

WIHIAH



ANCHORAGE, ALASKA  2016 SEPTEMBER 18 - 21

WATER INNOVATIONS FOR HEALTHY

ARCTIC HOMES



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WIHAH CONFERENCE PLANNING COMMITTEE

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MPH Program Coordinator, University of
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*Alaska Department of Environmental
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Thomas Hennessy

*Arctic Investigations Program, US
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Prevention (CDC)*

Tim Thomas

*Clinical and Research Services,
Alaska Native Tribal Health Consortium
(ANTHC)*

Korie Hickel

*Alaska Native Tribal Health Consortium
(ANTHC)*

Dennis Wagner

*Environmental Protection Agency, Alaska
Operations Office*



IMPORTANT INFORMATION



REGISTRATION

The registration desk, located at the top of the stairs outside of the Aleutian Room, will be open each day from 7:00am - 5pm.

NAME BADGES

Name badges serve as each conference attendee's entrance to sessions, meals and events. Please wear your name badge at all times.

BUSINESS AND INTERNET SERVICES

Complimentary wireless Internet is available in all guest rooms and meeting space. Access information will be posted at the registration desk. The business center is located on the lobby level, to the right of the cafe.

SILENCE CELL PHONES

Please remember to silence cell phones at all times during the conference including meals.

DRESS CODE

Dress code is business casual for the conference.

SOCIAL MEDIA

Use hashtag #WIHAH2016 to follow the conference on social media.



CONFERENCE OVERVIEW

The WIHAH conference is bringing together Alaskan, U.S., and international engineers, health experts, researchers, community members, policymakers, and innovators to discuss health benefits, challenges and innovations associated with making running water and sewer in remote northern communities safe, affordable and sustainable. A conference proceedings publication and a summary report of the meeting will be produced. This conference will consist of expert speaker and poster presentation sessions, along with selected innovative technical demonstrations.

This circumpolar conference is identified as an official event in conjunction with the U.S. Chairmanship of the Arctic Council, as an endorsed project of the Arctic Council Sustainable Development Working Group. The Alaska Department of Environmental Conservation is partnering with a number of U.S. agencies to sponsor this informative conference. Federal sponsors include the U.S. Environmental Protection Agency, U.S. Arctic Research Commission; U.S. the Centers for Disease Control and Prevention; the U.S. Department of State; and the U.S. Department of Agriculture, Rural Development Program.

CONFERENCE THEMES:

- The impact of household water and sanitation on Arctic human health
- Climate change impacts on water and sanitation infrastructure in the Arctic
- Innovative engineering approaches to increase access to water of adequate quality and quantity, including water reuse
- Methods of ownership, operations and maintenance to maximize useful life of water and sewer systems in the Arctic
- Regulations and policies affecting access to and the cost of providing adequate quantities of water in the home



AGENDA

Sunday, September 18

6pm – 8pm

WELCOME RECEPTION

Sponsored by the Alaska Department of Environmental Conservation

Top of the World

Hilton Hotel

Monday, September 19

7am – 8am

REGISTRATION DESK OPEN / BREAKFAST

Hilton – Second Level

8am – 8:50am

WELCOME REMARKS

Aleutian/Alaska Room

Larry Hartig – *Commissioner, Alaska Department of Environmental Conservation*

Jim Nordlund – *Alaska State Director, US Department of Agriculture - Rural Development*

Opening Plenary Speakers:

8:50 – 9:10am

Danielle Arigoni – *Acting Director, Office of Economic Resilience, US Department of Housing and Urban Development*

Climate Change, Disaster Resilience And Relocation - How One Federal Agency Is Striving To Adapt Policies And Programs To A Changing Environment

9:10 – 9:30am

Ann Meceda – *Arctic Affairs Officer, Acting Chair of the Sustainable Development Working Group of the Arctic Council*

The Arctic Council and Sustainable Development Efforts: Project on Water, Sanitation and Health

9:30am – 10am

BREAK

10am – Noon

ORAL PRESENTATIONS

Session 1:

The impact of household water and sanitation on Arctic human health

Dillingham Room

Laura Eichelberger – *Community Perspectives on Water Insecurity and Climate-Related Vulnerabilities in a Remote Iñupiaq Community*

John Nichols & AJ Salkoski – *Education and behavior change efforts to maximize the health benefits and sustainability of water and sanitation infrastructure*

Tim Thomas – *Impact of In-home Water Service on the Rates of Infectious Diseases: Results from Four Communities in Western Alaska*

Melanie O’Gorman – *Water Infrastructure and Well-being: What Does the Data Tell Us?*

Carlee Wright – *Water Quality and Health in Northern Canada: Contamination of Stored Drinking Water and Associations with Acute Gastrointestinal Illness in an Inuit Community*

AGENDA

Session 2:

Climate change impacts on water and sanitation infrastructure in the Arctic

King Salmon Room

Michael Bakaic – *Vulnerability Of Northern Water Supply Lakes To Changing Climate And Demand*

Andrew Medeiros – *Vulnerability Of Fresh Water Supply In Arctic Canada*

Michael Brubaker – *Climate Change and Community Water Security- Emerging Challenges and Strategies*

Jonathan Bressler - *International Survey on Water and Sanitation in the Arctic*

Noon – 1:30pm

LUNCH

Aleutian/Alaska Room

Speaker:

Eric Hoberg – *Accelerating Climate Change and a Warming World: Consequences for Sustainability and Safety of Arctic Water and Food Resources*

1:30pm – 5:00pm

ORAL PRESENTATIONS AND PILOT SYSTEMS

Session 1:

Overview of Household Pilot Systems in Development

Denali Room

Project Teams:

Alaska Native Tribal Health Consortium – The Kivalina system

State of Alaska Water & Sewer Challenge – Team: University of Alaska Anchorage

State of Alaska Water & Sewer Challenge – Team: DOWL Alaska

State of Alaska Water & Sewer Challenge – Team: Summit Consulting

Session 2:

Innovative Engineering Approaches To Increase Access To Water Of Adequate Quality And Quantity, Including Water Reuse

Dillingham Room

Ken Johnson – *Charting a New Direction for Wastewater Treatment in Nunavut*

Thomas Kasun – *Natural Engineering Wastewater Treatment for Alaska Villages*

James Englehardt – *Design, Construction, Operation, and Demonstration of a Municipal Net-Zero Water System for Nearly Closed-Loop Reuse of Water and Energy*

