

# Community Exposures to Produced Water

## Produced Water Workshop Panelists

### PANEL 1

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#### **Ryan Hall**

*NGL Energy Partners, Director, Technical Operations*

Ryan is the director of technical operations for NGL Energy Partners. NGL is the nation's largest water midstream managing over 2.7MM BBL of produced water per day. He holds a BS in Environmental Engineering from Pennsylvania State University and a Masters in Environmental Management from Duquesne University. He leads NGL's efforts to advance the beneficial use of treated produced water.

#### **Aaron Jubb**

*Research Chemist, USGS Geology, Energy & Minerals (GEM) Science Center, Reston, Virginia.*

Following his graduate studies, Dr. Jubb completed post-doctoral work at the National Oceanic and Atmospheric Administration's (NOAA) Chemical Science Division in Boulder, Colorado focusing on the atmospheric chemistry of CFC replacements and at Oak Ridge National Laboratory in Oak Ridge, Tennessee with an emphasis on the development and application of surface enhanced Raman scattering sensors. Dr. Jubb joined the USGS in 2017 where his principle areas of study involve: composition of oil and gas-associated wastewaters; molecular characterization of sedimentary organic matter; and *in situ* characterization of rock wettability

#### **Holly Puglis**

*Research Ecologist, Columbia Environmental Research Center at USGS*

Dr. Holly Puglis is an ecotoxicologist with the USGS with nearly 15 years of experience studying the effects of contaminants in aquatic systems. Holly co-leads an interdisciplinary team of scientists within the Survey to understand the impacts of energy development on environmental health. Her work within the team has focused on the impact of produced water contamination on native amphibian populations, potential toxicity of drill waste materials to aquatic biota, and the effects of produced water on seed germination.

#### **James Rosenblum**

*Research Assistant Professor, Civil & Environmental Engineering, Colorado School of Mines*

Dr. James Rosenblum is a research assistant professor at Colorado School of Mines, leading their Water Technology Hub. His research focuses on water reuse of municipal and industrial sources using biological to membrane-based processes, and their assessment through chemical characterization to *in-vitro* bioassays. Dr. Rosenblum's research also involves data science to evaluate the chemical risks and hazards associated with drinking water. He earned his PhD in Environmental Health Science at Ohio State Universities College of Public Health and has worked as a consultant to being the founder of an industrial water treatment company.

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## PANEL 2

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### Hope Dalton

#### *Director, Colorado Produced Water Consortium*

Hope Dalton is the first Director of the Colorado Produced Water Consortium. The Consortium was established in 2023 in the Colorado Department of Natural Resources by House Bill 23-1242 Water Conservation in Oil and Gas Operations to help reduce the use of freshwater within oil and gas operations. The Consortium's responsibilities also include making recommendations towards developing an informed path for reuse and recycling of produced water inside and potentially outside of oil and gas operations within the state, measures to address barriers associated with the utilization of produced water and research to evaluate analytical and toxicological methods employed during produced water treatment.

Hope has over 20 years' experience working in local, state, and federal government, including service at the Colorado Department of Public Safety, South Platte Renew, Metro Water Recovery, and Tri-County Health Department. Hope has experience in research, policy development, land use, and leading diverse stakeholder groups.

### Rusty Smith

#### *Executive Director, Texas Produced Water Consortium*

A native of West Texas, Rusty Smith brings a unique blend of experience in both the private and public sectors to the direction of the Consortium. Rusty comes to Texas Tech from the Lubbock Economic Development Alliance where he previously served as a project manager, focusing on recruiting new businesses and fostering innovation in the Lubbock region.

Prior to moving back to Lubbock, Rusty spent several years in Austin working in public policy in both the Texas House of Representatives and the Texas Senate, primarily focusing on natural resources, agriculture, and energy. Most notably, Rusty served as the Committee Director for the Texas Senate Committee on Agriculture, Water and Rural Affairs during the 85th Texas Legislature for Chairman Charles Perry. During that time, he oversaw all legislation under the jurisdiction of the committee, including issues impacting water resources across the state. After the 85th session Rusty was hired to serve as the Director of Government & Regulatory Affairs for the Texas Independent Producers & Royalty Owners Association, a statewide oil & gas trade association serving nearly 3,000 individual and corporate members. Rusty received a BS from Texas A&M University and an MBA from Texas Tech.

