



# CQA TRAINING COURSE

AT GEOU ATX 2020 | April 7 – 10, 2020

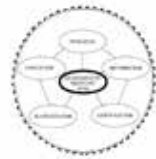
**REGISTER ONLINE** <https://minervatri.wufoo.com/forms/r1026gjp168nv6i/>

**QA/QC OF GEOSYNTHETIC AND COMPACTED CLAY LINING SYSTEMS**  
At GEOU ATX 2020 | April 8–9, 2020

**GEOSYNTHETIC CERTIFICATION INSTITUTE – INSPECTORS  
CERTIFICATION PROGRAM (GCI-ICP) EXAM**  
April 10, 2020



Accredited Geosynthetics Laboratories  
Accreditation Designation # GAI-LAP-001



v01242020

## LOCATION

GEOU ATX 2020 | Sonesta Bee Cave Austin Hotel | 12525 Bee Cave Parkway | Austin, TX 78738, USA

[TRI-Environmental.com](http://TRI-Environmental.com)

**Professionals who benefit from this course:**

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



**ABOUT GEOU ATX 2020**

5 High-Level Geosynthetics Short Courses  
4 Certification Opportunities  
3 Days of Learning & Networking

GeoU is THE relevant and comprehensive venue for detailed, application-oriented education.

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**QA/QC OF GEOSYNTHETIC AND COMPACTED CLAY LINING SYSTEMS, APRIL 8–9, 2020**

For the past 15 years, engineers, regulators, and other waste management professionals have come to Austin, Texas to attend the geosynthetic containment system CQA training course developed by TRI Environmental. This year, the traditional back-to-back single-day courses are combined under a single course name: “QA/QC of Geosynthetic and Compacted Clay Lining Systems” at GEOU ATX 2020.

This course focuses on the installation of all geosynthetics and compacted clay liners used in containment systems. The first day will focus on installation of geomembranes, geotextiles, geocomposites, geogrids, and geo-appurtenances. It includes discussion of geomembrane seaming and seam peel and shear testing. The second day will focus on the installation of compacted clay and geosynthetic clay liners. 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.

Gain comprehensive understanding of:

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

The course is designed specifically for those who need a detailed understanding of proper CQC and CQA procedures at waste containment facilities. It serves as ideal preparation for the Geosynthetic Certification Institute’s Inspectors Certification Program (GCI-ICP) exam.

\* 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 GSI’s required certification fee in order to take the exam. TRI does NOT collect the fee for GSI; that fee must be paid directly to GSI. The exam fee that TRI will collect is only to serve as proxy for overseeing the exam timeslot on site. Call GSI at +1 610 522 8440 for more information on the GCI-ICP program.



## VENUE

- **Sonesta Bee Cave Austin**  
12525 Bee Cave Parkway  
Austin, TX 78738, USA

## WHERE TO STAY

- **Sonesta Bee Cave Austin** – 12525 Bee Cave Parkway, Austin, TX 78738, Telephone: 512-483-5900, 20 miles from airport  
**Reduced Rate - Code: Geo-U 2020**  
<http://geo-u.com/geou-atx-2020-venue.html>
- **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

## 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.

## GCI-ICP CERTIFICATION EXAM, APRIL 10, 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 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.

## VENUE - SONESTA BEE CAVE AUSTIN HOTEL

**Room Discount Code: Geo-U 2020**, *Discounted rooms (USD \$159/night) are available through 9 March 2020*  
<https://www.sonesta.com/us/texas/bee-cave/sonesta-bee-cave-austin>.

The 195-room Sonesta Bee Cave Austin Hotel is located in the beautiful Hill Country of Austin, Texas. The Sonesta will be the venue for all GeoU 2020 short courses and certification activities. It will also host the April 7 Meet the Teacher Reception and the April 9 GeoU Happy Hour in the Meridan 98 rooftop lounge (6th floor of hotel). Learn more on the Networking page: <http://geo-u.com/geou-atx-2020-networking.html>.

The Sonesta Bee Cave Austin is perfect for business and leisure travelers in the Lake Travis and Hill Country Galleria area. The hotel is close to many dining, shopping, entertainment and area attractions, and just a short 20 minutes from downtown and the airport. It is also very close to TRI Environmental, which will host a laboratory technical tour on April 8 and sponsor a dinner at a nearby location on that evening. (Bus transportation provided.)

