

# FLORIDA REMEDIATION CONFERENCE

## The 27th Florida Remediation Conference **FRC 2022**

### Moderator and Speaker Compendium

November 16 - 18, 2022  
Omni Orlando Resort at Championsgate  
Championsgate (Orlando), Florida



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# FLORIDA REMEDIATION CONFERENCE



## FRC 50/50 Raffle

Winner Can Select to Take  
Half the Pot in Cash  
or a Bottle of  
Old Rip VanWinkle!



Drawing to take place in the  
Exhibit Hall at 6:00 pm at the  
Thursday Night Reception



Proceeds to benefit:



**The Daniel Foundation**  
FOR ORGAN DONATION AND SARCOIDOSIS AWARENESS

FODASA is a non-profit organization founded by transplant-survivor Steve Hilfiker. Our mission is to save lives by raising awareness about cardiac sarcoidosis and promoting organ donation.

FODASA is a fund of The Collaboratory, a 501c3 organization.

One Ticket \$5  
Five Tickets for \$20

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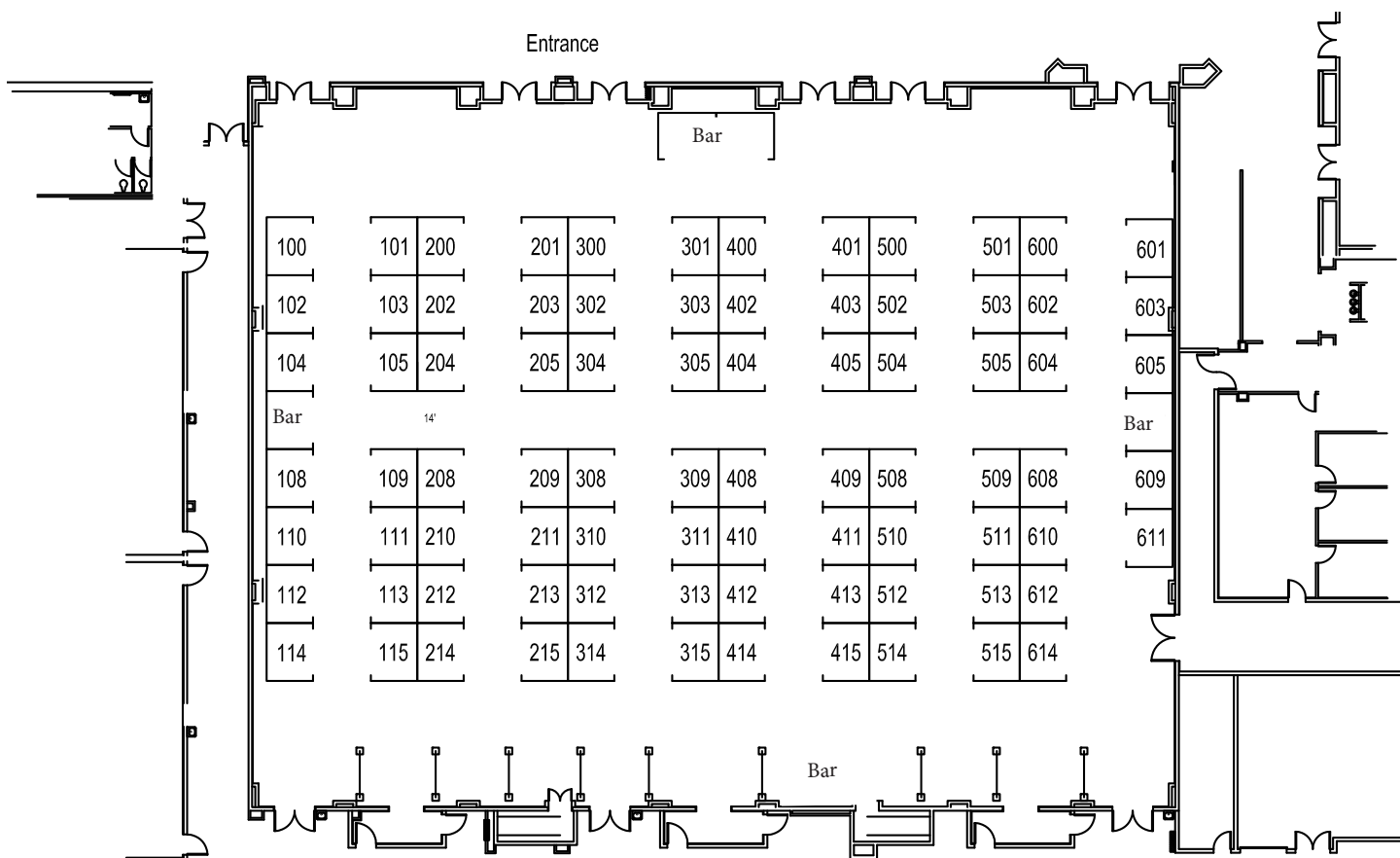


## List of Exhibitors

Exhibitor .....	Booth #	
A-C-T Environmental & Infrastructural, Inc.....	301	FRx Inc. ....611
Action Environmental.....	501	Geo-Solutions, Inc. ....305
Advanced Environmental Laboratories, Inc. (AEL).....	510	GeoKinetics / Advanced Construction Technologies ...603
Aestus, LLC.....	201	Geoprobe .....202
Aptim Environmental & Infrastructure, LLC.....	612 and 614	Geotech Environmental Equipment.....302
AST Environmental, Inc. ....	512	Hepaco, LLC .....515
Blaine Tech Services, Inc.....	403	Hull's Environmental Services, Inc. ....401
Carbon Service & Equipment Company .....	312	Huss Drilling .....205
CarbonWorks USA .....	511	Hydradry, Inc.....601
Cascade Drilling and Remediation Services.....	508	International Society of Technical & Environmental Professionals, Inc. (INSTEP).....PF
CG Thermal, LLC.....	214	JF Petroleum Group .....112
Clean Earth, Inc.....	208	Johnson Screens.....410
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DeWind One Pass Trenching, LLC. ....	415	Onion Equipment.....213
Dexsil Corporation.....	313	Petroleum Resources & Development, Inc. ....314
Directional Technologies, Inc.....	113	Petrotech Southeast, Inc. ....504
ecoSPEARS.....	605	PFAS Forum III.....PF
ECT2.....	315	Pine Environmental Services, LLC .....514
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Ellingson - DTD.....	604	PRM Filtration .....309 and 408
EMSL Analytical, Inc.....	104	Provectus Environmental Products, Inc. ....209
EN RX, Inc. ....	400 and 608	RECON Outfitters, LLC.....600
Environmental Risk Information Services (ERIS).....	503	QED Environmental Systems, Inc.....212
Enviroserve, Inc.....	405	REGENESIS.....300
EOS Remediation LLC.....	609	Remedial Systems Integrated, LLC.....404
ESD Waste2Water, Inc. ....	203	Republic Services .....502
ETEC, Inc.....	303	Ridge Environmental Solutions.....111
Eurofins Testing Southeast.....	402	Rig Source, Inc.....414
Evonik .....	105	Sirem Labs .....413
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		Summit Environmental Services, LLC .....411
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Terracon .....	200
TerraStryke Products, LLC .....	304
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Waste Connections .....	115
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## AGENDA

**Wednesday, November 16, 2022**  
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10:30 am - 5:30 pm

**The 12th Annual Florida Remediation Charity Golf Tournament**  
- ChampionsGate Golf Club  
Tournament to Benefit:



2:00 pm - 7:00 pm

Conference Registration Open (International Ballroom Foyer)  
- Omni Orlando Resort at ChampionsGate

2:00 pm - 7:00 pm

Exhibitor and Poster Presentation Setup (International Ballroom)

3:30 pm - 5:30 pm

**Pre-Conference Workshop:**  
**Remediation Case Studies** (National Ballroom D)

Moderator: **Norbert Barszczewski**, President, JP NetQuest, Inc.

***Evaluation and Implementation of ISS-ISCO at a Dry Cleaner VI Site***

Dr. Fayaz Lakhwala, Key Accounts Manager - Soil & Groundwater Remediation, Evonik

***Mitigation Efforts: Cattle Dip Vat Assessment – A Case Study***

Dr. Leslie Smith, Senior Project Professional and Karinne Brown, Project Advisor, SCS Engineers, Inc.

***In-Situ GeoChemical Stabilization (ISGS) - “A Creosote Story”***

Michael Scalzi, Founder and President, Innovative Environmental Technologies, Inc. (IET)

***Advanced Remedial Investigation- Methods and Lessons Learned Case Study***

Tommy Jordan, P.G., PMP, Resolute Environmental & Water Resources Consulting

5:30 pm - 7:00 pm

Welcome Reception (Ballroom Commons)

**Thursday, November 17, 2022**

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7:45 am - 7:00 pm                      Registration Open                      (International Ballroom Foyer)

7:45 am - 8:30 am                      Continental Breakfast – Exhibit Hall                      (International Ballroom)

8:30 am - 10:00 am                      **Opening Session**                      (National Ballroom D)

Welcome: **Eugene B. Jones**, Executive Director, Southern Waste Information eXchange, Inc. (SWIX)

Moderator: **Michael R. Goldstein**, Esq., Managing Shareholder, The Goldstein Environmental Law Firm, P.A

***Agricultural Residual at Former Agricultural Site in Miami-Dade County***

Wilbur Mayorga, P.E., Chief, Environmental Monitoring and Restoration Division, Miami-Dade County DERM

***EPA Update on PFAS***

David Hockey, Acting Associate Director for Federal Facilities Restoration and Reuse Office, US Environmental Protection Agency

***Key Changes to the ASTM E 1527-21 Phase I Environmental Site Assessment Standard***

Nicholas Albergo, P.E., DEE, D. WRE, F. ASCE, Senior Advisor, GHD

10:00 am - 10:30 am                      Refreshment Break – Exhibit Hall                      (International Ballroom)

10:30 am - 12:00 pm                      **Session I**  
**Florida Petroleum Restoration Program**                      (National Ballroom D)

Moderator: **Steve Hilfiker**, MS, LEP, President, Environmental Risk Management, Inc.

