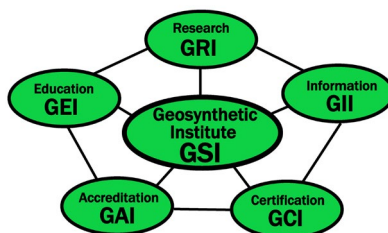


# The GSI Newsletter/Report



## Geosynthetic Institute

Vol. 36, No. 3

September, 2022

This quarterly newsletter, now in its 36<sup>th</sup> year, presents the activities of GSI and its related institutes to all who are interested. It is available on the institute's home page at [www.geosynthetic-institute.org](http://www.geosynthetic-institute.org). It also serves as a quarterly report to its member organizations. Details are available by contacting George R. Koerner or Jamie Koerner at phone (610) 522-8440; or e-mail at [gsigeokoerner@gmail.com](mailto:gsigeokoerner@gmail.com) or [Jamie@geosynthetic-institute.org](mailto:Jamie@geosynthetic-institute.org).

## Activities of GSI's Officers and Board of Advisors (BOA)

### 2022-2024 Board of Advisors

#### Term Ends 2022

- Kent von Maubeuge – NAUE GmbH & Co. KG (International-1)  
email: [kvmaubeuge@naue.com](mailto:kvmaubeuge@naue.com)
- Miranda Rine – C.P. Chemical (Resin and Additives Group)  
email: [Miranda.rine@cpchem.com](mailto:Miranda.rine@cpchem.com)
- David Carson – U.S. EPA (Agencies)  
email: [carson.david@epa.gov](mailto:carson.david@epa.gov)

#### Term Ends 2023

- Te-Yang Soong - CTI Co. (Consultants and Testing Labs)  
email: [tsoong@cticompanies.com](mailto:tsoong@cticompanies.com)
- Brian Fraser - Layfield Group (Barrier Group)  
email: [brian.fraser@layfieldgroup.com](mailto:brian.fraser@layfieldgroup.com)
- Mathieu Cornellier - Solmax (International - 2)  
e-mail: [mcornellier@solmax.com](mailto:mcornellier@solmax.com)

#### Term Ends 2024

- Burrill (Bo) McCoy - Waste Management Inc. (Owners and Operators)  
e-mail: [bmccoy2@wm.com](mailto:bmccoy2@wm.com)
- Rene Laprade - Tencate Geosynthetics (Geotextiles and Geogrids)  
e-mail: [r.laprade@tencategeo.com](mailto:r.laprade@tencategeo.com)
- Sam Allen – TRI Environmental Inc. (At-Large)  
e-mail: [Sallen@tri-env.com](mailto:Sallen@tri-env.com)

GSI has continued to have virtual quarterly meetings with the Board of Advisors throughout 2022 via Zoom. The Third Quarter BOA meeting was held on September 30, 2022 at 11:00 am. A "SWOT" analysis of GSI was presented and discussed. The BOA reviewed all GSI fellowship proposals and 10 fellowship recipients were selected. In addition to general business issues, other topics that were discussed during the meeting were: ongoing research projects, technical papers, upcoming conferences, specifications and the GAI-LAP Program.

Kent von Maugeuge, longtime BOA representative and friend, will be retiring next year. Elections for the International 2023 BOA position will be held during the 4<sup>th</sup> quarter meeting scheduled for December 21. Anyone interested in nominating someone for the open International BOA position should send the nominee's name and contact information to Jamie Koerner at [jamie@geosynthetic-institute.org](mailto:jamie@geosynthetic-institute.org)

We thank the BOA for sharing their time and talent to fulfill the GSI mission.

### IN THIS ISSUE

- Activities of GSI's Officers and BOA
- Overview of GRI (Research) Projects
- Progress within GII (Information)
- Progress within GEI (Education)
- Activities within GAI (Accreditation)
- Activities within GCI (Certification)
- The GSI Affiliate Institutes
- GSI's Member Organizations

## Overview of GRI Projects (Research)

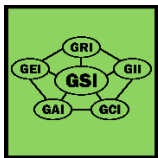
The following projects are all funded by GSI membership dues unless specifically noted. Most are long-term projects for which we are well positioned to accomplish. In an attempt not to repeat information in the quarterly newsletters, we will merely list the ongoing projects that have been written about in previous newsletters and will only provide details of new research. For details and/or discussion of ongoing projects contact:

George Koerner ([gsigeokoerner@gmail.com](mailto:gsigeokoerner@gmail.com))

Grace Hsuan ([hsuanyg@drexel.edu](mailto:hsuanyg@drexel.edu))

1. Durability and Lifetime of Geosynthetics
2. GSI Wall, pH and Durability of PET GGs
3. Geomembrane Creep Axisymmetric Behavior
4. Igepal CO-630 Alternative Surfactant
5. Strain Hardening
6. Anchored Geosynthetics
7. Drainage Geocomposites
8. Geogrid Induced Seepage in Levees
9. Geomembranes Anchored in Concrete
10. Jet-filter Long Term Flow Tests
11. Test for Anaerobic Digester Geomembrane Covers
12. EIA/KEE Testing for New Specification

## Progress within GII (Information)



<https://linkedin.com/company/geosynthetic-institute.org>

Our GSI Home Page is accessed as follows:

[www.geosynthetic-institute.org](http://www.geosynthetic-institute.org)

Everyone (members and nonmembers) can access the open part, which has the following menu:

**Newsletter**  
**Prospectus**  
**Specifications**  
**White Papers**  
**Bookstore**  
**Keyword Search**  
**Members Only**

**Research**  
**Certification**  
**Information**  
**Education**  
**Accreditation**  
**Personnel**  
**Contacts**  
**Upcoming**  
**Webinars**

To go further one needs a members-only password. Your contact person (names beneath member company) must obtain a password from Jamie Koerner. Jamie can be reached by e-mail at [Jamie@geosynthetic-institute.org](mailto:Jamie@geosynthetic-institute.org). When you get into this section, the following information is then available.

- GRI Test Methods (all)
- GRI Reports
- GRI Technical Papers (419 Citations)
- Notes of GSI Meetings
- Links to the GSs World
- Keyword Search for Generic Papers
- Example Problems
- Frequently Asked Questions (FAQs)

### GRI Reports

To date, we have 48 GRI Reports available to members and associate members. These reports vary in length from 30 to 200 pages. They are in the password protected section of our home page at [www.geosynthetic-institute.org/member/reports.html](http://www.geosynthetic-institute.org/member/reports.html).

