



**CQA
TRAINING
WEEK**
November 13 – 16, 2018

REGISTER ONLINE <https://minervatri.wufoo.com/forms/qqqs3cl16ye6h1/>

**LINER INTEGRITY SURVEYS/
ASSESSMENTS (LISA)**

November 13, 2018

**CONSTRUCTION QA/QC FOR
GEOSYNTHETIC INSTALLATIONS**

November 14, 2018

**CONSTRUCTION QA/QC FOR
COMPACTED CLAY LINER &
GCL INSTALLATION**

November 15, 2018

**GEOSYNTHETIC CERTIFICATION INSTITUTE –
INSPECTORS CERTIFICATION PROGRAM
(GCI-ICP) EXAM**

November 16, 2018

Accredited Geosynthetics Laboratories
Accreditation Designation # GAI-LAP-001



v092618

LOCATION

TRI/Environmental, Inc. | Bldg. A Facility | 9063 Bee Caves Rd. | Austin, TX 78733, USA

TRI-Environmental.com

Electrical Leak Location (ELL) is the most powerful tool in the industry for ensuring quality geomembrane installations. The growing demand for ELL requires design engineers, CQA firms and facility owners to understand the principals of the methods in order to ensure maximum effectiveness.



LINER INTEGRITY SURVEY AND ASSESSMENT (LISA), NOVEMBER 13, 2018

Electrical leak location (ELL) surveys are the state-of-the-art nondestructive method of locating leaks in installed geomembranes. The Liner Integrity Survey and Assessment (LISA) course teaches the science behind ELL surveys. It provides the most up-to-date information on the various survey methodologies and standards and disseminates the theoretical and practical knowledge required to employ and provide oversight for ELL methods.

This training course details:

- How each of the ASTM-based ELL methods works
- The advantages and limitations of the various ELL methods
- How to properly prepare a site for an ELL survey
- How to select the appropriate ELL method for a project
- What effects the sensitivity and effectiveness of an ELL survey
- How to create effective project specifications for ELL surveys
- Real world case studies of ELL application

This course is ideal for design engineers, CQA firms, site owners and regulators interested in specifying and employing ELL.

ELL Specification and Oversight Certification

This training program qualifies individuals to:

- Advise on facility design for ELL applications
- Write ELL project specifications
- Create blind leaks in lining systems
- Provide oversight for ELL surveys

After the LISA class, a proctored exam will be offered to individuals seeking certification.

Professionals who benefit from this course:

- Specifying/Certifying Engineers
- Construction/Quality Assurance
- Project Managers
- Installers/Contractors
- Third-Party Inspectors
- Regulators



**FIELD CQC / CQA TRAINING,
NOVEMBER 14 – 15, 2018**

These two 1-day courses may be taken singly or as a package. They are designed specifically for those who need a detailed understanding of proper CQC and CQA procedures at waste containment facilities.

The courses provide ideal preparation for the Geosynthetic Certification Institute's Inspectors Certification Program (GCI-ICP) exam.

Gain comprehensive understanding of:

- Preparing CQC/CQA plans
- Reviewing CQC/CQA plans
- Performing CQC/CQA observations and tests
- Reviewing field CQC/CQA procedures

Each course presents material that complements the other. Day 1 focuses on installation of geomembranes, geotextiles, geocomposites, geogrids, and geo-appurtenances. It includes demonstrations of geomembrane seaming and seam peel and shear testing. Day 2 focuses on the installation of compacted clay and geosynthetic clay liners (GCLs). Special emphasis will be given to establishing rationale and standard operating procedures for field inspections, documentation of test and visual observations, and implementation of CQA plans. A broad appreciation for the manufacture and installation of containment facility materials will be provided. Additionally, a tour of TRI's Geosynthetic Testing and Research Laboratories will support class curriculum through test demonstrations, details on some TRI internal R&D projects, and discussion of other relevant topics.



