Environmental • Construction Materials Testing • Geotechnical • Subsurface Investigations


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SES SOUTHERN EARTH SCIENCES

# Built On Strong Foundations

Environmental • Construction Materials Testing • Geotechnical • Subsurface Investigations

### Expertise on Staff

- Professional Engineers
- Professional Geologists
- Field Technicians
- Laboratory Technicians
- Engineering Assistants
- Drilling Technicians
- Administrative/Clerical/ Drafting
- CPT Operators

### Wide Range of Services

- Geotechnical Engineering
- Field Drilling and Site Investigations
- Construction Materials Testing
- Lab Testing and Instrumentation
- Environmental Site Assessments
- Landfill and Solid Waste Management
- Asbestos/Lead Consulting
- Underground Storage Tanks
- Hydrogeological Investigations

### Specialized Services

- Expert Testimony
- Failure Investigations
- Specification Reviews
- Pile Integrity Testing
- Dipstick Flatness Testing
- Cone Penetration Testing
- Pile Driving Analyzer

### SESI Certifications

- Laboratory Certification Programs (AASHTO & CMEC)
- Technician Certification Programs (ACIL)
- OSHA Safety Certified
- Hazard Assessment (29 CFR 1910-120)
- US Army Corps of Engineers Validated

## Built on a foundation of professional integrity

Southern Earth Sciences, Inc. was formed in 1976 to provide the construction industry with complete geotechnical consulting and materials testing services. Initially focused on providing innovative solutions to unusual foundation problems, our growth has expanded into virtually every aspect of geotechnical engineering, construction materials testing and environmental consulting. SESI has gained the confidence of clients across the South and set a path for the company's continued growth.

## A multi-disciplinary approach

Having a wide range of expertise with a multi-disciplined staff gives SESI an advantage in the marketplace. Our staff is comprised of registered engineers, environmental scientists and professional geologists who are leaders in their respective fields. SESI also maintains professional assistance staff, from technicians and drillers to administrative support, in all satellite offices to ensure we have the resources to meet our clients' needs.



# Environmental

## Your Partner in Managing Ever-changing Environmental Requirements

With increasing federal, state and local scrutiny on environmental issues of all kinds, it is vital to have a partner who understands these pressures and remains on the leading edge of every issue. From Phase I Environmental Site Assessments to site analyses for large petroleum storage facilities and hazardous waste landfills, SESI has the necessary resources to solve client issues with modern efficiency.

### Phase I Environmental Site Assessments

Phase I Environmental Site Assessments protect the purchaser and lender in commercial and industrial property transactions. New EPA requirements for All Appropriate Inquiry means contamination from off-site sources and vapor intrusion should be considered. SESI can also collect and analyze soil and groundwater samples, if required (Phase II).

**Services**

- Water quality evaluation
- Hydrogeological services
- Site inspections
- Stormwater / industrial discharge compliance
- Contamination assessments
- Remedial actions
- Risk assessments
- Phase I and II ESAs

### Landfills and Solid Waste Management

SESI professionals are uniquely qualified to resolve landfill and hazardous waste issues. Our expertise in this area includes site selection and auditing, groundwater contamination testing, and closure services for landfills and energy-to-steam facilities. Our team has participated in the design of several – "Subtitle D" – solid waste landfills.

Our studies include the use of integrated computer graphics to create map displays, soil cross sections, boring logs and plume analysis. These technologies provide the most comprehensive evaluation and reporting of landfill conditions available.

**Services**

- Hydrogeological / geotechnical investigation
- Groundwater and gas monitoring / statistical analysis
- Technical support
- Design
- Leachate treatment
- Operations and management studies

### Underground Storage Tanks

SESI is approved in Alabama (ADEM), Florida (FDEP) and Mississippi (MDEQ) as a qualified Underground Storage Tank Contractor. This gives our experts the ability to assist clients in every area including site assessment and site planning, permitting, remediation and corrective action plans, and compliance with regulatory requirements.

**Services**

- Regulatory compliance
- Permitting
- Remediation and corrective action planning
- Closure services
- Inspection and monitoring

### Environmental Engineering and Consulting

Our engineers and geologist are capable of providing a variety of services to assist our clients in meeting project goals.

**Services**

- Wetlands Permitting
- On-site sewage systems
- Pond and lake design
- Small flow wastewater systems

### Asbestos and Lead-Based Paint (LBP) Consulting

The SESI team of certified asbestos and lead professionals have considerable experience in this important discipline. Our laboratories have the capability to test air samples and provide monitoring and assessment information. All operations are supervised by a licensed asbestos consultant.

