

DESIGNING FOR TOMORROW

LIVE!
November
13 to 16, 2023
CALGARY

THE FUTURE OF STORMWATER MANAGEMENT IN ALBERTA

PROGRAM





LIVE! November 13 to 16, 2023 PROGRAM

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EVENT SURVEY

(Please complete a separate survey for each of the training events and/or the conference)

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WELCOME!



Welcome to Western Canada’s premier conference and training event for professionals from all backgrounds related to stormwater management. From engineers and landscape architects to planners, ecologists and researchers, Designing for Tomorrow has grown to attract several hundred participants. 2023 marks our return to a live educational and networking event.

This year the conference portion of DFT will take place over one-and-a-half days in a single-track format. This allows for cross-disciplinary exposure to integrated subject matter, bridging specialist siloes as much as possible. It also allows us to offer several training opportunities before and after the conference. The poster session provides an opportunity to support our academic community by showcasing post-secondary work—some of it quite exceptional—happening locally. Posters will be brought over to the ballroom during the reception. Please do take the time to view them and vote for your favourite.

Conference abstracts have been assembled across a wide array of subject-matter areas, including a slot for the recently introduced *natural infrastructure* terminology category. *Ponds and wetlands* are a perennial favourite, and *case studies* are always relatable and popular. *Innovation* and *research initiatives* challenge us to stretch our thinking and *planning and implementation* topics envisage ways to incorporate solutions into our communities.

It will be wonderful to be able to meet again in person, the first time since our last conference in November 2019, which I still fondly remember. With thanks to my fellow members of the Program Committee, I am excited about how the program has come together and look forward to the ways that it will equip you and advance us on our way to comprehensive stormwater management for a resilient future.

Bert van Duin, Chair, ALIDP Events & Activities Working Group; Program Chair

Designing for Tomorrow Program Committee

Bert van Duin, P.Eng., Chair, Drainage Technical Lead, City of Calgary

Jill Prosser, P. Biol., Climate Adaptation Specialist, City of Calgary

Anton Skorobogatov, Ph.D., Innovation Lead, Magna Engineering

David Seeliger, P.Eng., Stormwater Director, MPE Engineering

Tara Paradis, EIT, Kerr Wood Leidal

Brett Emmons, P.Eng., PE, CEO, EOR



PROGRAM AT-A-GLANCE

	Monday 13	Tuesday 14		Wednesday 15	Thursday 16	Friday 17
		Track 1	Track 2			
AM	PCSWMM LID Training Mike Gregory, CHI with local applications 8:30 to 4:30	Stormwater Design Brilliance Training Bert van Duin, City of Calgary and guests 8:30 to 4:30	Landscaping Training GET YOUR FEET WET 8:30 to noon	Conference	Conference	
PM			Landscaping Training STAY HIGH AND DRY 1:30 to 5:00			
5:00 to 8:00				Reception		



TRAINING

Monday, November 13

PCSWMM AND EPA SWMM5 FOR LID ANALYSIS

This workshop will take an in-depth look at Low Impact Development (LID) modeling capabilities of EPA SWMM5 and PCSWMM. Attendees will learn about the theory behind the SWMM5 LID module, how to implement LID measures in a model, and how to visualize and analyze model results. PCSWMM will be used throughout the workshop to speed learning and program execution, and to enhance the understanding of the underlying EPA SWMM5 computational engine. This workshop will help you develop the necessary skills and confidence to apply SWMM5 effectively to represent LID facilities in a manner that is consistent with the methodology in the City of Calgary’s updated Stormwater Management & Design Manual, specifically related to quantifying the various components of the water balance, essential to projects in the Nose Creek watershed and Cooperative Stormwater Management Initiative area.

This is a hands-on classroom experience. You will need an appropriate laptop and will be provided with PCSWMM Professional 2D (60-day workshop license). More details will be provided to registrants. Local *SWMM doctors* will be on hand to ensure participants are well-supported in their learning journey.

Time	Topic	Notes
PCSWMM AND EPA SWMM5 FOR LID ANALYSIS		
8:00 TO 8:30 REGISTRATION		
8:30 – 9:15	Overview of EPA SWMM/ PCSWMM	
9:15 – 10:15	SWMM5 LID Module	
10:15 TO 10:30 BREAK		
10:30 – 11:00	LID Implementation in the City of Calgary Stormwater Management & Design Manual	
11:00 – 12:00	Exercise 1: Representation of Resilient Landscaping at a Development Site	
NOON TO 1:00 LUNCH		
1:00 – 1:30	Advanced LID Modeling, Part 1	
1:30 – 2:30	Exercise 2: Representation of Bioretention Cells at a Development Site	
2:30 TO 2:45 BREAK		
2:45 – 3:15	Advanced LID Modeling, Part 2	
3:15 – 4:15	Exercise 3: Representation of Rainwater Harvesting and Stormwater Capture Systems at a Development Site	
4:15 – 4:30	Wrap-up and Q&A	



About your Instructor



Mike Gregory, M.Sc., P.Eng., PE



Mike is a licensed professional engineer in Ontario, Florida, and Ohio with over 30 years of experience in stormwater management, program financing, and water resources planning/analysis/design. He has developed hydrologic and hydraulic models for over 120 stormwater projects across North America and specializes in continuous simulation for flood/erosion control, water quality treatment, volume reduction, and environmental flow maintenance. He has also assisted with the development of various stormwater modeling software, including teaching over 750 novice and advanced model users as a lead instructor

in 70 training workshops. Mike has been a lead author and researcher for 15 peer-reviewed technical papers and publications, and has given over 55 podium presentations and invited lectures at international conferences, seminars, and universities.

SWMM Doctors

Local experts will assist participants with troubleshooting during the event, brought to you by:





TRAINING TRACK “A”

Tuesday, November 14

STORMWATER DESIGN BRILLIANCE

Smooth Approvals and Resilient Outcomes

Back by popular demand, this expanded course--aimed at stormwater professionals, engineers and technicians (but also of interest to planning professionals)--provides an overview of what aspects are paramount to achieve brilliance in your stormwater management practice. Given its success in protecting our communities from storm-sewer and overland-flow flooding, the dual-drainage approach is one of the central tenets of the recently released CSA Standard “Flood Resilient Design of New Residential Communities” (CSA Group, 2019). Though the dual-drainage approach is widely used in Alberta, design professionals often have limited appreciation of how resilience to extreme rainfall can be achieved. This course will demonstrate how such resilience can actually be achieved.

The course will provide an overview of the key aspects to be cognizant of in the design and review of stormwater management submissions, ranging from Master Drainage Plans to Site Implementation Plans. Aspects to be addressed include flood control, water quality control and ways to minimize impacts on smaller streams, creeks and wetlands, as well as touching on the topics of climate change resiliency, drought management, biodiversity and vibrant communities. Using examples of typical submissions, you will gain an appreciation of the critical components that a reviewer looks for and why. Experience is that attendees of this course enjoy a smoother review process.

Time	Topic	Notes
Stormwater Design Brilliance		
8:00 TO 8:30 REGISTRATION		
8:30 – 10:00	Specialty Topics #1	
	culverts, scour, high-velocity challenges, stormwater reuse, springs	
10:00 TO 10:30 BREAK		
10:30 - noon	Specialty Topics #2	
	analytical procedures, ponds and wetlands, dam safety, OGS units	
NOON TO 1:00 LUNCH		
1:00 – 3:00	Stormwater Management Reports	
	Master Drainage Plans, Staged Master Drainage Plans and Pond Reports, Subdivision and Site Stormwater Reports	
3:00 TO 3:15 BREAK		
3:15 – 4:30	Low Impact Development	
	Key principles and modelling guidance	



About your Instructors

Bert van Duin, M.Sc., P.Eng.