Bob Tsigonis – *Preliminary Test Results from an Electrically-Assisted, Anaerobic Sewage Treatment System*

Jennifer Marlow & Michael Gerace – *The Kivalina Biochar Reactor: The Arctic's First Human Waste Bioreactor*

Pernille Jensen – *Potentials and challenges of biogas from fish industry waste in the Arctic*

6pm – 8pm

INTERNATIONAL RECEPTION

Chart Room

Presentations on International Topics, *Sponsored by the US State Department*

Hilton Hotel



AGENDA

Tuesday, September 20

7am – 8am	CONTINENTAL BREAKFAST	<i>Denali Room</i>
8am – 9:30am	<p>COUNTRY COMPARISONS</p> <p>Presenters will offer a short introduction to the water and sanitation situation in their country or region, levels of water and sanitation service, mechanisms for funding and construction of systems, operations and maintenance, regulating authorities and challenges.</p> <p>Speakers:</p> <p>Alexey Dudarev – <i>Russia</i></p> <p>Kåre Hendriksen – <i>Greenland</i></p> <p>Tyler Heal – <i>Yukon, Canada</i></p> <p>Michele LeBlanc-Havard – <i>Nunavut, Canada</i></p> <p>Peter Workman – <i>Northwest Territories, Canada</i></p> <p>Bill Griffith – <i>Alaska, USA</i></p>	<i>Aleutian/Alaska Room</i>
9:30am – 10am	BREAK	
10am – Noon	ORAL PRESENTATIONS	
<i>Session 1:</i>	<p>Innovative engineering approaches to increase access to water of adequate quality and quantity, including water reuse</p> <p>Ken Johnson – <i>Charting a New Direction for Wastewater Treatment in Nunavut</i></p> <p>Thomas Kasun – <i>Natural Engineering Wastewater Treatment for Alaska Villages</i></p> <p>James Englehardt – <i>Design, Construction, Operation, and Demonstration of a Municipal Net-Zero Water System for Nearly Closed-Loop Reuse of Water and Energy</i></p> <p>Bob Tsigonis – <i>Preliminary Test Results from an Electrically-Assisted, Anaerobic Sewage Treatment System</i></p> <p>Jennifer Marlow & Michael Gerace – <i>The Kivalina Biochar Reactor: The Arctic’s First Human Waste Bioreactor</i></p> <p>Pernille Jensen – <i>Potentials and challenges of biogas from fish industry waste in the Arctic</i></p>	<i>Dillingham Room</i>

AGENDA

Session 2:

Climate change impacts on water and sanitation infrastructure in the Arctic

King Salmon Room

Michael Bakaic – *Vulnerability of northern water supply lakes to changing climate and demand*

Andrew Medeiros – *Vulnerability of fresh water supply in Arctic Canada*

Michael Brubaker – *Climate Change and Community Water Security- Emerging Challenges and Strategies*

Jonathan Bressler – *International Survey on Water and Sanitation in the Arctic*

Noon – 1:30pm

LUNCH

Aleutian/Alaska Room

Speaker:

Tom Hennessy – *The Impact of Water and Sanitation Services on Health*

1:30pm – 5pm

ORAL PRESENTATIONS & PILOT SYSTEMS

Session 1:

The impact of household water and sanitation on Arctic human health

King Salmon Room

Laura Eichelberger – *Community Perspectives on Water Insecurity and Climate-Related Vulnerabilities in a Remote Iñupiaq Community*

John Nichols & AJ Salkoski – *Education and behavior change efforts to maximize the health benefits and sustainability of water and sanitation infrastructure*

Tim Thomas – *Impact of In-home Water Service on the Rates of Infectious Diseases: Results from Four Communities in Western Alaska*

Melanie O’Gorman – *Water Infrastructure and Well-being: What Does the Data Tell Us?*

Carlee Wright – *Water Quality and Health in Northern Canada: Contamination of Stored Drinking Water and Associations with Acute Gastrointestinal Illness in an Inuit Community*

Session 2:

Overview of Household Pilot Systems in Development

Denali Room

Project Teams:

Alaska Native Tribal Health Consortium – The Kivalina system

State of Alaska Water & Sewer Challenge – Team: University of Alaska Anchorage

State of Alaska Water & Sewer Challenge –Team: DOWL Alaska

State of Alaska Water & Sewer Challenge – Team: Summit Consulting



AGENDA



Wednesday, September 21

7am – 8am	CONTINENTAL BREAKFAST	<i>Denali Room</i>
8am – 9:30am	MORNING PLENARY SESSION Speakers: Nicholas Ashbolt – <i>Pathogen risk management considerations for safe household water uses</i> Guy Carpenter – <i>Reuse Regulations and Challenge of Regulating On-site Systems</i>	<i>Aleutian/Alaska Room</i>
9:30am – 10am	BREAK	
10am – Noon	ORAL PRESENTATIONS	
Session 1:	Regulations and policies affecting access to and the cost of providing adequate quantities of water in the home Bob Bastian – <i>Small Decentralized and Onsite Water Reuse Systems and Practices</i> Kåre Hendriksen – <i>Greenland - far from reaching The United Nations Millennium Development Goal - Why?</i> Kathryn Anderson – <i>Beyond Education: Using Social Marketing to Impact Behavior Change</i> Megan Alvanna-Stimpfle – <i>Proposed reforms to Alaska Water & Sewer Improvement Efforts</i>	<i>Dillingham Room</i>
Session 2:	Methods of ownership, operations and maintenance to maximize useful life of water and sewer systems in the Arctic Michael Black – <i>Techniques and Design of Building to Make it More Compatible with this New Arctic Environment</i> Graham Gagnon – <i>Applying a Water Safety Plan Approach to Small Systems in Northern Canada</i> Barbara Johnson – <i>A New Affordability Indicator for Rural Alaskan Water Utilities</i> Gavin Dixon – <i>Affordable Sustainable Sanitation through Energy Efficiency: ANTHC Rural Energy Initiative</i> James Temte – <i>National Tribal Water Center</i>	<i>King Salmon</i>
Noon – 1:30pm	LUNCH Speaker: Carolyn Kozak – <i>Water Security in the Arctic: Perspectives from the Model Arctic Council</i>	<i>Aleutian/Alaska Room</i>

PRESENTER BIOS



Megan Alvanna-Stimpfle was born and raised in Nome, Alaska. She is of King Island Inupiaq heritage and takes pride in Eskimo dancing and learning her language. She holds a Master's in Applied Economics from Johns Hopkins University and a B.S. in Economics from George Mason University.