During your stay at GeoU 2020, you will experience the hotel's contemporary chic, laid-back charm and tasteful design that reflects the natural beauty and textures of the local surroundings. Amenities on site include a fitness center, outdoor pool, 24-hour business center, and the lounge and rooftop bar.  
<http://geo-u.com/geou-atx-2020-venue.html>

## REGISTRATION

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

Online registration is available at: <https://minervatri.wufoo.com/forms/r1026gjp168nv6i/>



Sam Allen



Jeffrey Kuhn



Mark Sieracke

## ABOUT THE INSTRUCTORS

Learn more about our Instructors and other opportunities available at GEOU ATX 2020.

<http://geo-u.com/>

REGISTER TODAY!

explore | define | develop

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### **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).

### **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.

## CQA FOR GEOSYNTHETIC INSTALLATIONS SHORT COURSE OUTLINE APRIL 8, 2020

With Sam Allen and Mark Sieracke, P.E.

April 8, 2020		
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 &amp; 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 &amp; installation</i>	Allen
2:30 – 3:30 PM	Geotextiles, Geonets/Geocomposites, Geogrids, Pipe, Erosion Control – <i>Types and specifications, shipping/receiving, unloading, storage &amp; 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&amp;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**  
**APRIL 9, 2020** *With Dr. Jeffrey Kuhn, P.E.*

April 9, 2020	
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) APRIL 10, 2020

April 10, 2020

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.





**QA/QC OF GEOSYNTHETIC AND COMPACTED CLAY LINING SYSTEM COURSE PRICING  
/ GCI EXAM COST (SEE REGISTRATION FORM) FOR REGISTRATIONS BEFORE JANUARY 31, 2020**

**Early Bird (through January 31)**

Government . . . . .	\$350
Commercial, Single Registrant . . . . .	\$750
Commercial, 2 Registrants . . . . .	\$725
Commercial, 3+ Registrants . . . . .	\$700
GCI-ICP Exam Fee, Single Registrant . . . . .	\$75
GCI-ICP Exam Fee, 2+ Registrants . . . . .	\$35

**After January 31**

Government . . . . .	\$400
Commercial, Single Registrant . . . . .	\$850
Commercial, 2 Registrants . . . . .	\$825
Commercial, 3+ Registrants . . . . .	\$800
GCI-ICP Exam Fee, Single Registrant . . . . .	\$75
GCI-ICP Exam Fee, 2+ Registrants . . . . .	\$35

\*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.

**For more courses available at GEOU ATX 2020, please visit <http://geo-u.com/>**





REGISTRATION FORM

ONLINE REGISTRATION IS AVAILABLE: https://minervatri.wufoo.com/forms/r1026gjp168nv6i/

QA/QC of Geosynthetic and Compacted Clay Lining Systems | April 8-9, 2020

Early Bird (through January 31)

- Government \$350
Commercial, Single Registrant \$750
Commercial, 2 Registrants \$725
Commercial, 3+ Registrants \$700

After January 31

- Government \$400
Commercial, Single Registrant \$850
Commercial, 2 Registrants \$825
Commercial, 3+ Registrants \$800

GCI Exam | April 10, 2020

Early Bird (through January 31)

- GCI-ICP Exam Fee, Single Registrant \$75\*
GCI-ICP Exam Fee, 2+ Registrants \$35\*

After January 31

- GCI-ICP Exam Fee, Single Registrant \$75\*
GCI-ICP Exam Fee, 2+ Registrants \$35\*

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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
I have registered with GCI & paid the GCI certification fee, and I will take the Compacted Clay Liner CQA Exam

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

**ONLINE REGISTRATION IS AVAILABLE:** <https://minervatri.wufoo.com/forms/r1026gjp168nv6i/>

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

First Name \_\_\_\_\_ Last Name \_\_\_\_\_

Position \_\_\_\_\_ Company \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Phone \_\_\_\_\_ Email \_\_\_\_\_

I have registered with GCI & paid the GCI certification fee. I will take the **Geosynthetic CQA Exam**

I have registered with GCI & paid the GCI certification fee, and I will take the **Compacted Clay Liner CQA Exam**

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

First Name \_\_\_\_\_ Last Name \_\_\_\_\_

Position \_\_\_\_\_ Company \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Phone \_\_\_\_\_ Email \_\_\_\_\_

I have registered with GCI & paid the GCI certification fee. I will take the **Geosynthetic CQA Exam**

I have registered with GCI & paid the GCI certification fee, and I will take the **Compacted Clay Liner CQA Exam**

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

First Name \_\_\_\_\_ Last Name \_\_\_\_\_

Position \_\_\_\_\_ Company \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Phone \_\_\_\_\_ Email \_\_\_\_\_

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