

alidp.org



2013 Annual Report



City of Calgary Bridgdeland Demonstration Rain Garden
Photo: Rene Letourneau



City of Calgary Marlowe Place Demonstration Rain Garden
Photo: Rene Letourneau



Equipping Alberta's professionals to create vibrant, functional landscapes within the fabric of the built environment, through comprehensive stormwater management.

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Message from our 2013/14 President

Board of Directors 2013-14

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City of Calgary Parks

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source2source (formerly Riparia)

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Northwest Hydraulic Consultants

The last two years have been a tremendous learning experience for me. Little did I know, back in May of 2012 when I became involved with the ALIDP, just how much there was to learn about low impact development (LID) and how much more there is to learn and to do to bring LID to the forefront of development in Alberta. This is not to say that there isn't a lot of great work being done--there certainly is--but rather there is so much more that we can do. Of course to do more requires more hands, more dedication, and more commitment. And I have to say that I have come to appreciate the dedication and commitment that the ALIDP partners bring to the development of best practices, sharing knowledge, and working together to expand awareness and publicize LID.

So what will the ALIDP bring to you over the next few years: information from new cold climate research, changes in building codes, opportunities to develop new areas for academic study? And who amongst you will move these issues forward? Partners have an immense opportunity to support their staff in developing both skills and initiating change in LID. I ardently encourage you to continue to participate with the ALIDP in developing and expanding research, advocating the advancement and expanded use of LID practices in Alberta, and encouraging greater understanding of LID through education.

I strongly believe that LID and the ALIDP will play a critical role in developing ecologically and environmentally sound urban landscapes. And, in the long run, well-designed and maintained LID landscapes can enhance and aid in the preservation of biodiversity in our urban environments. This type of urban design can result in landscapes that protect the environment and enhance the quality of life for the people living and working in our cities and everyone living downstream.

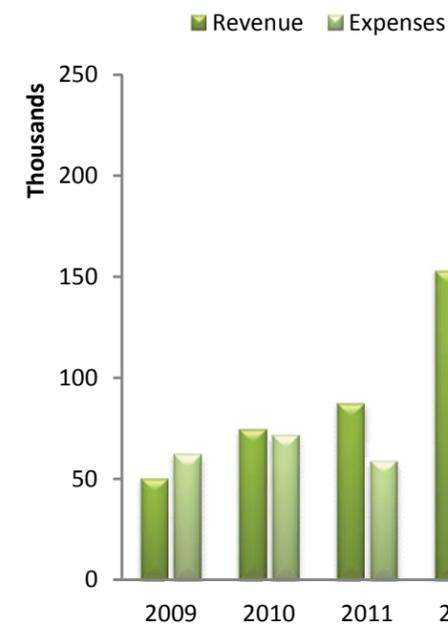
Thank you for giving me the opportunity to work on the ALIDP board. Thanks to the members of the board for their support and of course all of their hard work. And thanks to the City of Calgary Parks for supporting me in my efforts to assist the ALIDP.

Lastly I would say to you: You have the opportunity to change the landscape of our cities for the benefit of the planet; you can create green spaces that protect the environment; and you can influence how people care for one of our most precious resources, our water.

