



TRI CQA WEEK

DECEMBER 7–11, 2020

REGISTER ONLINE: trienviromental.wufoo.com/forms/tri-geosynthetics-cqa-week-online

5 Half-Day Online Sessions

LINER INTEGRITY SURVEYS/ ASSESSMENTS (LISA) PRIMER

December 7, 2020

CONSTRUCTION QA/QC FOR GEOSYNTHETIC INSTALLATIONS

December 8–9, 2020

CONSTRUCTION QA/QC FOR COMPACTED CLAY LINER & GCL INSTALLATION

December 10–11, 2020

GEOSYNTHETIC CERTIFICATION INSTITUTE – INSPECTORS CERTIFICATION PROGRAM

(GCI-ICP) EXAM
December 11



Accredited Geosynthetics Laboratories
Accreditation Designation # GAI-LAP-001

Create a new revenue center and provide growing, in-demand services to clients. LISA complements existing services offered by most CQA firms practicing in waste management. Water resource conservation, lined tanks, mining, and other sectors are now using LISA too.



LISA PRIMER

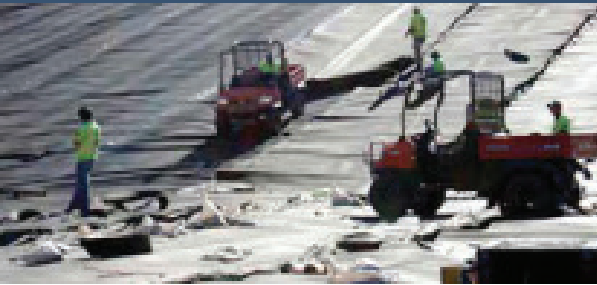
December 7, 2020 8:00 am - 12:00 pm CST

A Liner Integrity Survey (Electrical Leak Location) is a state-of-the-art, nondestructive method of locating leaks in installed geomembranes. LIS equipment, rooted in geophysical measurement techniques, tests exposed and soil or water-covered geomembranes. TRI's training course disseminates the theoretical and practical knowledge required to employ and specify the quality of LIS methods and equipment.

The Liner Integrity Surveys/Assessments (LISA) class provides the most up-to-date information on survey methods and standards (e.g., ASTM). It is ideal for design engineers, CQA firms, site owners, and regulators interested in specifying and employing this service.

Professionals who benefit from this course:

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



FIELD CQC / CQA TRAINING

December 8–11, 2020 8:00 am - 12:00 pm CST

These two 2-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. Course 1 focuses on installation of geomembranes, geotextiles, geocomposites, geogrids, and geo-appurtenances. It includes discussion of geomembrane seaming and seam peel and shear testing. Course 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.



GCI-ICP CERTIFICATION EXAMS

December 11, 2020

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

Thorough training in CQA of geosynthetic installations serves to 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. This unique program provides professional growth and business development opportunities.

ABOUT TRI

TRI/Environmental, Inc. (TRI) has been active in geosynthetics testing, inspection and research and development for 30 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://trienviroental.com)

Online registration is available at: trienviroental.wufoo.com/forms/tri-geosynthetics-cqa-week-online



Sam Allen



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) Geosynthetics 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).

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

Senior Engineer for TRI Environmental

Abigail Gilson is a Senior Engineer for TRI Environmental, Inc. and directs TRI's global liner integrity services. She has 15+ years and 170 million+ square feet of liner integrity survey / leak location experience. She has presented at conferences, published papers, and taught short courses around the world regarding the technical aspects of LIS methodologies. She is an expert in the LISA equipment offered by TRI, and she oversees equipment acquisition, operator certification, and field training.

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.