GCI-ICP CERTIFICATION EXAM, NOVEMBER 16, 2018

CQA course students will be allowed to sit for the Geosynthetic Certification Institute-Inspectors Certification Program (GCI-ICP) exams immediately following the CQA courses. All exam-interested students **MUST REGISTER** with the Geosynthetic Institute (GSI) and pay GSI's certification fee before the test. TRI does **NOT** collect this fee. Contact GSI (+1 610 522 8440) for more information.

EXCEPTIONAL PROFESSIONAL DEVELOPMENT

LISA training and CQA of geosynthetics complement and expand opportunities for engineering consulting and design practice. TRI's Short Course Training Week participants will be provided a certificate of course completion, suitable for use in proposals and statements of qualifications for CQC/CQA work. These unique programs provide professional growth and exceptional business development opportunities.

WHERE TO STAY

- Holiday Inn Express Hotel & Suites, Austin-Sunset Valley, 4892 US Highway 290 West, Austin, TX 78733, 1 800 315 2621, 10 miles from airport, 9.9 miles from short course, NO shuttle service
- Extended StayAmerica Austin – Southwest, 5100 US Hwy. 290 W., Austin, TX 78735, Telephone: 512- 892-4272, 15.7 miles from airport, 9.54 miles from short course, NO shuttle service
- Sonesta Bee Cave Austin – 12525 Bee Cave Parkway, Bee Cave, TX 78738, Telephone: 512-483-5900, Call for a Reduced Rate - code: TXRES, 20 miles from airport, 5.2 miles from short course, NO shuttle service

ABOUT TRI

TRI/Environmental, Inc. (TRI) has been active in geosynthetics testing, inspection and research and development for 20 years. TRI is an independent, third-party laboratory unaffiliated with any manufacturing, engineering/consulting, or construction management firm.

REGISTRATION

Download registration forms for the courses and exams at: [TRI-Environmental.com](https://minervatri.wufoo.com/forms/qqqs3cl16ye6h1/)

Online registration is available at: <https://minervatri.wufoo.com/forms/qqqs3cl16ye6h1/>



Sam Allen



Jeffery Blum



Abigail Gilson



Jeffrey Kuhn



Mark Sieracke

Sam Allen

Vice President and Division Manager

Sam Allen is the Vice President of Texas Research International's (TRI) Geosynthetic Services Division. He has served as Chairman of ASTM Committee D35 on Geosynthetics and currently serves on the Board of Directors of the Geosynthetic Institute (GSI).

Jeffrey Blum

Senior Project Manager for Weaver Consultants Group

Jeffery Blum serves as a senior project manager for Weaver Consultants Group and has 25 years of landfill and wastewater impoundment construction quality assurance experience. His work has involved a wide variety of soils and geosynthetics. Jeff served on steering committees during the development of the GCI - Inspector Certification Program and the earlier NICET Geosynthetic Certification Program. Jeff has 10+ years of electrical leak location experience.

Abigail Gilson, M.S., P.E.

Senior Engineer for TRI/Environmental

Abigail Gilson, is the Director of TRI Environmental's Liner Integrity Services. She has a wealth of experience in geomembrane-lined containment facility design and construction and has performed since 2004. As a graduate of TRI's inaugural liner integrity class in 2003, her liner integrity and leak location field experience has exceeded 160 million square feet and over 100 projects. Her contribution to the field of electrical leak location includes numerous published technical papers, educational seminars, presentations world-wide, and chairing the ASTM committee for the recent revisions and additions to the ASTM Standard Guide and Practices. Ms. Gilson's expertise is available for providing equipment, field training, classroom education, instructional presentations, engineering consulting, and liner integrity survey execution. She has trained staff in all of TRI's office locations to provide local assistance on survey projects..

Dr. Jeffrey Kuhn, P.E.