***Petroleum Program Status and Overview (Update on the Petroleum Restoration Program)***

Natasha Lampkin, FCCM, FCCN, Program Administrator, Florida Department of Environmental Protection

Thursday, November 17, 2022 (Continued)

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10:30 am - 12:00 pm	<b>Session I</b> <b>Florida Petroleum Restoration Program</b> (National Ballroom D) <b>(Continued)</b>  <i><b>Natural Attenuation Monitoring (Natural Attenuation Monitoring and When to Return to Active Remediation)</b></i> Matt Ingham, P.E., FCCM, Environmental Administrator and James Treadwell, P.E., Chief Professional Engineer II, Florida Department of Environmental Protection  Q&A Wrap-up
12:00 pm - 1:00 pm	Lunch (Ballroom Commons)
1:00 pm - 3:00 pm	<b>Session II</b> (National Ballroom D)  Moderator: <b>Jim Langenbach</b> , P.E., Senior Principal Environmental Engineer, Geosyntec Consultants  <i><b>How to Use Drones on Remediation Projects</b></i> Brendan Brown, Principal Environmental Scientist, CDM Smith  <i><b>More Than a Powerful Visual: Using Statistical Modeling and Python to Efficiently Create Project Deliverables and Assess Remedial Options</b></i> Jim Depa, Senior Project Manager, Jacob and Hefner Associates, Inc.  <i><b>Groundwater Plume Analytics® Tools for Evaluating Remediation Effectiveness at Contaminated Sites</b></i> Joe Ricker, P.E., Senior Technical Principal, WSP Golder  <i><b>Concentration and Destructive Technologies Overview for Complete PFAS Treatment Solutions</b></i> Paul Newman, Market Sector Leader - Department of Defense, ECT2 - Emerging Compounds Treatment Technologies
3:00 pm - 3:30 pm	Refreshment Break – Exhibit Hall (International Ballroom)

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## Thursday, November 17, 2022 (Continued)

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3:30 pm - 5:00 pm                      **Session III**                      (National Ballroom D)

Moderator: **Joseph L. Applegate**, P.G., Sr. Principal Hydrogeologist,  
Geosyntec Consultants, Inc.

### ***Soil Blending and Soil Management Plan Guidance***

Joseph L. Applegate, P.G., Sr. Principal Hydrogeologist, and  
Ryan Tuttle, P.G., Project Geologist, Geosyntec Consultants, Inc.

### ***Surfactant Enhanced Vapour, Sorbed, and NAPL Phase Remediation of Petroleum and Chlorinated Solvents at Brownfields***

George (Bud) Ivey, B.SC., CES, CESA, P.Chem., EP, President & Senior  
Remediation Specialist, Ivey International, Inc.

### ***Stronger Bacteria, Faster Remediation: Using Nutrients to Achieve Complete Enhanced Reductive Dechlorination (ERD)***

Dr. Juan Fausto Ortiz-Medina, Research Associate, EOS Remediation

5:00 pm - 6:30 pm                      Poster Reception - Exhibit Hall                      (International Ballroom)

(6:00 pm FRC 2022 50/50 Raffle Drawing)



## Friday, November 18, 2022

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7:45 am - 12:00 pm                      Registration Open                      (International Ballroom Foyer)

7:45 am - 8:30 am                      Continental Breakfast - Exhibit Hall                      (International Ballroom)

8:30 am - 10:00 am                      **Session IV**                      (National Ballroom D)

Moderator: **Dr. Christopher M. Teaf**, Ph.D., Director Emeritus, Center  
for Biomedical & Toxicological Research, Institute of Science & Public  
Affairs, Florida State University

### ***Full-spectrum Solutions for the Subsurface Management of PFAS Pollution***

Chad Northington, P.E., Southeast District Technical Manager,  
REGENESIS

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**Friday, November 18, 2022 (Continued)**

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8:30 am - 10:00 am      **Session IV**      (National Ballroom D)  
(Continued)

***Improving Remedial Implementation Quality through Field Verification***

Susan Sitkoff, P.G., Capital Improvements Project Manager,  
City of Orlando and Joseph Bartlett, P.E., Environmental Engineer,  
Geosyntec Consultants, Inc.

***Optimization and Advances in Amendments for Chlorinated Solvent Sites***

Gary M. Birk, P.E., Managing Partner, Tersus Environmental, LLC

10:00 am - 10:30 am      Refreshment Break - Exhibit Hall      (International Ballroom)

10:30 am - 12:00 pm      **Session V**      (National Ballroom D)

Moderator: **Chad Northington**, P.E., Southeast District Technical  
Manager, REGENESIS

***High-Energy Injection of Permeable Reactive Transects for Treatment of Hexavalent Chromium in Varied Geology***

Derek Pizarro, CPG, Senior Product Manager, AST Environmental, Inc.

***Automated ISCO Injection of EN Rx Reagent to Target Both Vadose Soil and Groundwater Contamination at a Bulk Oil Facility***

Sultan Anjum, P.E., M.ASCE, D.WRE, Senior Engineer, Atlas

***Lessons Learned from Injecting More Than One Hundred Tons of Potassium Persulfate***

Drew Baird, P.G., Senior Geologist, FRx, Inc.

12:00 pm      Adjourn

10:30 am - 1:00 pm      Exhibitor and Poster Breakdown

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## 2022 Poster Presentations

Note: Posters Listed in Alphabetical Order by  
Presenter's Last Name

### ***Using Combinations of Solid Phase Amendments to Accelerate In-Situ Remediation***

Dr. John Freim, Director of Materials Science,  
Regenesis Bioremediation

#### Abstract:

Colloidal activated carbon accomplishes the rapid elimination of many aqueous phase groundwater contaminants. Adding complimentary amendments can promote active degradation, resulting in accelerated and sustained remediation. This work describes the modeling and performance of novel solid phase colloidal remediation amendments that promote degradation through both abiotic and biotic mechanisms.



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### ***AFFF Use, Best Management Practices, and Response Planning***

Jill A. Greene, P.G., PMP Principal Geologist, CDM Smith, Inc.

#### Abstract:

Firefighting foams have recently become the subject of much scrutiny, as some Class B foams contain per- and poly- fluoroalkyl substances (PFAS). The PFAS serve as surfactants that spread the foam to trap oxygen and suppress the fire. Unfortunately, the same properties that make PFAS so effective in fighting fires result can result in contamination in locations of discharge. A variety of BMPs can be implemented to reduce potential environmental impacts from the use of firefighting foams. Many users of Class B firefighting foam are working to transition to fluorine-free products; however, firefighting foam replacement is complex and could require a complete system review and, potentially, redesign and modification of system components to meet the new objectives or material and performance requirements. Additionally, effective technologies for decontamination of foam dispensing equipment are in their infancy and evolving regulations and policies make the disposal/treatment of rinsewater or replaced AFFF challenging. This presentation will provide an overview of the use of firefighting foams and regulatory framework governing their use, best management practices to reduce to potential for impacts to the environment, response planning in the event of foam discharge, and the current state of methods for foam transition.



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## ***Environmental Analysis of Surface Water Pollution in Ibadan, Nigeria Using Bodija Stream as a Case Study***

Daniel Odion, CCM, Ascension Construction Solutions

### **Abstract:**

Surface water pollution has always been a significant menace for municipalities because of its chronic effect on human health. Identifying ways to minimize its occurrence through proper waste disposal is not only vital to the survival of human health, but also enhances the sustainability of water resources in any clime. This study gives an insight into the effects of pollution on qualities of streams in Nigeria. As a case study, the pollution level of Bodija stream was analysed by taking samples at seven different points (sp1-sp7) along the stream stretch considering the upper, middle, and lower courses of the stream and their pollution sources (e.g., abattoir, markets) for physical, chemical, and bacteriological analyses. The main characteristics determined were temperature, color, turbidity, total solids, PH value, electrical conductivity, total hardness, calcium hardness, dissolved oxygen, BOD, COD, and faecal coliform counts. The results from the analysis showed high rate of gross pollution across the length of the stream with highest being recorded at its upper course. Values from BOD, COD, alkalinity, chloride, hardness indicates that the level of municipal waste transfer from washings, refuse, faeces, urine, and other human activities. The order of pollution of the river thus followed this pattern; sp1> sp2 > sp4 > sp5 > sp3 > sp6 > sp7. Therefore, this study has shown that poorly maintained waste systems is a major cause of surface water pollution, especially in developing countries like Nigeria, and opined by way of recommendation that proper and efficient environmental policies which emphasize on proper disposal of industrial and sewage wastes can serve as a preventive solution to the problems created by water pollutants.

