Dreas Nielsen
Senior Science Advisor

Education and Credentials

M.S., Oceanography, Oregon State University, 1982

B.S., Biology, Union College, 1976

Professional Affiliations

American Statistical Association

Guest Lecturer

Co-instructed one-day course on environmental forensics for CLE credit and New Jersey LSRP credentials, 2018, 2019

Professional Profile

Mr. Dreas Nielsen is a senior science advisor at Integral Consulting Inc., who specializes in quantitative analysis of environmental data. His scientific expertise is principally in the areas of sediment contamination, chemical bioaccumulation, biological effects of contaminants, and chemical transport and fate. His approach to scientific topics stresses analytical and quantitative methods, with an emphasis on computer applications. During his 36 years of experience, Mr. Nielsen has performed and managed the collection and analysis of biological, physical, chemical, and geographic data from sites throughout the United States. Potential impacts at these sites were associated with heavy manufacturing, petrochemical manufacturing, wood treatment, wood pulp and paper production, shipbuilding, mining, and smelting. Mr. Nielsen's experience with these sites covers a broad range of contaminants, media, pathways, and exposures. Throughout this diverse range of conditions, he has collected, analyzed, modeled, and presented data to support ecological and human health risk assessments, RI/FSs, natural resource damage assessments, and cost allocation.

Mr. Nielsen's technical expertise includes data management, statistical analysis, integration of database and geographic information systems, mathematical modeling, programming, and other quantitative methods. Mr. Nielsen has designed and developed numerous databases customized to meet specialized needs of projects and clients and has developed project-specific web pages, including GIS-based interfaces, to facilitate broad and straightforward access to project data and analyses.

Relevant Experience

Ecological Risk Assessment and Natural Resource Damage Assessment

Evaluation of Spatial and Temporal Changes in Fish Communities, Florida—Coordinated and carried out analyses of spatial and temporal variations in fish communities and nutrient regimes in response to changing freshwater flow rates. Statistical testing methods, similarity measures, data reduction and smoothing methods, and graphical analyses were used to characterize fish communities, evaluate relationships between fish communities and physical/chemical conditions, and parameterize an *EcoSim* model.

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Natural Resource Damage Assessment, Montana—Applied t-SNE similarity and likelihood ratio analyses to evaluate metal concentrations in a stream relative to the composition of local bedrock material and upstream mine tailings. Similarity and statistical methods produced a consistent overall evaluation, and the likelihood ratio analysis provided multiple lines of evidence to characterize locations as most strongly influenced by regional geology or by mine tailings.

Benthic Community Assessment and Causal Analysis, New Jersey—Developed a new statistical method to quantitatively integrate multiple lines of evidence of community impairment. The method, based on likelihood ratios, produces a scalar measure that is directly interpretable as evidence, and provides a basis for further quantitative analyses of the role of potential chemical and physical stressors.

Natural Resource Damage Assessment, Tombigbee River, Alabama—Evaluated potential damages in a DDT-contaminated estuary for a variety of receptors and exposure conditions, incorporating spatial variability in conditions throughout the site, and addressing different remedial scenarios. Developed time- and area-weighted exposure estimates for mosquitofish based on preferred habitat and the timing of seasonal flooding of the site, and related to measured DDT concentrations in tissue. Used the results to inform the design of post-remedial monitoring.

Natural Resource Damage Assessment, Greens Bayou, Texas—Conducted analyses of the spatial and vertical distribution of chlorinated solvents and pesticides. Developed estimates of exposure and damage to the benthic community to be used as a basis for compensatory restoration estimates. Estimated the post-remedy recovery period based on remedial design and sediment accumulation rate estimates, and developed recommendations for the post-remedial monitoring plan.

Natural Resource Damage Assessment, Saginaw River, Michigan—Coordinated the compilation, review, and analysis of data from three decades of sampling of a PCB-contaminated river and bay. Performed temporal and 3-dimensional spatial analyses of the data, including computation of mass-based assessment and cleanup thresholds. Presented results to oversight agencies, and prepared position papers to support litigation of a natural resource damage claim.