Director of TRI Geotechnical Laboratory

Dr. Jeffrey A. Kuhn, P.E., is the Geotechnical Laboratory Director for TRI/Environmental, Inc. His doctoral work principally focused on alternative/evapotranspirative cover design and evaluation for the EPA, and he performed research with expansive clays for the Texas Department of Transportation (TxDOT). Prior to joining TRI, he served as a consulting engineer, where he worked on the design and installation of the Circuit of the Americas Formula One Race Track over expansive clays with tight differential movement criteria. Since 2012, he's led the expansion of TRI's geotechnical laboratory capabilities and reach within the geotechnical community.

Mark Sieracke, P.E.

Landfill Design and CQA Consultant

Mark D. Sieracke, P.E., is an industry-recognized expert in the fields of landfill design and CQA. Mark serves as a Principal and Solid Waste Practice Area Manager for Weaver Consultants Group. Mark has served as a Technical Reviewer of the US EPA Technical Guidance Document: Quality Assurance and Quality Control for Waste Containment Facilities (EPA/600/R-93/182, Sept. 1993). He has served as a hands-on CQA practitioner, certifying engineer, and consultant for 1000+ acres of geosynthetic installations. He contributes routinely to landfill failure investigations and constructability reviews for design engineers. Mark serves on the Waste Management Inc. (WMI) Geosynthetic Task Force, creating the corporate standards for CQA.

LINER INTEGRITY SURVEY AND ASSESSMENT (LISA) OUTLINE NOVEMBER 13, 2018

With Abigail Gilson, M.S., P.E. and Jeffrey Blum

November 13, 2018	
8:30 – 8:45 AM	Welcome & Introduction
8:45 – 9:15 AM	Significance of ELL
9:15 – 9:30 AM	Electricity 101
9:30 – 10:30 AM	Bare Geomembrane Methods
10:30 – 10:45 AM	Break
10:45 AM – 12:00 PM	Covered Geomembrane Methods
12:00 – 12:45 PM	Lunch (<i>provided</i>)
12:45 – 1:00 PM	Understanding ASTM D7007
1:00 – 2:30 PM	Designing For And Specifying ELL
2:30 – 2:45 PM	Break
2:45 – 4:00 PM	Case Histories
4:00 – 4:15 PM	Final Q&A and Soil-Covered Demo
4:15 – 5:15 PM	Exam
5:15–6:30 PM	Tour of TRI's Accredited Geosynthetics Testing Laboratory
6:30 – 9:30 PM	Tex-Mex Dinner

CQA FOR GEOSYNTHETIC INSTALLATIONS SHORT COURSE OUTLINE NOVEMBER 14, 2018

With Sam Allen and Mark Sieracke, P.E.

November 14, 2018		
7:30 – 8:00 AM	Registration	
8:00 – 8:15 AM	Welcome and Introductions	Allen
8:15 – 8:30 AM	CQA Principles and Philosophy – <i>Responsibilities, appreciation of role, professional considerations and on-site protocol, conflict resolution, etc.</i>	Sieracke
8:30 – 9:30 AM	Background of Geosynthetics and Manufacturing – <i>Polymers to products, material properties, product manufacturing</i>	Allen
9:30 – 10:30 AM	HDPE & LLDPE & fPP Geomembranes & Seams – <i>Types and specifications, shipping/receiving, unloading, storage & installation</i>	Sieracke
10:30 – 10:45 AM	Break	
10:45 – 11:15 AM	HDPE & LLDPE & fPP Geomembranes & Seams – Continued	Sieracke
11:15 AM – 12:15 PM	Welding Demonstration/Seam Testing – <i>Double track fusion welds, extrusion welds, “T” welds, seam sampling, peel and shear testing, peel incursion and strain measurements, modes of failure, break codes, field vs. laboratory testing</i>	Sieracke & Installer
12:15 – 1:00 PM	Lunch (provided)	
1:00 – 2:00 PM	Special Guest Lecture	
2:00 – 2:30 PM	PVC Geomembranes & Seams – <i>Types and specifications, shipping/receiving, unloading, storage & installation</i>	Allen
2:30 – 3:30 PM	Geotextiles, Geonets/Geocomposites, Geogrids, Pipe, Erosion Control – <i>Types and specifications, shipping/receiving, unloading, storage & installation</i>	Allen
3:30 – 3:45 PM	Break	
3:45 – 4:30 PM	Protection and Soil Cover	Sieracke
4:30 – 4:45 PM	CQA Paperwork and Record Keeping – <i>Importance of documentation, communication records, examples of record keeping and documentation, checklists</i>	Sieracke
4:45 – 5:00 PM	Discussion	
5:00 – 6:00 PM	Tour of TRI Geosynthetic Testing and Research Laboratories – <i>Test demonstrations, explanation of some TRI internal R&D projects, etc.</i>	
6:00 – 8:00 PM	Texas BBQ Dinner (provided)	