For five years, Megan served as a legislative assistant for Senator Lisa Murkowski in Washington D.C. responsible for policies addressing infrastructure & sanitation, housing, health delivery, public safety and justice, land management, as well as fish & wildlife management for Alaska Native and rural Alaskans. She assisted in organizing the Arctic Imperative Summit to bring arctic and coastal Alaskan issues to the forefront of American policy. Living in Nome, she serves on the Nome Port Commission and is an elected member of the King Island Traditional Council.



Kathryn Anderson holds adjunct faculty positions at the University of Alaska Anchorage, Alaska Pacific University, and the University of South Florida, where she teaches social change marketing, commercial marketing, and program management. She is the owner of Pescatore Systems International, an Anchorage-based consulting firm specializing in social change marketing and program evaluation.

Dr. Anderson holds an interdisciplinary PhD from the University of Alaska Fairbanks and a Master of Public Health from the University of Alaska Anchorage. In addition, she holds a Bachelor of Science degree in Mathematics from Arizona State University and a Master of Science in Computer Science from Rutgers University. She completed the Harvard Business School Advanced Management Program in 1995.

Ms. Anderson currently serves on the governing boards of Providence Alaska Health and the Allergy and Asthma Foundation Alaska Chapter. Kathryn resides in Anchorage and Homer with her husband.



Danielle Arigoni has been a leader in key federal efforts to expand investment in sustainability and resilience for nearly two decades. She serves as acting director for the US Housing and Urban Development (HUD) Office of Economic Resilience, which recently awarded \$1 billion to states and localities to pilot resilient disaster recovery strategies considering climate risk. She serves as staff lead on the White House Council on Climate Preparedness and Resilience and for HUD Secretary Julian Castro's Climate Council.

PRESENTER BIOS



Dr. Nicholas Ashbolt received his PhD in microbiology from the University of Tasmania in 1985 and specializes in applying microbial risk assessment to support guidelines and water safety plan management of urban water services. Since September 2013 he has been the Alberta Innovates-Health Solutions Translational Health Chair in Infectious Diseases (Water), School of Public Health at the University of Alberta. Previously he was the Senior Research Microbiologist in the Office of Research and Development, U.S. Environmental Protection Agency, Cincinnati OH (2007-2013), Head of the School of Civil and Environmental Engineering (2005-2007), University of New South Wales, Sydney, where he was a Professor (1994-2007) and Deputy Director of the

Centre for Water & Waste Technology (1996-2005); and Principal Scientist (Wastewater) (1990-1994) at Sydney Water Corporation, Australia.

Ashbolt's present research focuses on understanding the ecology of saprozoic pathogens in engineered water systems to develop improved management of *Legionella*, non-tuberculous mycobacteria and *Pseudomonas aeruginosa* within water safety plans. Through his career he has focused on translating microbiological risks into best management practices and regulatory reform; pioneering developments and uptake of quantitative microbial risk assessment (QMRA) into WHO's harmonized approach (Stockholm Framework) and its incorporation into Australian, Canadian, Scandinavia, United States, and WHO drinking water, recreational water and reuse water guidelines/regulations. He has focused his research on filling research gaps identified by QMRA-derived performance targets used in water/sanitation safety plans. In particular, not only researching enteric pathogens, but also opportunistic (saprozoic) pathogens that grow in environmental media/engineered systems. He has a record of substantial research funding (\$13M) and has supervised 14 MSc and 23 PhD students to completion, and is currently advising four MSc and two PhD thesis students.



Michael Bakaic is a graduate of the Master of Environmental Studies program at York University. Through studies in Toronto and at the University of Alaska Fairbanks, Michael has focused his research on the development of water infrastructure in Canada's north. His major project has been to conduct water supply forecasts for the communities in the Canadian territory of Nunavut. By developing novel climate and demand forecasting methods, his research has contributed to the development of water security in this territory.

PRESENTER BIOS



Bob Bastian is a Senior Environmental Scientist with EPA's Office of Wastewater Management in Washington, D.C., where he has worked for over 40 years dealing with a wide range of wastewater and biosolids management issues associated with POTWs and on-site wastewater treatment systems, such as innovative treatment processes, wastewater and biosolids reuse, decentralized wastewater treatment, water quality benefits of wastewater treatment, on-site power production and energy recovery, toxics control, etc., including coordinating the Agency's efforts to develop and update the EPA Guidelines for Water Reuse document. He has also served as an EPA liaison with numerous interagency workgroups and committees, as well as external groups such as the Water Science & Technology Board of the National Academy of Sciences, WEF, WE&RF, NWRI, WRF, WaterReuse Assoc., NSF Int'l.'s Joint Wastewater Committee, etc. Bob earned BS and MS degrees in biology, earth sciences and mathematics from Bowling Green State University in Ohio and served as an officer in the U.S. Army Corps of Engineers before joining EPA in 1975.



Mr. Michael Black oversees the Department of Rural Utility Management at ANTHC since December 2012. Prior to this appointment, Mr. Black held the position of Director of Program Development for DEHE of ANTHC. Previous to joining ANTHC in 2010, he served the State of Alaska as Deputy Commissioner for Alaska Department of Commerce, Community and Economic Development beginning in 2007. The previous twenty five years he worked with rural communities on the issues of economic development, local governance, infrastructure development and financial management as a Local Government Specialist for the Department of Community and Regional Affairs and later as Director of the Division of Community and Regional Affairs in the Department of Commerce, Community and Economic Development. He has served on numerous committees, boards and task forces dealing with rural issues in his tenure with the State of Alaska; including, Rural Sanitation Task Force, Federal Field Work Group on Alaska Rural Sanitation, Alaska Climate Change Subcabinet-Immediate Action Work Group, Alaska Workforce Investment Board, and the Alaska Rural Action Subcabinet. He has a BBA in Business Development from Ohio University ('70) and a MMS in Environmental Management from Duke University ('74).



Jonathan Bressler is a CSTE fellow working as an epidemiologist with the Environmental Public Health Program at the Alaska Department of Health and Social Services. He earned an MPH in Global Epidemiology from Emory University, where he conducted his thesis on the impact of pit latrines on trachoma prevalence in Guinea. He served as a Peace Corps volunteer in Burkina Faso. He enjoys writing, language, travel, hockey, skiing, hiking, playing music, GIS mapping, statistical analysis, and good food.