### Pei Xu

#### *Professor, NMSU, Research Director of the New Mexico Produced Water Research Consortium*

Dr. Pei Xu is a professor in the Department of Civil Engineering at the New Mexico State University, and the research director of the New Mexico Produced Water Research Consortium. Her research focuses on water reuse, desalination, membrane processes, nanomaterials, produced water treatment and reuse, resources recovery and brine valorization. The goal of her research is to address critical water shortage challenges in arid and semi-arid regions. She was selected by the American Association for the Advancement of Science as a Leshner Fellow on Food and Water Security, and C. Herb Ward Family Endowed Interdisciplinary Chair and PESCO Endowed Professor at NMSU.

# Community Exposures to Produced Water

## PANEL 3

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### **Thomas Borch**

*Professor in the Department of Soil and Crop Sciences, with joint appointments in the Department of Civil and Environmental Engineering, and Department of Chemistry.*

Thomas Borch is a Professor in the Department of Soil and Crop Sciences at Colorado State University (CSU), and he holds a joint position in the Department of Chemistry. Dr. Borch is internationally recognized as an authority on soil and water processes that affect the fate and transport of emerging contaminants, metals, and soil organic matter (SOM). He currently studies the effects of permafrost thaw and wildfires on the molecular chemistry of soil carbon and water quality. Dr. Borch's research group, in collaboration with sociologists, economists, engineers, chemists, microbiologists, and toxicologists, have also been pioneering research related to characterization, treatment and reuse of industrial water such as oil and gas produced water for crop irrigation. Dr. Borch's research has resulted in 130 peer-review publications and nearly 200 invited talks nationally and internationally. Dr. Borch has received the Faculty Early Career Development (CAREER) Award from the National Science Foundation (NSF) in 2009, the 2015 (Mid-Career) SSSA Marion L. and Chrystie M. Jackson Soil Science Award by the Soil Science Society of America for outstanding contributions in the areas of soil chemistry and mineralogy and was elected Fellow of the Soil Science Society of America in 2022.

### **Isabelle Cozzarelli**

*Research Hydrologist, USGS Geology, Energy & Minerals (GEM) Science Center, Reston, VA.*

Dr. Cozzarelli is a Research Hydrologist in the USGS Geology, Energy, & Minerals Science Center in Reston, VA. She specializes in interdisciplinary long-term research on the fate and effects of organic contaminants in surface and subsurface environments. Her research focuses on coupled hydrogeological, microbiological, and geochemical processes controlling reactions in hydrogeologic systems and fundamental understanding of biodegradation and contaminant biogeochemical cycles in order to protect water quality and ecosystem health.

She has served as Adjunct faculty in Virginia Tech's Department of Geosciences and on a number of scientific journal editorial boards. She received the USGS Meritorious Service Award in 2017 and, in 2023, she received the "Friend of Water-Rock Interaction & Applied Isotope Geochemistry Award" from the International Association of Geochemistry.

Dr. Cozzarelli was a member of International Advisory Board for the Danish GEOCON (Advancing GEOlogical, geophysical and CONtaminant monitoring technologies) multi-institution study for the period 2014-2018. Dr. Cozzarelli is an elected Fellow of the Geological Society of America and currently Chairs the HEI Energy Review Committee. She holds a B.S. in Geomechanics from the University of Rochester, and a M.S. and PhD. in Environmental Sciences-Geochemistry from the University of Virginia.

### **Nathaniel Warner**

*Associate Professor, Civil and Environmental Engineering, Penn State*

Nathaniel Warner is an Associate Professor at Penn State. Dr. Warner's research group established research methods that helped trace environmental impacts, including radioactivity, from management of oil and gas produced water. His work on the impact of energy development to water resources over the past fourteen years has included evaluation of produced water as a dust suppressant, discharges of treated produced water to supplement surface water, and novel treatment for reuse. Prior to Penn State Dr. Warner worked as a professional geologist for six years.