SCHEDULE

LISA PRIMER December 7, 2020

8:00 AM	Welcome	
8:15 AM	Introductions	Gilson
8:30 AM	Significance of LIS	Gilson
9:00 AM	LIS Terminology, History and Background	Gilson
9:35 AM	Applications	
9:45 AM	Leak Statistics	Gilson
10:00 AM	Break	
10:30 AM	Test Methods and Standards	Gilson
11:15 AM	Designing for and Specifying LIS	Gilson
12:00 PM	Questions/Answers/Discussion	Gilson

CQA COURSE ONE December 8, 2020

8:00 AM	Introductions	Allen
8:15 AM	CQA Principles Philosophy - <i>Responsibilities, appreciation of role, professional considerations and on-site protocol, conflict resolution, etc.</i>	Sieracke
9:00 AM	Intro to Geomembrane Manufacturing and Properties - <i>Polymers to products, material properties, product manufacturing.</i>	Allen
10:00 AM	Break	
10:15 AM	Geomembrane Seams and Welding Field 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
11:15 AM	Smart Welders - <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>	Allen
11:30 AM	Electronic Leak Location (ELL)	Allen
12:00 PM	Questions/Answers	

SCHEDULE

CQA COURSE ONE December 9, 2020

8:00 AM	Review of Yesterday	Allen
8:15 AM	Geotextiles & Geosynthetic Drains - <i>Types and specifications, shipping receiving, unloading, storage & installation</i>	Allen
9:15 AM	Geogrids Pipe Erosion Control - <i>Types and specifications, shipping receiving, unloading, storage & installation</i>	Allen
10:00 AM	Break	
10:15 AM	Installation Protection and Soil Cover	Sieracke
11:15 AM	CQA Paperwork and Record Keeping - <i>Importance of documentation, communication records, examples of record keeping and documentation, checklists</i>	Sieracke
12:00 PM	Questions/Answers	

CQA COURSE TWO December 10, 2020

8:00 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>	Kuhn
8:45 AM	Compacted Clay Properties- <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>	Kuhn
10:00 AM	Break	
10:15 AM	Compacted Clay Liner Construction - <i>Equipment, preprocessing of soil, soil moisture control, sieving, clod control, crushing/pulverizing materials, compaction, test pads.</i>	Kuhn
11:45 AM	Questions/Answers	

SCHEDULE

CQA COURSE TWO December 11, 2020

8:00 AM	Review of Yesterday	Kuhn
8:15 AM	GCL History - <i>Commercially-produced GCLs, geosynthetic materials, manufacturing of GCLs, manufacturing quality control, recommended specifications.</i>	Kuhn
9:15 AM	Bentonite Measurements - <i>Measures of and tests for bentonite quality, recommended specifications for bentonite in GCLs, contaminant-resistant bentonite.</i>	Kuhn
10:00 AM	Break	
10:15 AM	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>	Kuhn
11:00 AM	Questions/Answers	Allen & Kuhn

SCHEDULE

GCI-ICP EXAM December 11, 2020

12:00 PM	Online Exam Geosynthetics
2:00 PM	Break
2:30 PM	Online Exam - Compacted Clay Liners

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).

Time allowance and structure

- Students will be given two hours to take the geosynthetic test. 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. 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 choose 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 NOVEMBER 23, 2020. *\$50 additional per registration thereafter.*
CQC/CQA Short Courses and CQA Exam

Liner Integrity Survey Short Course

December 7 - 1 registrant per company	\$450.00/person
December 7 - 2 registrants per company	\$425.00/person
December 7 - 3+ registrants per company	\$400.00/person

CQC/CQA Short Courses

Both courses, 1 registrant per company	\$675.00/person
Both courses, 2 registrants per company	\$600.00/person
Both courses, 3+ registrants per company	\$550.00/person
Both courses, government	\$200.00/person
One course (day) only, 1 registrant per company	\$400.00/person
One course (day) only, 2 registrants per company	\$350.00/person
One course (day) only, 3 + registrants per company	\$325.00/person
One course (day) only, government	\$150.00/person

GCI EXAM December 11, 2020

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.*

REGISTER ONLINE

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