PRESENTER BIOS



Mike Brubaker, M.S., specializes in assessing health conditions in rural communities. In particular he focuses on environment, pollution, development, and climate change. Mike was born in Juneau Alaska and raised in Anchorage. He earned his BS in Biology from St. Lawrence University and a MS in Environmental Management from the University of San Francisco. He was a Peace Corps volunteer in Hungary from 1995 to 1997. Since 1998 he has worked in the Alaska Tribal Health System. Before coming to ANTHC, He spent 10 years working for the Aleutian and Pribilof Islands Association, a regional tribal health consortium. He was a founding member of the Center for Climate and Health and started the Local Environmental Observer (LEO) Network in 2011. Mike has

been lead author on over a dozen books and reports about climate change impact on rural Alaska communities. He publishes a weekly e-journal entitled, The Northern Climate Observer.



Guy Carpenter is a senior water executive whose 25-year career includes utility operations, water resources planning and management, public policy development, engineering consulting, elected public service, and bringing intellectual property to

commercialization. Guy has a bachelor's degree in Chemistry from Northern Arizona University and is a registered Professional Engineer (Civil) in Arizona. Mr. Carpenter currently serves as board member for the Central Arizona Project, which delivers Colorado River water to the three county area in Arizona where 85% of the state's population lives. He is also the President of the national

WaterReuse Association, and has served on the Association board for 6 years. Guy also serves on the advisory boards for the University of Arizona Water Resources Research Center, and the Arizona State University Kyl Center for Water Policy at the Morrison Institute. Guy recently resigned from Carollo Engineers as their national Water Reuse Technical Practice Director to become the Senior Vice President of Strategic Operations for AquaTecture, which is developing public private partnerships for water and wastewater projects, bringing transformative intellectual property to market, and providing temporary staffing services for water and wastewater systems.



Gavin Dixon is a Senior Project Manager for the Rural Energy Initiative at the Alaska Native Tribal Health Consortium (ANTHC). In this role, he manages energy auditing, energy efficiency projects and renewable energy projects for sanitation systems in rural villages across Alaska. He is also responsible for the development of an innovative energy efficiency training for sanitation operators in partnership with AVTEC. Gavin has been with ANTHC since 2011, working with the energy program since its inception.

PRESENTER BIOS



Alexey A. Dudarev, Ph.D., Dr.Med.Sc., head of hygiene department of the Northwest Public Health Research Centre (St-Petersburg, Russia) since 2000. Born 1964, graduated St-Petersburg State Medical Academy named after Mechnikov in 1987.

More than twenty years of experience studying environmental health conditions in Russian Arctic. 1987–2000 – researcher in the Research Institute of Radiation Hygiene (St-Petersburg) where studied the problem of increased levels of natural and artificial radioactivity in the Russian Arctic, including consequences of Novaya Zemlja nuclear testing explosions and Chernobyl accident. Since

2000 was involved in research and issues on the occurrence of persistent toxic substances (PTS) in the Russian North and health effects among indigenous population. Organizer and participant of multiple field expeditions throughout Russian Arctic.

One of the key researchers in the international projects: AMAP/GEF project “*Persistent Toxic Substances, Food Security and Indigenous Peoples of the Russian North*” (2001-2004), AIA project “*PTS in Kamchatka and Commander Islands*” (2003-2004), IPEN projects on PCBs and DDTs in the Russian Arctic (2006). Co-author of the First Regional Monitoring Report (Eastern Europe) for POPs Global Monitoring Plan under the Stockholm Convention (2008). Principal investigator from the Russian side of the AMAP/SDWG project “*Food and water security in the context of health in the Arctic*” (2012-2013) and EU Kolarctic project “*Food and health security in the Norwegian, Finnish and Russian border region*” (2013-2016).

Member of the AMAP Human Health Assessment Group (HHAG) since 2002. Co-author of the AMAP “Human Health in the Arctic” Reports – 2009 and 2015. Member of the International Union for Circumpolar Health (IUCH). Author (or co-author) of more than 170 scientific publications mostly regarding Arctic environmental health, exposure and effects of persistent toxic substances (PTS) in the Arctic, Arctic food-and-water security, cancer epidemiology, indoor air quality, air ionization, radiation ecology.



Dr. Laura Eichelberger holds a PhD in Cultural and Medical Anthropology from the University of Arizona, and a Masters of Public Health from Johns Hopkins Bloomberg School of Public Health. She is an assistant professor of anthropology at the University of Texas in San Antonio, and a former Cancer Prevention Fellow at the National Cancer Institute. In her research, Dr. Eichelberger combines ethnographic and epidemiologic methods to examine the relationships between issues of water insecurity, energy security, sustainability, and health at different life stages. Throughout, she examines how people make sense of experiences of water insecurity through political, economic, and cultural frameworks.

Dr. Eichelberger’s interests in water and health brought her back to her home state of Alaska, where she has examined problems related to adequate water and sanitation in remote communities in western and northwestern Alaska for over ten years. Her current research investigates how climate change is affecting health through the built environment. In addition, Dr. Eichelberger is exploring how local definitions of sustainability and the concept of “community-based adaptation” inform responses by community leaders, government agencies, and private entities.

PRESENTER BIOS



Dr. James Englehardt, P.E., is Professor of Environmental Engineering at the University of Miami, appointed 1992. Previously he was Research Engineer for Johns Manville Corp. Filtration and Minerals Division (1983-1987), and Field Engineer for GE Water & Process Technologies (1978-1980). He serves on the EPA Science Advisory Board, Drinking Water Advisory Committee; the Editorial Board of the ASCE-ASME journal; and the Miami-Dade County Small Business Advisory Board for Architecture and Engineering. He has published 112 peer-reviewed journal articles and technical papers. Awards include the EPA NCEA Science Advisor's Award; the AAAS-EPA Robert C. Barnard Environmental Science & Engineering Award for Advances in Risk Assessment; and the

University of Miami Johnson A. Edosomwan Outstanding Publication Award and two Eliahu I. Jury Awards for excellence in research.