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## ***Novel Mobile Permanent Membrane Filtration of PFAS and Other Contaminants from Water Sources***

Gerard Simon, COO, Advanced Mobile Filtration Services, LLC

### **Abstract:**

Increasing awareness in proper cradle to grave treatment and disposal of contaminants such as PFAS are on the forefront of many operators, environmental agencies and communities, and are followed closely with emerging technologies to provide solutions. Once such novel technology using mobile permanent nano membranes, which allow for removal of PFAS and other contaminants to non-detect levels, without the need for chemical interaction that allows disposal or reuse of the water permeate. The technology is commercially available at very high flow rates without fouling or need for cartridge changeout and landfill disposal as traditional filtration.

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## ***Electrical Monitoring of Karst Flowpaths***

Kyle Spears, Technical Sales Manager, Aestus, LLC

### **Abstract:**

Remediation in karst aquifers has been historically difficult and costly due to rapid groundwater and contaminant flow through discrete fracture and/or dissolution zones. The standard environmental industry approach is to try and map these features utilizing wells or direct push techniques which generally does not produce acceptable results. An alternative approach is to monitor a site using temporal electrical resistivity imaging (TERI) stations to provide high resolution data to locate discrete flowpaths and related flow patterns over time, which are associated with recharge and draining of karst aquifers. This approach is illustrated on a case study basis using TERI data from a managed aquifer recharge (MAR) research site in Oklahoma. The results indicate that the rapid pathways and hydraulic structures in both vadose and phreatic zones are easily mapped in any type of geology (including hard rock sites). Additionally, changes due to water content and bioactivity can be monitored. This TERI technique can be easily applied to focus and monitor remediation work at contaminated sites, as well as address questions related to water supply projects.



## **Moderator and Speaker Profiles**

(Moderators and Speakers Listed in Order of Appearance)

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## Norbert Barszczewski

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### Norbert Barszczewski

Norbert Barszczewski, President, JP NetQuest, Inc.

#### Bio:

Norbert Barszczewski is the president of JP NetQuest, Inc. The company was founded in 2007 and specializes in web development, online marketing, e-commerce, and general IT services. In addition to running the company, Norbert serves as chief web developer and marketing expert. He also frequently presents online marketing educational courses for local businesses and professionals.

Between 1999 and 2020, Norbert worked as a research associate at the Center for Biomedical and Toxicological Research at the Florida State University (FSU) in Tallahassee, Florida. In 2006 he obtained his second Master of Science degree from Florida State University. While at FSU Norbert was involved in organizing large-scale international environmental conferences, multiple projects for NATO, US Department of Energy, NASA and EPA. He also served as the IT manager for the center.

Norbert currently resides in Northbrook, IL and is a father of two twin boys. Hobbies include international relations, outdoors and travelling. Norbert speaks Polish, Spanish, Russian and German.

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## Dr. Fayaz Lakhwala

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### Presentation Title:

#### ***Evaluation and Implementation of ISS-ISCO at a Dry Cleaner VI Site***

Dr. Fayaz Lakhwala, Key Accounts Manager - Soil & Groundwater Remediation, Evonik

### Abstract:

A former dry cleaner presented vapor intrusion (VI) risk to nearby residents in Lansing, Michigan. Remnant source tetrachloroethene (PCE) was vertically extensive through a substantial vadose zone resulting in a soil gas PCE plume that encompassed several residences and required interim vapor mitigation at receptors. The objective of this State-led project was to significantly reduce source mass and related VI risk. Traditional technologies were considered, but challenges resulted in unit cost estimates on the order of \$350 per ton. In Situ Solidification (ISS) – In Situ Chemical Oxidation (ISCO) was evaluated as an alternative to effect reduced vapor intrusion risk at substantially lower cost (on the order of \$133 per ton). ISS-ISCO was evaluated using Portland cement for both the ISS and for alkaline activation of sodium persulfate used in ISCO. Combining ISS with ISCO allows for balancing permeability reductions, contaminant destruction, and ultimate end use soil compressive strength for redevelopment. Bench testing was conducted to evaluate a range of reagent mix designs and potential results at field scale. Bench results were then used as a guide in choosing reagent dosages for full-scale ISS-ISCO implementation at the subject site. Full-Scale implementation of ISS-ISCO was completed using the Lang Tool mixing process in October 2019. Results achieved and the relative differences between the bench and field scale approaches will be presented. The data indicated:

- Bench: contaminant destruction up to 80%, unconfined compressive strength ranging from 25-50 psi, and significant hydraulic conductivity reductions. Limitations of bench testing relative to scale, procedures used, and leachability testing will also be discussed.
- Full-Scale: Outperformed the bench test results with a 94 percent reduction of PCE mass found on soils, contaminant concentration decrease in adjacent groundwater monitoring wells of 90 to 99 percent, and the site was successfully solidified and ready for redevelopment.

### Bio:

Dr. Lakhwala serves as the Key Accounts Manager within Evonik's Soil and Groundwater Remediation group. He holds M.S. and Ph.D. degrees in Chemical Engineering with a minor in Environmental Science. He has 30 years of experience in the area of site remediation with activities in technology development, remedial design and engineering, site characterization, treatability studies, project management and business development. He has worked with environmental technology companies, research laboratories and environmental consulting firms. In the last 15 years, his focus has been on the design and application of in situ chemical oxidation (ISCO), in situ chemical reduction (ISCR), enhanced reductive dechlorination (ERD), NAPL stabilization and treatment of heavy metals in soil and groundwater. Besides US, he has worked on projects in Asia Pacific and Europe.

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## Dr. Leslie Smith

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### Presentation Title:

#### ***Mitigation Efforts: Cattle Dip Vat Assessment – A Case Study***

Dr. Leslie Smith, Senior Project Professional and Karinne Brown, Project Advisor, SCS Engineers, Inc.

### Abstract:

CDVs were widely used throughout the state of Florida to mitigate the spread of Cattle Tick Fever. Private land owners are not required to address environmental impacts from the CDVs; however, liability still exists for government entities where CDVs are on their property or properties they purchase. Based on our client's past experiences with CDVs, some environmental impacts were found at deeper intervals within the soil than initially expected, causing higher assessment and remediation costs. In order to avoid this, the implementation of various mitigation efforts and sampling techniques were utilized to ensure migration of impacted soils did not occur during the assessment.

### Smith Bio:

Dr. Smith is a Senior Project Professional at SCS Engineers in their Environmental Services Department. She has over 6 years of experience in the environmental engineering/remediation field. Throughout her years in the environmental industry, she has field and management experience through various types of environmental projects, including the performance and preparation of contamination assessments, remediation implementation and contract management, Phase I and II Environmental Site Assessments, hazardous material assessments and surveys, soil and groundwater sampling, underground storage tank removal oversight, report writing and review, and equipment maintenance. Dr. Smith has worked with both the FDEP Petroleum Restoration Program, the Drycleaning Solvent Cleanup Program, the Site Investigation Section (SIS) and the South Florida Water Management District (SFWMD) on a variety of projects and contaminant types, including chlorinated solvents, petroleum constituents, per- and polyfluoroalkyl substances (PFAS) chemicals and metals. Dr. Smith currently manages various advanced environmental projects, which includes assessment and/or remediation services both in the private and public sectors.



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## Karinne Brown

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### Brown Bio:

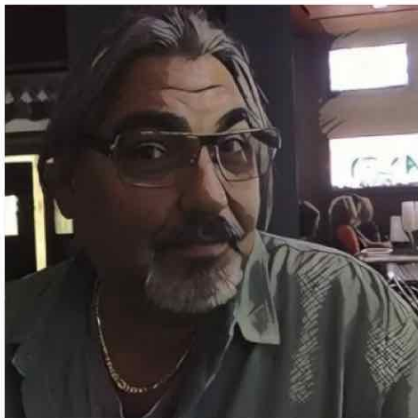
Ms. Brown is experienced with Phase I and II Environmental Site Assessments, Landfill Gas monitoring and reporting, soil development oversight, and surface and groundwater assessment and monitoring. She is responsible for coordinating and managing redevelopment of contaminated sites. Project experience includes due diligence and site investigations, environmental studies, soil management oversight, and quarterly sampling and monitoring (groundwater and gas). Facilities include former/current agricultural and commercial sites, lakefills, and landfills.

Ms. Brown has technical experience with local regulatory agencies pertaining to the above stated project types and technical knowledge and experience regarding well installation and soil, ground/surface water, and gas sampling/monitoring. Ms. Brown has prepared technical reports including the following: assessment, soil management, dust control, and health and safety plans, site assessment, continued monitoring reports and analysis (monthly, quarterly, etc.), and project oversight and implementation reports.

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## Michael Scalzi

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### Presentation Title:

#### ***In-Situ GeoChemical Stabilization (ISGS) - "A Creosote Story"***

Michael Scalzi, Founder and President, Innovative Environmental Technologies, Inc. (IET).

