Members of the Railroad Environmental Community,

The Rail Transportation and Engineering Center (RailTEC) at the University of Illinois Urbana-Champaign is pleased to host the 2022 Railroad Environmental Conference (RREC). This year marks the twenty-fourth annual RREC and we are honored to have played a role in its development from the small gathering of 150 people and five supporter companies in 1999 to its present scope. Interest and attendance at the conference has grown considerably in the years since then and it has emerged as the principal annual gathering of the railroad environmental professional community. Last year more than 400 people attended from throughout North America and abroad, including railroaders, consulting engineers, environmental control equipment suppliers, regulators, industry attorneys, academics and other rail transportation professionals.

The vitality of the conference program benefits from the excellent input provided by representatives from the railroads, environmental engineering, and supply firms who participate in the RREC Planning Committee. Each year this group considers topics of particular interest to the railroad industry, reviews the submitted abstracts, and selects presentations based on their quality, timeliness, and relevance. The goal is coverage of the broad array of current and emerging subjects of interest to railroads. An important criterion is innovative new ideas and results with potential to benefit and improve railroad environmental practice. The RREC organizing team has strived to achieve the proper balance with this year’s selection of presentations in the following topic areas:

- Compliance for Operating
- Environmental Management Systems
- Environmental Permitting and Planning
- Incident Management
- Remediation
- Sustainability and Resilience
- Wastewater Management

The RREC provides a forum for attendees to meet with colleagues, clients, regulators, researchers, and other members of the railroad environmental community to learn about new techniques and technologies, exchange views, catch up on regulatory and legislative developments, and generally stay in touch with the direction of the railroad industry’s environmental programs. It is also an excellent opportunity to renew old acquaintances and make new contacts in the ever-changing railroad environmental arena.

On behalf of RailTEC at the University of Illinois at Urbana-Champaign, I would like to extend an invitation to everyone interested in railroad environmental performance, practices, and engineering to attend this year’s conference. I hope you can attend and look forward to meeting you.

Sincerely,

Chris Barkan
Professor
George Krambles Director - RailTEC
University of Illinois at Urbana-Champaign
**Meeting Location:**  
**iHotel Illinois Conference Center | 1900 S First St, Champaign, IL 61820**

**Schedule Overview**  
**Tuesday, 1 November**  
Pre-Conference Workshop 8:30 - 3:00 PM  
see page 6

**Wednesday, 2 November**  
Plenary Session 8:00 - 9:30 AM  
Break 9:30 - 10:00 AM  
Concurrent Sessions 10:00 - Noon  
Lunch Noon - 1:25 PM  
Concurrent Sessions 1:25 - 2:45 PM  
Break 2:45 - 3:15 PM  
Concurrent Sessions 3:15 - 4:35 PM  
Poster Presentation Reception 4:35 - 6:00 PM  
AREMA Committee 13 Banquet 6:15 - 8:30 PM

**Thursday, 3 November**  
Plenary Session 8:00 - 9:30 AM  
Break 9:30 - 10:00 AM  
Concurrent Sessions 10:00 - Noon  
Lunch Noon - 1:25 PM  
Concurrent Sessions 1:25 - 3:10 PM  
Optional Tours 3:15 pm - 4:45 PM  
see page 7

**Conference Keynote Address by Matthew Tejada**  
Director - Office of Environmental Justice  
United States Environmental Protection Agency

**Poster Presentation Reception:**  
Conference attendees and guests are encouraged to take the opportunity to meet and discuss ideas with the poster presenters.

**AREMA Committee 13 Banquet:**  
AREMA Committee 13 will host the Conference Banquet, which is open to all RREC attendees. The Banquet Program will begin immediately following the reception in the iHotel Illinois Conference Center. Additional ticket purchase required.