Bert is a licensed professional engineer in Alberta with over with over 35 years of experience in the analysis, planning, design and management of urban drainage, stormwater management and watershed management projects in Alberta, British Columbia, Saskatchewan and Ontario. As Drainage Technical Lead at the City of Calgary, he is a resource to all the Water Utility and beyond for the practical implementation of sustainable drainage practices. Prior to joining the City in 2009, he provided stormwater and watershed management services in the Calgary area to the land development industry, municipal government, and provincial government. He serves as Adjunct Assistant Professor in the Schulich

School of Engineering's Department of Civil Engineering at the University of Calgary, as well as at the Department of Civil and Environmental Engineering at the University of Alberta, and in 2009 he was invited to join the Urban Water Resources Research Council of the Environmental Water Research Institute. In 2017, he was appointed Chair of the Canadian Standards Association Technical Committee of the Green Infrastructure for Stormwater Management initiative, responsible for the development of national standards for Low Impact Development infrastructure. He is one of the founding members and former president of the Alberta Low Impact Development Partnership.



Craig Kipkie



Narayan Pokhrel



Alexa Baker

STORMWATER DESIGN BRILLIANCE TRAINING SPONSOR





TRAINING TRACK “B”

Tuesday, November 14

LANDSCAPING

Effective Plant Selection and Implementation Strategies for Resilient Urban Landscaping

This new training opportunity will have more of a summit flavour, sharing the viewpoints and experiences of many participants, including you! The overarching emphasis will be on the functional selection of plants for various purposes, their cultural needs, factors in deciding what plant format to use for different objectives, and establishment and maintenance considerations.

The day will be split into two ½-day themes: *Get Your Feet Wet* will include wetland and bioengineering topics, and feature the good, the bad and the ugly of floating treatment wetland and bioengineering projects. We are pleased to welcome Olds College to share the latest results of metal and selenium depletion trials by individual wetland species. *Stay High and Dry* will cover absorbent landscaping, rain gardens, bioretention and naturalization. Native plants and examples using Matrix Planting strategies will be emphasized, referencing City of Calgary and EPCOR guidance and experiences gained from local research and demonstration projects. Updated seed-mix calculation-approaches will be discussed.

Expect to be equipped with specific local knowledge and resources to fulfill your own vision of landscaping success.

Time	Theme	Notes
½ day – Get your feet wet		
8:00 TO 8:30 REGISTRATION		
8:30-10:00	Floating treatment wetlands	Steve Tannas, Dan Karran, Jill Prosser
10:00 TO 10:30 BREAK		
10:30-noon	Stream bioengineering	Mike Gallant, Jason Di Pietro, Steve Tannas
NOON TO 1:15 LUNCH for all-day registrants		
½ day – Stay high and dry		
1:15 TO 1:30 REGISTRATION		
1:30-3:00	Bioretention, rain gardens and absorbent landscaping	Britta Hansen, Anton Skorobogatov, Jeff Schurek, Leta van Duin
3:00 TO 3:15		



BREAK		
3:15-5:00	Naturalization	Nathan Gill, Darin Sherritt, Leta van Duin

Your Instructors

Morning Program: Get Your Feet Wet

Floating Treatment Wetlands

Steven Tannas, PhD, P.Ag., Tannas Conservation Services Ltd.
 Dan Karran, PhD, P.Ag., Olds College
 Jill Prosser, P.Biol, City of Calgary

Stream Bioengineering

Mike Gallant, MScE, P.Eng., CPESC, Kerr Wood Leidal Associates Ltd.
 Jason Di Pietro, Leaf Ninjas Inc.
 Steven Tannas, PhD, P.Ag., Tannas Conservation Services Ltd.

MORNING LANDSCAPING TRAINING SPONSOR



Afternoon Program: Stay High and Dry

Resilient Landscaping

Anton Skorobogatov, PhD, Magna Engineering Services Inc.
 Britta Hansen, MLA, PLA, OALA, ALA, EOR Inc.
 Jeff Schurek, CSLA, ISL Engineering and Land Services Ltd.
 Leta van Duin, B.Sc., ALIDP

Naturalization

Darin Sherritt, M.Sc., P.Ag., Tannas Conservation Services Ltd.
 Nathan Gill, GRP, Eagle Lake Professional Landscape Supply
 Leta van Duin, B.Sc., ALIDP



DESIGNING FOR TOMORROW: the future of stormwater management in Alberta

LIVE! November 13 to 16, 2023 PROGRAM



Steve Tannas



Dan Karran



Jill Prosser



Steve Tannas



Mike Gallant



Jason Di Pietro



Anton Skorobogatov



Britta Hansen



Jeff Schurek



Darin Sherritt



Nathan Gill



Leta van Duin



Wednesday, November 15

CONFERENCE Day 1 - Morning

Registration and Continental Breakfast 8 - 8:30

BREAKFAST BRONZE SPONSOR: **Lafarge Canada Inc.**

Welcome

8:30 8:45 David Seeliger
ALIDP President, MPE Engineering Ltd.

Bert van Duin
Conference Program Chair, City of Calgary

Cluster: Natural Assets and Asset Management

Facilitator: Jill Prosser

8:45	9:10	Michelle Molnar Natural Assets Initiative	Mainstreaming Natural Asset Management
9:10	9:35	Gemma Dunn GHD	How to Avoid Green Elephants: Governance as a Driver for Resilient Green Infrastructure
9:35	10:00	Twyla Kowalczyk Associated Engineering	Resources to Elevate Project Outcomes: Environmental Significant Areas and Natural Asset Valuation

Morning Break

MORNING BREAK BRONZE SPONSOR: **ABT, Inc. Permavoid**

Cluster: Green Roofs/ Blue Roofs

Facilitator: Anton Skorobogatov

10:30	10:50	Karen Liu Next Level Stormwater Management	Engineering Vegetated Roofing Systems to Optimize Stormwater Management
10:50	11:10	Kerry Ross Green T Design	Getting Green Roofs Right for Ensuring Success
11:10	11:30	Nathan Gill Eagle Lake Professional Landscape Supply	Green Roof Case Studies
11:40	12:00	James Cowan Credit Valley Conservation	Smart Blue Roof Implementation Study



Wednesday, November 15

CONFERENCE Day 1 - Afternoon

Lunch

SILVER LUNCH SPONSOR



Cluster: Ponds and Wetlands

Facilitator: Craig Kipkie

1:00	1:20	Josh Maxwell, Keihan Kouroshnejad WSP Canada	Comparison and Implications of Stormwater Management Facility Design criteria between Edmonton and Calgary
1:20	1:40	Sherif Ahmed University of Alberta	Physical Processes and Sediment Transport in Stormwater Wet Ponds and Constructed Wetlands in Calgary, Alberta
1:40	2:00	Brier Reid Dillon Consulting Ltd.	The Integration of Natural Assets with Future Growth Plans: Belvedere Master Drainage Plan
2:00	2:20	Anton Skorobogatov Magna Engineering Services Inc.	Storm Parks: The Convergence of Infrastructure, Nature and People

Afternoon Break

AFTERNOON BREAK BRONZE SPONSOR: **Dillon Consulting Ltd.**

Cluster: Forum - Food for Thought and Discussion

Facilitator: Leta van Duin

2:35	3:10	Leta van Duin ALIDP Josée Méthot International Institute for Sustainable Development	Talking Terminology on the Road to Scaling LID Implementation
3:10	3:40	Michael James DeepRoot Canada Corp.	Let the Water Flow: Crossing the Public / Private Property Line



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3:40	4:10	Pippa Cookson-Hills City of Calgary	The Role of LID in City of Calgary's Climate Risk and Resilience Assessment Process
4:10	4:30		Open Discussion
4:30	4:45		Recognition and wrap-up for the day

Networking Reception 5:00 until 8:00 p.m.

Please visit our exhibitors and vote for your favourite poster presentation!