### Abstract:

A discussion of the advancement for DNAPL stabilization from the "shotgun" In Situ Stabilization (ISS) approach, to the more focused and elegant In Situ Geochemical Stabilization (ISGS) chemistry. Brief case studies, examining the efficacy of the ISGS technology for DNAPL sites. Selecting the right site. when is isgs THE SOLUTION.

### Bio:

As a leader in the field of environmental technology, Michael Scalzi has been performing biologically and chemically based remediations since the late 1980s. In 1998, he founded Innovative Environmental Technologies (IET), an international environmental technology company that operates throughout the United States and Africa.

Throughout his career, Mr. Scalzi has performed remedial projects and designed and patented chemical, biological and mechanical processes, making him integral in expanding the application of in-situ remedial processes. His unique perspective relating to the integration of mixed technologies and delivery processes has allowed him to apply chemical oxidation, aerobic processes, anaerobic processes along with more traditional remedial approaches resulting in more affordable solutions.

In addition to his work at IET, Mr. Scalzi has developed curriculum for training environmental professionals for colleges in New York and Pennsylvania, has sat on numerous state and federal roundtables and advisory boards and has published several articles relating to his experiences and expertise.

Mr. Scalzi holds a Bachelor of Arts degree in Biology and a Master of Arts in Microbiology from the State University of New York.

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## Tommy Jordan. P.G., PMP

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### Presentation Title:

#### ***Advanced Remedial Investigation- Methods and Lessons Learned Case Study***

Tommy Jordan, P.G., PMP, Resolute Environmental & Water Resources Consulting

### Abstract:

Mr. Jordan will present elements and lessons learned of an advance remedial investigation to complete a Remedial Design of a landfill Permeable Reactive Barrier Wall funnel and gate system in Georgia. Elements included management methods to develop the advanced subsurface characterization and summary of utilizing Hydraulic Profiling Technology, innovative Surface Wave geophysical analysis, subsurface soil vapor evaluation, Geotechnical testing, groundwater modeling, and discrete groundwater sampling.

### Bio:

Mr. Jordan has 25 years of field, laboratory, and management experience in the geotechnical, geophysical, and environmental industry. He is considered a subject matter expert in laboratory evaluations of remedial technologies. He serves as a Senior Manager at Resolute Environmental and Water Resources in the Atlanta, Georgia office. He is a decorated military veteran and served overseas in the U.S. Army Reserves as an airborne platoon leader and International Liaison. He is a Licensed Professional Geologist in multiple states and a PMI® certified Project Management Professional.

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## Eugene B. Jones

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### Eugene (Gene) Jones

Eugene (Gene) Jones, Executive Director, Southern Waste Information eXchange, Inc.

### Bio

Gene Jones serves as Executive Director of the Southern Waste Information Exchange (SWIX), a 501(c)(3) non-profit organization which has been operating since 1981 assisting businesses and municipalities with their waste management and remediation issues.

In addition, Gene is a serial entrepreneur and brings over 40 years of experience with waste management and recycling in senior executive level positions. Over the past 40 years, he has successfully founded, built and sold several businesses including Environmental Management & Consulting Services, Inc., Advanced Derived Fuels, LLC, Hazardous Substance and Waste Management Research, Inc., Environmental Industry Conference Management, LLC, FieldClean of Florida, LLC, Landcare Equipment Sales and Services, LLC. and his latest venture Florida Industrial Hemp Company, LLC.

Gene is based in Florida and specializes in building strategic relationships with waste recycling firms and brings a vast network of associations in the recycling sector from his work in organizing conferences such as;

#### Conferences:

- the Agricultural Plastics Recycling Conference & Trade Show,
- the Waste Conversion Technology Conference & Trade Show,
- the Southeast Recycling Conference & Trade Show,
- the New Life for Closed Gas Stations Conference and Exhibition,
- the International Symposium on the Redevelopment of Manufactured Gas Plant Sites,
- the National Conference on Waste Exchange and Resource Reuse,
- Florida Medical Cannabis Conference & Exhibition,
- Florida Industrial Hemp Conference & Exhibition,
- Cannabis in Sports Conference, and
- Florida Remediation Conference.

#### Associations:

- Florida Agricultural Plastics Recycling Cooperative
- Florida BioFuels & BioEnergy Association, Inc.,
- Recycle Florida Today, Inc.,
- International Society of Technical & Environmental Professionals, Inc.,
- Florida Brownfields Association, Inc., and
- Keep Florida Beautiful, Inc.

Gene is a Martial Arts practitioner and has his 8th degree black belt in Shaolin Goju and a 5th degree black belt in Nisei Goju. Gene is also the Author of [Instant Self-Esteem: Empowering Self-Confidence](#).

Gene is also the inventor of the [Soap Bag Saver](#), which he designed for the reuse of leftover soap bars.

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## Michael R. Goldstein, Esq.

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Michael R. Goldstein, Esq.

Michael R. Goldstein, Esq., Managing Shareholder, The Goldstein Environmental Law Firm, P.A

### Bio

Michael R. Goldstein, Managing Shareholder of The Goldstein Environmental Law Firm, P.A., and a Martindale-Hubbell AV Preeminent and Chambers and Partners rated attorney, practices exclusively in the areas of environmental law and environmental redevelopment for a broad range of clients, including retail, residential, and industrial developers, public and private companies, real estate funds, lenders, and local governments. A major aspect of Mr. Goldstein's environmental legal practice involves support of real estate and business transactions, including managing pre-acquisition and pre-leasing due diligence investigations; structuring, negotiating, and drafting environmental provisions in purchase, lease, and development agreements; and assisting lenders evaluate and limit the risk of exposure to environmental liability in connection with new loans and potential foreclosures. In addition, he works closely and extensively with real estate development principals and engineering, planning, and design professionals to help coordinate federal, state and local regulatory approvals for complex retail, industrial, residential, mixed use, and marina related projects throughout the State of Florida.

Mr. Goldstein's practice has a heavy emphasis on the remediation, financing, and beneficial reuse of contaminated sites and involves a broad array of Brownfields related transactional, administrative, regulatory, legal, legislative, and policy work for clients in both the private and public sectors. He has developed a national reputation as one of the leading and most innovative Brownfields practitioners in Florida, working on important and precedent establishing projects as well as heading up or participating in numerous local, regional, state, and federal environmental restoration initiatives. On a statewide level, Mr. Goldstein was the founding Chairman of the Florida Brownfields Association and served as its Chairman and/or President for the first five years of the organization's existence. Mr. Goldstein's tenure as Chairman and President was distinguished by his commitment to elevating environmental justice and public health as critical areas of emphasis for business, community, regulatory agency, and local government stakeholders. In 1996, the Miami-Dade County Commission appointed him Chairman of the Miami-Dade County Brownfields Task Force, a post that he held until the committee's business was completed in 2004. In January 2006, Mr. Goldstein was appointed to serve on the Advisory Board of the Bureau of National Affairs' highly respected Environmental Due Diligence Guide, which serves as a national reporting, editorial, and opinion forum for environmental transactions and related Brownfields and policy matters. In 2008, he founded and funded the Goldstein Brownfields Foundation, which is dedicated to empowering economically and health disadvantaged individuals and communities with scholarships, programming, and resources to restore polluted land, revitalize neighborhoods, and protect public health. The Goldstein Brownfields Foundation also focuses on increasing the ethnic and gender diversity of lawyers working in the environmental arena through academic scholarships, educational and career programming, and professional mentoring. In 2009, Mr. Goldstein was appointed to the Executive Committee of the National Brownfields Coalition, an affiliation of private and public sector stakeholders working in the U.S. Congress to advocate for improvements in environmental redevelopment policy and legislation.



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## Wilbur Mayorga, P.E.

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### Presentation Title:

#### ***Agricultural Residual at Former Agricultural Site in Miami-Dade County***

Wilbur Mayorga, P.E., Chief, Environmental Monitoring and Restoration Division, Miami-Dade County DERM



### Abstract:

The long-term application of agrichemicals can result in accumulation of agrichemical residual in soils to levels that exceed regulatory limits and can also result in groundwater contamination based on leaching of agrichemical residuals into the underlying groundwater. This is especially likely in area with soils with high permeability overlying a shallow, unconfined aquifer such as the case of the Biscayne Aquifer in Miami-Dade County. Miami-Dade County DERM has documented soil contamination from agricultural residuals at 87% and groundwater contamination at 72% at over 60 former agricultural sites evaluated. Arsenic was identified as the primary soils contaminant of concern (COC) for direct exposure while chromium represents the primary COC with respect to leachability. Arsenic and inorganic nitrogen in the form of nitrate-nitrite nitrogen (NOX-N) were the predominant groundwater contaminants. The presentation will provide resources, to responsible parties, for environmental evaluation at former agricultural sites that have transitioned to a nonagricultural land uses classification.

### Bio:

Mr. Mayorga received his M.S. in Environmental Engineering from Florida International University (FIU) and he is a registered professional engineer in the State of Florida. In his current role as Chief of the Environmental Monitoring and Restoration Division of the Miami-Dade County's Department of Regulatory and Economic Resources - Environmental Resources Management (DERM), Mr. Mayorga manages the restoration of contaminated sites, wellfield protection program, comprehensive groundwater monitoring and protection program, the brownfields and the petroleum restoration delegation programs from FDEP, environmental laboratory services, environmental contracting services for all Miami-Dade county departments, and environmental compliance for the county airports.