Dr. Graham Gagnon is a Full Professor in the Department of Civil & Resource Engineering at Dalhousie University. He holds a PhD in Civil Engineering from the University of Waterloo (1997) and a B.Eng. in Environmental Engineering from the University of Guelph (1993). In 1998, Dr. Gagnon was hired as an Assistant Professor in Civil Engineering at Dalhousie University and in 2002 he was awarded a Canada Research Chair in Water Quality & Treatment. In December 2006, Dr. Gagnon became the Faculty of Engineering's first NSERC Industrial Research Chair holder, through a partnership between NSERC and Halifax Water. In 2012, this Research Chair was renewed with additional industrial partners, namely: Cape Breton Regional Municipality, LuminUltra Ltd., CBCL Ltd

and Mantech Inc. Graham works closely with his students and research partners to deliver timely solutions that have broad to the water industry. He has authored more than 125 peer reviewed journal articles, 250 conference proceedings and has supervised more than 50 graduate students in his 18-year career at Dalhousie University. In 2013, Dr. Gagnon was awarded the Fuller Award from AWWA through the Atlantic Canada Section for his constructive leadership to the water industry.



Artist and architect **Michael Gerace** is the co-director of Re-Locate, a transdisciplinary and global collective collaborating with the Inupiaq Eskimo village of Kivalina, Alaska, to develop strategies for village relocation. Re-Locate locates, makes visible, and brings action to the political, cultural, and environmental issues underlying relocation and the climate displacement of communities around the world.

PRESENTER BIOS



Bill Griffith has managed Division of Water facility programs in the State of Alaska Department of Environmental Conservation since 2004. He holds a Bachelor's degree in Civil Engineering and English from Carnegie Mellon University and Master's degree in Construction Engineering from the University of New Mexico. After serving as a U.S. Peace Corps Volunteer in Nepal, he spent ten years helping to design, construct and operate water and sewer systems on the Navajo Indian Reservation and with villages in the interior of Alaska. He then worked as a program manager for the Alaska Native Tribal Health Consortium before coming to work with the state.



Larry Hartig is an attorney with more than 20 years experience in environmental law, regulations, permits and land use issues. Prior to his appointment in 2007 as Commissioner of the Department of Environmental Conservation, he was in private practice as an attorney with the Anchorage law firm of Hartig Rhodes Hoge & Lekisch, PC. Joining the firm in 1983, Mr. Hartig worked primarily on environmental, natural resources, and commercial matters. His practice included assisting clients in obtaining environmental and other permits for natural resource development projects, as well as projects involving environmental compliance and cleanup of contaminated properties. Clients included government, private developers, industry, and Native Corporations, among others. He also worked as a landman in the Land/Legal Department of Alyeska Pipeline Service Company between 1972 and 1976. Mr. Hartig has a B.A. from the University of Utah and received his J.D. from Lewis and Clark College. He is a member of the Exxon Valdez Oil Spill Trustee Council. He is also a member of the Alaska Bar Association and a former member of the State Board of Forestry.



Tyler Heal was born and raised in Yellowknife, Northwest Territories. His family has been working in civil construction in Northern Canada since 1939. As Stantec's Civil Engineering Lead for the Yukon, Tyler continues in this commitment to and passion for the North. Having lived and worked in the Northwest Territories, Nunavut and the Yukon (where he is currently based), his interests include community-based solutions to infrastructure challenges, the history and heritage of Northern Canada, and the contemporary issues faced by Northern/Indigenous communities.

PRESENTER BIOS



Kåre Hendriksen, M.Sc., Ph.D., is associate professor at the Technical University of Denmark, Arctic Technology Centre (ARTEK) and affiliated the Arctic Engineering Study Programme. Kåre Hendriksen works half of the year in Sisimiut, Greenland, and half in Denmark and teaches several courses on sustainable development, Greenlandic social studies, and planning. Kåre has periodically worked as a consultant for the Greenlandic Home Rule government and during the 1990s been the manager of local vocational schools in Greenland. During the last twenty years, he has conducted research and innovation projects in Greenland on sustainable development with special emphasis on local development dynamic, the economic aspects of settlements and the island-

economic character of Greenland, trade possibilities, the interaction between the infrastructure level and business development, as well as governance and capacity building. Through his research, Kåre have collected empirical data in most Greenlandic settlements and often trawled between these settlements by local hunters in open boat or by dogsled. Current activities in the Arctic focus on (1) sustainable development in existing and new industries around infrastructure, business development and settlement patterns and (2) capacity building and intercultural aspects of learning in relation to the role of consultants and governments in processes of certification as well as the role of professional knowledge. Kåre is an experienced facilitator of processes of dialogue and learning in relation to social and technological change.



Tom Hennessy, MD, MPH is the Director of the Arctic Investigations Program (AIP), CDC's field station for infectious diseases in Anchorage, Alaska. Dr. Hennessy joined the US Public Health Service in 1990 and served on the Navajo Reservation until he joined CDC in 1994. Tom is a graduate of Antioch College, the Mayo Medical School and Emory University's Rollins School of Public Health. He completed residencies in Family Medicine, Preventive Medicine and is a graduate of the CDC Epidemic Intelligence Service.

His interests include vaccine preventable diseases, food and waterborne infections, zoonotic infectious diseases and reducing health disparities. He was part of the Ebola outbreak response in West Africa in 2014-15 and led an investigation of risk factors for Ebola transmission within households in Sierra Leone. Tom is an affiliate faculty member of the University of Alaska, Anchorage in the Department of Health Sciences. He is also the Co-chair for the Arctic Human Health Experts Group, a multinational advisory group to the Arctic Council.

PRESENTER BIOS



Korie Hickel is a Sr. Environmental Health Consultant with the Alaska Native Tribal Health Consortium. She oversees environmental public health programs that address topics including healthy homes and air quality, water and sanitation, and brownfields and community environmental health. Her undergraduate studies in International Health and Master of Public Health degree through the University of California at Berkeley, have equipped her efforts to partner with Alaska Natives and American Indians to address diverse water and sanitation public health issues through research, health education and promotion and environmental health field work.

Ms. Hickel's interest in water and sanitation work focuses on human health, including access to adequate and sustainable water and sanitation services and how residents use the provided services. She works on multi-disciplinary teams to incorporate health education and behavior change methods in water and sanitation projects in an effort to maximize the health benefit provided by the available water and sanitation technology.