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Exhibitors

Layfield Geosynthetics
<https://www.layfieldgroup.com/geosynthetics/>

ABT, Inc. Permavoid
<https://abtdrains.com/products/stormwater-modules/permavoid/>

Eagle Lake Professional Landscape Supply
<https://eaglelakelandscape.com/>

DeepRoot Canada Corp
<https://www.deeproot.com/>

Iconix Waterworks LP
<https://www.iconixww.com/>

Norwood Waterworks/ Citygreen

<https://norwoodwaterworks.com/>

Accu-Flo Meter Service
<https://www.accuflo.com/>

Romex North America
<https://romexcanada.com/>

ACO Systems, Ltd.
<https://www.acocan.ca/>

ADS
<https://www.adsenv.com/>

Barr Plastics Inc
<https://www.barrplastics.com/>

Leaf Ninjas Inc.
<https://leafninjas.ca/>



Thursday, November 16

CONFERENCE Day 2 – Morning

SILVER DAY 2 SPONSOR



Registration and Continental Breakfast 8 - 8:30

Welcome

8:30 8:45 David Seeliger and Bert van Duin

Cluster: Stormwater Reuse

Facilitator: Bert van Duin

8:45	9:15	Norm Neumann University of Alberta	Case Studies in Tracking Sources of Fecal Pollution in Urban Stormwater Drainage Networks to Identify Points Sources of Pollution
9:15	9:45	Brett H. Emmons EOR	Stormwater Reuse Examples of Success – From Urban Redevelopment, to Highway, to District-Level
9:45	9:55	Reuse Q&A	

Morning Break

Cluster: Policy/ Regulation/ Funding

Facilitator: Josh Maxwell

10:25	10:45	Matt Sloan and Kirsten Smith City of Edmonton	Edmonton's Green Infrastructure Efforts
10:45	11:05	Hannah Kratky and Sara Kardash Stantec Consulting Ltd.	Replacing a Storm Outfall with Bioretention Gardens, Overland Drainage, and Infiltration Wells in Rundle Park
11:05	11:50	Panel moderated by Erin Bird City of Calgary	Leveraging Grants and Funding Opportunities to Support LID: A cross-discipline panel discussion
11:50	12:00	ALIDP	Poster Awards, Wrap-up....safe travels!

Lunch – for paid registrants of both the Conference and afternoon Soil Cell Training



POSTER PRESENTATIONS

Posters will be on display during the conference in the **Desert Palms** room (door on the right as you go to the parking lot via the conference doors). They will be brought over to the Ballroom during the reception. Please take some time to view the posters and vote for your favourites in three categories: **Best Appearance; Most Impactful; Best Overall**. We also have a few posters that are not being judged (the non-numbered entries at the end of the list below).

Winners will be announced at the conference wrap-up on Thursday.

1. Yang Yang, University of Alberta
Evaluation of pollutant removal efficiency of urban stormwater wet ponds and the application of machine learning algorithms
2. Ghazal Jalal, University of Calgary
Characterization of nutrient leaching of amended and non-amended bioretention cells
3. Ketan Tagde & Cuauhtemoc Tonatiuh Vidrio-Sahagun, University of Calgary
Thermal performance of the extensive green roof on the Calgary Municipal Building
4. Cuauhtemoc Tonatiuh Vidrio-Sahagun, University of Calgary
A systematic framework for flood frequency analysis under stationary and nonstationary conditions
5. Haibin Yan, University of Alberta
Effects of mixed land use on urban stormwater quality under different rainfall types
6. Blair Cann, University of Calgary
Hydrological Modelling of Infiltration-Based Low Impact Development
7. Liam Carson, University of Alberta
Using a Microbial Source Tracking 'Toolbox' Approach to Investigate Sources of Fecal Pollution in an Urban Stormwater Drainage Network

Aidan Yakymyshyn & Tenaya Lynx, Bow River Basin
Council Young Professionals Committee
2022 Urban Stormwater Tour

Joey Simoes, International Institute for Sustainable
Development
**Strategies and Practical Applications for BMP Spatial
Targeting in Canadian Prairie Watersheds to Maximize
Water Quality Benefits**

VOTE and leave comments for the poster presenters

<https://www.surveymonkey.com/r/3R3X5H6>





TRAINING

Thursday, November 16 PM

ALL ABOUT SOIL CELLS for Stormwater Management

This brand-new course aimed at those involved with the siting and design, construction, operation and maintenance of soil cells provides an overview of all aspects to be considered in the creation and operation of these popular LID practices. Given their success in creating more resilient communities, the design and construction of soil cells are covered in design guidance issued by EPCOR, the Cities of Edmonton and Calgary, as well as by the various suppliers of the components that make up soil cells. Considerations for suitable implementation across the province will be included.

This course will discuss the available guidance, providing additional details pertaining to the siting and layout of these LID practices, their components with specific attention to growing media and vegetation needs, as well as to the construction, inspection and operation and maintenance of these practices. The contents of the soon to be released City of Calgary Module 2C will figure prominently.

Using lessons learned and examples of typical installations you will gain an appreciation of components that are critical to the successful implementation of soil cells.

A breakout session will allow participants to drill down into either in-depth consideration of layout and sizing/dimensioning for engineers; or vegetation selection, other biotic elements, and considerations for stormwater management for landscape architects, ecologists, and urban foresters.

Lunch will be included for conference registrants.

Time	Theme	Notes
Soil Cells		
12:45 TO 1:00 REGISTRATION		
1:00 - 2:00	General	
	Components	
	Layout	
	Considerations	
2:00 – 2:40	Specialty Breakout: Planning and Analysis for Engineers	Specialty Breakout: Vegetation Selection and Biotic Considerations
2:40 TO 3:00 BREAK		
3:00 – 4:30	Construction and Inspections	
	Operations and Maintenance	



About your Instructors

David Seeliger, P.Eng.



David has over 30 years of Canadian and Australian experience in all aspects of stormwater management, with specialist expertise in modelling, designing and implementing LID practices. He is the Stormwater Director at MPE Engineering Ltd. David has worked on a broad range of projects, including development of the City of Calgary’s LID vegetative practices guidelines and various LID monitoring programs. His recent focus involves integrating LID practices in the urban greenfield and redevelopment settings to meet environmental and community goals.

In addition to his long-standing role as ALIDP President, he also participates in various CSA technical committees to develop Canadian flood standards for greenfield and existing urban communities.

David previously held executive positions as director and secretary of the Hydrological Society of South Australia, a not-for-profit technical society promoting all aspects of the water cycle.

Jeff Schurek, CSLA



As Manager of ISL’s Landscape Architecture and as a senior landscape architect with more than 20 years of experience, Jeff has been a long-time proponent of LID in Alberta and British Columbia. He has built his knowledge based on over 40 successful LID installations across both provinces. His LID work extends over the last 15 years with a primary focus of installations in the Edmonton region. Jeff has been involved in the design and construction of some of Edmonton’s first LID streetscape applications including projects like 105 Avenue Green Street, The Quarters Phase 1, and Imagine Jasper. His work also involves several City