**Services**

- Risk assessments (LBP)
- Asbestos and LBP surveys
- Abatement plans and specs
- Abatement monitoring and inspections

# Construction Materials Testing

## Full Range of Services and Unparalleled Response

Our laboratories are certified by AASHTO, CMEC, and the US Army Corps of Engineers to perform soil, concrete, asphalt and metals testing. Our professional inspectors and technicians continually participate in proficiency testing programs to ensure internal quality control.

### Field Testing and Inspection

In addition to our laboratory testing facilities, SESI maintains a fully outfitted mobile field laboratory available for on-site testing. This allows our OSHA safety certified technicians to perform both call-out services on small projects or full-time quality control testing and inspection on major projects. The on-site testing lab offers a full range of services.

**Services**

- Dipstick technology for flatness testing of concrete slabs
- Soil testing – compaction, pile load testing, pile and caisson inspection, plate load bearing tests
- Asphaltic concrete testing – core density and thickness, evaluation of aggregates, mix designs, plant and field control
- Portland cement concrete – batch plant and field control, core drilling, molding, curing and testing cylinders
- Slump testing, air content and unit weight
- Pipe and block inspection
- Soundness and abrasion of aggregates
- Bridge inspection
- Pile integrity testing
- Pile dynamic analysis (PDA)
- Vibration monitoring
- Rebar location / depth of cover
- Post tensioning inspection
- Welding and steel framing inspections

### Laboratory Testing of Materials

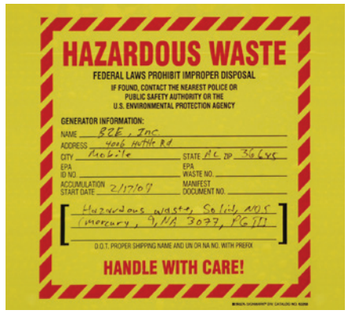
Strategically located laboratories make testing of soils, concrete, asphalt and metals quick and convenient. Branch managers supervise all lab operations in accordance with ASTM Specifications E-329 and E-699. All equipment is calibrated annually to ensure accurate data. SESI technicians are certified by appropriate accrediting agencies on a routine basis.

**Services**

- Consolidation testing
- Flexible wall permeability testing
- Triaxial testing
- Soil classification testing
- Concrete strength testing
- Steel strength testing

# MISSION

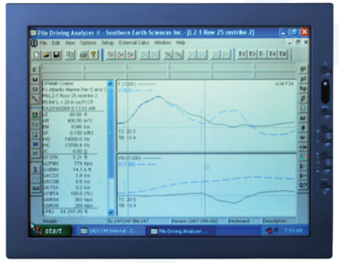
The mission of Southern Earth Sciences, Inc. is to conduct our business in accordance with the highest degree of professional integrity, ethical behavior and business standards.

# Geotechnical

## Comprehensive Geotechnical and Geological Services

The SESI multi-disciplined staff of professionals places the company in the unique position to combine efforts and give our clients the broad spectrum of geotechnical, environmental and construction consulting necessary to move a project forward quickly. We have drilling, cone penetration testing (CPT) and Geoprobe® equipment in-house to respond rapidly and efficiently to project schedules. Our team has assisted in thousands of projects ranging from single-story residential structures to multi-million dollar industrial facilities. SESI is truly your turn-key solution for site investigations.



Pile Driving Analyzer®

### Engineering Analysis and Design

SESI registered professional engineers and geologists solve unusual foundation, engineering and environmental issues on a regular basis. We specialize in pinpointing the obstacles and presenting alternative design options. All foundation aspects are covered from pavement analysis, slope stability to deep and shallow foundation analysis.

**Services**

- Pile and drilled shaft systems
- Excavation bracing
- Geological mapping / soil profiles
- Soil stabilization studies
- Shallow foundation systems
- Retaining walls
- Slope stability

### Field Drilling and Site Investigation

SESI Drilling, Cone Penetration Testing (CPT), and Geoprobe® crews have successfully completed the Hazardous Assessment and Resource Management Course (29 CFR 1910-120). Senior drillers are also required to maintain water well drilling licenses. Regardless of the area or terrain, our crews are prepared to go virtually anywhere to provide you with accurate and current data.

**Services**

- Groundwater monitor wells
- Sediment sampling
- SPT testing
- CPT testing

### Laboratory Testing

In an effort to coordinate and expedite efforts across our geotechnical engineering, drilling and environmental projects, SESI maintains branch offices across the Southeast. These laboratories allow project engineers to receive results quickly and accurately. Routine tests are conducted at these facilities under the direction of responsible professionals.