Extending over the past 40 years, **Eric Hoberg** may best be described as a field biologist and biogeographer who continues to explore nuanced questions about the history of the biosphere in a continuum across evolutionary and ecological time. Connections among host parasite systems are the threads that bind an intricate tapestry describing and revealing myriad patterns and interactions what we observe in our world, providing a pathway to understand a history of dynamic change and complexity. Born in San Francisco, he was educated at the University of Alaska in biology (1971-1975) where a passion for high latitudes was soon evident. Graduate studies followed at the University of Saskatchewan, Canada (1979) and the University of Washington (1984). Career trajectories have taken

him to Oregon State University (1985-1989) the Atlantic Veterinary College, University of Prince Edward Island (1989-90) and to his current positions as a senior Research Zoologist and Chief Curator of the US National Parasite Collection with the United States Department of Agriculture (from 1990) and appointment as the Curator of Parasitic Nematodes at the National Museum of Natural History, Smithsonian. Field-based research over the past decades has centered to a considerable extent on the high northern latitudes spanning Siberia, Alaska, and the central Canadian Arctic. Episodic climate change and ecological perturbation over the past 3 million years are examined as drivers of faunal assembly, structure and patterns of diversity. Integrated studies, field collections, museum archives and transboundary approaches are the baselines for defining pathogen biodiversity. The nature of historical processes emphasizes the impact of ecological perturbations and the necessity to anticipate the outcomes of accelerating climate warming and globalization on emergence of pathogens and diseases which now pose direct consequences for ecosystem integrity, and animal and human health.

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Pernille Erland Jensen has been affiliated with the Arctic Technology Centre (ARTEK) at the Department of Civil Engineering of the Technical University of Denmark since 2006. She heads the center's research area on Arctic Environmental Engineering, and teaches both undergraduate and graduate courses on Arctic Environmental Engineering topics in Greenland and Denmark. She has developed several courses for ARTEK including field work courses in Greenland and E-Learning courses and modules, which may be taken online from any location. Pernille's research sets off in the field of environmental engineering, and her goal is to contribute to develop solutions for sustainable management residuals and prevent loss of resources from the technosphere of our urban

environments. In the Arctic context her foci have been to develop technologies for safe domestic wastewater handling tailored for the small remote Arctic communities, and on safe and sustainable management of residuals from the dominant industries in Greenland: fish production and mining. Pernille was member of IACORDS (International Association for Cold Regions Development Studies) since 2013. She is also a member of the Thematic Network of Environmental Impact Assessment under UARCTIC (University of the Arctic). Pernille has authored more than 40 scientific journal papers, supervised 5 PhD students and participated in numerous national and international research and development projects.



Barbara Johnson is a graduate student in the Ms Resource and Applied Economics program at the university of Alaska Fairbanks. Her current research centers on issues surrounding water resources in Arctic and subarctic communities. In the past she has researched the costs and benefits of the development of water infrastructure for the United Nations University Institute for Water, Environment and Health.



Ken Johnson is a planner and engineer with over 30 years of experience in planning and engineering in remote and cold regions. His experience and expertise includes community planning, water and sanitation infrastructure, including treatment, distribution, collection, and disposal, solid waste management, drainage management, and climate change adaptation. He has lived and worked in all three northern territories (Yukon, NWT, and Nunavut), and he has completed work in more than 40 communities across the north.

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Tom Kasun is a Senior Business Development Manager at the Alcoa Technical Center (ATC), located near Pittsburgh, PA. For the past three years, Tom has been a member of ATC's Commercialization group – whose mission is to help companies match innovative, Alcoa-developed technology solutions with their complex, recurring challenges. Two years ago, his role was expanded to include collaborating with 3rd Parties to grow Alcoa's NEWT™ technology.

Prior to his current role, Tom led the rolling lubrication and surface technology group where he developed a passion for reducing Alcoa's environmental footprint – specifically through enabling water and oil reuse. He continues to be a thought leader in this area, and his experience in development, implementation and management of metalworking fluids has helped save Alcoa tens of millions of dollars each year through increased productivity, lower scrap and reduced lubricants usage. Tom has been an integral member of the Alcoa lubricants commercial team since 1991. Tom holds 5 patents and recently served as chairman of the Alcoa Global Rolled Product patent committee managing the full life cycle of IP from inventor through licensing of patents and trade secrets. He has worked at the Alcoa Technical Center for 32 years.

Prior to Alcoa, Tom worked in the metallization department at IBM in Endicott, NY. Tom's role at IBM was to develop a "dry process" for etching metals. This project was focused on eliminating "wet chemicals" and process step elimination.

He received his Masters Degree and Bachelors degree in Chemical Engineering from the Pennsylvania State University in 1983 and 1981 respectively.



Carolyn Kozak is a second year graduate student in Arctic and Northern Studies at the University of Alaska Fairbanks. Prior to moving to Fairbanks in January of 2016, Kozak worked as a curator and public programmer for the Anchorage Museum at Rasmuson Center for over six years. This practical application of history with the museum through exhibition development and public engagement sparked a tireless intellectual curiosity for the circumpolar north and a sense of personal responsibility to its people, both past and present.

Since joining the UAF campus, Kozak has been selected as a student ambassador to the University of the Arctic (UARctic), a cooperative network of universities, colleges, research institutes and other organizations concerned with education in the North. She participated in the first fully international Model Arctic Council in March of this year and attended the UARctic Congress in St. Petersburg, Russia as part of her student ambassadorship.

Kozak's research interests include national identities, image literacy, and media messaging of climate change.

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With a B.Sc. in Psychology, and a B.Tech in Environmental Health, **Michele LeBlanc-Havard** has applied her skill set, in various parts of Canada and the USA, in the fields of Public and Environmental Health. She has been fortunate to work as an instructor in the Environmental Health Program at Cape Breton University where she enjoyed facilitating a love of Environmental Health in her students. LeBlanc-Havard moved to the Arctic during a leave of absence from her position as an Environmental Health Officer for Health Canada where she was part of the Traveling Public Program. Currently as an Environmental Health Specialist to the Chief Medical Officer of Health for the Territory of Nunavut, LeBlanc-Havard is responsible for the development of Nunavut's Environmental

Health Program. One of the files she holds currently is developing new drinking water regulations. This is an important time in Nunavut's Population Health development and she feels honored to be part of it. LeBlanc-Havard has lived in the Arctic for 7 years and now calls Iqaluit Nunavut home. She lives in Iqaluit with her 2 step sons, 4 year old daughter and her husband who works as an extreme guide. As a family they enjoy dog sledding, snow sailing, ice fishing, skiing and camping. The peace and vastness of the Arctic has stolen her heart and she is proud to work and hopefully make a difference in Population Health and the people she serves.



Jen Marlow co-owns Re-Locate LLC, joint developers of the Kivalina Biochar Reactor. She is also Co-Executive Director of Three Degrees Warmer, a climate justice nonprofit; co-director of Re-Locate, a transdisciplinary global collective working in Kivalina, Alaska, to support village efforts to relocate; and Affiliate Professor at the University of Washington School of Law. In her capacity as a lawyer, Jen has worked on landmark state and federal climate change lawsuits, advising clients and courts of the applicability of international human rights laws to climate change-related claims.