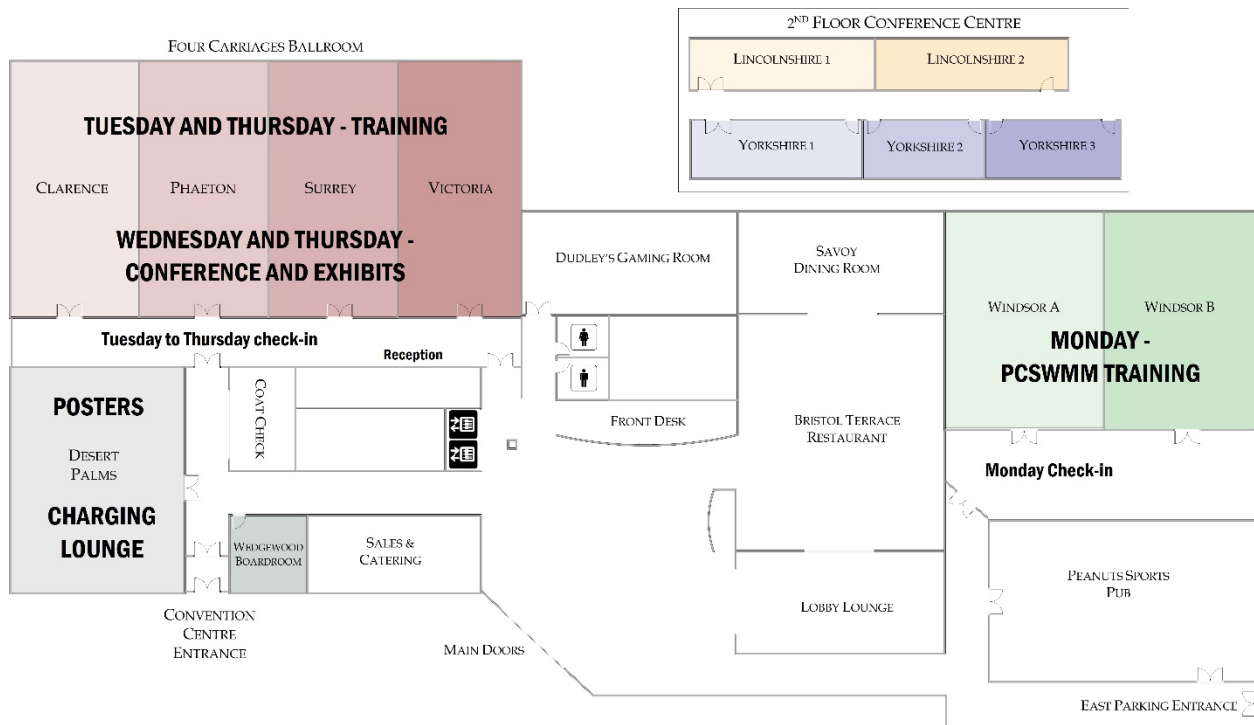
of Edmonton/ EPCOR LID Demonstration areas. Jeff is an active contributor to the ALIDP Research and Monitoring Working Group.

THANK YOU TO OUR SOIL CELL TRAINING SPONSORS!





CARRIAGE HOUSE INN - FLOORPLAN



EVENT CONTACT INFORMATION

Logistics, Registration, Promotional

Leta van Duin leta@alidp.org (403) 617-8883

Program


Bert van Duin Bert.vanduin@calgary.ca (403) 826-2597



CONFERENCE ABSTRACTS AND BIOS

Cluster: Natural Assets and Asset Management

Mainstreaming Natural Asset Management

 **Nov 15, 8:45 – 9:10**

The challenges of aging infrastructure, climate change, biodiversity loss and high level of service requirements, coupled with the declining rate of re-investment on infrastructure and high renewal and replacement costs, require civil infrastructure to be managed efficiently and sustainably. Integrating nature and the services it provides into infrastructure considerations is an innovative approach to develop long-term sustainable infrastructure systems that addresses the issues facing communities today. The Natural Assets Initiative (NAI) team provides scientific, economic and municipal expertise to support and guide local governments in identifying, valuing and accounting for natural assets in their financial planning and asset management programs, and in developing leading-edge, sustainable and climate resilient infrastructure. To date NAI has worked with over 120 communities across Canada on a range of projects. This presentation will speak to rapidly advancing practices in natural asset management, including a new standard for natural asset inventories, as well as accounting frameworks to accelerate more abundant, equitable, and thriving natural assets.

About the Speaker

Michelle Molnar

Michelle is the Technical Director of the Natural Assets Initiative. Her work focuses primarily on the management of natural assets using various tools of GIS & mapping, ecological economics, policy analysis, and public outreach. She is the author of several natural asset management reports, a past President of the Canadian Society for Ecological Economics and has taught Ecological Economics at the British Columbia Institute of Technology. Michelle has an M.A. in Public Policy from Simon Fraser University, an M.A. in Philosophy from the University of Western Ontario and an H.B.A. in Economics from the University of Western Ontario. Her talk will address the question of how to mainstream nature-based solutions.





Cluster: Natural Assets and Asset Management

How to Avoid Green Elephants: Governance as a Driver for Resilient Green Infrastructure

📅 Nov 15, 9:10 – 9:35

Green infrastructure (GI) is increasingly recognized as an effective strategy to manage stormwater, and many Canadian municipalities are looking to scale-up and operationalize their green infrastructure programs. However, managing increasingly larger portfolios of GI assets comes with a range of challenges, such as: operations and maintenance of numerous and varied GI assets, implementing a scalable asset management program that integrates with existing assets, and ensuring the appropriate governance and management structures. A well-considered asset management program coupled with effective governance are crucial to ensuring that assets are not built and then forgotten, and that municipalities have the appropriate resources for the long-term management of both existing assets and new assets as they come into service. GHD recently completed a Green Infrastructure Asset Management Program for the City of Vancouver, the first of its kind in Canada. The framework provides guidance for effectively managing existing GI, scaling up the implementation of new GI assets, and adapting to the related evolving governance and funding challenges. The outcome of this work provides insights for other Canadian municipalities implementing GI to support climate resilience. The audience will understand the benefits of incorporating green infrastructure assets into municipal asset management plans and programs.

About the Speaker

Gemma Dunn, PhD, MSc, BSc (Hons)

Dr. Dunn is GHD's Western Canada Water Market Leader. Trained in both natural and social sciences, she has a strong technical background in water management coupled with significant policy and governance expertise. She has over 20 years' experience in the water sector and specializes in integrated water management / One Water. Her PhD research with the Australian CRC for Water Sensitive Cities was instrumental in shaping the City of Vancouver's aspiration to become a Water Sensitive City, which is expressed in the Rain City Strategy (RSC). Working with GHD, Gemma went on to manage the development of City's Green Infrastructure Asset Management Planning Program, which oversees the implementation of the RSC. She is currently working with the City of Spokane to develop their 20-year water, wastewater and stormwater infrastructure investment strategies (which includes green infrastructure practices), as well as with the City of Vancouver investigating groundwater discharge practices in different jurisdictions in North America.





Cluster: Natural Assets and Asset Management

Resources to Elevate Project Outcomes: Environmental Significant Areas and Natural Asset Valuation Nov 15, 9:35 – 10:00

The City of Calgary (the City) retained Associated Environmental Consultants Inc. to identify, classify and map environmentally significant areas (ESAs) within City limits. The ESA framework outlines the reasoning for identifying ESAs and uses it to inform planning and land use decisions. Unique to the City's ESA approach is prioritizing areas that manage climate risks and contextualizing the ecosystem services ESAs provide by building on the City's natural asset valuation project. This information allows the City to better track and report changes to ESAs, provides transparent and defensible justification for evaluating and protecting ESAs, and provides clarity, predictability, and consistency for land use decision-making for the City planning department and the development industry. The ESA inventory is comprised of 20 components, or datasets, that represent environmental significance from multiple technical perspectives. Results found that ESAs account for 25% of the City's land cover, which provide services equivalent to \$1.6 Billion/year with a replacement cost of \$1.2 Billion. The ESA tool should be used to identify key areas of the natural landscape to conserve, which is often directly aligned with water conveyance and retention features. Both the ESA and the natural asset valuation can also be used to identify opportunities to enhance the environmental significance and overall value of a project, such as adding pollinator habitat or rare plant species to designs, integrating socio-economic benefits such as recreation or managing climate risks such as strategic placement of shade features, such as trees, to support citizens during extreme heat events.