**Tests**

- Compaction
- CBR and LBR
- Permeability
- Swell pressure measurements
- Triaxial strength testing
- ASTM testing of soils and rock
- Soil cement, classification, conductivity and resistivity
- Consolidation

### Instrumentation

When land suitable for building is in short supply, it becomes necessary to evaluate innovative foundation solutions. Instrumentation of soil and rock plays a key role in overcoming building limitations. Over the years, SESI has developed an expertise in evaluating, identifying, planning and designing highly refined field instrumentation programs using pore pressure instrumentation, inclinometers, geophysical exploration equipment and vibration monitoring devices to limit engineering problems.

**Equipment**

- Inclinometers
- Piezometers
- Sondex units
- Settlement plates
- Strain gauges
- Pressure cells
- Vibration monitoring
- Pile integrity testing
- Pile dynamic analyzer (PDA)


# Subsurface Investigations

## Conventional Drilling
## Cone Penetration Testing
## Direct Push Technology

To support Southern Earth Sciences, Inc.'s geotechnical and environmental exploration objectives, SESI is staffed with experienced crews and equipped with a variety of Cone Penetration Testing, Drilling and Direct Push rigs. The equipment is mounted on a variety of carriers including two-wheel and four-wheel drive trucks and track vehicles. All crew members investigating contaminated sites have completed the 40-hour Hazardous Assessment and Response Management Course (29 CFR 1910-120), and senior drillers maintain required state water well contractors licenses.

Employing CPT technology, SESI, Inc. is able to provide high quality geotechnical and hydrogeological in-situ soil properties. Our in-house CPT equipment gives SESI a unique advantage to offer clients increased accuracy, speed of deployment and reduced costs.


### CPT Technology

Cone Penetration Testing, commonly referred to as CPT, is an in-situ testing method used to determine the geotechnical engineering properties of soils and delineating soil stratigraphy. Today CPT is one of the most frequently used and accepted in-situ test methods for soil investigations worldwide although few CPT rigs are available in the Southeast area.

CPT works by pushing an instrumented cone into the ground at a controlled rate of 2 cm/sec. The data can be collected at any interval but is commonly collected every two-inches. Built-in load cells are used to continuously measure the cone tip and sleeve friction resistance. In addition to these values, a porous filter piezo-element, located behind the cone tip, is used to measure pore water pressure during penetration. All CPT field testing procedures are performed in accordance with ASTM D 5778-95 (2000).


### Advantages Over Standard Penetration Testing

The CPT test offers an advantage over conventional sampling methods by providing a virtually continuous profile of subsurface stratigraphy. From the data collected, correlations can be made for the soil characteristics such as internal friction angle, undrained shear strength and estimated unit weight. In addition, pore water dissipation tests can be conducted in order to determine other properties, such as permeability of saturated soils. In an environmental application, soil/gas, soil and groundwater samples can be collected without producing cuttings that would require collection and disposal. Small wells (from 1 to 2 inches in diameter) can also be installed with this equipment.

### Equipment Capabilities

- Climate controlled cabins
- 2.5, 5 and 10 ton cones
- Shear wave velocity measurement
- Video cone
- Instant feedback available through electronic logs

### Equipment

- 20-ton track-mounted CPT rig
- 20-ton truck-mounted CPT rig
- Two (2) track-mounted GeoProbe 6625 equipped for CPT and MacroCore

### Field Drilling

Southern Earth Sciences, Inc. has a variety of truck and track mounted drilling equipment to meet project objectives. SESI staff includes licensed well drillers in Louisiana, Mississippi and Florida.

Drilling methods include Flight Auger, Hollow Stem Auger, Rotary Wash and NQ Rock Coring. Specialty sampling equipment includes piston samplers up to 5," Dennison Samples, vane shear, etc.

### Direct Push

SESI operates several direct push platforms including a dual purpose Geoprobe 6625 CPT. This equipment can utilize conventional macro core sampling and groundwater/vapor sampling tools or, by utilizing earth anchors, can be converted to a 20-ton Cone Penetration Testing Machine.

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**Southern Earth Sciences, Inc. is a member of the following organizations:**

American Council of Engineering Companies (ACEC)

American Society of Civil Engineers (ASCE)

American Society for Testing of Materials (ASTM)

National Ground Water Association (NGWA)

American Concrete Institute (ACI)

American Association of State Highway and Traffic Officials (AASHTO)

**ADEM Approved**
Alabama Department of Environmental Management

**FDEP Approved**
Comprehensive Quality Assurance Plan

**MDEQ Approved**
Mississippi Department of Environmental Quality

**OSHA Certified**
Safety

**NIOSH Certified**
Asbestos

**AASHTO and CMEC Accredited**

**US Army Corps of Engineers Validated**

**SoEarth.com**

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