Reintroducing Windward Environmental to SMWG

John Toll & Annie Gibbs

Sediment Management Work Group Members' Meeting

ExxonMobil Houston Campus

November 14, 2024

Windward environmental LLC

- Lower middle market professional services firm
- Working for regulated parties in the NCP compliance space
  - 60% CERCLA
  - 40% Clean Water Act
- Our business is project delivery
- Business model
  - Listen to and advocate for our clients
  - Produce work products that meet high project delivery standards
  - Apply best available relevant science
  - Earn the trust and respect of all parties
  - Bring out the best in all parties
  - We're successful when our clients are successful

Windward's SMWG Projects Over the Years

Years	Project
2012-2014	Sediment Quality Value (SQV) and Toxicity Reference Value (TRV) Compendia
2015-2017	Recommendations for the Derivation and Use of Biota-Sediment Bioaccumulation Models for Carcinogenic PAHs
2022	BLM Application to Sediment Porewater
2023	Beneficial Use Of Contaminated Sediments: A Literature Review
2023	Survey of Sediment and Fish PCB Remediation

Windward USB Flash Drive Contents

1. **Resumes for key Windward staff members**
2. **Windward contacts (e-mail addresses and phone numbers for key staff)**
3. **SMWG Subject Matter Expert Topics table (Windward)**
4. **Windward presentation, 2024 Fall Sponsors' Forum** ("Characterization of ambient polychlorinated biphenyl background conditions in surface waters of the Pajarito Plateau, New Mexico")
5. **Church, B.G., J. Toll, S. Tobiason, A. White. 2022.** Characterization of ambient polychlorinated biphenyl background conditions in surface waters of the Pajarito Plateau, New Mexico. *Integrated Environmental Assessment and Management* **19**(5):1307-1319.

   Supplemental Information-1. Figures.
   Supplemental Information-2. Data tables.
6. **Windward presentation, 2024 Fall Members' Meeting** ("Reintroducing Windward Environmental to SMWG")
7. **Toll, J. 2024.** The postmodern era of environmental regulation. *Integrated Environmental Assessment and Management* **20**(6):1783-1786.

Sediment Management Work Group
Subject Matter Expert Topics

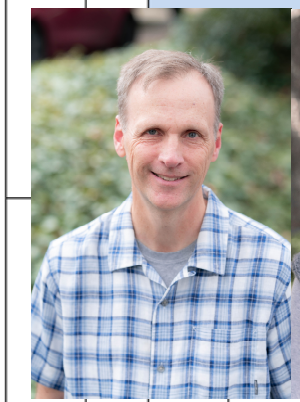
	Topic	Subtopics	Expert Contacts
1.	Contaminated sediment assessment	Remedial investigation	
		Study design	
		Monitored natural recovery/enhanced monitored natural recovery/thin layer cover	
		Adaptive management	John Toll (johnt@windwardenv.com)
		Dredging	
		Dredging, dewatering and disposal design	
		Channel design including bioengineered bank protection and restoration	
		Permitting, including 404/401, special-status species, incidental take, essential fish habitat	
		Monitoring plan design	Jennifer Parker (jenniferp@windwardenv.com) Suzanne Replinger (suzanner@windwardenv.com)
			Jennifer Parker (jenniferp@windwardenv.com) Suzanne Replinger (suzanner@windwardenv.com)
		ion planning	
			nv.com)
			vardenv.com)
			vardenv.com)
			ntacts
			vardenv.com)
			Craig Hanson (craigh@windwardenv.com)
		thylation)	Bob Santore (roberts@windwardenv.com)
			John Toll (johnt@windwardenv.com)
			Suzanne Replinger (suzanner@windwardenv.com)
			David DeForest (davidd@windwardenv.com) Bob Santore (roberts@windwardenv.com)
			Bob Santore (roberts@windwardenv.com) David DeForest (davidd@windwardenv.com)
2.	Capp		
3.	Cont rem		
9.	PFAS/Emerging Contaminants	PFAS chemistry	Amara Vandervort (amarav@windwardenv.com)
		PFAS toxicology	Kate McPeek (katem@windwardenv.com) Shannon Katka (shannonk@windwardenv.com)
		Water treatment	
		Destruction	
		Multimedia fate	
		Transport modeling	
		Materials to Address PFAS in Sediments and Groundwater to Surface Water Discharge	
10.	Marine geotechnical and structural engineering (separate or combined)		
11.	Health and safety		
12.	Allocation		
13.	Public Engagement	Community outreach/stakeholder engagement	
		Community impact mitigation	
		Risk communication	Suzanne Replinger (suzanner@windwardenv.com)
		Environmental justice	
14.	Maintenance dredging	Characterization	Suzanne Replinger (suzanner@windwardenv.com)
		Authorizations and permitting	Suzanne Replinger (suzanner@windwardenv.com)
		Implementation	
		Disposal	