CQA FOR COMPACTED CLAY & GEOSYNTHETIC CLAY LINER (GCL) INSTALLATIONS SHORT COURSE OUTLINE
NOVEMBER 15, 2018 *With Dr. Jeffrey Kuhn, P.E.*

November 15, 2018	
8:00 – 8:30 AM	Registration
8:30 – 9:00 AM	Liner and Cover Systems – <i>Single liners/double liners/composite liners, leakage rates through soil, composite action with geomembranes, importance of drainage layer properties</i>
9:00 – 10:30 AM	Compacted Clay – <i>Materials, factors affecting hydraulic conductivity, clod vs. particle orientation theory, keys to low hydraulic conductivity, water content-density criteria, recommended procedures for determining acceptable zone, influence of overburden stress, bonding of lifts, thickness</i>
10:30 – 10:45 AM	Break
10:45 AM – 12:00 PM	Construction of Compacted Clay Liners and Covers – <i>Equipment, preprocessing of soil, soil moisture control, sieving, clod control, crushing/pulverizing materials, compaction, test pads</i>
12:00 – 1:00 PM	Lunch (<i>provided</i>)
1:00 – 2:00 PM	CQA for Compacted Clay Liners and Covers – <i>CQA principles, CQA plan, tests, observations, field water content tests, field density tests, hydraulic conductivity compliance tests, frequency of tests, sampling pattern, outliers, corrective action, role of test pads, final certification</i>
2:00 – 3:00 PM	History of GCLs – <i>Commercially-produced GCLs, geosynthetic materials, manufacturing of GCLs, manufacturing quality control, recommended specifications</i>
3:00 – 3:15 PM	Break
3:15 – 4:00 PM	Bentonite – <i>Measures of and tests for bentonite quality, recommended specifications for bentonite in GCLs, contaminant-resistant bentonite</i>
4:00 – 5:00 PM	Installation of GCLs – <i>Transportation, handling, storage, subgrade preparation, placement procedures, seaming protection, construction quality control and assurance, observations, types of tests, frequency of testing, field case history</i>
5:00 – 5:30 PM	Open discussion

CERTIFICATION EXAM: GEOSYNTHETIC CERTIFICATION INSTITUTE – INSPECTORS CERTIFICATION PROGRAM (GCI-ICP) NOVEMBER 16, 2018

November 16, 2018

7:45 – 8:00 AM	Registration and Introduction
8:00 – 10:00 AM	Geosynthetic Exam
10:00 – 10:25 AM	Break
10:30 – 11:30 AM	Compacted Clay Liner (CCL) Exam

Information regarding exams

- ALL students wishing to sit for the exam(s) MUST FIRST register for certification through the Geosynthetic Institute (GSI) and pay the applicable fees directly to GSI (phone: +1-610-522-8440). GSI registration must be received by the GSI 7-10 days before the exam(s).
- Students are REQUIRED to bring a government-issued photo ID prior to entering the testing room. They must also supply the Proctor with a photocopy of the ID when turning in the test.

Time allowance and structure

- Students will be given two hours to take the geosynthetic test. There are 140 questions. One must answer 70% of the questions correctly in order to pass. Only one correct answer is possible for each question.
- Students will be given one hour to take the compacted clay liner test, which involves 30 questions. At least 70% of the questions must be answered correctly in order to pass. There is only one correct answer for each question.
- The test is a multiple-choice test. Students must circle the correct answer (and only one answer) for each question. They must not select multiple answers for the same question.