White papers are available for free to everyone, however GRI reports are only free to members (located in the member's only section of the website). Non-members can purchase the reports from the online GSI bookstore.

We have written 7 papers over the last quarter as follows:

- HP-TRM's
- Polk Co. EGC
- Closure Turf Durability and Freeze Thaw
- Pearce Creek Exposed Geotextile
- GAI-LAP: A 25-year Retrospective
- Alternative for ASTM D5397 Testing Stress Crack
- Survivability of GS with Aeroaggregates
- GG Seepage induced Flow in Levees

## Progress within GEI (Education)

### ATA Geosynthetic Conference 2023

Advanced Textiles Association (ATA, formerly IFAI) will hold its 2023 Geosynthetic Conference in Kansas City, MO from February 5 -8 at the Kansas City Convention Center..

GSI's Special Session at the Geosynthetic Conference 2023 "Exposed Geosynthetic Performance" will take place on **Wednesday, February 8 from 8:00am – 9:30am**. It will be an action-packed session with George Koerner moderating the following four speakers:

**David Beaumier**, Eng., M. A. Sc.  
Director of Technological Innovation  
Polymer CTT Group SAGEOS  
"Laboratory Predicted Performance of Exposed Geosynthetics"

**George A. Reinhart**, III, PhD, PE  
Senior Engineer / Vice President  
Jones Edmunds Consultants Inc.  
"Exposed Geomembrane Cover Performance at Polk County Landfill in Florida"

**Stephan Fourmont**, Eng., M. A. Sc.  
Business Development Manager  
Afitex-Exel Geosynthetics inc.  
"Exposed NPNW GT performance at a large surface impoundment for over one year"

**Bryan Scholl**, Ph. D., P.E.  
Director of Engineering  
Watershed Geo Inc.  
"Closureturf - a ten-year retrospective of UV performance"

We expect a strong turnout for the conference and hope to see many GSI members there.



Brian Fraser, George Koerner and Eric Rankinen

### Layfield Group Visits Geosynthetic Institute

We had a nice meeting with Brian Fraser, Eric Rankinen, and Rohit Sati of Layfield on September 22<sup>nd</sup> at GSI. In typical Layfield style they came with an action-packed agenda. Some discussion points were:

Topic 1: Status of Proposed new EIA/KEE Specification

Discussion 1: We currently have nine geomembranes in house from three EIA/KEE manufacturers (Siemens, Cooley and E squared) Thank you! We are testing these materials per the new draft specification. The Oven aging, QUVA and chlorine challenge are underway and will be finished at the end of the year. At that time, we will share the results and convene an international group of twelve (thanks to the GSI News article in GS magazine) to discuss the results and finalize the specification

Topic 2: New HDPE Testing for positive pressure digester cover application

Discussion 2: Due to some ingenious efforts by graduate student at GSI this summer this test method has been up and running at GSI for two months and it work great. We will write the method up and list it on our website for future use in quarter four of 2022.

Topic 3: Chlorine Testing for geomembranes

Discussion 3: This testing is covered under GRI GM24 "Incubation and Subsequent Evaluation of Single 180° and Double 180° Folding of Geomembranes". The most common chlorine concentration tested is 10 PPM. Some are shocking the system with concentrations as high as 500 PPM.

Topic 4: Update to CSPE specification

Discussion 4: Layfield brought a very interesting observation to our attention. They would like The GRI GM28 specification for CSPE to address the transition of the material from a thermoplastic to a thermoset. This occurs at different rates due to exposure to environmental conditions. They suggested that we include ASTM D1388 flexural rigidity, ASTM D2240 durometer hardness and GRI GS 24 wind whip to the list of specified test method. We will undertake this testing at GSI in the coming months

Topic 5: PE-RT bimodal HDPE Resins - High Temperature HDPE

Discussion 5: We are very interested in this topic to the point that we would like to commission work in this area and create a new specification class of GRI HDPE geomembranes beyond GRI GM-13. There are several successful products used in extreme high temperature and challenging environmental applications currently on the market. They are made

with bimodal HDPE resins and have been used in brine and finish water surface impoundments in Australia and South Africa. The technology looks promising, and we should certainly advance the industry whenever possible.



Bogdan Tronac, Kent von Maubeuge, Chris Quirk, Kaye Norman, Julia Fox, Louise Crane and Andrew Cracknell

### NAUE Special Session on Sustainability

A comprehensive look at the latest issues, challenges and successes surrounding geosynthetics and the environment were shared at a Naue Special Session on Sustainability at the Birchwood Park in Warrington, UK on September 20<sup>th</sup>, 2022.

This one-day seminar entitled “**Geosynthetics- Environmental Applications and Sustainability**” explored sustainability and how geosynthetics impact both benefits and concerns of geosynthetics on the built environment. The agenda was as follows:

- George Koerner (GSI) Sustainable Development with Geosynthetics
- Kent Von Maubeuge (Naue) Benefits of the use of GCLs – regarding carbon footprint, sustainability and more
- Gordon Wilson, (VHE Construction) Sighthill TRA Regeneration – The Solution
- Chris Quirk and Jake White (Naue) Greenline Product Line
- Rob Marshall (BTTG) Industry Standards Update
- Darren Legge (UK Environmental Agency) Agency perspective and regulatory requirements

Around 50 attendees heard from the six (6) speakers explaining now our industry is undergoing revisions to ensure greater harmonization of international sustainability goals. The highlight of the workshop was an introduction of Naue’s new “Green-Line” geotextiles which are made of cellulose instead of polypropylene.



Flavio Montez CEO of Huesker Inc. and George Koerner at Engineers and Beers Event



### Presentation: Soft Soil Stabilization with Geosynthetics September 14, 2022 from 5:30 to 7:30 PM

The event came at the end of GeoCharlotte and provided a chance to connect with peers and review the latest in geosynthetic products and applications in an informal atmosphere, with food and drink provided by Huesker Inc. at the Olde Mecklenburg Brewery in Charlotte North Carolina.

The purpose of the one-hour lecture was to provide design and construction information to engineers in utilizing sites having very soft soil conditions. By very soft we mean just that zero blow count material with

insitu shear strength of less than 100 psf (5 kPa). Traditional methods in dealing with such soils have been to use deep foundations or to excavate and replace. Both traditional alternatives are expensive and run afoul with regulations and sustainability requirements.