About the Speaker

Twyla Kowalczyk, P.Eng., M.Sc., IRP

Twyla has a diverse background across the water management field with unique experience in disaster risk reduction, climate resilience and emergency response planning. Twyla leads climate resilience within the Strategic Advisory Services group at Associated Engineering and supports other departments across the organization to integrate climate into various project types. She has been involved at a national level for informing climate adaptation progress reporting and worked with the Canadian Standards Association on climate-related standards and guidelines. Twyla utilizes her facilitation, education and communication experience to support industry in making connections of climate change to asset management, natural assets and risk reduction.





Cluster: Green Roofs/ Blue Roofs

Engineering Vegetated Roofing Systems to Optimize Stormwater Management

📅 Nov 15, 10:30 – 10:50

Urban centres have high concentrations of impervious areas which pose a challenge in managing large volumes of stormwater. Heavy rain events or back-to-back storms cause problems like flooding, property damage, and combined overflow sewer discharge. Green infrastructure, such as vegetated roofs, can help mitigate these problems because they restore the hydrologic cycle in urbanized areas. Vegetated roof systems designed for maximum stormwater management decrease the volume of stormwater within the urban core and reliably delay travel time of stormwater to the treatment plant. These retention and detention strategies help alleviate the burden of heavy stormwater on our cities' infrastructure.

Learning Objectives: 1) The distinction between stormwater retention and detention, 2) The importance of detention in urban centres, 3) Existing roof top technologies, 4) Using biomimicry to re-engineer vegetated roofing system, 5) Collaboration: Landscape Architects, Architects, Civil Engineers.

About the Speaker

Karen Liu, BAsC, MASc, PhD

Dr. Karen Liu is the Green Roof Specialist with Next Level Stormwater Management. She is a member of the CSA A123 Technical Committee responsible for numerous roofing standards and was a key participant in the research consortium that developed the national wind testing standard for vegetated roofing CSA A123.24. Karen serves on Green Roofs for Healthy Cities' Technical Committee, reviews green roof standards, and develops training programs for green roofing professionals. She also serves as a lay councillor for the Ontario Association of Landscape Architects. Karen is an experienced researcher and educator and conducted green roof research at both National Research Council in Ottawa and British Columbia Institute of Technology in Vancouver. As a former global product manager with a major German green roof company, she has extensive practical experience across North America, Europe and Asia.





Cluster: Green Roofs/ Blue Roofs

Getting Green Roofs Right for Ensuring Success

📅 Nov 15, 10:50 – 11:10

Green roofs are an important green building component increasingly used in urban areas for their stormwater management practices, particularly where space constraints limit the use of other strategies. Each green roof is unique and often designed to achieve multiple design objectives and performance results. Despite the greater acceptance and uptake, some green roofs have failed to live up to their performance requirements. This presentation will focus on various case studies to illustrate some common reasons for green roof failures and discuss strategies to ensure long-term success of green roofs and how to optimize multiple benefits objectives.

About the Speaker

Kerry Ross, B.Arch, B.Gen, LEED AP, GRP

Kerry Ross is the Director of Green T Design, a company dedicated to greening rooftops through design, installation, research, and maintenance. Over the past 20 years, Kerry has been involved in over 60 green roof and living wall projects mainly in Alberta. She was one of the first Green Roof Professionals in Canada and continues to be a vocal advocate for incorporating green roofs wherever possible.





Cluster: Green Roofs/ Blue Roofs

Green Roof Case Studies

📅 Nov 15, 11:10 – 11:30

Two large Calgary green roof installations will be shared: Calgary Cancer Centre and the City of Calgary Stoney Transit Facility. One facility features native plants, and one is a sedum roof. From design through to maintenance, there are many lessons to be learned.

About the Speaker

Nathan Gill

Nathan Gill has been active in the green roof industry for 9+ years, and has combined his roofing and building knowledge, horticultural passion, and local experience to become an expert in green roof implementation on the Canadian Prairies. He is currently CEO of Eagle Lake Turf Farms Ltd, which is the parent company of EcoLogic Horticulture and Eagle Lake Professional Landscape Supply. 'Eagle Lake' is the licensed grower for LiveRoof in Alberta, Saskatchewan and Manitoba. LiveRoof is a prevegetated modular green roof system.





Cluster: Green Roofs/ Blue Roofs

Smart Blue Roof Implementation Study

📅 Nov 15, 11:30 – 11:50

Industrial, commercial, and institutional sector properties generally cover 20-30% of urban spaces and are occupied by extensive flat roof buildings, paved surfaces, and relatively small pervious spaces. Unsurprisingly, these lands generate the largest runoff volumes per unit area of all urban land use categories. This puts a tremendous strain on municipal stormwater systems, many of which are undersized for the flows they are tasked with conveying. Credit Valley Conservation's Smart Blue Roof Implementation Study intends to showcase an effective alternative to conventional, passive flat roof drainage. Smart Blue Roof technology leverages control logic and the "internet of things" to retain rainwater on building rooftops, maximizing the stormwater management and rainwater reuse potential of flat roofs. Credit Valley Conservation's Smart Blue Roof is anticipated to be the first of its kind to be compliant with the new CSA standard for rainwater harvesting systems (CSA B805-18), and construction is scheduled for the Spring of 2023. This presentation will describe the process of construction, essential design considerations, legislative hurdles, and the expected, myriad benefits of this innovative, active stormwater management strategy.

About the Speaker

James Cowan, EIT

James is a graduate of the University of Guelph's Environmental Engineering program, and his current role is to support green infrastructure and low-impact development projects within the Region of Peel. He is a member of Credit Valley Conservation's Integrated Water Management team.





Cluster: Ponds and Wetlands

Comparison and Implications of Stormwater Management Facility Design Criteria Between Edmonton and Calgary Nov 15, 1:00 – 1:20

This presentation provides a comparison and contrast of the storm pond design standards between the City of Edmonton and the City of Calgary. We will explore the differences and similarities in the modelling and geometrical constraints and discuss major differentiating parameters and approaches. We will focus upon three major aspects of the standards: hydrology, geometry, and treatment requirements. These differences will be illustrated using a conceptual design exercise on a hypothetical greenfield development. Modelling requirements vary greatly between Edmonton and Calgary, with storm events in Edmonton being generally more intense than Calgary, however Calgary uses a frequency analysis approach which tends to increase beyond the single event 100-year return period volume. Key storm pond geometrical requirements include minimum surface areas, depths, slopes, and freeboard requirements. Each of these requirements has an impact upon the final footprint and cost of the facility. Finally, treatment requirements vary between the two Cities, with Calgary having a more stringent target particle capture of 50µm versus Edmonton's 75µm. Our presentation will not delve into the reasons for this difference, but will discuss impacts upon pond design and current trends. Overall, this presentation should provide the audience with an informative discussion that will stimulate constructive debate around design guidelines and our industry's approach to storm pond design.

About the Speaker

Josh Maxwell, M.Sc., P.Eng., PMP

Josh Maxwell leads WSP's water resources practices in the Alberta Land Development and Municipal Engineering. He specializes in infrastructure planning and design, with a special interest in sustainable stormwater management. He is actively engaged with private and public clients as an engineering consultant, practicing land development and municipal engineering across Western Canada. With 15 years of experience, he is an enthusiastic and outgoing presenter of technical information to private entities, public groups, commissions, councils, and regulatory bodies.



Recently, Josh has been actively involved in several LID initiatives in the Edmonton Region, including the Eastwood and Elmwood LID Retrofits as part of the City of Edmonton's Neighborhood Renewal Program. Josh is a Director of the ALIDP.