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## David Hockey

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### Presentation Title:

#### ***EPA Update on PFAS***

David Hockey, Acting Associate Director for Federal Facilities Restoration and Reuse Office, US Environmental Protection Agency

### Abstract:

Mr. Hockey will discuss the US EPA's Administration priority to address PFAS contamination. Specifically, he will address upcoming PFAS rulemakings, policy/guidance and the Agency's approach under Superfund to remediate PFAS contamination at private and Federal Facility sites.

### Bio:

Dave Hockey is the Acting Associate Director of EPA's Federal Facilities Restoration and Reuse Office in Washington, DC. In this position, he supports the oversight of Federal Facility Superfund cleanups across the nation. During the majority of Dave's 31 years with EPA, he specialized in hazardous and solid waste policy, leading a variety of regulatory and voluntary programs. In the hazardous waste program, Dave served as a Senior Policy Adviser to the Director, Branch Chief of the RCRA Corrective Action & PCB program and held other Senior leadership positions. He earned a BA in Biology from the University of Delaware and a MS in Environmental Science and Policy from George Mason University. Dave enjoys playing and refereeing ice hockey, spending time with his family and the outdoors.

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## Nicholas Albergo, P.E.

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### Presentation Title:

#### ***Key Changes to the ASTM E 1527-21 Phase I Environmental Site Assessment Standard***

Nicholas Albergo, P.E., DEE, D. WRE, F. ASCE, Senior Advisor, GHD

### Abstract:

A new Standard was passed in late 2021 that includes several substantial revisions impacting environmental professionals. This presentation will address those changes.

### Bio:

Nick Albergo was the former ASTM E50.02 Vice-Chair on Environmental Assessment, Risk Management and Corrective Action. He has shaped the rules and regulations that are now in everyday use throughout the United States, as one of the primary authors of the ASTM E 1527, 1528 and E 1903 Standard Practice for Environmental Site Assessments. He has remained an integral part of all seven revisions to the Standard.

Nick is now an Engineering Professor at the University of South Florida and a Senior Advisor to GHD. He was the founder and CEO of HSA Engineers & Scientists, a Florida-based engineering consulting firm that he successfully grew to more than 400 professionals. The firm was sold to GHD in 2013. He has had a distinguished career as an inventor, as the author of over 185 professional publications, and as the founder and Keynote Speaker for the Florida Remediation Conference on Innovative Remedial Technologies.

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## Stephen F. Hilfiker, MS, LEP

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### Stephen F. Hilfiker, MS, LEP

Stephen F. Hilfiker, MS, LEP, President, Environmental Risk Management, Inc.

#### Bio

Steve Hilfiker, founder and president of Environmental Risk Management, Inc. (ERMI), has served in a variety of industry association roles since 1991. Currently, he serves:

- on the Board of the Florida Ground Water Association & is Chair of the Environmental Committee;
- on the Technical and Legislative Committees of the Florida Brownfields Association;
- as a member of Environmental Professionals of Florida;
- as founder and leader of ICEA (the Informal Coalition of Environmental Associations), an advocacy group seeking to keep environmental concerns at the top of state legislative priorities.

Steve received a Master of Science from the University of Florida in 1990. Based in Ft. Myers, he has been conducting environmental assessment, risk management, forensic and remediation services throughout Florida since 1991. Perhaps most significantly, Steve is well connected in Tallahassee and is actively involved with the development of environmental policy and legislation in Florida.

Steve is a trusted, authoritative advisor to business owners, developers, financiers, real estate agents, educators, and legislators. As a result, he has been invited to speak at conferences and meetings of numerous professional organizations, including:

- Real Estate & Environmental Seminars
- Financial & Development Conferences
- Bar Associations & Forensics Groups
- High Schools, Universities and Civic Groups

His articles have appeared in The Florida Specifier, the CCIM Newsletter, various industry trade publications, and multiple Florida newspapers.

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## Petroleum Restoration Program

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### Natasha Lampkin

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#### Presentation Title:

##### ***Petroleum Program Status and Overview (Update on the Petroleum Restoration Program)***

Natasha Lampkin, FCCM, FCCN, Program Administrator, Petroleum Restoration Program, Division of Waste Management, Florida Department of Environmental Protection

#### Bio:

Program Administrator with the Florida Department of Environmental Protection Petroleum Restoration Program. Natasha holds a Bachelor of Arts in Business Administration. She has been working in the Petroleum Program for 25 years. Her service in the program includes strategic planning, site management, performance-based cleanup, coordination with local programs, state cleanup, reimbursement, contracting, noticing, database design, metrics, federally funded projects and process improvement.

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### Matthew Ingham

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#### Presentation Title:

##### ***Natural Attenuation Monitoring (Natural Attenuation Monitoring and When to Return to Active Remediation)***

Matthew Ingham, P.E., FCCM, Environmental Administrator, Petroleum Restoration Program, Florida Department of Environmental Protection

#### Bio:

Matt obtained a Bachelor's Degree of Science in Chemical Engineering from Mississippi State University. Afterwards, he returned to his home state of Florida, and worked in the environmental consulting field for several years before becoming a site manager and professional engineer for Team 5 for nearly a decade. Since then, Matt has served the State of Florida as a professional engineer for the Waste Site Cleanup and Drycleaning Programs and is currently an Environmental Administrator with the Florida Department of Environmental Protection Petroleum Restoration Program.

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## James Treadwell

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### Presentation Title:

***Natural Attenuation Monitoring (Natural Attenuation Monitoring and When to Return to Active Remediation)***

James Treadwell, P.E., Chief Professional Engineer II, Petroleum Restoration Program, Florida Department of Environmental Protection

### Bio:

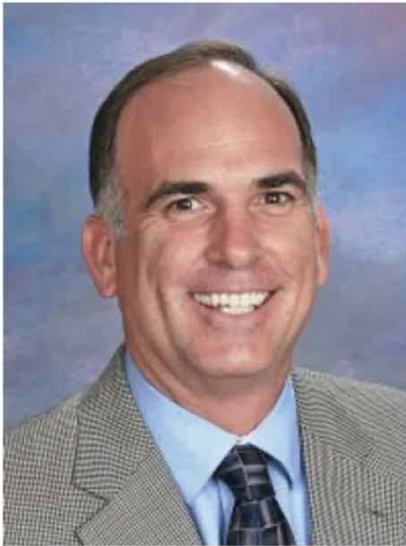
James has worked in the FDEP Petroleum Program for 20 years, working as a Site Manager, Professional Engineer, and Contract Manager. Current duties include technical support for the Local Program Petroleum teams, Conditional Closure review, and technical review of proposed scopes of work.



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## James Langenbach, P.E

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James Langenbach, P.E.

James Langenbach, P.E., Senior Principal Environmental Engineer, Geosyntec Consultants, Inc.

### Bio:

James Langenbach is a Senior Principal Environmental Engineer based in Florida with more than 20 years of experience focused on assisting clients with environmental assessments; remediation design and treatment system optimization; environmental management systems; sustainable remediation designs; and regulatory compliance.

For decades, a wide range of industries have used chlorinated solvents as degreasing agents and for similar commercial applications. In many places throughout the world, these solvents have seeped into the ground near work sites, either through spills or as runoff, creating dense plumes of contaminants that can threaten aquifers and ecosystems. Jim is at the forefront of practitioners developing novel solutions to these issues in this field.

As a consultant, Jim is recognized for using innovative approaches in the planning and execution of projects that are grounded in practical applications of existing and emerging technologies. His clients include federal, state, municipal, and industrial sites throughout the Southeastern United States. He specializes in the management of multi-party PRP group sites, and the characterization and remediation of complex manufactured gas plant (MGP), and chlorinated solvent sites with non-aqueous phase liquid (NAPL) source areas using the latest, proven assessment tools and remediation strategies to achieve exit-strategy focused remedial goals. Jim has served as Geosyntec's engineer-of-record on a number of key projects at NASA's Kennedy Space Center, in addition to managing remedial actions at multi-party PRP sites such as the Orlando MGP Superfund Site. He also has served as Geosyntec's lead engineer on projects in Florida's Dry-Cleaning Solvent Cleanup and Hazardous Waste Program, during which he has completed assessments or remedial designs for more than 30 solvent, metal, and petroleum-impacted sites.

To advance the state of the practice, Jim's work emphasizes sustainable remediation approaches to the design or optimization of soil and groundwater treatment systems. Examples include his efforts to transition sites from energy-intensive, mechanical treatment systems to passive, in situ biological treatment and flux control approaches. He also designed and created a solar-powered groundwater recirculation system at Kennedy Space Center for the enhanced in situ treatment of a chlorinated solvent plume.