Amara Vandervort

Annie Gibbs

Bob Santore

Craig Hansen

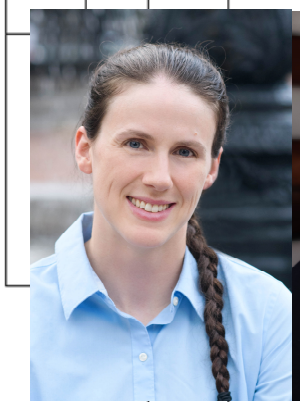


David DeForest

Jenn Parker

John Toll

Kate McPeek



Kelly Croteau

Kim Goffman

Shannon Katka

Suzanne Replinger

Topic	Expert Contacts	
Contaminated Site Assessment	Croteau DeForest Goffman Hanson Katka	Parker Replinger Santore Toll Vandervort
Contaminated Sediment Remediation	Gibbs Parker	Replinger Toll
Natural Resource Damages	Gibbs	
Chemistry	Vandervort Parker Santore	Goffman Hanson
Regulatory & Policy Updates	Toll DeForest	Santore Replinger
Specific Contaminants of Concern	DeForest Replinger	Santore Toll
PFAS/Emerging Contaminants	McPeek Katka	Vandervort
Public Engagement	Replinger	
Maintenance Dredging	Replinger	

Contact list and resumes provided on the USB flash drive

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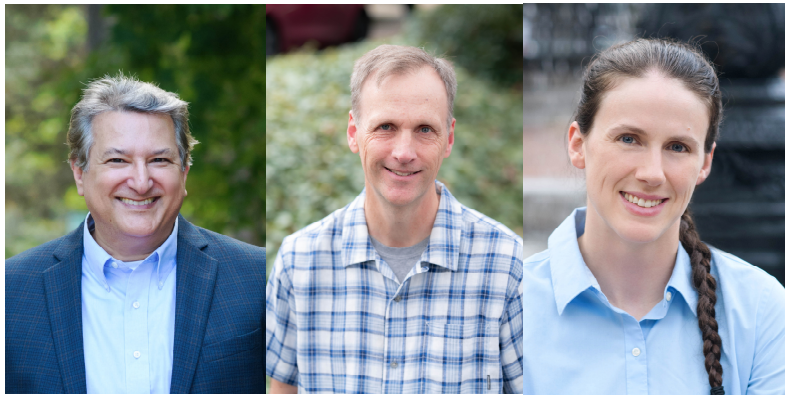

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Contact list and resumes provided on the USB flash drive

Annie Gibbs

Natural Resource Damage Assessments, Biological Assessments

- MS Environmental Toxicology and Chemistry
- 4 years with NOAA before moving to consulting
- NRD cases/settlements: 16/3
  - Settlements – St. Louis River Interlake Duluth Tar; Sheboygan River and Harbor; Four Star Supply diesel spill
- NRD litigation: Port Gamble Mill and Bay NRD (testifying expert), Kalamazoo River Morrow Dam (pre-trial expert)
- Developer and technical reviewer of environmental assessments, biological assessments

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Contact list and resumes provided on the USB flash drive