**Banquet Keynote Address by Alissa Yakali**  
Sustainability and Supplier Relations Manager  
Honda Development & Manufacturing of America, LLC

**Women’s Networking & Outreach Luncheon:**  
The Women’s Networking & Outreach Luncheon will provide a networking opportunity for women professionals and students at the Railroad Environmental Conference. The lunch will be held on Thursday, 3 November. More details to come.
Pre-Conference Workshop

Workshop on Infrastructure Life-Cycle Carbon Emissions Assessment for Railway Track Maintenance: Supporting Sustainable Decision-Making for Railway and Transportation Infrastructure

Date and Time: Tuesday, 1 November 2022, 8:30am-3pm CDT
Location: iHotel Illinois Conference Center

This workshop concentrates on establishing strong industry dialog and participation in a project, funded by the Federal Railroad Administration (FRA), to develop a framework for Life-Cycle Assessment (LCA) of emissions from railroad track and infrastructure maintenance and construction. Specific topics to cover include shared goals, data, tools and eventual implications of emissions LCA for multi-modal transport decision making. The main objectives of this workshop are to:

• Explain the reasoning for development of an rail infrastructure construction and maintenance emissions LCA framework, including its potential uses, relevant legislation, links to decision making, etc.
• Introduce similar development conducted on the highway transportation side
• Obtain insight from the industry and key stakeholders on the current status of industry activities in the area, including perceived pressures and institutional barriers and challenges
• Discuss project boundaries, goal and scope with the industry
• Establish an industry advisory council for the project

The workshop will consist of invited plenary presentations to frame the issues and pose the questions to be answered surrounding life-cycle emissions of rail infrastructure, followed by participatory workshop sessions to discuss and develop stakeholder responses. **We want your input on these important issues,** and your organization will benefit from participating in this effort by learning from other industry and agency contacts involved in infrastructure emissions LCA, and helping to shape future guidance and tools to conduct emissions LCA for rail construction and maintenance projects.

This workshop is supported by the FRA and hosted by Michigan Technological University and the University of Texas at Austin, in conjunction with the University of Illinois Urbana-Champaign Rail Transportation and Engineering Center (RailTEC). Lunch will be provided for workshop attendees registered in advance (option on UIUC conference registration) but space is limited. Remote online access to the workshop plenary presentations will be provided, but involvement in discussions by remote participants is likely to be limited, so in-person participation is encouraged.

For more information, contact Pasi Lautala (ptlautal@mtu.edu), 906-487-3547

Register now at [https://rrec.railtec.illinois.edu/registration/](https://rrec.railtec.illinois.edu/registration/)

Previously registered for RREC? Select “Already Registered ($0)” to add the pre-conference workshop.
Post-Conference Tours

The technical presentations will adjourn at 3:10 PM Thursday, 3 November. There will be 3 optional tours available for anyone interested after the conclusion of the technical presentations. Interested participants will be able to attend 1 of the 3 available tours. Tours will depart from the iHotel Illinois Conference Center at 3:15 PM and will last approximately 1 hour. **Space is limited and available on a first come first serve.**

Register now at [https://rrec.railtec.illinois.edu/registration/](https://rrec.railtec.illinois.edu/registration/)
Previously registered for RREC? Select “Already Registered ($0)” to add a tour.

**Champaign-Urbana Mass Transit District: Hydrogen Production Station**

MTD is the first transit agency in the nation with a hydrogen fleet fueled entirely from our own 100% renewable source. The project has three important components that make this technology truly zero emissions: a solar array to produce clean energy, a hydrogen fuel production station that uses solar energy to turn water into hydrogen, and hydrogen fuel cell electric buses that use hydrogen to generate electric power. From sun to street, these are truly zero emission – it’s like riding on sunshine!

Learn more here: [https://mtd.org/inside/projects/zero-emission-technology/](https://mtd.org/inside/projects/zero-emission-technology/)

**Illinois Fire Service Institute**

The Illinois Fire Service Institute (IFSI) is the statutory State Fire Academy for Illinois. It serves as the oldest continuous fire training institution in the United States. Since 1925, first responders from across the state, nation, and the world have relied on IFSI to deliver hands-on, innovative, and top-quality training, education, and research.

Learn more here: [https://www.fsi.illinois.edu/content/about/](https://www.fsi.illinois.edu/content/about/)

**Research and Innovation Lab (RAIL)**

RAIL was created to provide representative conditions for conducting experimental laboratory work aimed at increasing railway safety and improving infrastructure design, maintenance, and performance. The 3,500 square-foot space provides researchers with the necessary tools to study various infrastructure components at the material, component, and system levels.