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## Brendan Brown

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### Presentation Title:

#### ***How to Use Drones on Remediation Projects***

Brendan Brown, Principal Environmental Scientist, CDM Smith

### Abstract:

The use of drones equipped with lightweight sensors and powerful photogrammetry software is changing approaches to data collection and analysis for environmental sites. There are multiple sensors that can be mounted on drones that provide information on remediation and restoration sites. These sensors include multispectral, high resolution digital, LiDAR, thermal sensors, and hyperspectral sensors. Drones can provide views not otherwise possible (multispectral data) and allow for greater volumes of data collection than traditional field methods. Drones are not a one size fits all approach to data collection, but when paired with traditional methods, can go beyond traditional sampling schemes and unlock insights at multiple scales. Multiple case studies will be presented on the use of drones and various sensors paired with machine learning models that are used to evaluate site topography and erosion, track excavation progress, calculate volumes of waste piles, characterize minerology, identify groundwater seeps, and assess ecosystem restoration and health. Drones provide an opportunity to gain additional insights for site characteristics and allow for data collection on a much greater scale than traditional field work. By leveraging drone-derived data and machine learning, we can scale back the amount of traditional field data necessary while increasing the area of monitoring.

### Bio:

Mr. Brown is an environmental scientist with over 17 years of experience in environmental data collection at remediation sites using bioremediation and chemical oxidation. He is an FAA licensed drone pilot and has executed 100's of missions using drones and multiple environmental sensors. He is the Principal Investigator on several CDM Smith R&D projects using UAVs to collect multispectral data, thermal data, and LiDAR data at environmental sites.

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## Jim Depa

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### Presentation Title:

***More Than a Powerful Visual: Using Statistical Modeling and Python to Efficiently Create Project Deliverables and Assess Remedial Options***

Jim Depa, Senior Project Manager, Jacob and Hefner Associates, Inc.

### Abstract:

While statistical modeling and 3D visualization technology have become widely accepted tools on large environmental remediation projects, they remain under-utilized at smaller sites. However, continuing advancements in both software technology and computing power have made the technology more accessible to projects of any size. Additionally, the integration of Python scripting language can help automate certain tasks to produce nearly any type of data deliverable more economically. Most importantly, analyses of statically modeled data can reduce both investigative and remedial costs by providing more accurate estimates the in-situ contaminant mass, simulating the size of an excavation, or by designing a more targeted subsurface injection strategy.

### Bio:

Mr. Depa is a geologist and senior project manager at Jacob Hefner and Associates. He is a 2005 graduate from the University of Illinois with degrees in Geology and Geographic Information Sciences (GIS). He has more than 16 years of experience in the environmental consulting field and specializes in creating 3D statistical models to assess complex sites. He has created data deliverables on over 230 environmental investigation projects - from routine data visualizations to multi-million-dollar design remedies. Mr. Depa has also been involved in four environmental litigation projects, including a case involving odor complaints from a landfill - recently settled in November 2021 for \$28.5M, in what is thought to be the largest odor nuisance settlement in United States history.

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## Joe Ricker, P.E.

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### Presentation Title:

#### ***Groundwater Plume Analytics® Tools for Evaluating Remediation Effectiveness at Contaminated Sites***

Joe Ricker, P.E., Senior Technical Principal, WSP Golder

### Abstract:

Groundwater Plume Analytics® is an innovative evaluation technique that uses empirical data to reliably and effectively communicate meaningful patterns in groundwater plume behavior. Using Groundwater Plume Analytics® tools to evaluate remediation effectiveness at several mature remediation sites resulted in many beneficial outcomes, including cessation or optimization of active remediation systems, optimized monitoring programs, quantification of remedial progress (e.g., demonstrated reductions in plume area, average concentration, and mass) and calculation of attenuation rates to quantify natural attenuation. Additional qualitative beneficial outcomes have also been realized, including focused attention from site managers and effective communication with project stakeholders. Many examples of the beneficial results will be presented.

### Bio:

Mr. Ricker is a Senior Technical Principal with WSP and has worked in the remediation industry for 28 years. His primary area of expertise is in groundwater data analytics. He is the lead author for three U.S. patents, as well as multiple articles and guidance documents. Mr. Ricker is a licensed Professional Engineer in 28 states, including Florida. He received a B.S. in Civil Engineering from Rose-Hulman Institute of Technology and a M.S. in Civil Engineering from the University of Memphis.

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## Paul Newman

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### Presentation Title:

#### ***Concentration and Destructive Technologies Overview for Complete PFAS Treatment Solutions***

Paul Newman, Market Sector Leader - Department of Defense, ECT2 - Emerging Compounds Treatment Technologies

### Abstract:

The presentation will provide a discussion of 1) concentration technologies (regenerable IX and foam fractionation) necessary to make destruction cost-effective; and 2) primary PFAS destruction technologies showing promise in pilot-scale projects.

### Bio:

Paul Newman is the Department of Defense Market Sector Leader for ECT2, an equipment company focused on developing and implementing treatment technologies for PFAS and other emerging, difficult-to-treat contaminants, with full-scale PFAS treatment plants operating in the US and Australia since 2017. Paul's focus is currently on supporting the DoD in pilot- and full-scale water treatment deployment, and pairing our regenerable ion exchange process with destruction technologies.

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## Joseph L. Applegate, P.G.

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Joseph L. Applegate, P.G.

Joseph L. Applegate, P.G., Sr. Principal Hydrogeologist, Geosyntec Consultants, Inc.

### Bio

Joe Applegate is a Sr. Principal Hydrogeologist in the Tallahassee, FL office and has 35 years of experience and has managed multiple USEPA CERCLA, RCRA, and FDEP environmental contracts and programs and has managed federal, state, and industrial sites including petroleum, dry-cleaning facilities, chemical manufacturers, fire training facilities, landfills, former MGPs, and pesticide manufacturers and applicators.

Joe is a recognized regulatory expert with extensive knowledge of federal and state environmental rules, regulations, and permitting processes allow him to meet the clients and regulatory community needs quickly and efficiently. Joe has managed numerous State of Florida Superfund, State Hazardous, Drycleaning Solvent, State Owned Lands and Site Investigation, Brownfields, Petroleum, and Former Manufactured Gas Plants. He has managed multiple conditional closure projects and developed RC packages for private client projects as well as for the FDEP. He has also managed projects with emerging contaminants, including 1,4 Dioxane and PFAS. He has presented at multiple conferences in Florida on industrial uses of these compounds, physicochemical properties, fate and transport of PFAS in soil and groundwater, as well as general assessment and remedial approaches.



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## Joseph L. Applegate, P.G. and Ryan Tuttle, P.G.

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### Presentation Title:

#### ***Soil Blending and Soil Management Plan Guidance***

Joseph L. Applegate, P.G., Sr. Principal Hydrogeologist, and Ryan Tuttle, P.G., Project Geologist, Geosyntec Consultants, Inc.

### Abstract:

The Florida Department of Environmental Protection had developed new guidance on preparing Soil Management Plans and Soil Reuse Involving Soil Blending Activities at Chapter 62-780, F.A.C., Sites. The FDEP District and Business Support Program prepared these guidance documents to help the environmental industry prepare and implement successful projects and to help promote consistency of data interpretation and to conduct soil blending in a protective manner for sites where soil reuse is performed. This presentation will provide a high-level overview of these guidance documents and will provide real case examples of how soil blending plans are prepared and implemented. The featured projects will include recent projects where plans have been developed and approved by the FDEP and have been implemented successfully to achieve cleanup target levels for COCs (mainly arsenic) at golf course/residential redevelopment projects.

### Applegate Bio:

Joe Applegate is a Sr. Principal Hydrogeologist in Geosyntec's Tallahassee, FL office and has 35 years of environmental experience of characterization and fate and transport experience. He has managed multiple USEPA CERCLA, RCRA, projects including petroleum, dry-cleaning facilities, chemical manufacturers, and landfills. Mr. Applegate is a board member of the PFAS Forum and has presented and moderated at multiple conferences in Florida on industrial uses of these compounds, physicochemical properties, fate and transport of PFAS, as well as general assessment and remedial approaches.



### Tuttle Bio:

Mr. Tuttle is a licensed Professional Geologist with 18 years of professional experience in environmental site assessment and remedial investigation. He has managed and conducted site assessment activities for various clients at manufactured gas plant (MGP), former legacy waste management, chlorinated solvent, and petroleum sites in Florida. Mr. Tuttle has achieved multiple Site conditional closures using Risk Management Options specified in Florida Administrative Code, Chapter 62-780.



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## George (Bud) Ivey

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### Presentation Title:

#### ***Surfactant Enhanced Vapour, Sorbed, and NAPL Phase Remediation of Petroleum and Chlorinated Solvents at Brownfields***

George (Bud) Ivey, B.Sc., CES, CESA, P.Chem., EP, President & Senior Remediation Specialist, Ivey International, Inc.

### Abstract:

This technical platform presentation will factually, and visually, explain, the three (3) primary hydro-geo-chemical factors that limit the availability of vapour, sorbed, globule (ganglia), and non-aqueous phase liquids (NAPL) contamination, for physical, biological, and chemical remediation, at brownfield sites. It will demonstrate, how surfactant enhanced remediation, when coupled with multiphase extraction (MPE), bioremediation, and chemical methods, can reliably improve in-situ soil, bedrock, and groundwater remediation, with more sustainable time and cost savings. The brownfield case study sites will feature, surfactant enhance physical, biological and chemical remediation. The sites will include a Manufactured Gas Plant (MPG), a Superfund site, and/or, an upstream Pipe-Line spill site. The contaminants of concern (COC) will include VOC, petroleum hydrocarbons, chlorinated solvents, and comingled COC plumes. The practical applied presentation will be supported by literature references, tables, graphics, statistics, and three-dimensional animations of the in-situ remediation techniques applied.