Suzanne Replinger

- Leads human health and ecological risk assessments for projects ranging from small, state-led sites to large Superfund sites
- Designs sampling programs to support risk evaluations and improve understanding of contaminant fate
- Develops chemical bioaccumulation models to calculate preliminary remediation goals (PRGs) and evaluate risks associated with post-remedy scenarios
- Provides clear leadership and communication to
  - meet project goals
  - respond to client needs
  - ensure that the final products meet Windward's standards for high-quality deliverables

Jennifer Parker

- Over 20 years of experience environmental science and chemistry
  - 15 years in environmental consulting
  - 7 years environmental laboratory/research
- Contaminated Sediment Site Assessments & Remediation
  - Remedial investigations
  - Study design
  - Sampling strategies/monitoring
  - Ecological risk
  - Benthic surveys
  - CA SQO evaluation
  - NRD support
- Litigation Support
  - Forensic chemistry/fingerprinting

Shannon Katka

- Over 20 years of consulting experience in environmental assessment and ecological risk assessment
- Ecological risk evaluation
  - Aquatic and terrestrial ERAs at small sites, large complex Superfund sites, and eco risk evaluations at international sites
  - Ecotoxicity – development and interpretation of TRVs
    *Developed SQV/TRV compendium for SMWG (2012-2014)
  - Dietary modeling – including application/evaluation of BSAFs
    *Provided cPAH BSAF recommendations for SMWG (2015-2017)
  - NRD support
- Contaminated Sediment Assessments
  - Sediment remedial investigations, including development of study design and sampling strategies
- Sediment Remediation
  - Derivation of risk-based sediment remediation goals

Amara Vandervort

- Chemistry and Emerging Contaminants
  - Creation and implementation of QA/QC procedures for chemistry, bioassessment, field measurement, and toxicity assessment
  - USEPA 1600 series method validation study and laboratory inter-comparison study administration
  - Analytical chemistry laboratory management
- Contaminated Sediments Assessments
  - QAPP preparation and quality assurance program design (small-scale projects, superfund projects, and state-wide programs)
  - Coordination and oversight of field sampling (sediment, water, tissue, and passive samplers), laboratory programs, and data validation
  - Field lead for sediment core processing, surface water sampling, and tissue sample collection and processing
- Lab & Consulting
  - 20 years environmental quality assurance program design and implementation/environmental laboratory
  - 7 years environmental consulting

Kate McPeek

- Environmental and analytical chemistry
- Aquatic toxicology
- Disturbance ecology
- Contaminant monitoring (aquatic & terrestrial)
- Environmental data quality assessment
- Design, coordination, and supervision of environmental sampling and survey efforts throughout the United States.
- Particular interest in contaminants of emerging concern, including pharmaceuticals and PFAS
- Manages projects investigating the sources and ecological impacts of CECs in the Pacific Northwest

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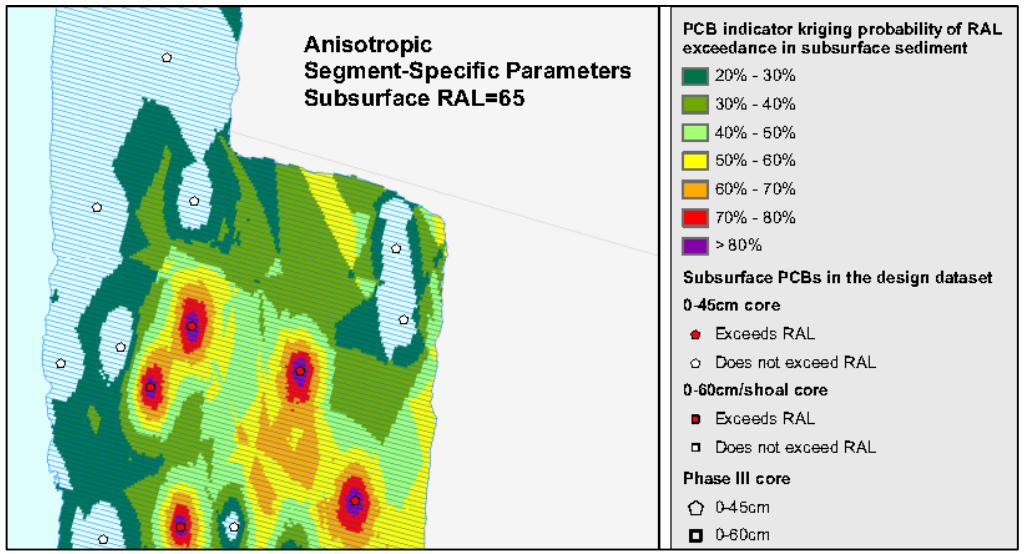
Contact list and resumes provided on the USB flash drive

