10 January 2007

Dear Industry Colleagues:

Happy New Year!

In keeping with tradition, we take this time to offer you best wishes for a successful 2007, and news from the TRI Geosynthetic Services Division. We have just completed a successful 2006 effort and are anticipating a productive Geosynthetics 2007 Conference in Washington D.C. January 15-17, where we hope to have the opportunity to visit with many of you at our booth and in technical sessions.

Some news regarding our staff and services follows.

Staff

In response to continued growth in laboratory resources and sponsored work, TRI was pleased to welcome several new personnel to our team. Most significant in this context is the addition of Mr. Richard Lacey, P.E. to our technical staff as a Staff Engineer. Mr. Lacey (or Rich to most of us) has most recently enjoyed a successful career as the Geosynthetics Laboratory Manager at Geotechnics in Pittsburgh, PA., and is one of the few professionals we know who qualifies as a respected expert in both soils and geosynthetics testing technologies. More importantly, Rich has no equal in his understanding of geosynthetics testing equipment, data generation biases and specification compliance, making him immediately relevant to every service we provide. He benefits from a background in field CQA, test equipment development and calibration, lab management and standardization work. He joins TRI during a time of tremendous activity in all of these fields with ongoing growth in TRI soils and geosynthetics testing as well as Liner Integrity Surveys and CQA classes. He will contribute significantly to these and other areas through our conformance/verification and soil-geosynthetic interactions laboratories, and we are proud to have him on our staff. Please take an opportunity to help us welcome Rich at RLacey@tri-env.com, or at 800-880-8378 (512 263 -2101), ext. 133.

Mr. Joseph Chen has also joined our soils-geosynthetic interactions laboratory as Laboratory Coordinator. In December, Joseph relocated to Austin with his wife and three year old son. He currently is completing the last round of revisions to his dissertation on fiber reinforced soil under the direction of Dr. Erik Loehr and Dr. John Bowders at the University of Missouri, Columbia. Joseph's research interests include not only fiber reinforced soils, but the use of recycled plastic pins for slope stability, and connection and pullout testing for MSE walls. TRI is pleased to welcome Joseph and his family to Austin and looks forward to him completing his Ph.D in geotechnical engineering, expected in May 2007.

To acknowledge and respond to the impressive logistics demands of increasing in-plant sampling work and routine project specification compliance evaluations, TRI is also pleased to welcome Ms. Jenny Tenney as Project Manager. Jenny will work directly with Melissa Hunter to accommodate client requests and maintain superior customer service via in-plant sampling coordination and laboratory test scheduling. Jenny has a strong background in the geotechnical

and environmental consulting industries having worked at Golder Associates, Denver, for many years as a Project Coordinator.

Other staff announcements included the re-election of Sam Allen to the Board of Directors of the Geosynthetic Institute, and appointment as Chairman of the ASTM Committee on Technical Operations (COTCO). In addition, Joel Sprague, P.E., TRI's Senior Engineer, was appointed Chairman of SubCommittee D35.01 on Geosynthetic Mechanical Properties while John Allen, TRI's soil-geosynthetic interaction laboratory director, is serving as the Task Group Chairman for GCL friction and internal shear standards.

Laboratory Equipment, Infrastructure and Growing Technologies

A laboratory's responsiveness is based largely on its own internal resources. Our growth in this regard is testament to your critical support and our continuing reputation as "the industry's lab". For this we are profoundly grateful.

Geosynthetic Conformance/Verification and Interface Friction Testing

TRI's geosynthetic laboratory experienced an exceptional year in 2006. We were pleased to add key laboratory equipment that substantially increased our position as a full service and rapid turnaround time laboratory. Included in additions was a fifth hydraulic transmissivity test apparatus that was acquired as part of developing a new TRI transmissivity laboratory. This unique lab now houses five transmissivity test frames with loading capacities as high as 60,000 psf. TRI also developed additional compressive test equipment that allows for conventional and accelerated testing of short and long-term compression strength and creep properties under normal and shear loading.

In interface friction testing, TRI added a direct shear box bringing our in-house total to 11 interface friction boxes and further reducing our testing turnaround time for the determination of slope stability behavior. This capacity has supported TRI's robust growth in services as well as research projects. Research efforts have included the establishment of a web-based friction database (available to clients) and ongoing GCL research, led by John Allen, investigating the hydration and consolidation procedures for GCLs and GCL interfaces, as well as drained condition strain rates associated with interfaces with variable clayey soils.

State-of-the-Art Wide Width Tensile Clamps

In 2006, TRI acquired a state-of-the-art wide width tensile testing system. The system includes an expanded extension capability Instron 5889 tensiometer equipped with non-contact video extensometer and new German Demgen designed clamps that work via a "smart" gripping pressure system that self-adjusts during testing as the measured tension force increases. This design represents the next generation of clamps replacing the more traditional capstan or roller clamp design. TRI has noted increased measured strengths ranging from 1-8% over strengths

achieved with more traditional capstan clamps. This, in turn, has demonstrated the limitations and challenges of roller clamps requiring facial friction for a component of gripping pressure.

