropriate.*
- ▶ *Shield's personnel have extensive experience with a variety of technologies including monitored natural attenuation, bioremediation, phytoremediation, chemical oxidation, soil vapor extraction, dual-phase extraction, reactive barriers, soil flushing, and various pump-and-treat scenarios.*

A Turn-key Approach



Shield offers our clients the complete package when it comes to wastewater treatment services. Not only do we offer comprehensive design services, we also provide the construction, construction management, installation, permits, startup, and often will even provide the actual plant operation.

Industrial facilities must adopt treatment strategies that allow them to remain competitive while maintaining strong public confidence in their operation. Industries are faced with the tasks of source reduction and waste minimization as well as treatment efficiency and toxics removal. As such, many industrial treatment systems are process-specialized, requiring designers to possess an expertise and wealth of relevant experience to successfully select process components and systems. Shield's wastewater engineers offer a high level of industrial experience, specific knowledge of current and pending regulations, and an awareness of public perception. Another distinction that sets Shield apart from the competition is the inclusion of experienced wastewater treatment plant operators.

Shield offers a broad range of WWTP services including:

- *Design/Construction/Operation*
- *Design Drawings and Specifications*
- *Pretreatment Surveys and Administration*
- *Treatability Studies for Complex Wastewaters*
- *Conventional and Advanced Biological Systems*
- *Plant Start-up and Operator Training*
- *201 Facilities Plans*
- *Treatment Plant Performance Evaluations*
- *Sewer System Evaluation Surveys*
- *Regulatory Liaison and Permitting*
- *Pilot Testing and Evaluation of Unit Processing*
- *CSO Studies and Designs*



- ▶ *Shield personnel have over 100 years of combined experience serving industrial, and municipal clients, as well as private treatment plant owners.*
- ▶ *Our staff consists of six professional engineers and two Class IV certified treatment plant operators.*
- ▶ *Our design approach reflects our operation-based background.*
- ▶ *Shield provides plant operation and maintenance services on 8 treatment plants in Kentucky.*

Minor to Major Sources

No matter what type of source your industry is, no permitting issue is ever “minor.” The Clean Air Act Amendments of 1990 have created one of the largest and fastest-growing sets of environmental regulations since RCRA was passed in 1984.

Shield offers our clients a depth of experience in air permitting, modeling, and regulatory compliance. Our engineering staff possesses both the technical expertise to deal with the ever-changing regulatory landscape and the interpersonal skills to facilitate effective interactions with the regulatory agencies.



Industrial Expertise

Our staff of engineers and scientists has the experience in industry to translate your manufacturing procedures into the language of air permitting and registration. We have worked closely with industries that use uncommon chemicals to develop emission factors and testing protocols to demonstrate compliance with permit limits. Our engineers also have process-specific experience in a variety of industries, including surface coating, electroplating, metal finishing, pulp and paper, and rubber. This expertise allows us to develop compliance and recordkeeping tools that will be comprehensible to your manufacturing staff. Furthermore, we work closely with state agencies in developing the annual emissions inventory form so it will be consistent with your manufacturing process and the way you keep records.



Good Communication

It's no secret that good communication promotes success in all areas; experience has shown that this communication can be especially important in the air permitting process, where long lead times often require applications to be prepared before the process design has been finalized. We work closely with our clients to streamline the permitting process, working with your process engineers to identify critical items both in terms of schedule and compliance. Once your permit application is submitted, we follow its progress closely through the regulatory agency to resolve questions or concerns which may arise as your permit goes through each step of the approval process.

Underground and Aboveground Storage Tanks

Underground storage tanks (USTs) have been targeted as a major contributor to soil and groundwater contamination therefore, the United States Environmental Protection Agency has issued mandates and regulations covering the design, installation, repair, and removal of USTs.

In addition, aboveground storage tanks (ASTs) can also pose a potential risk to the environment. For this reason, they are subject to many regulations including leak detection systems, structural integrity specifications, and release prevention measures.