The alternative is Soft Soil Stabilization with Geosynthetics which involves placing a high strength geosynthetic (geotextile or geogrid) on the surface of the soft soil before backfill. The backfill can be surcharge (temporary) or embankment (permanent) to mobilize settlement and accompany subgrade soil strength gains. Sometimes deep foundation (technique of stone or sand columns encased in geotextile or geogrids) or prefabricated vertical drains are used in conjunction with high strength geosynthetic to accelerate the process. We spoke with the support of many case histories which emphasized drainage and trusting your field instrumentation. A great time was had by all and we ran overtime with the Q & A portion of the program.



Keith Brooks from Industrial Fabrics Inc. and Jamie Koerner

On September 29, 2022 GSI was visited by Keith Brooks, chief engineer for Industrial Fabrics. Since 1981, Industrial Fabrics has served diverse clients along the Gulf Coast of the USA as a distributor of geosynthetics. As of 2017 Industrial Fabrics, Inc. is also a primary manufacturer of geotechnical products, including geotextile fabrics, geogrids, liner material, silt fence, erosion control, pipeline protection and paving products for the construction industry. Keith brought much optimism to the visit which was punctuated by a tour of AeroAggregates in Eddystone, PA.

## “GSI Fellowships for Graduate Students”

Every year GSI awards several fellowships to support research in various fields, all involving geosynthetics. The program recognizes and supports outstanding students from around the world who are studying geosynthetics. GSI’s Board of Advisors (BOA) have reviewed this year’s proposals and the following 10 students have been chosen to receive a GSI Fellowship. Each student will be awarded \$5,000 to be used towards expenses related to their research proposal.

We congratulate the following 10 students and their advisors. Everyone at GSI and the BOA wish them continued success.

If you are interested in additional information about any of the GSI fellows, please contact [Jamie@geosynthetic-institute.org](mailto:Jamie@geosynthetic-institute.org).

No.	Name	University	Advisor(s)	Research Topic
1-22	Daniel Adeleke	Villanova USA	Kristin M. Sample-Lord	Coupled Hydraulic-Mech.-Chem. Behavior of Bentonite Polymer Composite in Waste Containment Applications
2-22	Mahmoud Ali	Queens University Canada	Kerry Rowe	Brittle Stress Crack of HDPE GM Caused by Extrusion Weld
3-22	Pourya Alidoust	Temple University USA	Joseph Coe	Advancement in Quality Control of GCLs using Full Waveform Inversion of Seismic Data
4-22	Mehran Azizian	University of Texas Arlington USA	Xinbao Yu	Analysis of Geocells-Reinforced Percussion Anchors under Static Uplift Load by Experimental and Numerical Methods
5-22	Yunhui Fan	Queens University Canada	Kerry Rowe	Geomembrane Physical Response and Leakage for Waste Covers due to Differential Settlement
6-22	Li He	University of Massachusetts-Amherst USA	Guoping Zhang	Water Drainage and Harvesting in Soils via Wicking Geotextile with Super Hydrophilic and Super Hydrophobic Patterns
7-22	Kasra Salemi Kouchesfahani	Queens University Canada	Richard Brachman	Physical Modelling of Geosynthetic Waste Covers under Differential Settlement
8-22	Rishneswar Ramineni	Texas A&M USA	Anand J. Puppala	Performance Evaluation of the Geosynthetic Reinforced Unpaved Pavement Sections Constructed over Weaker Subgrade Conditions Based on Large-Scale Repeated Load Tests
9-22	Kairen Shen	Rutgers University USA	Hao Wang	Numerical Modeling and Performance Analysis of Geogrid-Reinforced Airfield Flexible Pavement
10-22	Md. Wasif Zaman	University of Kansas USA	Jie Han	Investigation of Moisture Reduction in Unsaturated Soils using Geotextiles

## Webinar Wednesday schedule for 2022

11:30 AM – 1:00 PM (Eastern Time Zone)

The schedule is as follows:

Date	GSI #	Title	# Portals
1/12/2022	W5	Geosynthetics in Hydraulic Applications	12
2/09/2022	W6	Geosynthetics in Heap Leach Mining	21

3/16/2022	W7	Geosynthetics in Agriculture/Aquaculture	9
4/20/2022	W9	Behavior of 20 Landfill Failures	7
5/11/2022	W12	Landfill Covers: Past-Present-Emerging	17
6/08/2022	W14	Lifetime Predictions of Geosynthetics	4
7/20/2022	W17	Geosynthetics in Erosion Control	cancelled
8/10/2022	W20	Geosynthetic Drainage Materials	4
9/07/2022	W26	Applications and Design of Geotextile Tubes	11
10/12/2022	W27	Stability Design of Landfill Cover Soils	
11/09/2022	W29	QA/QC of Geosynthetics	
12/07/2022	W34	Geosynthetics in Roadways	

Register at:

[www.geosynthetic-institute.org/webinar.htm](http://www.geosynthetic-institute.org/webinar.htm)

Each webinar provides 1.5 Professional Development Hours available upon completion of a short quiz

GSI Members Cost - \$200

(unlimited number of attendees for GSI Members)

Nonmembers Cost - \$250

### Courses

We have abandoned our in-house, one-day, courses (which have been given for the past 30-years) and are presently delivering two of them in six segments over three consecutive days, one each morning and then afternoon. They are the following:

1. Quality Assurance/Quality Control of Geosynthetic in Waste Containment Facilities  
(Recordings are available)
2. Construction Inspection of Mechanically Stabilized Earth (MSE) Walls, Berms and Slopes  
(Recordings are available)

The third and newest of GSI courses is an On-Line "Designing with Geosynthetics (DwG)" course. Please go to [www.geosynthetic-institute.org/courses.htm](http://www.geosynthetic-institute.org/courses.htm) and scroll down to Course #3. Here you will see the requisite details. The course itself is completely synchronized with the 6<sup>th</sup> Edition of the DwG textbook. It consists of 1540 slides with  $\approx$  18 hours of voice over; about one minute for each slide.

Contact Jamie Koerner at [jamie@geosynthetic-institute.org](mailto:jamie@geosynthetic-institute.org) if you want additional information.

## Activities within GAI (Accreditation)

As of July 2022, the following laboratories are accredited by the GAI-LAP for the number of test methods listed in parenthesis. Contact personnel, telephone numbers and e-mails are also listed.