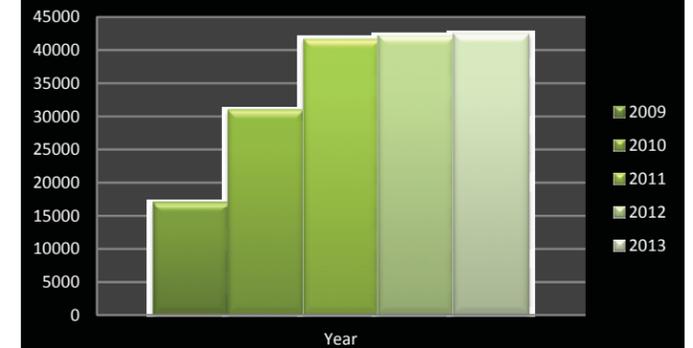
Thank you,

James
James Borrow

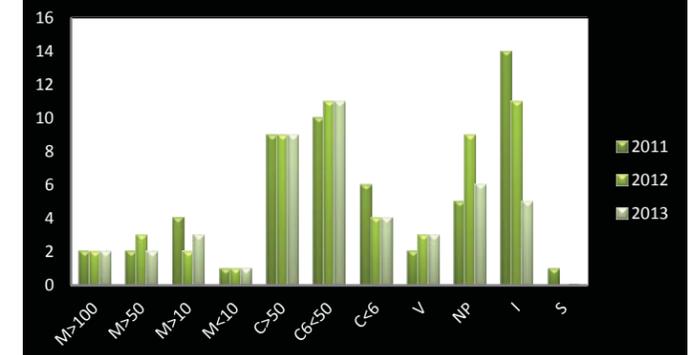
Revenue and Expenses 2009-13



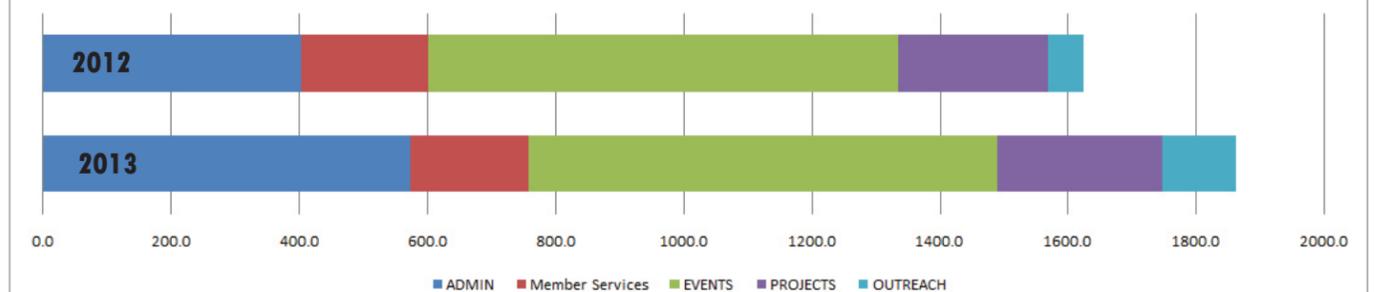
Partnership Revenue Over Time (\$)



Partner Types Over Time



Staff Hours



The City of Airdrie is adding 'Live Liquid Micro-organisms' to help with water quality and odour concerns here at its East Lake pond. Thanks Bob, Amanda and Scott for enriching our Board retreat by showing us your evolution in stormwater practices.

FROM LEFT TO RIGHT: Bob Neale (City of Airdrie Engineering), Katelyn Inlow (Director), Michael Rawson Clark (Director), David Seeliger (Vice-President), Rene Letourneau (Treasurer), James Borrow (President), Amanda Ginn (City of Airdrie Sustainability), John Helder (Director), Scott Fediow (City of Airdrie Parks), Leta van Duin (Executive Director), Xiangfei Li (Secretary) and Roy Ermter (Director).

2013 - By the Numbers

Attended eleven
Third-Party
WEBINARS
and EVENTS

11

Webinar - Credit Valley Conservation - Assumption Protocols
Webinar - Clean Streets mean Clean Streams
Webinar: Algal Blooms
Bow River Basin Council - quarterly forums (3)
Calgary River Valleys/Federation of Calgary Communities - stormwater roundtable
Alberta Professional Planners Institute - LID Luncheon
Greater Edmonton Green Roof Consortium - site tour
TRIECA Conference - Toronto
International LID Symposium - Minneapolis/St. Paul

Made four
PRESENTATIONS

4

BUILDEX Calgary - Green Roofs in Alberta
Bow River Phosphorus Management Plan - Stakeholder Advisory Group, Calgary Urban Development Institute
Bow River Basin Council Legislation & Policy Forum - Land Use

Supported two
EVENTS

2

Canadian Water Resources Association (Alberta Branch) - Display Booth at Annual Conference
International Erosion Control Association (Northern Plains Chapter) - Marketing and Logistics for erosion-control field day

Led or
participated in
four PROJECTS

4

Bow River Phosphorus Management Plan - Urban Non-point Task Team and Steering Committee
Olds College - Developing a collaborative bioretention research program
Alberta Urban Municipalities Association - Stormwater policy-development project
Bow Basin Watershed Management Plan 2012 - Implementation Committee

Held three
EVENTS

3

Designing for Tomorrow - 3 days of training in Calgary
Implementing LID 2013 - 2 days featuring the City of Edmonton LID Design Guide
Bus tour - central Calgary LID installations

Our 2013 Partners



A word from our Executive Director

Defining Low Impact Development - life in vague terms

I haven't met anyone who loves the term Low Impact Development (LID). Those who don't know what it means often think you mean Smart Growth, Light Imprint, Eco-footprint or eco-lightbulbs. It's often an awkward moment at dinner parties, until you unpackage the idea. Explanation is always required, but most people get the idea easily enough with a few minutes of clarification.

Amongst professionals (whom you would assume would be informed) the gaps are often surprisingly large. Someone in a municipality recently received a call requesting special consideration because a project was 'LID'. The basis of the request was that the project was small and, therefore, obviously 'low impact'.

Just one step better, I encountered someone last year who was emphatic that we 'stop talking about LID and look at the other stormwater solutions for water quality.' On the bright side, at least that person knew that LID was about stormwater.