Natural Resource Damage Assessment, St. Lawrence River—Developed the database of sediment and tissue PCB data used jointly by PRPs and Trustee agencies in the cooperative natural resource damage assessment conducted on the St. Lawrence River.

Ecological Impacts of Ichthyoplankton Entrainment, Gulf of Mexico—Evaluated environmental impact statements that were prepared for liquefied natural gas regasification facilities in the Gulf of Mexico, focusing on the assessment of entrainment and impingement impacts to fish eggs and larvae. The evaluation produced qualitative and quantitative estimates of the effect of the data, assumptions, calculation methods, and models used on the overall impact assessments. Recommended alternative approaches to improve substantially the accuracy and precision of these impact assessments.

Ecological Risk Assessment, Newport, Delaware—Managed the compilation of tabular and GIS data for an ecological risk investigation at a former wood-treating facility in the eastern United States. This project evaluated and rectified data integrity problems in data sets produced by a previous contractor and integrated the tabular data with spatial data to facilitate site-specific ecological risk assessment. Also used these data to characterize exposure of receptors at the site.

Ecological Risk Assessment, Fox River, Wisconsin—Provided technical review of the development and application of a food web model to predict PCB dynamics in an industrial estuary, focusing on ecological, physiological, and computational issues.

Ecological Damage Assessment Following a Chemical Spill, Ohio River—Evaluated species abundance data in samples from impacted and unimpacted areas. Assessed the appropriateness of different statistical models for estimating the probability that any rare (threatened or endangered) species were affected.

Natural Resource Damage Assessment in Commencement Bay, Washington—Evaluated natural resource damages resulting from contamination of sediment of an urban waterway with metals, PCBs, and other organic chemicals. Automated the calculation for a spatially complex site to allow rapid evaluation of alternative scenarios.

Sediment Assessment

Evaluation of Contaminated Site Recovery Rate, Portland, Oregon—Calculated the statistical likelihood of recovery over a range of future years for a contaminated sediment site, based on statistical modeling of temporal changes in fish tissue PCB concentrations, and the application of likelihood ratios to contrast alternative recovery scenarios.

Sediment Data Analysis, Upper Columbia River, Washington and British Columbia—Coordinated the analysis of both recent and historical sediment chemistry data from the Upper Columbia River to assist in the planning of future sampling programs. Analyses included multivariate analyses of element abundances, analysis of spatial and vertical variation in concentrations, characterization of background conditions and comparison to site conditions, and evaluation of partitioning to pore water. These analyses identified several different classes of sediment in the river, characterized by different chemical and physical characteristics. Evaluation of the fingerprints of these classes relative to potential source materials provided insights into both the spatial and proportional influence of potential sources.

Evaluation of Groundwater-Sediment Interactions, Patrick Bayou, Texas—Evaluated the potential contributions of groundwater, based on measured concentrations and flow gradients, to influence ecological risk in an adjacent waterway. Contrasted predictions of groundwater transport calculations with results of toxicity testing in the waterway.

Detailed Sediment Investigation, San Diego, California—Managed a comprehensive sediment investigation at two shipyards in San Diego Bay, focusing on the effects of metals, organo-metallic compounds, PAH, PCBs, polychlorinated triphenyls, and petroleum hydrocarbons on aquatic life,

aquatic-dependent wildlife, and human health. This investigation included a sediment triad study; bioaccumulation tests; ecological and human health risk assessments using site-specific exposure data; analyses of fish histopathology, age and condition, and PAH exposure; sediment profile imaging; and analyses of sediment mineralogy. Developed a method to synthesize the many measurements of biological conditions to produce a quantitative estimate of impairment relative to reference conditions. Also developed a deductive approach to causation analysis that provides a definitive assessment of the potential impact of site-related chemicals. Developed alternate site-specific cleanup levels and assessed their predictive performance. A feasibility study also was conducted to evaluate alternative remedial designs.