Shield offers a broad range of UST and AST services that are essential to tank owner/operators to avoid potential liabilities including:



- *UST/AST Removal, Upgrade, and Assessments*
- *Site Characterization and Investigation*
- *Corrective Action Plans*
- *Remedial Design/Remedial Action*
- *Regulatory Liaison and Permitting*
- *Design/Permit/Construction of Spill Containment Systems*
- *Industrial Tank Decommissioning/Dismantling*

- ▶ *Shield personnel have extensive experience working with various state reimbursement funds.*
- ▶ *Over the past 34 years, Shield personnel have worked on over 3,000 UST/AST projects.*
- ▶ *Our broad base of technical and regulatory experience, combined with established relationships with regulatory agencies, allows Shield to provide comprehensive, cost-effective remedial solutions.*
- ▶ *Remedial technologies utilized at various sites include free product recovery; soil vapor extraction; pump, flush, and treat; air sparging; high vacuum; bioremediation; and monitored natural attenuation.*

An Economic Approach



Shield offers our clients years and depth of experience when it comes to industrial compliance services. Shield personnel understand that industrial compliance activities must be completed in the most cost-effective manner possible while still maintaining adherence to federal, state and local regulations. Our compliance approach reflects our operation-based background and strategic approach to environmental compliance issues.

Industrial facilities should perform two types of compliance activities: 1) those that are mandated by regulations and are strictly a cost to the client's operations, and 2) those that can reduce a facility's waste or streamline their processes into a more efficient and competitive operation.

Shield's compliance professionals are aware of these varied issues, and make every effort to reduce the cost of mandated compliance activities while seeking ways to improve our client's bottom line through compliance audits, waste minimization, automation of routine compliance functions, and other site-specific methods. Shield has also been successful in developing environmental management programs for our clients that provide a structure around which all of the compliance functions can be centered. These programs add value to our clients by ensuring compliance with regulations in a timely fashion while assisting in the continual search for ways to reduce operating expenditures.

Shield offers a broad range of industrial compliance services including:

- *NPDES Permitting, Sampling and Reporting*
- *Stormwater Permitting, Sampling, and Engineering Controls*
- *Development and Update of SPCC/PPC Plans*
- *SARA Compliance and Reporting*
- *Title V Permitting*
- *Indoor Air Quality*
- *Environmental Management Plans and Systems*
- *Development of FRPs/RMPs/BMPs*
- *Wastewater Treatment Services*
- *Sewer System Evaluation Surveys*
- *Employee Training & Industrial Hygiene*
- *Air Quality Studies/Emissions Testing*
- *Compliance Audits*



After years of depending upon subcontractors to provide drilling services, Shield entered the drilling market in 2008. Having this capability in-house allows Shield to provide more timely investigative services without having to coordinate outside firms and enables us to provide more cost-effective, flexible services on behalf of our clientele. Our drilling staff consists of trained professionals with scientific degrees with over 40 years of combined experience.

Geoprobe® 5410



Mounted on a four-wheel drive Ford carrier vehicle, this probe is a versatile and durable machine capable of accessing challenging terrain. The 5410 is equipped with a DT21 Dual Tube Sampling system that utilizes 2.125-inch OD probe rods as an outer casing and 1-inch rods for the inside rod string. A cutting shoe is installed on the leading end of the rod string and allows soil samples to be collected in disposable clear plastic liners.

Geoprobe® 6620 DT

The 6620 DT is one of the most versatile probes on the market and with a built-in rotary spindle it's capable of turning 8-inch augers and with a 60-inch width can access tight locations. The 6620 is equipped with the powerful GH62 Hammer cable of producing 17.5 tons of downforce. Shield has also equipped this unit with a DT32 Dual Tube Sampling system to allow for cased boreholes and discreet sampling intervals.



Geoprobe® 7822 DT



The 7822 DT has been the number one choice for drilling contractors since its inception. Equipped with a GH63 hammer and a 2-speed auger head, this unit is more than capable of turning 8-inch augers for monitoring well installations. Tight spaces and rugged terrain are no match for this highly capable machine. Mobility coupled with its hydraulic mast adjustments ensure that a well or boring can be placed exactly where desired regardless of site conditions. Shield has equipped the unit with a DT32 Dual Tube sampling system to allow for cased boreholes and discreet sampling intervals.