- 1<sup>A</sup> - TRI/Environmental Inc. (155 tests)  
Jarrett Nelson -- (512) 263-2101  
[jnelson@tri-env.com](mailto:jnelson@tri-env.com)
- 3<sup>A</sup> - Golder Associates (43 tests)  
Henry Mock -- (770) 492-1893  
[Henry\\_Mock@golder.com](mailto:Henry_Mock@golder.com)
- 4<sup>C</sup> - Geosynthetic Institute (108 tests)  
George Koerner -- (610) 522-8440  
[gsigeokoerner@gmail.com](mailto:gsigeokoerner@gmail.com)
- 8<sup>B</sup> - Propex Operating Co., Ringgold (18 tests)  
Todd Nichols -- 438-553-3757  
[todd.nichols@propexglobal.com](mailto:todd.nichols@propexglobal.com)
- 9<sup>B</sup> - Lumite (17 tests)  
Rebecca Kurek -- (770) 869-1787  
[rkurek@lumiteco.com](mailto:rkurek@lumiteco.com)
- 13<sup>A</sup> - Precision Geosynthetic Labs (TRI Env.) (77 tests)  
Chad Blackwell -- (714) 520-9631  
[cblackwell@tri-env.com](mailto:cblackwell@tri-env.com)
- 14<sup>A</sup> - Geotechnics (55 tests)  
J. P. Kline -- (412) 823-7600  
[JPkline@geotechnics.net](mailto:JPkline@geotechnics.net)
- 20<sup>A</sup> - GeoTesting Express, MA (62 tests)  
Barbara Sanchez-- (978) 635-0424  
[bsanchez@geotesting.com](mailto:bsanchez@geotesting.com)
- 22<sup>B</sup> - CETCO Hoffman Estates (11 tests)  
Minerals Technologies Inc.  
Dennis Wind -- (847) 851-1904  
[Dennis.wind@mineralstech.com](mailto:Dennis.wind@mineralstech.com)
- 24<sup>B</sup> - CETCO Lovell (11 tests)  
Minerals Technologies Inc.  
Stuart Yates -- (307) 548-6521  
[stuart.yates@mineralstech.com](mailto:stuart.yates@mineralstech.com)
- 25<sup>B</sup> - Ten Cate, Pendergrass (13 tests)  
Melissa Medlin -- (706) 693-2226  
[m.medlin@tencategeo.com](mailto:m.medlin@tencategeo.com)
- 26<sup>B</sup> - Agru America Inc. (27 tests)  
Maria Coffey -- (843) 546-0600  
[mcoffey@AgruAmerica.com](mailto:mcoffey@AgruAmerica.com)
- 29<sup>E</sup> - FITI Testing and Research Institute (80 tests)  
Hang Won-Cho -- 82-2-3299-8071  
[hwcho@fitiglobal.com](mailto:hwcho@fitiglobal.com)
- 31<sup>D</sup> - NYS Dept. of Transportation (8 tests)  
Tom Burnett -- (518) 485-5707  
[tburnett@dot.ny.gov](mailto:tburnett@dot.ny.gov)
- 34<sup>B</sup> - Solmax (GSE) - Houston, TX USA (29 tests)  
Jeremy Stephenson  
[Jstephenson@solmax.com](mailto:Jstephenson@solmax.com)
- 38<sup>C</sup> - CTT Group SAGEOS (120 tests)  
Oliver Vermeersch -- (450) 771-4608  
[overmeersch@gcttg.com](mailto:overmeersch@gcttg.com)
- 40<sup>B</sup> - Solmax (GSE) - Kingstree, SC USA (20 tests)  
Thomas Harrelson -- (843) 382-4603  
[tharrelson@solmax.com](mailto:tharrelson@solmax.com)
- 41<sup>A</sup> - SGI Testing Service, LLC (19 tests)  
Zehong Yuan -- (770) 931-8222  
[ZYuan@sgilab.com](mailto:ZYuan@sgilab.com)
- 43<sup>A</sup> - Ardaman & Associates (22 tests)  
George DeStefano -- (407) 855-3860  
[gdestafano@ardaman.com](mailto:gdestafano@ardaman.com)
- 44<sup>B</sup> - Berry Global Inc. (9 tests)  
Julie Solarz -- (615) 847-7299  
[juliesolarz@berryglobal.com](mailto:juliesolarz@berryglobal.com)