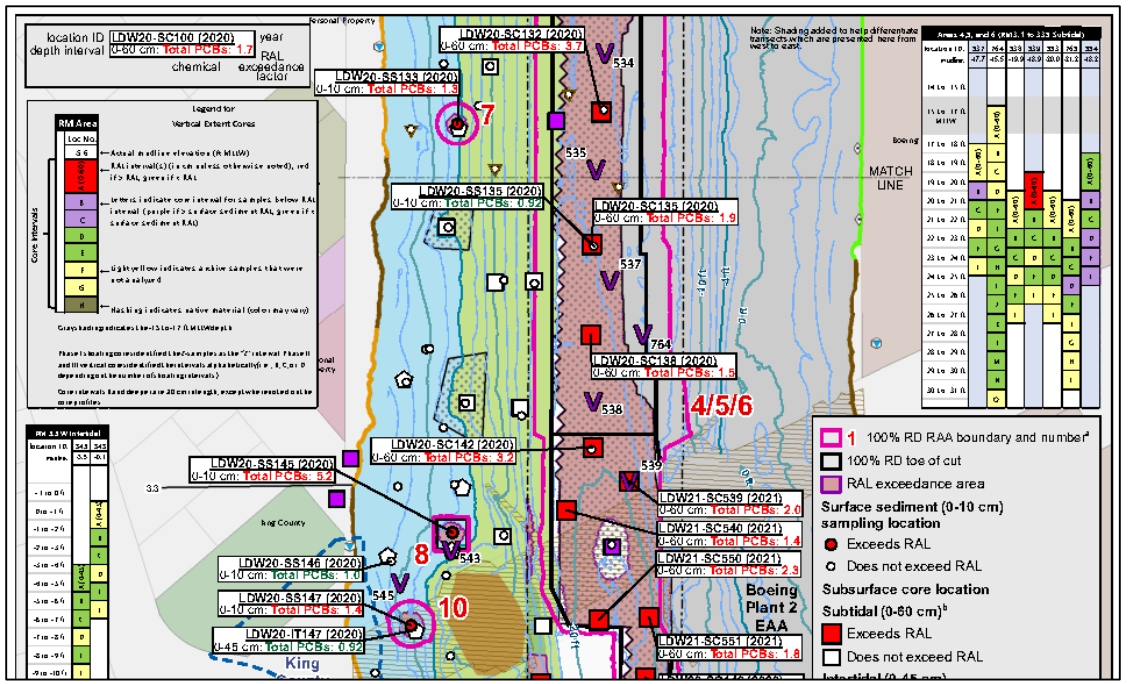
Kim Goffman

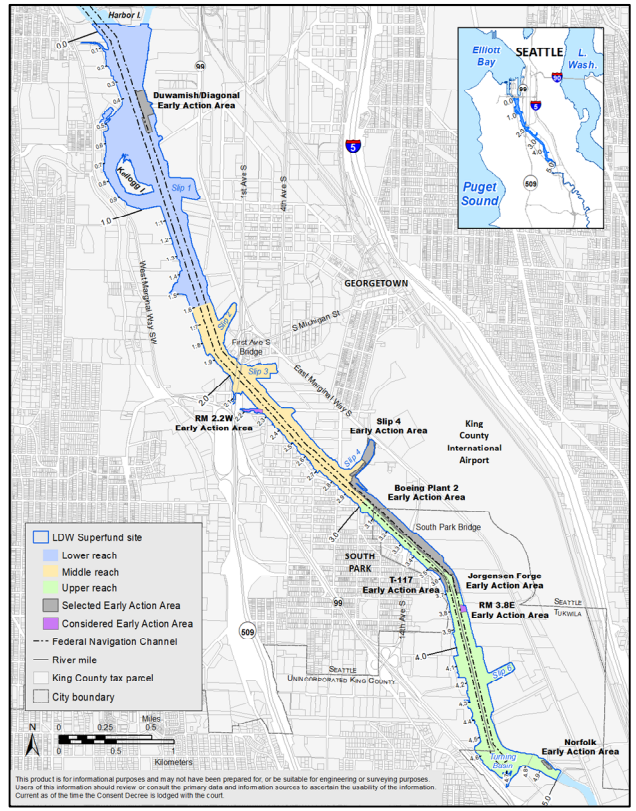
- Primary responsibility is to facilitate the collection, management, and reduction of chemical, biological, physical, and engineering data in accordance with the needs of project teams
  - Laboratory and data validator oversight
  - Quality assurance project plan compliance
  - Assurance of accurate and efficient incorporation into Windward's EQuIS database
- >25 years experience in data management and database design/development
  - RI/FS
  - Ecological and human health risk assessments
  - Design investigations
  - Construction monitoring
- Field geology and sampling background provides broad understanding of unique characteristics of environmental data, the needs of the project scientists and engineers who interpret the results, and the requirements of the agencies providing regulatory oversight.

Craig Hanson

Craig and his team have decades of experience managing and analyzing a wide variety of sediment chemistry data from complicated sites, turning those data into useful management decision-making information.







- Working with trade groups and regulated parties to develop bioavailability-based toxicity models for metals and selenium
- Developing and incorporating bioavailability-based toxicity models into U.S. and Canadian regulations
  - United States Environmental Protection Agency
  - Canadian Council of Ministers of the Environment
  - Washington Department of Ecology
  - Environment and Climate Change Canada
  - British Columbia Ministry of Environment and Climate Change
- Supporting the mining industry with expert knowledge of chemical fate and ecotoxicity from permitting through closure planning

Bob Santore
David DeForest