Review of Regulatory Proposals—Conducted a technical review of the evaluation approaches used in EPA's July 1996 draft documents *The National Sediment Contaminant Point Source Inventory: Analysis of Facility Release Data* and *The National Sediment Quality Survey: A Report to Congress on the Extent and Severity of Sediment Contamination in Surface Waters of the United States*. Identified flaws in the technical basis and mathematical formulation of the HAZREL ranking system, and conducted an error analysis to demonstrate the impact of these flaws. Evaluated the sediment quality values used for sediment screening, and applied statistical analysis that revealed their lack of comparability. Demonstrated that the evaluation methods used in both documents were driven by the number of samples collected in a geographic region rather than the characteristics of those samples, and recommended modifications of the methods.

Development of Sediment Assessment Guidance, Olympia, Washington—Managed a project to support the Washington State Sediment Management Unit, which included developing guidance for sediment sampling and analysis plans, reviewing approaches for deriving human health-based sediment quality criteria, and developing an action plan for creation of multi-user disposal sites.

Evaluation of Bioaccumulation-Based Sediment Standards, Olympia, Washington—Managed and carried out evaluations of bioaccumulation of organic and inorganic chemicals in fish and shellfish using data from the literature and from an extensive chemical database for Puget Sound. Evaluated the effects of sediment conditions, chemical properties, and biota characteristics on bioaccumulation potential, and prepared a critique of bioaccumulation assessment methods that includes recommendations regarding data collection and assessment approaches.

Forensics

Evaluation of DDT Sources, Portland Harbor, Oregon—Applied matrix factorization and likelihood ratio analyses to characterize and contrast local upland and upstream sources of DDT and degradation compounds (DDx). Characteristic DDx and dioxin/furan compounds and ratios distinguished alternative sources, and likelihood ratio analysis quantified the strength of evidence for the relative contribution of different sources to downstream sediment samples.

Evaluation of Potential PCB Sources to Rainbow Trout, Clark Fork River, Montana—Used a matrix factorization (unmixing) analysis to identify different underlying patterns of PCB congeners within rainbow trout tissue as a whole, and evaluated those in the spatial context of the Clark Fork River and its tributaries to identify potential locations of PCB sources.

Oil Aging Analysis, Gulf of Mexico—Directed the evaluation of oil-contaminated marine water samples to evaluate contributions of fresh and aged oil. A matrix factorization (unmixing) method was applied to measurements of parent and alkylated PAHs to identify and characterize chemical patterns representative of fresh and aged oil.

Sediment Contaminant Deposition History, Los Angeles Harbor, California—Evaluated the history of contaminant releases to a harbor embayment in support of remedial cost allocation. An overall sediment deposition rate derived from dredging history and bathymetry was combined with analysis of the likelihood of co-occurrence of maximum concentrations of different contaminants with an indicator chemical. Multiple chemicals each provided a separate line of evidence that were combined statistically to associate maximum deposition with different periods of site occupancy.

Dioxin Source Analysis, Washington—Provided senior technical consulting and oversight of analyses using multivariate data analysis methods to evaluate potential sources of dioxins to residential soils. Multiple methods (discriminant analysis, unmixing analysis, and spatial similarity analysis) confirmed the presence of two spatially and chemically distinguishable dioxin/furan fingerprints corresponding to an industrial source and urban background. Relative contributions of each pattern in soil samples were derived to support cleanup decision-making.

PCB Source Analysis, San Diego, California—Directed the evaluation of PCB congener concentrations in sediments along an industrialized shoreline in support of cost allocation negotiations. A matrix factorization (unmixing) method was used to identify and characterize distinct PCB patterns (potential sources) and their relative contribution to each sediment sample. Analysis of the spatial distribution of each chemical pattern identified distinct point sources along the shoreline.

PAH Source Analysis, Commencement Bay, Washington—Evaluated potential contributions of different sources of PAHs in sediment of an urban waterway. Although PAHs are labile and are therefore non-conservative tracers, an analysis focused on PAHs bound to organic carbon revealed distinct chemical and spatial patterns that were associated with point source locations on the shoreline.