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Ann Meceda is a Foreign Service Officer with the U.S. Department of State. She currently serves as an Arctic Affairs Officer in the Bureau of Oceans and International Environmental and Scientific Affairs, where she works as the U.S. Head of Delegation to the Sustainable Development Working Group of the Arctic Council (for Fall 2016 she will be the acting Chair of this group) and supports the U.S. Senior Arctic Official and other key stakeholders on Arctic policy issues. Ann has served most recently as the political/labor officer in Casablanca, Morocco, working extensively on interagency programs addressing labor and social issues. She has also served in Germany, Slovakia, and Tunisia. She has an undergraduate degree from UCLA in Mass Communications/Business and an MBA from the Haas School of Business at UC Berkeley.



Dr. Andrew Medeiros is an expert in freshwater ecology, biogeochemical processes, and Arctic environments. His research focuses on understanding the ecological trajectory of northern ecosystems in the past, present, and future. Research on the evolution of northern aquatic ecosystems over thousands of years enables him to make predictions and create models of future responses to environmental change. Dr. Medeiros is motivated by seeing science in action and has worked hard to build relationships and establish trust with First Nation and Inuit communities whom are at the forefront of environmental change in the North. This has allowed him to combine quantitative modeling to examine issues of fresh water quantity and quality as it applies to northern communities. The

data allows researchers to conduct risk analysis for municipal water supplies, and research areas of concern for local residents. His findings have resulted in a fundamental shift in the way this knowledge is applied to water security challenges faced by northern communities. These research methods can be applied to freshwater resource assessments, fisheries management, and biomonitoring. Dr. Medeiros has received numerous awards, internships and grants throughout his career including the W. Garfield Weston Postdoctoral Fellowship in Northern Research in 2012 and 2013. Dr. Medeiros has contributed his Arctic expertise to 15 peer-reviewed scientific publications, four technical reports, and a number of regional and international television segments. He was also a scientific advisor and contributing author for The Economics of Ecosystems and Biodiversity (TEEB), an initiative of the Arctic Council administered by the Conservation of Arctic Flora and Fauna (CAFF). Dr. Medeiros is currently an adjunct professor in the Department of Geography at York University.

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John Nichols has 19 years' experience with water and sewer design, construction and operations. He currently serves as Manager of Utility Operations for the Alaska Native Tribal Health Consortium. He leads a department of 35 direct and 100 contract employees, providing engineering services and technical assistance to 150 rural Alaska community water/sewer systems. Technical assistance includes water plant operator training, energy efficiency training and retrofits, troubleshooting and operational engineering assistance, and emergency response.

The department also provides full water/sewer management services to 27 rural Alaska communities through the Alaska Rural Utility Collaborative (ARUC). ARUC provides customer billing and collections, water operator guidance, purchasing of supplies, rate setting and data collection for each member community. As such, it has some of the most complete village water/sewer operational data in Alaska, especially in the areas of energy use and energy efficiency results. ARUC's purpose is to empower communities in rural Alaska to sustainably provide safe water and sanitation services.

Mr. Nichols is a licensed engineer who started his career as Public Works Director in Dillingham, Alaska. He then joined ANTHC in Anchorage, Alaska designing and building water/sewer systems in western Alaska villages. He has also worked as a field engineer at the Indian Health Service Fort Hall Field Office in Idaho, designing and building water and sewer mains on the Fort Hall Reservation, before returning to ANTHC in 2007.



Jim Nordlund was appointed by President Obama to the position of Alaska State Director for USDA Rural Development in August of 2009. Since that time USDA-RD has invested nearly \$2 billion in Alaska's rural communities in electric, telecom, and sanitation projects; community facilities; housing, energy and business development. Jim has lived in Alaska for 33 years and was previously the owner of Nordlund Carpentry LLC, a residential building contractor in Anchorage. Jim's work in Alaska includes seven years as the state's Director of Public Assistance where he managed 500 employees and a \$250 million budget, he served in the Alaska State House of Representatives, and he's been a commercial fisherman. Jim has a bachelor's degree from St. John's University in

Minnesota and a Master's in Public Administration from the University of Colorado. He is married with one child and lives in Anchorage.



Melanie O'Gorman is an Associate Professor in the Department of Economics at the University of Winnipeg. Her research and teaching are in the areas of macroeconomics and economic development.

She is currently leading a research project which explores the determinants of high school graduation and achievement in the Canadian Arctic, and another on the financing of water infrastructure in Manitoba First Nations. She continues to conduct research related to hydroelectric development with the Wa Ni Ska Tan Hydro Alliance (www.hydroalliance.ca). She is Chair of the M.A. in Environmental, Resource and Development Economics at the University of Winnipeg which trains students in the area of sustainable development (uwinnipeg.ca/erde).

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AJ Salkoski is the Senior Program Manager for the Tribal Air Quality & Healthy Homes Programs at the Alaska Native Tribal Health Consortium (ANTHC) and has 8 years of environmental health experience in Alaska. He currently works on a variety of HUD and EPA funded studies and projects to find the relationship between indoor air quality and need for respiratory medical care among high risk Alaska Native Children and to work on air quality issues in Alaska Native Communities. He also has experience with projects focused on solid waste management, community planning, and energy efficiency in communities in rural Alaska.



James Temte is a member of the Northern Cheyenne Tribe and grew up in the Rocky Mountains living in Wyoming and Colorado. James joined the National Tribal Water Center (NTWC) in 2014 and now serves as the Director of the NTWC. James received his undergraduate degree in molecular biology and a minor in chemistry from Fort Lewis College and Masters of Science at the University of Alaska Anchorage in Applied Environmental Science and Technology. James has served as the Director of the Alaska Tribal Conference on Environmental Management, the Vice Chair of the National Tribal Air Association and on the Board of Directors of the Climate Registry. He has a passion for public art, tribal sovereignty, self-determination, protecting the environment, and human health.

James' interest in water and sanitation work focuses on human health, including affordable access to adequate and sustainable water and sanitation services. He loves to work with communities on multi-disciplinary teams to incorporate innovative health education techniques to inspire positive actions.