- 45<sup>B</sup> - Ten Cate Geosynthetics Malaysia SDN Bhd. (24 tests)  
Boon Kean Tan -- (603) 519 28576  
[BK.tan@tencategeo.com](mailto:BK.tan@tencategeo.com)
- 46<sup>B</sup> - TAG Environmental Inc. (13 tests)  
Ryan Ackerman -- (705) 725-1938  
[ryan\\_ackerman@tagenv.com](mailto:ryan_ackerman@tagenv.com)
- 49<sup>B</sup> - Engepol Geosintéticos (16 tests)  
Patricia Natali -- (55) 51 3303-3901  
[patricia@engepol.com](mailto:patricia@engepol.com)
- 50<sup>B</sup> - ADS, Inc. Hamilton (7 tests)  
Justin Elder -- (513) 896-2065  
[justin\\_elder@ads-pipe.com](mailto:justin_elder@ads-pipe.com)
- 51<sup>B</sup> - SOLMAX - Canada (22 tests)  
Claude Cormier -- (450) 929-1234  
[ccormier@solmax.com](mailto:ccormier@solmax.com)
- 53<sup>B</sup> - Polytex Autofagasta (18 tests)  
Mario Contreras Cardenas -- 011 55-288-3308  
[mcontreras@polytex.cl](mailto:mcontreras@polytex.cl)
- 55<sup>B</sup> - Atarfil Geomembranas (21 tests)  
Gabriel Martin Sevilla -- 34 958 439 200  
[gmartin@atarfil.com](mailto:gmartin@atarfil.com)
- 56<sup>B</sup> - Polytex Santiago (14 tests)  
Sebastian Iturruta Monroe-- 011 56-2-677-1000  
[Siturruta@polytex.cl](mailto:Siturruta@polytex.cl)
- 57<sup>B</sup> - Ten Cate Cornelia (22 tests)  
Randy Johnson -- (706) 778-9794  
[r.johnson@tencategeo.com](mailto:r.johnson@tencategeo.com)
- 58<sup>B</sup> - Propex Furnishing Solutions - Hazlehurst (10 tests)  
Lee Branch -- (912) 375-6180  
[Lee.Branch@propexglobal.com](mailto:Lee.Branch@propexglobal.com)
- 59<sup>B</sup> - Firestone (9 Tests)  
Janie Simpson -- (864) 439-5641  
[SimpsonJanie@firestonebp.com](mailto:SimpsonJanie@firestonebp.com)
- 60<sup>B</sup> - TDM Geosintéticos S.A. (19 tests)  
Henry De La Cruz -- 051-1-6300330  
[Hdelacruz@tdmgeosinteticos.com.pe](mailto:Hdelacruz@tdmgeosinteticos.com.pe)
- 61<sup>B</sup> - Raven Industries (24 tests)  
Clint Boerhave -- (605) 335-0288  
[Clint.Boerhave@ravenind.com](mailto:Clint.Boerhave@ravenind.com)
- 62<sup>B</sup> - SOLMAX - Selangor - Malaysia (16 tests)  
Pei Ching Teoh -- (450) 929-1234  
[pcteoh@solmax.com](mailto:pcteoh@solmax.com)
- 63<sup>A</sup> - TRI-SC Labs (12 tests)  
Jay Sprague -- (864) 346-3107  
[Jesprague@tri-env.com](mailto:Jesprague@tri-env.com)
- 64<sup>B</sup> - Agru America (NV) (14 tests)  
Ryan Steele -- (775) 835-8282  
[RSteele@AgruAmerica.com](mailto:RSteele@AgruAmerica.com)
- 65<sup>C</sup> - Bombay Textile Research Assoc. (BTRA) (23 tests)  
PK Panda (0) 022-25003651  
[geotech@btraindia.com](mailto:geotech@btraindia.com)
- 66<sup>B</sup> - Rowad International Geosynthetics Co. Ltd (13 tests)  
Saleh Al-Qubaisi -- +966-3-812-1360  
[A.alqubaisi@rowadplastic.com](mailto:A.alqubaisi@rowadplastic.com)
- 69<sup>B</sup> - Solmax (GSE) - Rayong - Thailand (18 tests)  
Siriporn Chayapornlert -- 66-386-36758  
[siripornc@solmax.com](mailto:siripornc@solmax.com)
- 70<sup>A</sup> - RSA Geo Lab LLC (48 tests)  
Rasheed Ahmed -- (908) 964-0786  
[geolab13@yahoo.com](mailto:geolab13@yahoo.com)
- 71<sup>B</sup> - Plasticos Agricolas y Geomembranas S.A.C. (24 tests)  
Manuel Constantino Olivares Espinoza --  
073-511814-511829  
[calidad@pqaperu.com](mailto:calidad@pqaperu.com)
- 72<sup>B</sup> - Tensar Corp. GA (5 tests)  
Lynn Cassidy-Potts (770) 968-3255  
[lcassidy@tensarcorp.com](mailto:lcassidy@tensarcorp.com)
- 73<sup>B</sup> - Gai Loi JSE (10 tests)  
Paul Wong 84-650-362-5825  
[paul905677@gmail.com](mailto:paul905677@gmail.com)
- 74<sup>B</sup> - Agru America Inc. (9 tests)  
Mark Locklear - (843) 221-4121  
[mlocklear@agruamerica.com](mailto:mlocklear@agruamerica.com)
- 75<sup>B</sup> - GeoMatrix S.A.S. (42 tests)  
Javier Diaz Cipagauta (571) 424-9999  
[jdiaz@geomatrix.com.co](mailto:jdiaz@geomatrix.com.co)
- 76<sup>B</sup> - Tehmco (Chile) (15 tests)  
Rodrigo Campoy 56-22-580-2852  
[rcampoy41@gmail.com](mailto:rcampoy41@gmail.com)
- 78<sup>B</sup> - PQA Mexico (16 tests)  
Cesar Augusto Arcila (669) 954-8202  
[directorcalidad@pqagag.com](mailto:directorcalidad@pqagag.com)
- 79<sup>A</sup> - TRI Geosynthetic Testing and Services (32 tests)  
Chad Blackwell 86-512-6283-1396  
[c.blackwell@tri-env.com](mailto:c.blackwell@tri-env.com)
- 80<sup>B</sup> - Texel Technical Materials (10 tests)  
Eric Trudel (418) 387-4801  
[Etrudel@alkegen.com](mailto:Etrudel@alkegen.com)
- 81<sup>B</sup> - Solmax (GSE) - Rechlin - Germany (18 tests)  
Evelyn Kroeger 49-40-767420  
[ekroeger@solmax.com](mailto:ekroeger@solmax.com)
- 83<sup>B</sup> - Solmax Geosynthetics S.A.E. (13 tests)  
Ahmed Abdel Tawab - 202-2-828-8888  
[atawab@solmax.com](mailto:atawab@solmax.com)
- 84<sup>B</sup> - Owens Corning (18 tests)  
Ashutosh Dixit - 1-778-945-2888  
[Ashutosh.dixit@owenscorning.com](mailto:Ashutosh.dixit@owenscorning.com)
- 85<sup>B</sup> - PAG Tacna (17 tests)  
Manuel Constantino Olivares Espinoza --  
073-511814-511829  
[calidad@pqapag.com](mailto:calidad@pqapag.com)
- 86<sup>B</sup> - BOSTD China (29 tests)  
Zheng Hong - 86-532-8780-6917  
[zhenghong@bostd.com](mailto:zhenghong@bostd.com)
- 87<sup>B</sup> - Willacoochee Industrial (19 tests)  
Miranda Adams - 912-534-5757  
[miranda@winfabusa.com](mailto:miranda@winfabusa.com)
- 88<sup>B</sup> - Geosynthetic Testing Services Pvt. Ltd. (16 tests)  
Ravi Kant - 02717-250019  
[rkant@gts-pl.com](mailto:rkant@gts-pl.com)
- 89<sup>B</sup> - Megaplast India Pvt. Ltd. (13 tests)  
Tatwadarsi Tripathy - 91-937404-4620  
[geo.sqc@megaplast.in](mailto:geo.sqc@megaplast.in)
- 90<sup>B</sup> - Techfab (India) Industries Ltd. - Daman (10 tests)  
Anant Kanoi - 91-22-2287-6224  
[anant@techfabindia.com](mailto:anant@techfabindia.com)
- 91<sup>B</sup> - Techfab (India) Industries Ltd. - Rakholi (3 tests)  
Rajendra Chavan - 91-982-593-9922  
[geogrid.qualitylab@techfabindia.com](mailto:geogrid.qualitylab@techfabindia.com)
- 92<sup>B</sup> - Techfab (India) Industries Ltd. - Khadoli (2 tests)  
Navir Kumar - 91-22-229-76224  
[woven.qualitylab@techfabindia.com](mailto:woven.qualitylab@techfabindia.com)
- 93<sup>B</sup> - Garware Technical Fibres (19 tests)  
Rajendra K. Ghadge - 0-932-601-8083  
[rghadge@garwarefibres.com](mailto:rghadge@garwarefibres.com)
- 95<sup>B</sup> - Mexichem Colombia (Pavco) (8 tests)  
Jenny Colmenares Chavez - 57-1-782-5100 (ext. 1534)  
[jjenny.colmenares@wavin.com](mailto:jjenny.colmenares@wavin.com)
- 96<sup>B</sup> - Tensar China (6 tests)  
Zhu Shaolian - 603-6148-3276  
[zsl@tensar.com.cn](mailto:zsl@tensar.com.cn)
- 97<sup>A</sup> - TUV SUD PSB Singapore (17 tests)  
CHA Ming Yang - 65-6885-1514  
[ming-yang.CHA@tuv-sud.psb.sg](mailto:ming-yang.CHA@tuv-sud.psb.sg)  
[nathalia.santos@neoplastic.com.br](mailto:nathalia.santos@neoplastic.com.br)
- 99<sup>B</sup> - Atarfil Middle East (16 tests)  
Mohammad Hneine - 971-564-33-1271  
[mhneine@atarfil.com](mailto:mhneine@atarfil.com)
- 100<sup>B</sup> - Atarfil Geomembranas USA (12 tests)  
Alejandro Carreras - 757-263-4057  
[acarreras@atarfil.com](mailto:acarreras@atarfil.com)
- 101<sup>B</sup> - Solmax (GSE) - Spearfish, SD USA (7 tests)  
Chuck Taylor - 605-642-8531  
[ctaylor@solmax.com](mailto:ctaylor@solmax.com)
- 102<sup>B</sup> - SKAPS Industries (12 tests)  
Sadhi Arora - 706-336-7000  
[sadhi.Arora@skaps.com](mailto:sadhi.Arora@skaps.com)
- 103<sup>B</sup> - STRATA Geosystems Pvt. Ltd. (6 tests)  
C. V. Kanade - 91-22-4063-5100  
[cv.kanade@strataindia.com](mailto:cv.kanade@strataindia.com)