Keihan Kouroshejad



Cluster: Ponds and Wetlands

Physical Processes and Sediment Transport in Stormwater Wet Ponds and Constructed Wetlands in Calgary, Alberta

📅 Nov 15, 1:20 – 1:40

Wet ponds and constructed wetlands can improve stormwater quality by removing suspended sediment before it is discharged into receiving water bodies. However, there is still a lack of understanding regarding their optimal design, operation, and management due to a shortage of long-term monitoring data across various environmental conditions. Therefore, a hybrid problem-solving approach was adopted in the current study to investigate the key factors affecting physical processes and the differences in the performance of a wet pond and a wetland. First, a comprehensive two-year field monitoring dataset was used to investigate the physical process that may affect sediment transport and fate in four ponds/wetlands in Calgary. Second, the monitoring data supported the application of the Environmental Fluid Dynamics Code (EFDC), a three-dimensional hydrodynamic and sediment transport model, in the ponds/wetlands to simulate physical processes and evaluate their hydraulic performance and Sediment Removal Efficiency (SRE). The EFDC model revealed that SRE varied from 70% to 100% during inflow events. The study investigated the factors affecting SRE, including inflow characteristics, sediment load, vegetation, wind, and stratification. SRE was found to be negatively correlated with inflow duration but not sensitive to the inflow rate due to submerged berms. In addition, stratification significantly affected SRE, increasing or decreasing it based on inflow characteristics and internal flow paths. In conclusion, the study demonstrated that the EFDC is a promising tool for predicting SRE and optimizing design and operation by simulating various remediation options, including pond depth, inflow configuration, and baffles design, to maximize the SRE.

About the Speaker

Sherif Ahmed, PhD, EIT

Dr. Sherif Ahmed is a dedicated Postdoctoral Fellow at the University of Alberta, actively leading a research project focusing on sediment dynamics in storm sewer systems. This work aims to understand the movement and deposition of sediments in storm sewer systems to optimize their functionality by preventing blockages in sewer pipes and reducing sediment and pollutant loadings in downstream ecosystems. With a Ph.D. in Water Resources Engineering and a history of collaboration with the City of Calgary to improve stormwater quality, Sherif exemplifies a commitment to bridging academia and practical solutions for environmental improvement. His commitment extends to education, where he has taught Water Resources and Environmental Engineering courses and seminars at the University of Alberta in Canada and Cairo University in Egypt. Sherif is enthusiastic about balancing their academic pursuits with industry experience.





Cluster: Ponds and Wetlands

The Integration of Natural Assets with Future Growth Plans: Belvedere Master Drainage Plan

📅 Nov 15, 1:40 – 2:00

This presentation will discuss the process by which natural assets (wetlands, ephemeral streams, intermittent streams) were integrated with the land use concepts in the Belvedere Area Structure Plan. The first of its kind, the preparation of this MDP included engagement between The City and Alberta Environment and Parks stakeholders to discuss the priorities for wetland preservation in the Study Area. A wetland retention strategy was proposed that began with a desktop identification of retention potential of wetlands within the study area, and led to the development of a wetland retention decision tree. Future Water Act Applications are expected to use the decision tree when demonstrating avoidance or mitigation. The MDP was then submitted to AEPA for review under the Water Act. A pre-development model (PCSWMM) was developed a planning-level tool that estimated surface water discharge, storage, and water level elevations for pre-development wetlands and watercourses. This model confirmed that some wetlands within the Study Area are subject to water inputs from shallow groundwater. The recommended post-development servicing strategy references the objectives of the CSMI Regional Stormwater Guidelines & Policies for the East Belvedere lands. Catchments were aligned with the land use concept and ponds were located adjacent to wetlands recommended for high retention potential. Priority ephemeral and intermittent streams were integrated into the post-development overland emergency escape network.

About the Speaker

Brier Reid, MEdes., P.Eng., RPP, MCIP

Brier is an Associate at Dillon Consulting Ltd. She is both a Registered Professional Planner and a Professional Engineer and enjoys working with land developers and municipalities. Her planning expertise provides a perspective on the complex human-scale services of an urban centre. Her engineering experience allows Brier to bridge the gap between policy development, technical analysis, and detailed design. Brier is a specialist in land use planning and design, stormwater design, stormwater modelling and wetland preservation. Her design passions are guided by the responsible and sustainable growth of urban environments including the efficient design of cities and healthy ecosystems. She was the lead author and project manager for the Belvedere Master Drainage Plan.





Cluster: Ponds and Wetlands

Storm Parks: The Convergence of Infrastructure, Nature and People **Nov 15, 2:00 – 2:20**

Storm parks, an emerging term in the realm of stormwater management, represent a novel and multifaceted response to the environmental, social, and operational challenges associated with traditional stormwater management practices. Conventional stormwater management may address rate control and sediment removal, but it is now confronted with an evolving landscape of environmental pressures, the impact of climate change, and the growing need for functional urban spaces. This shift in stormwater management necessitates a fresh perspective that caters to the environment's needs, maximizes limited urban space, and continues to meet and exceed water quantity and quality targets.

Multifunctional stormwater management facilities can be designed to manage the effects of runoff in urban areas while also creating engaging, environmentally beneficial spaces. This presentation will provide an overview of the evolving landscape of innovative stormwater management. It will delve into the shifts in policy and project case studies in the Calgary region, exemplifying the efforts of the MAGNA Engineering team.

About the Speaker

Anton Skorobogatov, MEdes, PhD

Anton is an interdisciplinary professional who has been balancing a career in consulting and academic pursuits focused on plant-soil interactions, nature-based solutions, and low impact development. He seeks to combine scientific knowledge with good design principles to achieve environmentally sound solutions. His background allows him to go after creative solutions, which is well-suited for his role as Director of Innovation at MAGNA Engineering. He completed his PhD program at the Schulich School of Engineering at the University of Calgary in Spring of 2023. His PhD thesis focused on investigating bioretention system performance and the impacts of plants, media, and hydrologic loading on water quantity and quality. Anton is actively involved with the Alberta Low Impact Development Partnership, where he currently holds the positions of Vice President and Chair of the Research and Monitoring Working Group.





Cluster: Forum – Food for Thought and Discussion

Talking Terminology on the Road to Scaling LID Implementation 📅 Nov 15, 2:40 – 3:10

Do you know the difference between Natural Assets and Natural Infrastructure? Green infrastructure and Nature-based Solutions? Why should you care? An array of new terminology crowds the already acronym-rich stormwater management landscape, threatening to add fog rather than clear it up. At the same time, these new terms have captured the imagination of players beyond the traditional stormwater management world, potentially broadening support for low impact development implementation. This presentation will explore how this re-branding highlights low impact development for the set of solutions that it always has been about, but through new lenses.

A prairie initiative by the International Institute for Sustainable Development, the *Natural Infrastructure for Water Solutions* project (NIWS), will be introduced, leading into a panel discussion around pathways to scaling low impact development solutions.

About the Speakers

Leta van Duin., B.Sc.

Leta is the Executive Director of the Alberta Low Impact Development Partnership. She has been involved with LID since the mid-2000s, when she advised on plant selection for the University of Calgary’s first bioretention pilot, and she has been keenly watching its evolution ever since. Her background in environmental modelling, landscape design, chemistry, community engagement and communications give her a broad perspective. She holds a B.Sc. in Geography from the University of Winnipeg and has worked for the federal government, in civil engineering consulting, and the non-profit sector. Leta is a member of the Canadian Standards Association Green Infrastructure for Stormwater Technical Committee and has been involved in several LID research and demonstration initiatives. She is a guest lecturer in the University of Calgary Landscape Architecture program.



Josée Méthot, M.Sc.

Josée is a senior policy specialist in the International Institute for Sustainable Development’s Water program. In this role, she is leading an initiative to scale the adoption of natural infrastructure across the Canadian Prairies.

Before joining IISD, Josée led a multi-sector watershed organization in Alberta and managed programs related to water, land-use, and policy. She brings expertise in water management, planning and process design, and the bridging of science and policy. A published environmental scientist working at the water-energy-food nexus, Josée has worked collaboratively with diverse stakeholders, including various levels of government, community organizations, industry, First Nations, and academia. She holds a Master of Science in Natural Resource Sciences from McGill University and a Bachelor of Science from the University of Calgary.