**SHORT COURSE TUITION / GCI EXAM COST (SEE REGISTRATION FORM)
FOR REGISTRATIONS BEFORE FRIDAY, OCTOBER 26, 2018**

Liner Integrity Survey And Assessment (Lisa) | November 13, 2018

1 registrant per company	\$1350.00/person
2 registrants per company	\$1250.00/person
3+ registrants per company	\$1095.00/person
ELL Specification and Oversight Certification Exam	\$500.00/person

CQC/CQA Short Courses and CQA Exam | November 14 – 15, 2018

Both courses, 1 registrant per company	\$850.00/person
Both courses, 2 registrants per company	\$800.00/person
Both courses, 3+ registrants per company	\$750.00/person
Both courses, government	\$300.00/person
One course (day) only, 1 registrant per company	\$600.00/person
One course (day) only, 2 registrants per company	\$550.00/person
One course (day) only, 3 + registrants per company	\$450.00/person
One course (day) only, government	\$225.00/person

GCI Exam | November 16, 2018

TRI fee for one applicant only per company	\$75.00/person*
TRI fee for 2+ applicants per company	\$50.00/person*

*The exam costs above DO NOT reflect the TOTAL cost for sitting for the GCI exam, only TRI's exam proctoring cost.

The GCI exam is part of the GCI CQA technician certification program. Because of this, one MUST REGISTER with the Geosynthetic Institute (GSI) and pay its required certification fee in order to take this exam. TRI does NOT collect the fee for GSI; that fee must be paid directly to GSI. Call +1 610-522-8440 for more information.



REGISTRATION FORM

ONLINE REGISTRATION IS AVAILABLE: https://minervatri.wufoo.com/forms/qqqs3cl16ye6h1/

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2 registrants per company \$1250.00/person
3+ registrants per company \$1095.00/person
ELL Specification and Oversight Certification Exam . . . \$500.00/person

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One course (day) only, 3 + registrants per company . . \$450.00/person
One course (day) only, government \$225.00/person

GCI Exam | November 16, 2018

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TRI fee for 2+ applicants per company \$50.00/person*

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METHOD OF PAYMENT

Payment may also be made by check, money order, American Express, Visa or MasterCard.

Total Amount Paid (USD \$) _____

- Check
Money Order
Make check or money order payable to TRI/Environmental, Inc.

Credit Card: American Express Visa MasterCard Credit Card #: _____ Expiration Date: _____

Please direct questions to Mr. Sam Allen, phone: (800) 880-8378, fax: (512) 263 2558.

BILLING / 1ST REGISTRANT INFORMATION Billing Info is SAME as 1st Registrant Info Billing Info is DIFFERENT than Registrant Info

First Name _____ Last Name _____

Position _____ Company _____

Address _____

City _____ State _____ Zip _____

Phone _____ Email _____

If Billing is SAME as 1st Registrant Info, be sure to check boxes below if appropriate.

- I have registered with GCI & paid the GCI certification fee. I will take the Geosynthetic CQA Exam November 16, 2018
I have registered with GCI & paid the GCI certification fee, and I will take the Compacted Clay Liner CQA Exam November 16, 2018

Return ALL Registrations and Payment via Mail or Fax to: TRI, ATTN: Kevin Garcia, 9063 Bee Caves Road, Austin, Texas 78733
(KGarcia@tri-intl.com; Fax: 512-263-2558)

ONLINE REGISTRATION IS AVAILABLE: <https://minervatri.wufoo.com/forms/qqqs3cl16ye6h1/>

REGISTRANT INFORMATION If you have more Registrants, please fill out following Registrant Information fields.

First Name _____ Last Name _____

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Address _____

City _____ State _____ Zip _____

Phone _____ Email _____

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(KGarcia@tri-intl.com; **Fax:** 512-263-2558)