Sediment Metal Pattern Classification, Washington—Planned and oversaw pattern analyses of sediment metals data, developing a classification scheme to distinguish sediments reflecting different sources or partitioning and transport mechanisms.

Beach Dust Resuspension Analysis, Washington—Planned and provided senior technical oversight of a screening-level evaluation of the potential impact on riparian soils of aerial transport of resuspended dust from sediments exposed during lake drawdown.

Cost Allocation, Anniston, Alabama—Managed a project to evaluate potential sources of metals and PCBs to a contaminated residential area, using environmental measurements, historical documents, and emission rate calculations based on industrial operating characteristics and feed materials, in support of cost-recovery litigation.

Mercury Bioaccumulation Modeling, New York—Provided senior technical consulting on the development of a bioenergetics-based food web model to evaluate the multi-year bioaccumulation response of fish to different mercury exposures.

Cost Allocation, Ohio—Reviewed documents and data generated during a multi-year assessment and cleanup of a waste disposal and recycling site. Evaluated the nature, fate, and distribution of contaminants found at the site in relation to raw materials, waste products, and practices at the client's manufacturing site. Evaluated potential formulations of industrial materials used decades ago, to determine potential contaminants of concern originating at the client's facility, and reviewed records of waste haulers to develop independent estimates of the client's proportionate contribution to the site.

Data Management, Analysis, and Communication

Multistate PCB Litigation Support—Developed the databases and managed the data acquisition, organization, and dissemination for a multistate, multisite toxic tort litigation. Web-accessible databases were created for members of the project team. These databases included site-specific compilations of environmental chemistry data from hundreds of sources and an overall inventory of data sets that included characterization and prioritization information. Data set characterizations were aligned with areas of expert testimony to facilitate each testifying expert's rapid access to relevant data.

Deepwater Horizon, Gulf of Mexico—Principal-in-charge for Integral's support to BP Exploration and Production Inc. in response to the Deepwater Horizon accident. Designed and implemented the database used to compile chemical and biological data collected from the Gulf of Mexico. Established procedures and developed automation tools for the import of data from electronic reporting formats. Coordinated a team of data managers from multiple companies in the standardization and normalization of numerous specialized data sets. Participated in the development of standard operating procedures for data collection and management, and in the establishment and implementation of data verification procedures. Collaborated with chemists, toxicologists, and biologists to ensure the highest possible levels of data completeness and accuracy.

San Jacinto River Waste Pits RI/FS, Harris County, Texas—Coordinated the acquisition, organization, statistical and spatial analysis, and reporting of sediment and tissue characterization data. Releases of dioxins and furans from a closed disposal facility mingled with other industrial and municipal wastes in the waterway, and data collection and analyses were conducted to evaluate sources, bioaccumulation potential, and remedial alternatives.

Ecological Risk Assessment and Remediation Alternative Assessment—Developed an interactive web application that integrates a database of chemical data with spatial (GIS) data to allow users to explore changes in ecological risks associated with different remediation approaches in a forested wetland. Chemical data were loaded into a database from electronic laboratory deliverables, GIS data were organized and standardized, and a web mapping interface was implemented. The tool allows users to select different areas for remediation and to apply different cleanup levels and

residual levels, and calculates surface area-weighted average chemical concentrations and ecological hazard indexes for several receptor species.

Calcasieu Impact Assessment, Calcasieu Estuary, Louisiana—Developed an integrated GIS and relational database application to assess natural resource damages in a Gulf Coast ecosystem. Developed and applied data quality objectives, data quality assurance procedures, and data summarization rules for the acquisition, review, and interpretation of historical data from the estuary, including sediment, water, and tissue chemistry, species abundance, and toxicity test data. Created a software interface to the integrated application for use by an industry coalition and a public agency, and created a customized version for a private client. Conducted analyses to highlight spatial and temporal variation throughout the estuary, as well as systematic differences between historical data sets.