Diversification...The Key to Our Future

Over the course of our history, Shield has continually developed a diversified portfolio of service offerings. This willingness of our shareholders to expand the firm ensures that Shield will continue to operate as a market leader for years to come. In addition to the prior described services, Shield also offers the following list of services that complement our firm:

- ▶ *Air Quality Studies and Source Sampling*
- ▶ *Title V Permitting*
- ▶ *Accidental Release/Risk Management Plans (RMP)*
- ▶ *Source Emission Inventory/Modeling*
- ▶ *Environmental Audits*
- ▶ *Human Health and Ecological Risk Assessments*
- ▶ *Toxicity Assessments*
- ▶ *Risk Based Cleanup Criteria Determination*
- ▶ *Brownfield Redevelopment*



- ▶ *OSHA/SARA Compliance and Reporting*
- ▶ *Stormwater Compliance*
- ▶ *Storm and Sanitary Sewer Systems*
- ▶ *Water Storage and Distribution Systems*
- ▶ *O & M - Groundwater Treatment Systems*
- ▶ *Water Resources Engineering*
- ▶ *Construction Management*
- ▶ *Asbestos and Lead Paint Management*

- ▶ *Building Condition Surveys*
- ▶ *Tank and Facility Decommissioning*
- ▶ *Unexploded Ordinance Management*
- ▶ *Emergency Response*
- ▶ *Litigation Support/Expert Testimony*
- ▶ *Hydrogeological Assessments and Investigations*
- ▶ *Land Surveying*
- ▶ *NPDES Permits*
- ▶ *Spill Prevention Control & Countermeasure (SPCC)*



Professional and Technical Staff

<u>MEMBER</u>	<u>TITLE</u>	<u>EXPERIENCE</u>
Amy Dunagin	Accountant	7
Chad Kelley	Drilling Manager	23
Chad Von Gruenigen	Project Geologist	10
Charles Phillips, P.G.	Senior Professional Geologist	35
Christina Clasen	Project Geologist	2
Collin Isaacs	Environmental Technician	6
Daniel Porter, Ph.D., P.E.	Project Engineer	41
Dan V. Terrell, III	Senior Project Manager	13
Danita Farrier	Environmental Support Specialist	33
Dow Porter	Senior Project Manager	7
Edward Fisher, E.I.T.	Project Engineer	20
Elizabeth Greathouse	Environmental Technician	27
Joe Harvey	Environmental Technician	48
Jim Knauss, Ph.D.	Senior Risk Assessor	9
Mark Cross, P.G.	Project Geologist	31
Mark Saliga, P.E.	Senior Environmental Engineer	4
Mason Porter	GeoProbe Operator	32
Michael Morris, P.G.	Senior Professional Geologist	2
Monica Murphy, E.I.T.	Project Engineer	24
Nicole Galavotti, P.E.	Senior Environmental Engineer	23
Robert Francis	Senior Project Manager	16
Roger Oberholzer	Project Engineer	25
Scott Johnson	Environmental Scientist	17
Shane Wise	Design/Draftsperson	14
Wesley Cobb	Env. Tech./Cert. WWTP Operator	

Professional Registrations

<u>MEMBER</u>	<u>DISCIPLINE</u>	<u>REGISTRATIONS</u>
Chad Kelley	Certified Well Installer	KY: 0384053200 TN: 964 IN: 2992WD
Chad Von Gruenigen , P.G.	Professional Geologist	KY: 169205
Charles D. Phillips, P.G.	Professional Geologist	KY: 255 IN: 1533 TN: 104
Christina Clasen, P.G.	Professional Geologist	KY: 268553
Daniel S. Porter, Ph.D., P.E.	Professional Engineer	KY: 33804
Edward W. Fisher, E.I.T.	Engineer-in-Training	KY: 14627
Mark W. Cross, P.G.	Professional Geologist	KY: 216484
Mark P. Saliga, P.E.	Professional Engineer	KY: 19461 IL: 062-050783 IN: PE10302084 NC: 041002 OH: E-67410 PA: PE062510
Michael E. Morris, P.G.	Professional Geologist Asbestos Inspector	KY: 2225 AZ: 36062 GA: 2069 NC: 2395 TN: 3844 VA: 1971 KY: 67822
Monica Murphy, E.I.T.	Engineer-in-Training	KY: 15954
Nicole R. Galavotti, P.E.	Professional Engineer	KY: 22348 TN: 109446 WV:16983



SHIELD ENVIRONMENTAL ASSOCIATES, INC.

948 Floyd Drive

Lexington, Kentucky 40505

859-294-5155

www.shieldenv.com