Kelly Croteau

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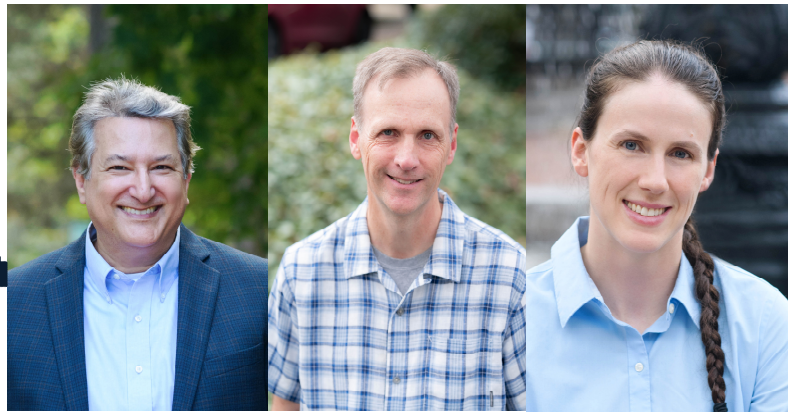

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John Toll

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John is singularly the best ecological scientist I have ever dealt with and, no matter what the project (cleanup, permitting, NEPA), he had the total respect from the agency personnel. I would recommend him for any project.

-Joan Snyder, Stoel Rives

Integrated Environmental Assessment and Management — Volume 20, Number 6—pp. 1783–1786

Editorial

The postmodern era of environmental regulation

Four years ago this month, I published an editorial in *Integrated Environmental Assessment and Management* (IEAM) titled "The Modern Era of Environmental Regulation" (Toll, 2020), a synopsis of the first 50 years of the modern era. It applauded improvements in environmental quality achieved by regulating chemical pollution, but it criticized the environmental regulatory framework and the profession that had developed to serve it. My concern was that environmental regulations provided the motive, means, and opportunity to spend too much time and money on relatively minor problems.

That concern hasn't ebbed. I've become both more cynical and more pragmatic. I've come to appreciate the importance of trust. Risk aversion creates mistrust, making smaller problems more difficult to solve than bigger ones. If you find yourself working on a site where the risk or potential risk reduction is relatively low, beware: Such sites can be more difficult to close. Stakeholders often mistrust experts who tell them that a site is not badly polluted, especially if remediation might be a gateway to restoration or redevelopment opportunities.