### Bio:

George (Bud) Ivey, is the President and Senior Remediation Specialist with Ivey International Inc. He is an environmental professional, with over twenty-five years of assessment and remediation experience. He has worked on more than 3000 major environmental remediation projects, which have taken him to over 50 countries globally. He has more than 20 international patents and trademarks, and is the recipient of many prestigious international environmental awards. His educational background includes: Synthetic-Organic Chemistry, Geological Engineering, and a Master's Certification in Project Management.

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## Dr. Juan Fausto Ortiz-Medina

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### Presentation Title:

#### ***Stronger Bacteria, Faster Remediation: Using Nutrients to Achieve Complete Enhanced Reductive Dechlorination (ERD)***

Dr. Juan Fausto Ortiz-Medina, Research Associate, EOS Remediation

### Abstract:

Enhanced reductive chlorination (ERD) through bioremediation is an effective and affordable approach to remove chlorinated compounds such as perchloroethylene (PCE) and trichloroethylene (TCE) from groundwater. ERD is typically achieved by injecting a carbon substrate to stimulate growth of dechlorinating bacteria, either native or added through bioaugmentation. While this approach is successful at some sites, lower-than-expected dechlorination rates and undesirable accumulation of intermediate daughter products such as cis-dichloroethylene (cDCE) and vinyl chloride (VC) can occur if other macro- and micronutrients are not present in adequate amounts. In this presentation, we will review the importance of adding an optimal amount of nutrients, such as fixed nitrogen and vitamin B12, to achieve complete ERD and further conversion of cDCE and VC to ethene. To further illustrate this importance, we will present results from a field site where bioaugmentation, along with the addition of emulsified vegetable oil (EVO) and a pH buffer stimulated fast PCE reduction to cDCE, but further conversion to ethene was limited. Pilot tests showed that nutrient addition resulted in a rapid decline in cDCE and VC, with concentration of dechlorinating bacteria increasing from 3 to 40,000 copies/mL and VC reductase genes increasing from 0.2 to 1,460 copies/ml in 2 months. Full-scale injection of nutrient supplements reduced cDCE and VC levels by over 99%, leading to ethylene detection throughout the site. Therefore, the concentration of nutrients on site must be considered to attain complete ERD when biostimulation and bioaugmentation strategies are implemented.

### Bio:

Dr. Fausto Ortiz-Medina joined EOS Remediation in 2020. His responsibilities as Research Associate include the research and development of new technologies for in situ remediation, performance analysis of implemented treatments, and quality testing of current products to guarantee their expected effectiveness. He holds a bachelor's degree in Biotechnology Engineering from Instituto Tecnológico y de Estudios Superiores de Monterrey (ITESM, Mexico), a MS in Environmental Science and Engineering from King Abdullah University of Science and Technology (KAUST, Saudi Arabia), and a PhD in Civil Engineering from North Carolina State University (NCSU, USA).

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## Dr. Christopher M. Teaf, Ph.D.

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### Dr. Christopher M. Teaf, Ph.D.

Dr. Christopher M. Teaf, Ph.D., Director Emeritus, Center for Biomedical & Toxicological Research, Institute of Science & Public Affairs, Florida State University

#### Bio:

Dr. Teaf is a Board-certified toxicologist and risk assessor with over 40 years of environmental and public health experience specializing in soil, water and air quality, toxicology, risk assessment, and environmental health issues for solvents, petroleum, pesticides, polyfluorinated compounds (PFAs), metals, radionuclides, particulates, and bacteria/molds.

Chris is Director Emeritus of the Center for Biomedical & Toxicological Research at Florida State University, and Director of Toxicology for Hazardous Substance & Waste Management Research in Tallahassee. He has experience with industrial facilities, waste management sites, power facilities, agricultural sites, mining operations, educational institutions, and products in general commerce. He has directed research and taught environmental toxicology and risk assessment at the University level, for USEPA, the World Health Organization, NATO, ATSDR, many state/local agencies, and the private sector. He serves as co-Editor-in-Chief of Soil and Sediment Contamination and sits on editorial boards or as peer reviewer for a variety of scientific journals. Chris has testified in many state and federal courts, as well as state administrative hearings.

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## Chad Northington, P.E.

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### Presentation Title:

#### ***Full-spectrum Solutions for the Subsurface Management of PFAS Pollution***

Chad Northington, P.E., Southeast District Technical Manager, REGENESIS

### Abstract:

This presentation will explain the process through which colloidal activated carbon can be used to treat PFAS contamination and will examine the different application approaches, both individually and when combined. Laboratory data will demonstrate sorption efficacy in groundwater, and practical application and validation data will be shown from real-world case studies. This presentation will be of interest to practitioners, site managers and regulators interested in how to comprehensively manage PFAS contamination, from highly contaminated source areas to low concentration distal plumes or direct protection of sensitive receptors.

### Bio:

Mr. Northington is a professional engineer with over twenty years of experience in the environmental field in the areas of site investigation, remediation engineering and construction, project management, and technical assistance. He received both his undergraduate and graduate degrees in environmental engineering from Michigan Technological University. Mr. Northington currently serves as the Senior Technical Manager with Regenesi. In this capacity, he provides technical support for application of soil and groundwater remediation solutions. Mr. Northington works directly with environmental firms and end users to develop turnkey remedial approaches for in situ-applied strategies across a broad spectrum of technology classes.



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## Susan Sitkoff, P.G. and Joseph Bartlett, P.E.

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### Presentation Title:

#### ***Improving Remedial Implementation Quality through Field Verification***

Susan Sitkoff, P.G., Capital Improvements Project Manager, City of Orlando and Joseph Bartlett, P.E., Environmental Engineer, Geosyntec Consultants, Inc.

### Abstract:

Historical chlorinated solvent releases at the Former Spellman Engineering Site resulted in the contamination of the underlying surficial aquifer. Due to the lack of a PRP to take on the liability of the site, the City of Orlando entered a Voluntary Cleanup Agreement with the EPA to take on the responsibilities. Decades of assessment and remedial activities at the Site have resulted in a very dynamic environment and an ever-changing Conceptual Site Model. Most recently (Nov. 2021), an Enhanced In-Situ Bioremediation and Emulsified Zero Valent Iron injection event was conducted where confirmation events (before, during, and after the injection activities) were conducted: (i) Before – pre-injection investigation activities (initial design based on existing data from MW network, by others) resulted in significant changes to the treatment areas; (ii) During – confirmation soil borings were advanced to visually verify amendment distribution; and, (iii) After – performance monitoring included purging additional volume at select wells for visual confirmation of amendment. The multiple field verification events provided data needed to ensure proper implementation and was paramount to the success of the project.

### Sitkoff Bio:

Mrs. Sitkoff is a licensed Professional Geologist with 28 years of experience in soil and groundwater assessment and remediation. Mrs. Sitkoff's experience includes remediation of chlorinated volatile organic compound (CVOC), petroleum hydrocarbon, inorganic, ammonia, polychlorinated biphenyl, perfluorooctane sulfonic acid (PFOS) / perfluorinated alkylated substances (PFAS), and polynuclear aromatic hydrocarbon (PAH)-impacted sites. Mrs. Sitkoff has utilized numerous remedial techniques to address CVOCs including large diameter auger (LDA) with stem enhanced extraction and emulsified zero valent iron (EZVI), bioremediation using emulsified vegetable oil (EVO), horizontal and vertical air sparging systems (HVASS), solar recirculation systems, in-situ chemical oxidation (ISCO), phytoremediation, and thermal remediation.



### Bartlett Bio:

Mr. Bartlett is a licensed Professional Engineer with 12 years of experience in environmental assessment and remediation services, including investigation and feasibility studies, remedial design, and remedial action implementation. Mr. Bartlett's experience includes an emphasis on assessment and remediation of chlorinated volatile organic compound (CVOC) and petroleum-impacted sites that have required extensive coordination and cooperation with a variety of clients and regulatory agencies including federal, state, municipal, private sector, and multi-party potentially responsible parties (PRPs).

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## Gary M. Birk, P.E.

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### Presentation Title:

#### ***Optimization and Advances in Amendments for Chlorinated Solvent Sites***

Gary M. Birk, P.E., Managing Partner, Tersus Environmental, LLC

### Abstract:

Anaerobic in situ remediation has emerged as a viable and cost-effective remediation strategy for chlorinated solvents. The process involves the addition of amendments to groundwater and/or soil to stimulate and increase the number and vitality of existing bacteria capable of degrading the contaminant to innocuous end products. For anaerobic remediation, distribution of the correct type of fatty acids is essential for effective reductive dechlorination. Hydrogen is required for cDCE → VC → ethene. It is produced from linolenic acid, propionate, butyrate, etc. Further, optimal bacterial growth and dechlorination conditions occur at a pH between 6.5 and 8.0; temperature between 15–35 °C, with an optimum growth temperature between 25 and 30 °C; strongly reducing conditions, ORP < -100 mV; and Vitamin B12 concentrations between 25 to 50 µg/L (Stroo et al., 2013). Recent studies show that biostimulation benefits from adding an exogenous nitrogen (N) source (e.g., NH<sub>4</sub><sup>+</sup>). The addition of NH<sub>4</sub><sup>+</sup> increased c-DCE to ethene dichlorination rates about five-fold (Kaya et al., 2019). This presentation will review options for in situ production and distribution of correct type of fatty acids to expedite closure. Options for overcoming challenges associated with acidic aquifers, cDCE and VC stall, biofouling, and formation of saponified materials in the inject will be presented. The presentation will conclude with a review of advances in minimizing surfactants for preparation of oil-in-water emulsions and recent developments in preparing surfactant-free oil-in-water emulsion.