Anchoring the lab is the Track Loading System (TLS), which makes static and pseudo-static experimentation of railway infrastructure and its components possible using a full-depth track substructure. Researchers are able to use data to evaluate existing infrastructure designs, develop new design and validate analytical models.

Learn more here: [https://railtec.illinois.edu/laboratories/rail/](https://railtec.illinois.edu/laboratories/rail/)
Compliance for Operating Facilities

Best Practices for Addressing Historical Construction & Demolition on Railroad Properties Across Multiple States
Bryan Salley - Norfolk Southern

Environmental Issues Affecting the North American Railroads
Theresa Romanosky - Association of American Railroads

Maintaining Compliance and Adapting Program Management Tools for New Technologies
Robert Hagler - Arcadis U.S., Inc.
Corey Aten - BNSF Railway

Maintaining Compliance at Idled Facilities While Reducing Expenses
Robert Scoble - Norfolk Southern

Salt Management Opportunities for a Commuter Rail Network
Heather McClintock - Wood

Environmental Management Systems

A Tank Car Fire for the Fourth of July - Rapid Site Characterization and Remediation Following the Release of Acrylonitrile
Todd McFarland, Tom Hensel, Kevin Howard - Wood
Matt Adkins - CSX

Best Practices for Lowering Costs from Waste Truck Hauling Operations
Gregory Calhoun - Norfolk Southern

Beyond the Weather: Ground-Level Environmental Monitoring & Warning System
Daniel Jobin - Kije Sipi Ltd

Electronic Data Management/Systems to Improve Compliance at Rail Wastewater Treatment Plants
Sandy Suver - Union Pacific Railroad
Dan Mac Gregor - Jacobs

Embracing Digital Transformation for Environmental Data Management
Brandon Barlow & Luke Jacobs - Encamp

Lessons Learned From The Help Desk: Key Takeaways for Your Wastewater and Compliance Programs
Erin Rodgers - Environmental Standards, Inc.

Using Data to Drive Asbestos Management for Railroad Assets
Nicole Lenczowski - Union Pacific Railroad
Adam Hagedorn - GHD
Presentations

**Environmental Permitting and Planning**

BNSF Sabine River Bridges Project - Keys to a Successful Section 106 Process  
Lori Price & Michael Chidley - Jacobs

Compliance Canines: Remote Sensing and Cadaver Dog Cemetery Investigation for a CN Bridge Replacement Project  
Amber Robinson & Zachary Overfield - HDR  
Kari Harris - CN Railway

CSXT Curtis Bay, Maryland - Air Permitting and Environmental Justice Considerations at a Coal Transfer Terminal  
Rebecca Hensley - CSX

From an Individual Permit to No Permit Required- The BNSF Bridge in Victorville, California  
Lisa Patterson, Dava Kaitala, Daniel Smith & Luc Truong - Jacobs  
Alan Bloomquist - BNSF Railway

Managing Multiple Perspectives & Expectations: Keeping CN’s Milton Logistics Hub on Track  
Chris Powell & Parker Dickson - Stantec  
France Moreau - CN Railway

Under the Bridge: Protecting and Restoring Fish Habitat During Railroad Bridge Construction  
Kevin Rice - Union Pacific Railroad  
Doug Anderson - Arcadis U.S., Inc.

**Incident Management**

Drain Identification Prior to Potential Emergency Response  
Christopher Hunsicker - Norfolk Southern

Environmental Response for Wildfire in Lytton, British Columbia  
Molly Corrigan - GHD  
Mike Linder - CN Railway

Facility Response Plan (FRP) Preparedness Is Beneficial to Real World Responses  
Nathan Williams - Norfolk Southern

Maintenance Challenges (and Opportunities) for Railroad Comprehensive Oil Spill Response Plans  
Colin McWilliams - RIO Environmental Consultants  
William Parry - CSX
**Remediation**

**Conceptual Site Model and Cleanup Modifications Responding to Nature-Based Extreme Conditions**  
Dora Chiang, Kevin Howard & Todd McFarland - Wood  
Steven Aufdenkampe & Dan Hunt - Norfolk Southern

**From Railbed to BBQ - A Case Study of a Mile-Long Remediation Project in Murphysboro, Illinois**  
Matthew Laub & Erica Foley - AECOM  
Joe Phelps - Illinois Central Railroad

**Is Vapor Intrusion Really an Issue at Petroleum Hydrocarbon Impacted Sites?**  
Daniel Dyer - CSX  
Robert Uppencamp - Arcadis U.S., Inc.