My pragmatic side recognizes that people, by and large, are rational actors.

If behaviors seem irrational, then we should suspect that we misunderstand what motivates those behaviors. As environmental scientists and engineers, we are trained to collect and analyze data to gradually reveal the truth of a matter. That's fine up to a point, but the logic breaks down when we buy into the belief that environmental data and their analyses hold the answers to environmental problems. We overvalue data on environmental conditions and undervalue data on human values and motivations. This fundamental misconception leads to misunderstandings, which lead to frustration. Frustration makes us vulnerable to being drawn into what, in my 2020 editorial, I called the "regulatory-industrial complex." The "regulatory-industrial complex" rewards people for enabling and indulging risk aversion because, frankly, fearmongering pays and most of us need paychecks. In the United States alone, we're spending billions of dollars (USD) to remediate (and litigate) contaminated sites, with little evidence that these investments are paying off in reduced risk. Were I to indulge my cynicism, I might say that these expenditures are meant to fund careers rather than mitigate risk.

Address correspondence to JohnT@windwardenv.com

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This problem is on track to get worse before it gets better. Remedial investigations at contaminated sites in the United States generally focus on Toxic and Priority Pollutants. The Toxic Chemicals list is found at 40 Code of Federal Regulations (CFR) Part 401, §401.15 (https://www.ecfr.gov/current/title-40/chapter-I/subchapter-N/part-401/section-401.15) and the Priority Pollutants list is found in Appendix A to 40 CFR Part 423 (https://www.ecfr.gov/current/title-40/chapter-I/subchapter-N/part-423/appendix-Appendix%20A%20to%20Part%20423). Both lists specify chemicals regulated in the United States for which we have developed analytical test methods. Note that the Toxic and Priority Pollutants that we study in contaminated site investigations generally do not include contaminants of emerging concern (CECs). CECs comprise chemicals that are widely used (e.g., pharmaceuticals and personal care products) and chemicals that were in widespread use until recently, like polyfluorinated alkyl substances (PFAS). Ling's (2024) recent paper can be seen as support for the "worse before it gets better" assertion. The author reports that "current costs to remove and destroy the total PFAS mass released annually into the environment would likely exceed the global gross domestic product of 106 trillion USD." Thus, remediation, which is already cost prohibitive, could get a lot more expensive unless we find cheaper, better solutions to pollution problems.

> *"If we set ourselves to the task, could we retool regulations fast enough to make a meaningful contribution to achieving the United Nations' goals in the next quarter century?"*

Less emphasis on chemical exposure, and more emphasis on whether and how chemicals affect ecosystem services and function, would be a step in the right direction. Unfortunately, we have installed institutional barriers that make it difficult to change course. I learned this in the 1990s. At the time, I was working on various projects tasked with helping plan 30-year combined sewer overflow (CSO) control programs. My team conducted technical studies that focused on chemical and pathogen fate and effects. One site stands out in my memory, because of the stakeholder involvement process. We met monthly with the stakeholder group throughout the life of the three-year project. We presented our work, answered questions from stakeholders, and used their advice to guide next steps. At the end of the three years, the stakeholder group wrote the final report for the elected official making the CSO control decision. The

 DOI: 10.1002/ieam.4995

Proselytizing

1. Computational toxicology will revolutionize the way we think about and solve pollution problems. The changes we're going to witness will resemble the changes in the public health profession in the late 19th and early 20th centuries. — Technology
2. The One Health Initiative will reshape the politics and practice of environmental stewardship in ways we don't yet grasp. — Philosophy
3. Scarcity, population growth will drive innovation. — Economics
4. The laws and policies that were brilliant adaptations to the needs of the United States in the mid-20th century are running out of gas, because they don't align with the technology, philosophy and economics of the early to mid 21st century.
5. Change agents are working in the midst of the chaos. They don't have a choice. To use a chemical engineering analogy, they're catalysts. Catalysts don't work outside the reactor.