Tim Thomas, MD, works as Director of the Clinical and Research Services Department in the Division of Community Health Services, Alaska Native Tribal Health Consortium (ANTHC). He has expertise as a medical epidemiologist with considerable clinical and research experience in Kenya and Alaska, addressing issues of health disparity among impoverished and minority populations. His clinical experience has involved work in Somalia for Doctors without Borders, in Kenya at a Mission hospital and at the Yukon Kuskokwim Health Corporation in Bethel, Alaska. He completed the CDC Epidemic Intelligence Service training in 1999 and has subsequently been primarily engaged in research. He worked in Kenya for seven years as head of an HIV research department at the Kenya

Medical Research Institute (KEMRI)/CDC Field station. As principal investigator of this CDC-sponsored Phase 2B clinical trial, he investigated the use of antiretrovirals during late pregnancy and breastfeeding. Dr. Thomas returned to Alaska in 2008 to work with the CDC Arctic Investigations Program, primarily on water and sanitation and oral health issues. In October 2011, he joined the Alaska Native Tribal Health Consortium (ANTHC) as Director of Clinical and Research Services Department where he has continued his work on oral health and sanitation among other research activities.

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Bob Tsigonis holds a Bachelor of Engineering degree from Thayer School of Engineering at Dartmouth College and a Master of Science degree from the University of Alaska Fairbanks. He is a registered engineer who has practiced environmental engineering in Alaska since 1973. Bob founded Lifewater Engineering Company, which manufactures innovative on-site sewage treatment systems for extremely cold climates and poor soils. He holds U.S. and Canadian patents on these sewage treatment systems and a U.S. patent on a fluid distribution box that distributes fluid equally from all ports regardless of the orientation of the box. Lifewater also manufactures extremely rough duty boats

for the shallow rivers of Alaska. He helps teach a cold regions engineering short course for the University of Washington and he enjoys volunteering with organizations that provide water and sanitation services to people in underdeveloped areas around the world.



Peter Workman became the Chief Environmental Health Officer in Northwest Territories April 1, 2015. Prior to that time Peter worked as a Health Emergency Planner, Environmental Health Consultant and Environmental Health officer in Nunavut from 2004 to 2014.

Peter has experience in working in rural, urban and remote regions in Canada with public health as his focus (including drinking water, sanitation, communicable disease investigation and food safety).

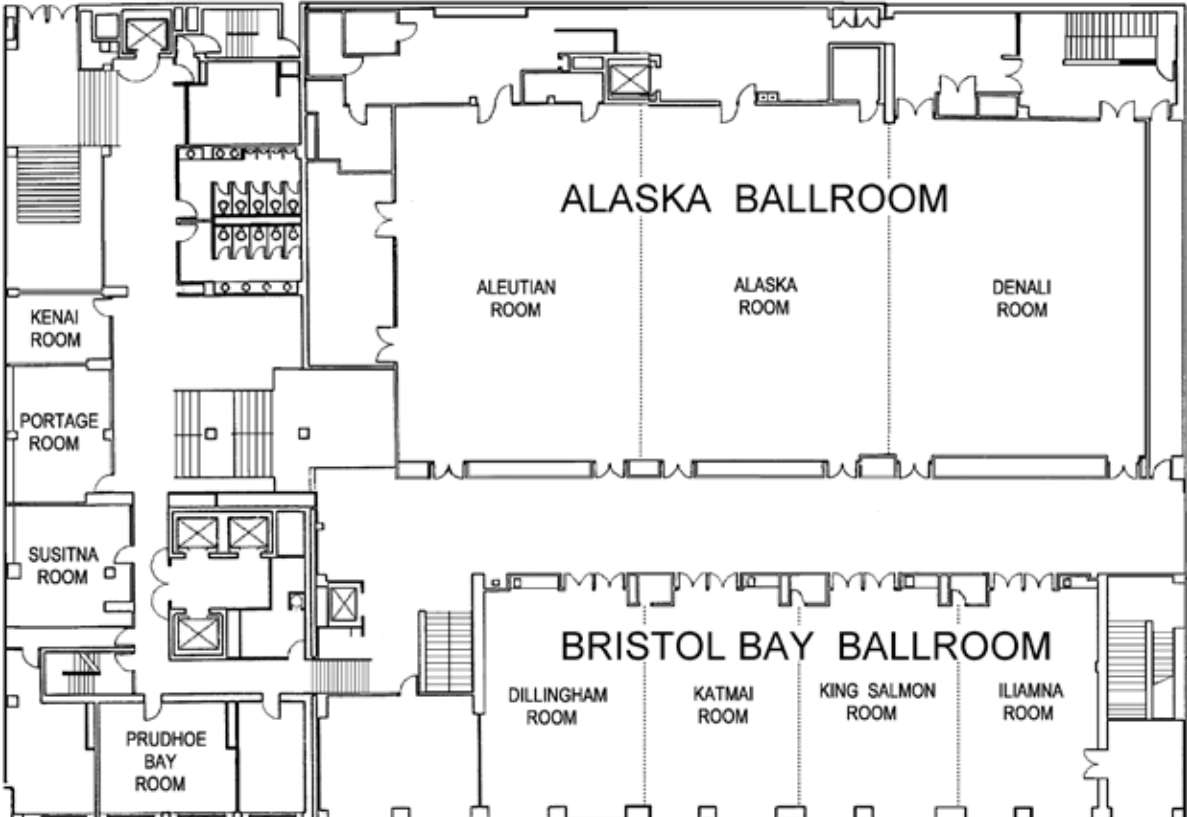
Peter is member of the Canadian Drinking Water Committee, the Federal Provincial and Territorial group that authors the Canadian Drinking Water Quality Guidelines, a national set of standards that are used to govern drinking water across Canada.



Carlee Wright completed her baccalaureate degree at the University of Guelph in 2014, majoring in biological science. She is currently a thesis-based MSc student in epidemiology at the Ontario Veterinary College, working with Dr. Sherilee Harper. Her research focuses on drinking water and acute gastrointestinal illness (AGI) in northern Canada, in the Inuit community of Rigolet, Nunatsiavut. Her project makes use of an EcoHealth research framework to assess the contamination of stored drinking water and its possible associations with self-reported AGI. Her project also aims to understand drinking water consumption patterns in Rigolet and how they have changed over time with new drinking

water infrastructure in the community. The ultimate goal of this work is to use the generated knowledge to help inform sustainable drinking water interventions to reduce risk of waterborne infections, and inform risk assessments and public health messaging in Nunatsiavut and other northern Indigenous communities.

HILTON HOTEL MAP



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