**Know Your LNAPL Regulatory Program - UST vs State Voluntary**  
Jim Brannen - Union Pacific Railroad  
Rick Edwards - Jacobs

**NMR Geophysics for High Resolution Site Characterization, CSM Refinement, and Remedial Design Optimization**  
Bradley Cross - ERM

**Tracking Sustainable Remediation**  
Lauren Mancuso - Union Pacific Railroad  
Betsy Collins & Carol Mowder - Jacobs

**Use of Continuous Monitoring In-Situ Sensors for Sustainably Monitoring and Optimizing Remedies**  
Lauren Mancuso - Union Pacific Railroad  
Carol Mowder & Tom Simpkin - Jacobs

**Using a Risk-Based Approach to Achieve Net Environmental Benefit During Derailment Remediation**  
Kristjana Zoras - GHD  
Mike Linder - CN Railway

**Sustainability and Resilience**

**Driving ESG Impact through Supplier Engagement: Class I Panel Discussion**  
Mark Coleman - TRC Companies, Inc.  
Raghu Chattrahi - CSX  
David Smat - BNSF Railway  
Kayden Howard - Kansas City Southern Railway  
François Bélanger - CN Railway  
Josh Raglin - Norfolk Southern  
Glen Wilson - CP  
Mark Lutz - Union Pacific Railroad

**Lambert’s Point Terminal - A Living Shoreline Success Story**  
Adam Motsinger & Troy Carpenter - Norfolk Southern  
Alaurah Moss - Dewberry

**Overview of the Department of Energy ARPA-E LOCOMOTIVES Program**  
Robert Ledoux - DoE ARPA-E
Sustainability and Resilience (cont.)

**LOCOMOTIVES Project 1: Advanced Locomotive Technology and Rail Infrastructure Optimization System (ALTRIOS)**
Jason Lustbader - National Renewable Energy Laboratory

**LOCOMOTIVES Project 2: Synthesis of COnsists as Rolling Energy micro-grids (SCORE)**
Lori Bennett - Pennsylvania State University

**LOCOMOTIVES Project 3: Multi-Decadal Decarbonization Pathways for U.S. Freight Rail**
George List - North Carolina State University

**LOCOMOTIVES Project 4: Comprehensive Impact and Cost Assessment Framework of Carbon Lowering Approaches for the US Rail Freight System**
Pablo Durango-Cohen - Northwestern University

**Planning for the Impacts of Climate Uncertainty and Extreme Weather Events for Rail Infrastructure: Increasing Flood Resiliency through Low Impact Development**
Shelley Hazen & Gary Rozmus - GEI Consultants

**Railroad Demolition & Remediation, a Sustainable Solution**
Ryan Jorrey, Stephanie Wernette, Christopher Romanoski & Leo Thorbecke - TRC Companies, Inc.
Tom Kefalas - LA Metro

**Resilience Design in Transit Infrastructure**
David Burrows, Huzefa Irfani & Aly Amr - Gannet Fleming

**Sustainable and Resilient Remediation at the Intersection of Climate Variability and Contaminated Site Management**
Kevin Morris - ERM

**Sustainability and Resiliency Framework**
Kristen Stevens - Union Pacific Railroad

**Taking the Lead: How Rail Will Meet its Climate Commitments by Partnering with Environmentally Sustainable Technologies While Creating Socio-Economic Solutions**
Jeff Bean - Viridi Parente

**The Future of Energy and Rail Decarbonization**
Michael Cleveland - Progress Rail Services

**What We’ve Learned: Planet Tracks, the Industry’s First Employee-led Business Resource Group for Environmental Sustainability**
Laura Pollack - Union Pacific Railroad
Presentations

**Wastewater Management**

The Largest, Environmentally Proactive, and Future Forward Industrial Wastewater System Renewal in Railroad History
Nicole Lenczawkski - Union Pacific Railroad
Matthew Flint - Arcadis U.S., Inc.