- 104<sup>A</sup> - Advanced Terra Testing (32 tests)  
William Raush - 303-232-8308  
[wraush@terratesting.com](mailto:wraush@terratesting.com)
- 105<sup>B</sup> - Pavco Wavin - Peru (6 tests)  
Nestor Sifuentes Boggio - 51 990 277 136  
[nestor.sifuentes@wavin.com](mailto:nestor.sifuentes@wavin.com)
- 106<sup>C</sup> - Auburn University-Erosion & Sediment Control Testing Facility (1 test)  
Michael Perez - 334-844-6267  
[Mike.perez@auburn.edu](mailto:Mike.perez@auburn.edu)
- 107<sup>A</sup> - TRI Australasia PTY LTD (38 tests)  
Warren Hornsey - +617-5535 7227  
[Whornsey@tri-env.com.au](mailto:Whornsey@tri-env.com.au)
- 108<sup>B</sup> - Solmax Geosynthetic Co. Ltd. Suzhou (13 tests)  
Tony Xia - 86512-66667-6100  
[Txia@solmax.com](mailto:Txia@solmax.com)
- 109<sup>B</sup> - Hock Technology Co. Ltd. (17 tests)  
Song Binghong - 186-7873-9722  
[Binghong.Song@sdhock.com](mailto:Binghong.Song@sdhock.com)
- 110<sup>C</sup> - Geofabrics Australia Pty. Ltd. - GRID (53 tests)  
Ryan Hackney - 61-42-781-0392  
[r.hackney@geofabrics.com.au](mailto:r.hackney@geofabrics.com.au)
- 111<sup>B</sup> - Huesker Inc. - Shelby (9 tests)  
Jamie Honeycutt - 704-406-8308  
[jhoneycutt@huesker.com](mailto:jhoneycutt@huesker.com)
- 112<sup>C</sup> - Instituto Mauá Tecnologia Brazil (7 tests)  
Henrique Nelson Satkunas  
[Henrique.satkunas@maua.br](mailto:Henrique.satkunas@maua.br)
- 113<sup>B</sup> - Minas Pack Filmes - Studio Tech (7 tests)  
Camila Nicoletti Brito  
[Camila.brito@azulpack.com.br](mailto:Camila.brito@azulpack.com.br)
- 114<sup>B</sup> - Lonax Industria Brasileira DeLonas Ltda. (12 tests)  
Felipe Diniz  
[qualidade@lonax.com.br](mailto:qualidade@lonax.com.br)
- 115<sup>B</sup> - Doha Waterproof Factory (18 tests)  
Ahmed Al-Masre  
[infor@dohawaterproof.com](mailto:infor@dohawaterproof.com)
- 116<sup>B</sup> - Reinforced Earth India Pvt Ltd (in progress)
- 117<sup>B</sup> - Soleno Textile Techniques Inc. (in progress)

<sup>A</sup>Third Party Independent    <sup>C</sup>Institute  
<sup>B</sup>Manufacturers QC            <sup>D</sup>Government

By the end of this year, we will have added 6 new laboratories. If anyone desires more information on the GAI-LAP program, its test methods, the associated laboratories, etc., please go to our website [www.geosynthetic-institute.org/gai/lab.htm](http://www.geosynthetic-institute.org/gai/lab.htm) or contact George Koerner.

## Activities within GCI (Certification)

GSI presently has three separate inspector certification programs. One (began in 2006) is focused on QA/QC of field inspection of waste containment geosynthetics and compacted clay liners. The second (began in 2011) is focused on MSE Wall, Berm and Slope field inspection. The third, on Geosynthetic Designer Certification began on September 1, 2016. See our website at [www.geosynthetic-institute.org](http://www.geosynthetic-institute.org) under "certification" for a description and information on all three of them. They are similar in that a perspective candidate must...

- Be recommended by a superior or professional engineer who knows, and can attest to, at least six months of acceptable experience performing professional services within the specific application area.
- Submit a completed application and be approved by the Geosynthetic Certification Institute to take the exam.
- Must successfully pass a written examination (70% of the questions is the passing grade) proctored by GCI or a GCI designated organization and graded by the Geosynthetic Certification Institute to become a certified inspector or engineer.
- Must pay a one-time fee which covers a five-year period upon completion of the above items. The fee is \$500 for five-years of certification. It is renewable if so desired.