Geosynthetics in Base Reinforcement (Bending Stiffness) Research

With Dr. Robert Gilbert of the University of Texas, TRI has continued to be involved in research on geosynthetic reinforcement of road subgrades and base courses providing services to both the Pennsylvania DOT (through Penn State) and Texas DOT, as well as to individual manufacturers and users. This work continues to focus on TRI's retrofitted multi-axial tensile apparatus to perform cyclic bench scale testing of reinforced roadbases to measure the stiffness benefit from adding a geogrid. Called the *Bending Stiffness Test*, the draft procedure has been modified to include cyclical loading and longer term evaluation. The current 2007 research efforts afford opportunities to provide direct comparison of bending stiffness resilient modulus results with full scale field exposures of various geosynthetic reinforcement products.

Large-Scale Erosion Control Testing Laboratory

In 2006, TRI realized the successful development and activation of a large-scale erosion and sediment control testing facility in Anderson County, South Carolina. Joel Sprague, P.E., of TRI's Southeast Area Office in Greenville, SC manages this large-scale research and testing facility, currently performing large scale ASTM D 6459*: Full-Scale Simulated Rainfall on 3:1 Slope with bare and RECP-protected soil* and ASTM D 6460*: Full-Scale Channel Flow with RECP-protected soil*, testing services. The laboratory is located just a mile off Interstate 85 about 25 miles southeast of Greenville, in Anderson County, SC. Contact Joel Sprague at 864 242 2220 or JSprague@tri-env.com for additional facility and testing information..

NTPEP

In 2006, TRI served AASHTO's National Transportation Product Evaluation Program (NTPEP) via our independent laboratory testing of plastic pipe, rolled erosion control and geosynthetic reinforcement products (geogrids and high strength geotextiles). The geosynthetic reinforcement program, based on the newly updated Washington DOT Standard T925, as well as the newly finalized ISO standard 20432, has facilitated a consistent and standardized approach to the measurement of geosynthetic product strength reduction factors. After NTPEP's on-site review of TRI's Austin, Texas facility in 2005, TRI updated our stock soils and aggregates for use during installation damage testing to comply with new requirements. Also realized in the program was the allowance for creep and creep rupture test results developed using the Stepped Isothermal Method (SIM). The SIM testing technology has realized significant growth with applications as varied as large underground storage units for storm water management applications and Kevlar wrapped gas vessels for the National Aeronautics and Space Administration (NASA). Specific to the geosynthetic reinforcement industry, TRI believes this new standardized approach, recognized and implemented internationally, will serve to afford more direct and straightforward product characterization and comparison.

Short Courses

New to 2007, TRI will offer *The Design, Specification and Testing of Geosynthetic Drains* as a short course exploring the various product offerings in the industry and providing guidance with regard to their selection and use. Much emphasis is being placed on an independent assessment of competitive drainage products and their use in design. Information regarding location and time for the course will be coming soon.

In June of 2007, TRI and ICORP International will be working in concert with the New York Solid Waste Association to bring our Liner Integrity Survey and accreditation training to New York State, where newly implemented regulations are expected to require this service. Information regarding location and registration for the course will be coming soon.

A summary of currently planned 2007 short course offerings is provided below.

CLASS	***DATE(S)***
CQC/CQA of Geosynthetic Lining Systems (Geosynthetics 2007 Conference)	***Tuesday, January 16 in Washington D.C.***
Interface Friction Testing and Slope Stability Issues (Geosynthetics 2007 Conference)	***Tuesday, January 16 in Washington D.C.***
Design and Construction of Reinforced Segmental Retaining Walls (Geosynthetics 2007 Conference)	***Thursday, January 18 in Washington D.C.***
Design and Construction of Reinforced Segmental Retaining Walls (GeoDenver Conference)	***Sunday, February 18 in Denver, Colorado***
Interface Friction Testing and Slope Stability Issues	***Tuesday, March 27 at Marriott – Ontario Airport, California***
CQC/CQA of Geosynthetic Lining Systems	***Wednesday, March 28 at Marriott – Ontario Airport, California***
CQC/CQA of Compacted Clay Liners and GCLs	***Thursday, March 29 at Marriott – Ontario Airport, California***
Proctoring for CQA Certification Exam	***Friday, March 30 at Marriott – Ontario Airport, California***
The Performance of Liner Integrity Surveys (Leak Location Services)	***Wednesday – Thursday, June 13-14, Latham, New York***

As details are finalized, a description and registration for TRI courses (not conference-related courses) listed above will be available on our web-site, www.GeosyntheticTesting.com.

Accreditation

TRI is the first laboratory to achieve accreditation from the Geosynthetics Accreditation Institute (GAI). 2006 represented the twelfth year of accreditation for many of our test procedures and, as such, our Division was once again audited via proficiency testing. We are pleased to report that we again were awarded continued accreditation. We currently maintain a repertoire of 118 accredited tests.

Conclusion

TRI appreciates your support and business, and this opportunity to share with you our efforts to continually improve as your choice for geosynthetic testing and research services. We love what we do here at TRI and commit again each year to bringing you the best, most responsive service, assisting you to realize success with geosynthetic projects.

Please contact us if you have any questions, suggestions, or comments. We look forward to working with you during a very successful 2007.

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