Document Management for Toxic Tort Litigation Support—Designed an on-line system to allow client access to a database of technical documents relating to exposure and health effects of a widely used industrial material. The on-line system provides the ability to search for documents using citation information and keywords and allows display of document text and technical comments.

Data Explorer for Human Health Exposure Assessment—Developed a desktop application that integrates tabular and GIS data to allow users to explore potential human health exposures to residual industrial wastes in a residential area. Spatial information on the locations of contaminated areas and of homes and businesses was integrated with tabular data on chemical concentrations and the history of individuals' residential and employment locations. The application provides the user with a map-based interface that allows exploration of both temporal and spatial relationships between contaminant locations and individuals' potential exposures.

Management of Photographic Data on Human Activities—Developed software tools to automate the acquisition and review of automatically collected photographs of human use activity at a contaminated site.

Post-Katrina Damage Assessments to Insured Properties, Gulf Coast—Developed web-based interfaces to display the locations of insured properties, peak wind speeds, and storm surge heights in the track of Hurricane Katrina.

Health Risk Assessment, Detroit, Michigan—Developed a database to support screening and detailed characterization of potential mercury contamination in houses following servicing of mercury-containing natural gas pressure regulators. This database supported real-time data collection via data entry forms on handheld computers, with daily uploading of data, reporting of results, and scheduling of multiple field crews for several different phases of assessment and cleanup. The database included a map interface to support efficient assignment of sampling locations to field crews and was deployed on the client's network.

California Earthquake Authority Rapid Damage Assessment System, California—Designed an on-line system to automatically acquire real-time data on earthquake ground motion from U.S.

Geological Survey processing centers, integrate that with a database of client properties, and present the information in a GIS-based web interface.

Landslide Litigation Support, California—Developed map-based, on-line systems to present narrative and photographic data on environmental and structural damage resulting from severe weather and geological subsidence.

RCRA Assessment at a Pulp Mill, Savannah, Georgia—Designed and implemented database features to store the topology of a drainage pipe network so that the downstream effects of facility processes and discharges could be evaluated, and the potential sources of downstream contamination identified. Pipe data stored in the database were linked with GIS data to allow visual querying and display of the pipe and discharge information.

Ecological Assessment, Rocky Flats, Colorado—Developed a database to integrate information collected during 7 years of ecological monitoring at the Rocky Flats Environmental Technology Site in Colorado. This database integrated the disparate data formats used by different monitoring programs during several years and presented the user with a single, consistent interface to all of the data.

Cost Allocation, Commencement Bay, Tacoma, Washington—Designed and implemented a database to support Superfund site administration, including PRP search, source control tracking, and remedial action tracking. Wrote the user's and programmer's guides for this database.

Site Characterization

Sediment Management, San Diego, California—Developed sampling designs for evaluation of an upland area to be used for dredged materials management. The sampling program was designed to distinguish between infiltration during dewatering of contaminated sediment and historical contamination of subsurface soil and groundwater.

Remedial Investigation and Feasibility Study, Onondaga Lake, New York—Conducted evaluations of the potential effects of alternate remedial actions for a feasibility study for cleanup of Onondaga Lake, New York. Coordinated the management of sampling data, which involved more than 1,500 samples of sediment, water, and tissue. The samples were analyzed for organic, inorganic, and conventional parameters by five separate laboratories.

Focused Feasibility Study, Crawfordsville, Indiana—Managed a project to evaluate remedial options for a wooded floodplain containing PCBs released from an industrial facility upstream, as well as downstream transport through a channel draining the wooded area.

Smelter Hill Remedial Investigation and Feasibility Study, Anaconda, Montana—Refined the specifications and implemented the software to transfer RI/FS data from the Smelter Hill Superfund site to EPA's Clark Fork Data Management System.

Property Damage Litigation Support, Texarkana, Arkansas—Managed a project to assess the transport of PAH downstream from several historical and current sources, in support of expert testimony in a property-damage litigation case.