Cluster: Forum – Food for Thought and Discussion

Let the Water Flow: Crossing the Public / Private Property Line

📅 Nov 15, 3:10 – 3:40

Historically, cities have not allowed private property owners to send their stormwater runoff across the property line and be managed in the public ROW. Although, from a strict “watershed” runoff point of view, in many cases this would be the most efficient way to manage the private property flows. There are both liability and priority use of the public realm issues that have created this arbitrary barrier with respect to stormwater runoff.

This presentation will look at case studies where cities allowed private property developers to manage some of their stormwater runoff on the public ROW either as a one-off variance or through regulations that re-imagine the strict public/private stormwater restrictions. The presentation will deal with: how liability issues are dealt with, O&M considerations, monitoring and reporting, and benefits and costs to both private developers and cities.

About the Speaker

Michael James

Michael James is the General Manager of DeepRoot Canada Corp. Mike has been in the municipal street tree / stormwater industry for over 25 years and has worked extensively with landscape architects, municipalities, engineers, and landscape contractors to provide solutions for the health of the Urban Forest and Low Impact Development techniques. Michael has a Degree in Public Administration and Business Management.





Cluster: Forum – Food for Thought and Discussion

The role of LID in The City of Calgary's Climate Risk and Resilience Assessment Process

📅 Nov 15, 3:40 – 4:10

Climate change is increasing the frequency and intensity of severe weather events both locally and globally. The City of Calgary recognizes climate change as a great risk with far reaching impacts. Public infrastructure is at risk due to climate hazards and can be made more resilient and energy efficient, through thoughtful planning and design. A Climate Risk and Resilience Assessment (CRRRA) process for Public Infrastructure has been developed to improve climate resilience. This process uses a risk management approach to identify, manage, and adapt to climate related hazards and impacts. The CRRRA process has been used to assess a variety of infrastructure types at The City, including streetscapes, buildings, roads, industrial complexes, arenas, stormwater infrastructure and more. Most recently, the Community Drainage Improvements (CDI) north and south portfolios were assessed using the CRRRA process to support the Disaster Mitigation Adaptation Fund (DMAF) application. This presentation will discuss the process itself, some applications, resultant adaptation measures and how to move towards implementation to reduce climate risk to infrastructure, human wellbeing and the environment.

About the Speaker

Pippa Cookson-Hills, M.Sc.

Pippa Cookson-Hills is an atmospheric scientist working as a climate adaptation specialist at The City of Calgary. She tracks and analyzes The City's historical and future climate data and incorporates this data in The City's Climate Risk and Resilience Assessment (CRRRA) process for city-owned buildings, which she manages. As part of Pippa's ALIDP presentation, she will discuss the most recommended climate adaptation measures from CRRAs – surprise, it's LID!





Cluster: Stormwater Reuse

Case Studies in Tracking Sources of Fecal Pollution in Urban Stormwater Drainage Networks to Identify Points Sources of Pollution Nov 16, 8:45 – 9:15

Stress on global water supplies is increasing due to climate change, overpopulation, and urban development, and it has been suggested that alternative source waters, such as stormwater, may be necessary to curb this burgeoning crisis. However, stormwater has not, as of yet, been extensively characterized in terms of potential public health risks from acute microbial threats, particularly in Canada. Stormwater has increasingly been shown to be a poor-quality source water based on the concentrations of fecal indicator bacteria, though few studies have been able to clearly target the specific sources of contamination within stormwater drainage networks for effective management.

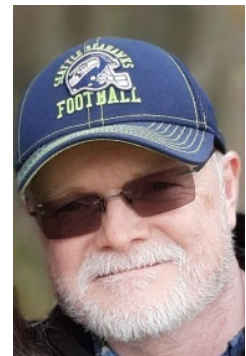
We investigated microbial water quality of stormwater from a mid-sized urban municipality using a “tool-box” approach to assess levels of traditional fecal indicators (*Enterococcus* and *E. coli*), individual host sources of fecal pollution, as well as enteric bacterial pathogens (e.g., *Arcobacter butzleri* and *Campylobacter* spp.). Collectively, data suggests that stormwater is generally of poor water quality, and routinely contaminated with pathogens, and should be managed effectively from a public health perspective when considering the alternative use of this water source.

We provide some case studies demonstrating the utility of using microbial source tracking (MST) methods to interrogate sources of pollution in these systems and help identify infrastructure issues contributing to pollution with the drainage network. Understanding the impact of fecal contamination sources, and consequent pathogen contamination in stormwater is necessary for the regulation of alternative source water use to minimize any impacts to public health.

About the Speaker

Norm Neumann, PhD

Dr. Neumann is a Professor in the School of Public Health at the University of Alberta. He co-chairs the ALIDP Stormwater Reuse Working Group. He received his PhD at the University of Alberta in 1999 in the Department of Biological Sciences in the field of immunology. During his PhD, he became involved in a series of collaborative research projects between the Dept. of Biological Sciences and the Dept. of Civil and Environmental Engineering studying waterborne pathogen disinfection, and subsequently went on to do post doctoral training in the Dept. of Civil and Environmental Engineering. In 2000 he took a position at the National Water Research Institute as a Research Scientist with Environment Canada, but in 2002 was recruited to the University of Calgary as an Assistant Professor in the Faculty of Medicine. In 2007, he moved to the University of Alberta as part of the formation of the School of Public Health, where he also served as Vice Dean of the School between 2018 to 2021. From 2002-2017, Dr. Neumann was also cross appointed as the Program Leader for Environmental Microbiology at the Provincial Laboratory of Public Health in Alberta Health Services, and was responsible for all public health related microbial water quality testing in the province (~240,000 samples per year). His area of research centers on One-Water.





Cluster: Stormwater Reuse

Stormwater Reuse Examples of Success – From Urban Redevelopment, to Highway, to District-Level Nov 16, 9:15 – 9:45

Stormwater has evolved significantly in the past 20 years. The emphasis has shifted very strongly toward preventing runoff from becoming a problem at the site level, with a focus on volume control, not just rate, and is often referred to as LID or GI. Yet with a host of other constraints, simple infiltration may not work: low permeable soils, site contamination, high bedrock, high water table, and groundwater protection areas. The convergence of the need for more creative stormwater solutions and water supply scarcity has led many all-over North America to turn toward Stormwater Capture and Use (SCU). Even in areas such as “water-rich” Minnesota, SCU/Reuse is exploding as a leading solution for holistic, smart water management, or One Water. This presentation will walk you through three different examples or different settings, issues, and drivers that all converged on SCU/Reuse as a win-win for water management. The examples include: 1) Highway 36/15 Interchange SW requirements where infiltration was restricted, 2) Urban Office St. Paul Redevelopment project with zero-runoff and demonstration site, and 3) Industrial District in NE Edmonton, Alberta with cost-prohibitive challenges that turns a problem into a resource, 4) City Street/Utility Reconstruction that must protect a high-quality lake, and more. Each illustrates SCU/Reuse’s flexibility to different settings, different types of projects, and drivers. Each illustrates how SCU/Reuse can become a win-win solution for the owner, the regulatory entity, and community. The drivers and benefits ranged from reducing O&M costs, to redundancy in water supply, to meeting sustainability goals, and to meeting a community’s increasing irrigation needs.

About the Speaker

Brett H. Emmons, PE, P.Eng., ENV SP

Brett H. Emmons is a founding principal of EOR with 35 years of experience in civil and water resources engineering, as well as natural resources, both in the US and internationally. His work focuses on innovative stormwater management techniques, like Low Impact Development (LID)/Green Infrastructure (GI), and emphasizes inter-disciplinary, integrated approaches. Brett has helped EOR establish itself as a regional leader in LID/GI and sustainability planning. While at EOR he has led small and large teams on planning, modeling, and design of projects, ranging from small-scale designs to multi-million-dollar community systemwide projects. His focus toward bringing diverse stakeholders together to address new and complex problems, includes working with disadvantaged communities, public interest groups, and government entities ranging from local to federal.