### Bio:

Gary is a founder and Managing Partner of Tersus Environmental based in North Carolina. He has a bachelor's degree in chemical engineering from North Carolina State University and holds registrations as a Professional Engineer in North Carolina, Virginia, and Florida. Gary has nearly four decades of experience in the development and implementation of technologies for in situ remediation of contaminated soil and groundwater.

Gary's focus is on engaging cutting-edge, sustainable green technologies that help environmental consulting companies restore groundwater and soil at challenging sites. Gary has worked extensively in the field of bioremediation and environmental consulting on soil and groundwater assessments and clean-ups. In 2011, Gary commercialized EDS-ER™ the first and most widely used water-mixable vegetable oil based organic substrate to provide a lasting source of carbon and hydrogen for enhanced reductive dechlorination and other bioremediation processes. He also is an author of several U.S Patents related to the remediation of Soil and Groundwater.



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## Chad Northington, P.E.

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Chad Northington, P.E.

Chad Northington, P.E., Southeast District Technical Manager, REGENESIS

### Bio:

Mr. Northington is a professional engineer with over twenty years of experience in the environmental field in the areas of site investigation, remediation engineering and construction, project management, and technical assistance. He received both his undergraduate and graduate degrees in environmental engineering from Michigan Technological University. Mr. Northington currently serves as the Senior Technical Manager with Regenesiis. In this capacity, he provides technical support for application of soil and groundwater remediation solutions. Mr. Northington works directly with environmental firms and end users to develop turnkey remedial approaches for in situ-applied strategies across a broad spectrum of technology classes.

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## Derek Pizarro, CPG

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### Presentation Title:

#### ***High-Energy Injection of Permeable Reactive Transects for Treatment of Hexavalent Chromium in Varied Geology***

Derek Pizarro, CPG, Senior Product Manager, AST Environmental, Inc.

### Abstract:

We successfully demonstrated a new method to install a viscous slurry at varying depths and heterogeneous geology without the use of soil mixing or hydraulic fracturing, as a continuing step in the overall treatment of hexavalent chromium in groundwater and soil at a confidential site. The selection of this type of amendment was preferred for this phase of the project when compared to other alternatives, such as excavation and direct mixing, pump-and-treat systems, or less reactive (aqueous) injectate alternatives. The injectate was installed in multiple transects to form passive zones which allow site groundwater to flow through and react with the injectate, reducing hexavalent chromium to trivalent chromium, and makes performance monitoring simple using existing monitoring wells and transect zone-specific piezometers. This application is a contemporary modification to more conventional permeable reactive barrier (PRB) application.

### Bio:

Derek Pizarro, CPG is a Senior Product Manager for AST Environmental, Inc. in West Chester, Pennsylvania. Derek is a Certified Professional Geologist and has 18 years of experience in environmental applications, specifically bedrock contaminant characterization; contaminant transport studies; heavy metals remediation; permeable reactive barrier (PRB) design; and reagent bench-scale testing and design for environmental sites and industrial and utilities clients. Previously, Derek served as General Manager and Environmental Products Director for a performance chemical manufacturer in King of Prussia, Pennsylvania, developing chemistries for treatment of inorganic contaminants, sediment applications, and injectates for use in PRBs. He is responsible for creating a novel product used in the remediation of dredged sediments impacted with late-transition and post-transition heavy metals, making them directly suitable for non-hazardous landfilling or onsite disposal. Derek received a Bachelor of Science in Geology and Environmental Geosciences and a Bachelor of Arts in History from Lafayette College in 2004. His career started with a bedrock field services company before moving to an ENR Top 100 Environmental Design Firm. Derek is a former American Foundry Society (AFS)-Environmental Health & Safety (EHS) committee member, and heavy metals task force advisor to a private utility group.

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## Sultan Anjum, P.E.

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### Presentation Title:

#### ***Automated ISCO Injection of EN Rx Reagent to Target Both Vadose Soil and Groundwater Contamination at a Bulk Oil Facility***

Sultan Anjum, P.E., M.ASCE, D.WRE, Senior Engineer, Atlas

### Abstract:

Difficult sites often require unique treatment approaches. This is the case at a Florida Bulk Oil Facility which had two challenging characteristics: vadose soil contamination and the groundwater plumes proximity to the four closed in place 10,000-gallon underground storage tanks (USTs) located under the above ground storage tank equipment storage building. These difficulties were overcome utilizing an automated injection system and a low concentration stabilized long-lasting oxidant. The remedial action plan (RAP) was designed to treat BTEX, MTBE, TRPH, Naphthalene's and BAPs for vadose soil and groundwater impacts across the site. The in-situ chemical oxidation approach required a way to saturate the vadose zone continually and provide targeted groundwater zone treatment, to combat adsorption and back diffusion from less accessible soils around the USTs. Thus, the injections utilized a combination of EN Rx Reagent, a stabilized hydrogen peroxide, and an automated injection system known as FOCIS™ (Feedback Optimized Continuous Injection System). Utilizing a combination of vertical and horizontal trenched injection wells the system delivered 4000 lbs of oxidant per month.

Baseline groundwater concentrations with the greatest impacts (approximately 18,000 ppb BTEX) were reported in monitor well MW-1. Over the course of the RAP implementation, areas of desorption were evident, and the longevity of oxidant was observed based on groundwater sampling field parameters. Laboratory analytical soil (September 21, 2021) and groundwater analytical results (May 19, 2022) indicate that no contaminants of concern exceeded any of their respective FDEP Soil Cleanup Target Levels (SCTLs) and Groundwater Cleanup Target Levels (GCTLs). This includes the reduction of BAPs (to non-detect) in soil and a greater than 99.9% reduction of BTEX groundwater concentrations in MW-1. A review of the remedial design, implementation, performance, and analytical test results will be discussed in more detail as part of the presentation.

### Bio:

Mr. Anjum is a Senior Engineer in the Atlas Tampa, Florida office. His key responsibilities include performing soil and groundwater assessments, conduct pilot test studies; preparing Remedial Action Plans, SPCC Plans and SWPP Plans, and Stormwater Inspection and Permitting. Mr. Anjum areas of expertise include environmental consulting, geotechnical engineering and air quality management and is also involved in business development activities. He has been in the Environmental Industry for over 29 years.

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## Drew Baird, P.G.

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### Presentation Title:

#### ***Lessons Learned from Injecting More Than One Hundred Tons of Potassium Persulfate***

Drew Baird, P.G., Senior Geologist, FRx, Inc.

### Abstract:

Hydraulic fracturing provides a robust method to install large quantities of potassium persulfate (KPS) at precise locations in the subsurface to act as a long-term, passive source of oxidant that distributes in situ by both diffusive and advective processes. The proposed presentation summarizes KPS fracturing methods, the form of fractures created in the subsurface, remedial design and implementation considerations, and project costs for KPS projects accumulated since 2017 and involving injection of more than 130 tons of KPS.

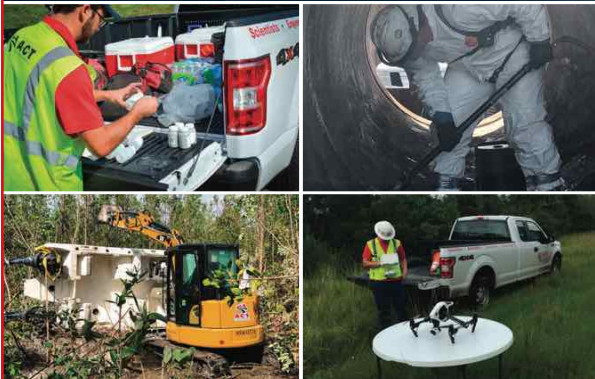
### Bio:

Drew Baird has more than 20 years of experience in remediation design and implementation, project and team management, field support services, and environmental consulting. He is currently Senior Geologist at FRx, where he leads the company's business development efforts and provides technical support on soil and groundwater remediation projects to clients in the US and Canada. Drew is a registered Professional Geologist licensed in South Carolina.



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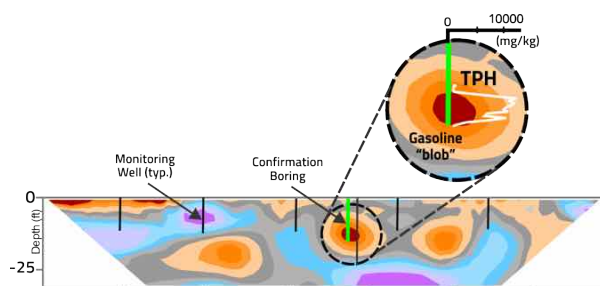
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