Chemical Fate and Transport

Remedial Investigation and Feasibility Study, Ward Cove, Alaska—Managed the development of screening and 3-dimensional models of contaminant transport and fate in Ward Cove (Ketchikan), Alaska, and carried out other analyses of sediment accumulation and bioaccumulation for the determination of areas of concern and appropriate remedial actions. The predominant influence of organic matter degradation required model customization to account for effects such as *in situ* production of 4-methylphenol. Also specified statistical methods for long-term monitoring of biological and chemical conditions.

Modeling of Permitted Discharge Impacts on Sediment, Puget Sound, Washington—Conducted an evaluation of models for assessing the potential impact on sediment of permitted discharges in the State of Washington. Performed modeling of several example sites, developed application guidance for the WASP4 model, and conducted training in model usage.

Other Technical Reviews

Ecological Impact Assessment, National Engineering Laboratory, Idaho—Managed the quality assurance review of organic and inorganic analysis data from the Idaho National Engineering Laboratory.

Development of Reference Area Performance Standards, Puget Sound, Washington—Completed a quality assurance review and evaluation of marine bioassay data to support the establishment of reference area performance standards. Participated in refining these standards and co-authored the final report.

PRP Search, Commencement Bay, Washington—Participated in the data summarization and review for a PRP search at a CERCLA NPL site with 9 problem areas, approximately 500 facilities, and 1,000 parties. EPA and site-specific evaluation criteria were applied to identify PRPs.

Litigation Support

Boatyard Impacts on an Adjacent Waterway, Los Angeles, California—Synthesized information on concentrations of PCBs, metals, DDT, and organic carbon adjacent to a potential source and throughout Los Angeles Harbor with information on hydrodynamic conditions and site operations to develop opinions on the spatial extent of boatyard operations on sediment of the adjacent waterway.

Sediment and Contaminant Accumulation Assessment, Los Angeles, California—Evaluated sediment accumulation rates and analyzed the temporal association of contaminants in the sediment column. Likelihood ratios were used to evaluate the strength of statistical evidence for various temporal patterns of release for different contaminants.

Source Identification, San Diego, California—Conducting reviews and analyses of historical data, and preparing sampling designs for additional data collection, to characterize potential releases from an industrial facility into a mixed-use waterbody, and to identify potential remedial approaches. Collaborate with the client and counsel in strategy development and agency negotiations.

Cost Allocation, San Diego, California—Conducted quantitative analyses and technical data interpretation regarding spatial and chemical patterns of PCBs in sediment related to historical usage and discharges from a shipyard and power plant.

Remedy Selection, San Diego, California—Testified before the San Diego Regional Water Quality Control Board regarding quantifiable impacts and remedy selection at the San Diego shipyards sediment site.

Damage Claims from Volatile Organic Chemicals in Groundwater, Multiple Sites Nationwide—Managed a litigation support project to perform technical review of more than 8,800 documents from 16 contaminated sites and provide appropriate documents and site summaries to 10 different testifying experts. Developed a customized bibliographic database that included document descriptions, site descriptions, and experts' requirements, but also supported document tracking and overall document management tasks. Conducted database development, document review, and data entry all on an accelerated schedule: in 4 months, the product of 3 years of document collection efforts was compiled and reviewed.

Cost Allocation, Anniston, Alabama—Managed a project to evaluate potential sources of metals and PCBs to a contaminated residential area, using environmental measurements, historical documents, and emission rate calculations based on industrial operating characteristics and feed materials, in support of cost-recovery litigation.

Cost Allocation, Ohio—Reviewed documents and data generated during a multi-year assessment and cleanup of a waste disposal and recycling site, to provide litigation support for a client named as a PRP. Evaluated the nature, fate, and distribution of contaminants found at the site in relation to raw materials, waste products, and practices at the client's manufacturing site. Evaluated potential formulations of industrial materials used decades ago, to determine potential contaminants of concern originating at the client's facility, and reviewed records of waste haulers to develop several independent estimates of the client's proportionate contribution to the site. Thorough review of available data demonstrated that the client's contribution to the site was minimal in terms of both volume and hazard. All of the documents reviewed were compiled into an electronic database that could be searched by document type, title, authors, date, and Bates number, and that would display scanned images of selected documents.