### Geosynthetics CQA Week Nov. 28- Dec. 2, 2022 TRI Environmental

TRI Environment will be giving a virtual course on November 29-30 "Construction QA/QC for Geosynthetic Installation" and on December 1-2 "Construction QA/QC for Compacted Clay Liner and GCL Installation".

The GCI-ICP exams will be given in the afternoon (virtually) following the conclusion of the December 2 course.

Anyone interested in taking these QA/QC courses given by TRI Environmental should register at:

<https://tri-environmental.com/geosynthetics-cqa-week-nov2022/>

Applications to sit for the GCI-ICP exams need to be submitted to the Geosynthetic Institute for approval prior to taking the exams. Applications and payment information for the exams can be found at:

<https://geosynthetic-institute.org/applications.htm>

### Program #1 - Inspection of Liner Systems for Waste Containment Facilities

The certification program for certified inspectors of geosynthetic materials and compacted clay liners started in 2006.

There are currently 498 practicing certified inspectors, 370 inspectors (2018-2022) and 128 inspectors (2006-2017) who have renewed to keep their certification current.

The following chart recaps the program from 2006 to the present:



## Inspector Certification Test Results 2006-2022

Year	Geosynthetic Materials		Compacted Clay Liners	
	No. of people taking exam	No. of people failing exam	No. of people taking exam	No. of people failing exam
2006	141	5 (3%)	128	12 (9%)
2007	82	11 (13%)	73	12 (16%)
2008	95	25 (26%)	89	20 (22%)
2009	36	7 (19%)	36	2 (5%)
2010	59	12 (20%)	54	7 (13%)
2011	54	6 (11%)	53	3 (6%)
2012	34	5 (15%)	28	3 (11%)
2013	32	4 (12%)	30	1 (3%)
2014	45	1 (3%)	42	3 (7%)
2015	56	6 (11%)	51	6 (12%)
2016	36	3 (10%)	35	5 (18%)
2017	78	5 (6%)	66	3 (4%)
2018	53	5 (10%)	51	1 (3%)
2019	114	20 (18%)	119	15 (13%)
2020	100	14 (14%)	92	10 (11%)
2021	70	14 (20%)	61	8 (13%)
2022	<b>54</b>	<b>3 (6%)</b>	<b>49</b>	<b>2 (7%)</b>
<b>Total</b>	<b>1139</b>	<b>146 (13%)</b>	<b>1057</b>	<b>113 (11%)</b>

GSI has a pre-recorded “QA/QC of geosynthetics in waste containment facilities” course that can be purchased by anyone wanting to take the course online (accommodates your schedule) in preparation for the GCI-ICP certification exams. More information can be found at: [www.geosynthetic-institute.org/courses.htm](http://www.geosynthetic-institute.org/courses.htm)

### Program #2 - Inspection of MSE Walls, Berms and Slopes

While a field inspector cannot require proper design or direct a contractor how to build a wall, flaws can be identified for possible design modification or mitigation action. Furthermore, and at minimum, construction practices can be observed and corrected if inadequate or improper. The official launch of this inspection program was on December 1, 2011 with a course and the examination afterward. A somewhat revised course on November 29, 2012 was presented. Presently, the corresponding course for this certification program has been transferred into a series of six presentations that have been recorded and can be viewed at your leisure.

### Program #3 - Geosynthetic Designer Certification

Please see [www.geosynthetic-institute.org/gdcpintro.pdf](http://www.geosynthetic-institute.org/gdcpintro.pdf) for the requisite details. Included are introduction (rationale behind the program was given in a recent GSI Column called “We’re Losing the Battle”), disclaimer, requirements, application, reference material, sample questions, proctor manual and proctor application. You must have six-months geosynthetic designer experience to take the exam.

## The GSI Affiliated Institutes

It has long been realized that the information generated within the GSI group should have a timely outlet to all countries, and in all languages. To this end, GSI has created affiliated institutes in three countries (Korea, Taiwan and India), and potentially others in the future. These affiliated institutes are full members of GSI and are empowered to translate and use all available information so as to create similar institutes and activities in their respective countries.

**GSI-Korea** was formed on February 9, 1998 as a collaborative effort between FITI Testing and Research Institute (a quasi-government organization) and INHA University (through its Geosynthetics Research Laboratory). It is presently held entirely within INHA University. **INHA University** is located in Incheon and the geosynthetics laboratory is led by Professor Han-Yong Jeon. Dr. Jeon has 10-students working on geosynthetic-related projects and is extremely active both nationally and internationally. His active participation at conferences worldwide is very admirable. He has provided research and development in many geosynthetic subjects including geotextiles, geomembranes, geocells, additives for GCLs, recycled plastics for improved formulations, etc.

**GSI-Taiwan** was formed on August 18, 2000 and is wholly contained within the National Pingtung University of Science and Technology in Nei Pu, Pingtung (southern Taiwan). The Director is Dr. Chiwan Wayne Hsieh who is a Professor in the Department of Civil Engineering and Dean of the R & D Office. The **7th Asian Regional Conference on Geosynthetics (GeoAsia7) & IGS First Young Engineers Conference** will be held on October 31- November 4, 2022 at the Taipei International Conference Center (TICC), Taipei, Taiwan. GeoAsia7 is organized by the Chinese Taipei Chapter of the International Geosynthetics Society and Dr. Hsieh is Chairman of the GeoAsia7 Organizing Committee. Information about the conference can be found at <http://www.geoasia7.org>

**GSI-India** under the direction of Dr. T.V. Sreekumar was formed in 2015. The hosting organization is the Bombay Textile Research Association (BTRA) which is a premier textile research institute providing testing, research, training and consultancy services. BTRA is located in Mumbai, India and is accredited as per ISO 17025. The Geosynthetic test lab is also GAI-LAP accredited. Testing at BTRA is performed as per the latest EDANA, ASTM, INDA, AATCC, ISO, EN and AASHTO international standards. BTRA is known for its excellence in textile R & D and is currently branching out into all forms of geosynthetics with a fantastic R & D laboratory. BTRA has a quarterly publication called “BTRA scan” and is worth checking out if you haven’t seen it. The latest news report was issued January 2022 and can be found at [www.btraIndia.com/btrascan.html](http://www.btraIndia.com/btrascan.html)

## **GSI Member Organizations**

GSI Annual Member Meeting will be held virtually on **Friday, December 16, 2022** at 11:00am EST USA. Login information will be sent to all member organizations in December.