Upgrading a Wastewater Treatment Plant to meet Challenges in Sustainability, Efficiency, and Regulatory Policy
Beau Perry - TRC Companies, Inc.
Seble Afework, Syed Tibu & Suzanne Carlson - CN Railway

Why Your Intermodal Maintenance Pads Need a Roof Over Their Heads
Divya Malyala & Lara Thurn - AECOM
Christopher Beranek - Norfolk Southern

**Poster Presentations**

Archaeological Removal of Two Civil War Graves from CSXT ROW
Thaddeus Bissett - Wood
Coley Campbell - CSX

Evaluation of MFR and ZVI as Treatment Alternatives for the Organochlorine Herbicides Dicamba and Acetochlor
Scott Pittenger & Steven Aufdenkampe - Norfolk Southern
Paul Dombrowski & Prasad Kakrla - ISOTEC

Getting Down to the Nitty-Gritty of Our Pump Problem
Shalabha Kalliath, Lara Thurn, Robert Stolt & Smuel Karlovich - AECOM
Christopher Beranek & Christopher Hunsicker - Norfolk Southern

How Clean is Clean for Plastic Pellet Incident Response?
Andrew McManus, Shannon Dunn, Jaceque Powell - Arcadis U.S., Inc.

Invasive Species (Florida Snowbirds) and Endangered Species Can Co-Exist: Navigating the ESA and EFH while Restoring Passenger Rail Service to Florida
Shannon McMorrow & Charlene Stroehlen - Wood

KCS Conservation Initiative Creates Monarch Butterfly Habitat Along Central Flyway
Rebecca Heslep, Jeremy Henson & Roy Hurta - Arcadis U.S., Inc.
Nick Pryor - Kansas City Southern Railway

Lessons Learned from a Successful Residential Remediation
Kristen Stevens - Union Pacific Railroad
Amy Goldberg Day - Arcadis U.S., Inc.

Managing Vapor Intrusion Risks at Railroad Sites
Bart Eklund - Haley & Aldrich

Partnering with City of Chattanooga to Achieve Stormwater Separation Goals
Divya Malyala, Lara Thurn, Robert Stolt, Vineeth Panicker - AECOM
Christopher Beranek - Norfolk Southern
Presentations

Poster Presentations (cont.)

Petroleum Storage Tank Emergency Response Plans (TANK ERPS) AND Stormwater Infrastructure & Drainage (SID) Maps
Richard Johns, Christina Chan & Jill Lam - Keystone Environmental
Mike Linder, Suzanne Carlson & Reid Paulson - CN Railway

Pollinator Conservation Opportunities and Lessons Learned from Utility and Highway Rights-of-Way
Megan Petraitis & Iris Caldwell - University of Illinois at Chicago

Restorative Remediation – Using Brownfields to Bring Nature Back into Our Urban Environments
François Beaudoin - GHD

Submersible Robotic Tank Inspection, API 653
Nick Pryor - Kansas City Southern Railway
Brian Kinsley - Square Robot
Gary Johnson - Transportation Industrial

Sustainable Approach to Extractable Analysis in the Laboratory
Johnny Mitchell - Pace Analytical Services, Inc.

Wastewater Treatment System Operational Cost Savings - Stormwater Diversion
Christina Chan, Antonio Gunardi, Francisco Perello & Mathew Barker - Keystone Environmental
Mike Linder - CN Railway
Chris Brown - Matcon Environmental

Registration Information

Registration Fees:
Advance Registration (paid by 9/16) $375
Registration (paid after 9/16, before 10/25) $475
Onsite Registration (Paid after 10/25) $600
Speaker and Moderator Registration $299
Student Registration* Free
AREMA Committee 13 Banquet $60
*Proof of full-time student status required.

Register today at rrec.railtec.illinois.edu/registration