Publications

Pastorok, R.A., M.K. Butcher, and R.D. Nielsen. 1996. Modeling wildlife exposure to toxic chemicals: trends and recent advances. *Hum. Ecol. Risk Assess*. 2(3):444–480.

Pastorok, R.A., R.D. Nielsen, and M.K. Butcher. 1996. Future directions in modeling wildlife exposure to toxic chemicals*. Hum. Ecol. Risk Assess.* 2(3):570–579.

Miller, C.B., and R.D. Nielsen. 1988. Development and growth of large, Calanid copepods in the Ocean Subarctic Pacific, May 1984*. Progr. Oceanogr.* 20:275–292.

Invited Presentations/Panels/Peer Reviews

Workshop on U.S. Seawater Vaporization: Getting to Resolution. An evaluation of the approaches used to predict potential impacts of open loop LNG vaporization systems on fishery resources of the Gulf of Mexico. Houston, TX. January 2006.

Environmental Technologies Panel Meeting. Sediment assessments for remedial investigations. National Shipbuilding Research Program. Seattle, WA. October 2005.

Society of Wetland Scientists 25th Annual Conference. Restoration of the Mesopotamian marshlands: Applications of hydrodynamic models. Seattle, WA. July 2004.

Sediment Management Workgroup Members Meeting. Use and extension of the sediment quality triad approach at working shipyards. Seattle, WA. September 2004.

Presentations/Posters

Whitehead, K., D. Nielsen, B. Sackmann, M. Macrander, G. Revelas, and D. Preziosi. 2020. Determination of sediment impacts due to exploratory oil operations using likelihood based statistics. Poster presentation at the Ocean Sciences Meeting. Co-sponsored by the American Geophysical Union, the Association for the Sciences of Limnology and Oceanography, and The Oceanography Society, San Diego, CA. February 16–21.

Sackmann, B.S., E. Revelas, K. Whitehead, D. Nielsen, C. Jones, and J. Durda. 2019. Using artificial intelligence and computer vision for cost-effective environmental monitoring and site characterization. Poster presentation at Tenth International Conference on the Remediation and Management of Contaminated Sediments, New Orleans, LA. February 11–14.

Whitehead, K., J. Durda, and D. Nielsen. 2019. Testing the applicability of BSAFs: A case study from the Berry's Creek Study Area Superfund Site. Poster presentation at Tenth International Conference on the Remediation and Management of Contaminated Sediments, New Orleans, LA. February 11–14.

Whitehead, K., and D. Nielsen. 2018. Determination of chemicals of concern by association with likelihood based evidence for biological impairment. Poster presented at the Ocean Sciences Meeting. Co-sponsored by the American Geophysical Union, the Association for the Sciences of Limnology and Oceanography, and The Oceanography Society, February 11–16, Portland, OR.

Nielsen, D. 2015. Quantitative weight of evidence for sediment recovery in the Portland Harbor Superfund site. Platform presentation. 36th Annual Meeting of the Society of Environmental Toxicology and Chemistry, November, Salt Lake City, UT.

Nielsen, D., J. Sampson, K. Whitehead, and J. Durda. 2015. Quantitative integration of multiple lines of evidence: The use of likelihood ratios in benthic community risk assessments. Poster Presentation, Eighth International Conference on Remediation of Contaminated Sediments, January 12–15, New Orleans, LA.

Nielsen, D., M. Aldea, and G. Palushock. 2009. Sediment transport assessment in a large, tidal river (Portland Harbor, Oregon). Platform Presentation, Fifth International Conference on Remediation of Contaminated Sediments, February 2–5, Jacksonville, FL.

Nielsen, D., and J.D. Germano. 2009. A multinomial exact test for interpretation of sediment profile image data. Poster Presentation, Fifth International Conference on Remediation of Contaminated Sediments, February 2–5, Jacksonville, FL.