

## ALIDP RAM - Research and Monitoring Working Group Update

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#### **RAM Overview**

- Working group formed in March 2020
- Purpose/Objectives
  - Identify industry-relevant research needs
  - Coordinate data sharing and analysis
  - Foster collaboration
  - Review findings
  - Provide input on ALIDP projects

### Participants

- Academia University of Calgary, University of Alberta, SAIT
- Municipalities City of Calgary, City of Edmonton, EPCOR

KERR WOOD LEIDAL

consulting engineers

Engineering Ltd.

ground

cubed

ISL

Industry



berta



## ALIDP Monitoring Program

- Range of Landscape Practices Monitored – 7 sites across the City of Calgary
- 11 bioretention areas, 3 rain gardens, turf/prairie analysis,
- Soil moisture, water level, flow, and vegetation data
- Scope aimed to:
  - Improve local design guidance
  - Validate theoretical assumptions
- Served as basis for shareable data package(s)









### Data package

- Data from the ALIDP monitoring program
- First site to have data complied was SAIT in 2020
- Data sharing agreement was made with Dr. William Zhang, University of Alberta
- Other sites/data packages to be completed in 2021
- Further opportunities for data sharing and collaboration

#### SAIT Data Package



## Phosphorus content/Fertilizers

- Media composition and verification testing
- Vegetation support necessity vs surplus
- Downstream impacts eutrophication
- CSA W200-2018 Design of Bioretention Systems
- City of Calgary LID Guidelines 2016
- Fertilizer use DO NOT USE
- Amendment investigations

### Surface/Subsurface Interaction

- Dr. Edwin Cey University of Calgary, Alberta Innovates
- Soil moisture dynamics and groundwater interaction
- Considerations include spatial variability, depth profiles, impact of cover type, microtopography
- Two identified sites Highland Park and Cambrian Heights
- Monitoring approach, objectives, and instrumentation, as well as customized inflow monitoring

# **Highland Park**



#### **Cambrian Heights**



- HydraProbe Profile (at 10cm, 25cm, 50cm, and 75cm)
- Nested Tensiometers (at 25cm, 50cm, and 75cm)
  - TB Rain Gauge



- Weighing Lysimeter
- Downspout
- ➤ Flow Direction

### **Okotoks Bioretention Research**

- Dr. Jianxun He 72 simulated events (and counting)
- 24 bioretention mesocosms analyzed since 2017
- Media, vegetation, and IP ratio
- Amendment research
- Dr. Edwin Cey simulated spring melt event







Ultratech Ultra-Phos Filter®,

Imbrium Sorbtive® Media,

Delta Adsorbents Activated Alumina,

Crushed drywall,

Water-treatment residuals (WTRs), and

Eggshells.

# City of Calgary LID Investigation

- Over 100 vegetated LID practices across the City
- In-depth analysis of about 30 sites
- Bioretention, bioswales, and soil cells
- Analysis of vegetation, media, design parameters
- LID inspections approach and methodology
- More investigation to follow

#### What is to come

- 2021 Monitoring Program continues into 2021
- City of Calgary LID Investigation next steps
- Okotoks Bioretention Research evolution
- Regular meetings reach out and participate!
- July, August, September stay tuned for dates!
- Sub-groups and topical discussions