Cluster: Policy/Regulation/Funding

Edmonton's Green Infrastructure Efforts

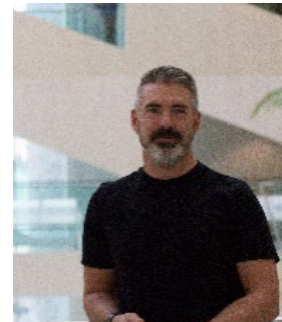
📅 Nov 16, 10:25 – 10:45

Our climate is already changing, both globally and locally. It's affecting our weather, environment, economy, and health. The City of Edmonton recognizes that unless significant global efforts to reduce greenhouse gas (GHG) emissions, climate change will have serious and continued impacts on our City. As such, City Council and Administration have supported numerous goals and initiatives to position the City and its residents to be better able to withstand and adapt to these changes. Strategies and plans like "Climate Resilient Edmonton: Adaptation Strategy and Action Plan" or "Breathe: Edmonton's Green Network Strategy" or "Edmonton City Plan" are transformative documents that establish clear goals and targets to help us respond to the impacts of climate change and protect the community, infrastructure and services. Many of these initiatives point towards the implementation of green infrastructure in a variety of forms to achieve climate goals. Over the last several years, departments from the City have made strides in advancing green infrastructure in the following areas: LID (rain gardens, retention basins, box planters, soil cells); comprehensive tree planting; naturalization, restoration, and reclamation; alternative ground covers; and permeable hard surfacing. The intent of this presentation is to share the City of Edmonton's recent experiences implementing these technologies from inception through construction and eventual operations and maintenance.

About the Speakers

Matt Sloan, AALA BC SLA CSLA

Matt Sloan is a licensed landscape architecture professional in BC and Alberta, currently serving as the Senior Landscape Architect at the City of Edmonton. With nearly two decades of experience, Matt has been a driving force behind the city's green infrastructure initiatives, designing and overseeing the development of numerous urban parks, sustainable landscapes, and community spaces. His dedication to enhancing Edmonton's natural environment and fostering community engagement through thoughtful design has made him an invaluable asset to the city's ongoing efforts to create a vibrant and sustainable urban landscape.



Kirstin Smith, RPP, LEED+ND

Kirstin is an urban planner who started her career in the private sector about 18 years ago. She joined the City of Edmonton in 2016 and now as a Senior Planner with the City's Building Great Neighbourhoods branch, she leads development of the City's comprehensive, upfront planning process for the Neighbourhood Renewal Program. To help maximize the full potential for strong and sustainable neighbourhoods, a focus of Kirstin's work is to align neighbourhood renewal efforts with complementary initiatives like Low Impact Development and other green infrastructure.





Cluster: Policy/Regulation/Funding

Replacing a Storm Outfall with Bioretention Gardens, Overland Drainage, and Infiltration Wells in Rundle Park Nov 16, 10:45 – 11:05

Outfall 80 in Rundle Park was severely damaged by the North Saskatchewan River and is environmentally challenging to access for repairs due to proximity to steep banks, sensitive species, and mature trees. As a result, and because the Outfall serves a small catchment area (< 5 ha), it was determined the Outfall would be abandoned in place and that flows from the contributing basin would be managed by a combination of LID and overland drainage. Stantec was retained to develop LID options to manage parking lot flows currently draining to the storm outfall. As the parking lot storm sewer was a couple meters below ground, the flows would normally have to surcharge to come to surface and drain into an LID facility. However, because the existing topography sloped toward the river, two tiered bioretention gardens in series were installed on the slope and the sewer was daylighted to drain to the gardens. This was preferred to regrading the parking lot to drain to multiple LID facilities. This project was completed on behalf of EPCOR Drainage and consisted of the conceptual, preliminary, and detailed design (complete) and support during/post construction (expected in Summer 2023). The numerous design challenges included bringing the existing sewer flows to the surface while still allowing the upstream sewer to drain, reducing sediment reaching the gardens, managing the garden overflows, and designing a maintenance access road for the grey infrastructure. This presentation will summarize the various challenges and successes of this unique and innovative project.

About the Speakers

Hannah Kratky, M.Sc., EIT

Hannah Kratky is a water resources EIT with a B.Sc. in Civil Engineering and an M.Sc. in Environmental Engineering. Her research focused on assessing the hydraulic and water quality improvement performance of low impact development for stormwater management. During her last year of her M.Sc., Hannah completed an internship with EPCOR in which she visually assessed various LID facilities throughout Edmonton and reported on their performance and provided recommendations for improvements. Hannah has been with Stantec for 4.5 years where she provides project coordination and design support for water resource projects in their Water Group in Edmonton.



Sara Kardash, B.Sc., EIT

Sara Kardash is a water resources EIT with a B.Sc. in Civil Engineering and an Environmental Specialization. Sara spent time with EPCOR drainage in the construction and LID groups prior to joining Stantec in 2021. Based in the Stantec Edmonton Water Resources group, Sara currently provides project coordination and design support for projects primarily in Edmonton and occasionally throughout Alberta and Canada. Sara has supported several stormwater management projects and contributed to LID projects from the concept to construction stages. Outside of LID, Sara contributes to stormwater outfall improvements, dry pond design, and utility coordination – all requiring significant coordination with various disciplines from landscape architects to structural to transportation.





Cluster: Policy/Regulation/Funding

Leveraging Grants and Funding Opportunities to Support Low Impact Development

📅 Nov 16, 11:05 – 11:50

Our panel will discuss the various grant opportunities, considerations, challenges, and lessons learned from the perspective of government and municipalities seeking to supplement budgets with grants and external funding. Nature-based solutions, including LID, are a key focus area for federal programs. We will take a look at what they are getting right and where there are opportunities for improvement. If you have experience, or would like to learn from those who have, this session will provide some tips, tricks, and words of advice to help you seek additional funding for your LID projects.

Moderator: Erin Bird, Leader Grant, Partner & Industry Relations, City of Calgary

Panelist 1: Micaela Mastromonaco, Government of Alberta

Panelist 2: Landon Evans, Linear Infrastructure Delivery, Utilities Delivery, City of Calgary

Panelist 3: Paul Atkinson, Urban Forestry, Parks & Open Spaces, City of Calgary

Panelist 4: Jillian Prosser, Climate and Environment, City of Calgary

About the Moderator

Erin Bird, P.Eng.

Erin Bird graduated from the University of Calgary in 1998 with a Bachelor’s Degree in Civil Engineering with a minor in Transportation. She is registered as a Professional Engineer with APEGA, and started with The City of Calgary in 2006. Previously, Erin had the opportunity to work for a General Contractor as well as a couple of design consulting firms and has worked in both the US and Europe. Over her career at The City, Erin has worked as a project manager and structural resource in Transportation Infrastructure, as a Senior Planning Engineer in Water Resources, as a Leader of Corporate Capital Project Strategies, and has most recently taken on a new role in Infrastructure Services as a Leader for Grant, Partner & Industry Relations. In her current role, Erin looks for opportunities for The City to leverage funding opportunities and liaise with construction industry associations.



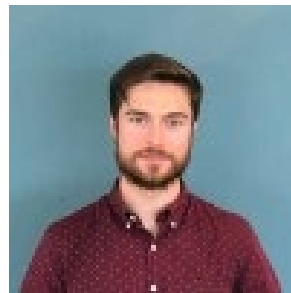
The Panelists



Jill Prosser



Micaela Mastromonaco



Landon Evans



Paul Atkinson



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Annual General Meeting

June 20th, 2024

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