We sincerely thank all of our sponsoring organizations for their continued support. Without members, GSI could not exist. The current GSI member organizations and their contact members are listed below.

### **Solmax**

*Mark Harris/Jacques Cote/Simon Gilbert St-Pierre/  
Jimmy Youngblood/Mathieu Cornellier [BOA]*

### **U.S. Environmental Protection Agency**

*David A. Carson (BOA)*

### **Federal Highway Administration**

*Silas Nichols/Daniel Alzamora*

### **Golder Associates Inc.**

*Frank Adams/Paul Whitty/Linda Grover*

### **Tensar International Corporation**

*Mark H. Wayne/Joseph Cavanaugh/Doug Brown*

### **TenCate Geosynthetics**

*John Henderson/John Lostumbo/Rene Laprade [BOA]*

### **Minerals Technology/CETCO**

*Reza Gorakhki/Stacy Byrd/Michael Donovan/Hilary Walker  
Huesker, Inc.*

*Flavio Montez/Andreas Elsing*

### **NAUE GmbH & Co. KG**

*Alexander Naue/Kent von Maubeuge [BOA]*

### **Propex Operating Company LLC**

*Drew Loizeaux/Noah Nichols*

### **Berry Global Inc.**

*Keith Misukanis/Monica Baker*

### **TRI Environmental Inc.**

*Sam R. Allen [BOA]/C. Joel Sprague*

### **U. S. Army Corps of Engineers**

*Kevin Pavlik/Richard DePasquale*

### **Chevron Phillips Chemical Co.**

*Ashish Sukhadia/Lawrence Szmuto/Miranda Rine[BOA]*

### **CARPI, Inc.**

*Alberto M. Scuero/Massimo Bugliosi/John A. Wilkes*

### **Civil & Environmental Consultants, Inc.**

*Tony Eith*

### **AGRU America, Inc.**

*Tom Nichols/Markus Haager*

### **INHA (GSI-Korea)**

*H.-Y. Jeon*

### **Waste Management Inc.**

*Greg Cekander/Burrill (Bo) McCoy [BOA]*

### **NPUST (GSI-Taiwan)**

*Chiwan Wayne Hsieh*

### **GeoComp/GeoTesting Express**

*W. Allen Marr/Gary T. Torosian*

### **ATARFIL**

*Emilio Carreras Torres/Jorge Fernandez Lopez/*

*Gabriel Martin/Alejandro Carreras Torres*

### **Republic Services Inc.**

*Joe Benco/ Mike Beaudoin/Dave Vladic*

### **InterGEO Services Co.**

*Şükrü Akçay/Archie Filshill*

### **Raven Industries, Inc.**

*Clint Boerhave/Stacy Coffin/Greg Anderson*

### **CTI and Associates, Inc.**

*Te-Yang Soong [BOA] / Kevin Foye*

### **Advanced Earth Sciences, Inc.**

*Kris Khilnani/Suji Somasundaram*

### **Carlisle Syntec, Inc.**

*Paul Markel/Vivian Zhang*

### **EPI, The Liner Co.**

*Daniel S. Rohe/Paul Livingston*

### **Weaver Consultants Group, Inc.**

*Mark Sieracke*

### **Aquatan (Pty) Ltd.**

*Piet Meyer/ Sanet van der Merwe*

### **Jones Edmunds, Inc.**

*George Reinhart/Tobin McKnight*

### **Afitex-Textel**

*Pascal Saunier/Stephan Fourmont/Jocelyne Grenier*

### **BTRA (GSI-India)**

*T. V. Sreekumar*

### **Watershed Geosynthetics LLC**

*Michael Ayers/Steve Mayes/ Bryan Scholl*

### **Maccaferri**

*Moreno Scotto/Sachin Mandavkar/Pietro Rimoldi*

### **Jones & Wagener (Pty) Ltd.**

*Jabulile Msiza/Angelique Grieve*

### **Ardaman & Assoc.**

*Mohamad Al-hawaree/Thomas S. Ingra/Deborah Scott*

### **American Wick Drain**

*Scott Morris/Craig Phelps/Seth Marlow*

### **INOVA Geosynthetics/AERO Aggregates**

*Archie Filshill/Theresa Loux*

### **Owens Corning Science & Technology LLC**

*Katie Hill/Jason Woodall*

### **SKAPS Industries**

*Nilay Patel/Anurag Shah*

### **Duke Energy**

*Asha Sree/Ken Karably*

### **Chesapeake Containment Systems (CCS)**

*Ryan Kamp*

### **Layfield Group**

*Deepaksh Gulati/Mark Simpson/Brian Fraser [BOA]*

### **Engopol Geosinteticos Ltda**

*Patricia Ferreira/Andréia Machado/Ildo Oliveira*

### **Concrete Canvas**

*Lee Church/Melanie Fuhrman/Nathan Ivy*

### **Jet Filter System**

*Doug Stoutin/Greg Heilman*

## **Associate Members**

### **Delaware Solid Waste Authority**

*Robin Roddy/Jason Munyan*

### **Nebraska Department of Environmental Quality**

*Michael Behrens*

### **New York Department of Environmental Conservation**

*Jaime Lang*

### **Maine Department of Environmental Protection**

*Victoria Eleftheriou*

### **New York Department of Transportation**

*Steve Heiser*

**California Water Resource Control Board**

*Scott Couch/ Brianna St. Pierre/Joshua Munn*

**New Jersey Department of Environmental Protection**

*Mary Anne Goldman*

**Pennsylvania Department of Environmental Protection**

*Jason Dunham*

**Florida Department of Environmental Protection**

*Joe Dertien*

**U.S. Bureau of Reclamation**

*Brian Baumgarten/Peter Irej*

**Michigan Dept. of Environmental Quality**

*Margie Ring/Xuede (Dan) Qian*

**Environment Agency of U. K.**

*Darren Legge*

**Florida Department of Transportation**

*David Horhota*

**Virginia Department of Environmental Quality**

*Jenny Poland*

**Massachusetts Department of Environmental Protection**

*Tom Adamczyk*

**Dept. of Water Affairs of South Africa**

*Kelvin Legge*

**Pennsylvania Department of Transportation**

*Beverly Miller*