What about people in-the-know who talk about 'L-I-Ds' or, worse, 'lids'? This is the logical equivalent of pointing at a skating rink and calling it a 'gold medal'. While a gold medal may be achieved by someone who uses a particular skating rink--that would be a great outcome--you would rarely, if ever, interchange the name of the *thing* where an activity happens with the name of the desired *result*.

People who use the term 'L-I-Ds' usually mean 'Source Control Practices'. 'SCPs' can refer to non-structural measures, such as product substitution for toxic materials, like coal-tar-based asphalt sealants; bylaws or educational materials prompting people to pick up after their pets; or pesticide and fertilizer restrictions; etc. But, more often, people mean structural measures in the uppermost part of the urban landscape implemented to prevent or minimize runoff before it aggregates. But where does one draw a line? Is it a SCP only on private land? In the right-of-way? Before a catchbasin? In my neighbourhood? Does it include conveyance if it is a bioswale? Is it everything before runoff gets to a pond or wetland? Is it everything before an outfall? Does the term SCP help us? I wonder.

Terminology in stormwater management isn't standardized, yet it's still hard to move language after terms are coined and habits are formed. In North America. I think we will be using the term 'LID' for the foreseeable future. Another strong contender, though, is the term

'green infrastructure', which evokes a positive, friendly eco-image. But this leaves out some perfectly useful and important volume and quality solutions that are far from 'green'. And it's a bit of a stretch to consider practices like deeper topsoil and gardening to be 'infrastructure'. But, okay, I can live with this idea.

If you spend time in Seattle, you'll encounter the more-specific moniker 'green *stormwater* infrastructure', which differentiates the term from other claimants on the green infrastructure name, such as bike-lane proponents. And a February 2014 Water Environment Federation Stormwater Report injected another colour when they entitled an article about the approach to LID in Colorado 'Taupe Infrastructure', nodding to the state's semi-arid challenges.

I think the best approach is to think of Low Impact Development (LID) as a statement of a desired *outcome*. This opens the possibility to encompass not only lot-level or SCPs, or infrastructure of whatever colour, or the promotion or exclusion of any particular best management practice. Rather, in this understanding, **LID embraces the discovery, consideration, and implementation of everything needed to achieve a sustainable built environment, so far as the practice of urban storm drainage is concerned.** Or as Bert often puts it, 'LID is the *evolution* of stormwater management.' This philosophy makes room for a big-enough sandbox in which to explore innovation, without excluding other aspects of urban drainage management.

But just when you make peace with the conceptual terminology, along comes a replacement for 'Best Management Practice'. The belovedly bandied-about BMP, says the U.S. National Research Council's Committee on Reducing Stormwater Discharge Contributions to Water Pollution, is too vague. The preferred term is 'Stormwater Control Measure' (SCM). I'm not sure we're ready for this in Alberta.

So while you contemplate an SCM of some colour, which is a type of BMP, but also possibly a SCP to achieve LID, which is synonymous or maybe not with Sustainable Urban Drainage Systems (SUDS) and Water-sensitive Urban Design (WSUD)--grab a coffee and ponder the evolution of stormwater, of language, and the progress we are making in LID on the following pages. But please, promise me you'll think about sending your 'lids' to a recycling facility.

From the uplands,

Leta van Duin

RIGHT TOP: Peter and Bert discuss the main parking lot bioswale which partially rings University of Minnesota TCF Bank Stadium, the first football stadium to achieve LEED rating in the U.S. This 30-ha site with a 50,805-seat stadium employs a full menu of LID practices to achieve both quantity and quality control. One novel feature is a mechanism which directs rainwater from the seating areas into the storm system, but diverts soapy cleaning water into the sanitary system. RIGHT MIDDLE: The same linear bioswale showing inlets. Inlets are cleaned by berming the low end of each one in order to create a dam, flushing the debris to the low end with water, and vacuuming. RIGHT BOTTOM: Too much concrete? Consider adding mini-drumlins. These mounds add a calming note in front of the U.S. District Court in Minneapolis. Check out Google Maps to see the full effect. BELOW: Beehives on a green roof in a shady atrium are watched over by employees in the Minneapolis City Council building, just across the street from the drumlins. BOTTOM: Blazingstar in full bloom on the Target Center roof.



Making progress towards LID



LEFT: Peter MacDonagh, designer of the Target Center green roof in Minneapolis, observes his own advice to ‘walk on vegetation’ rather than on pink-concrete fire breaks. Walking on plants is a counter-intuitive act at any time, but doing so in August requires extra attentiveness, since many plants are setting seed—seed which easily detaches and finds its way into shoes, forming a scratchy layer of ball-bearings. Skillfully avoided by Peter, I am less adept, stepping on a fire break with a bare foot while knocking seeds out of a shoe. This provides a rapid first-hand lesson in just how much heat is on roofs, and my bare foot is quickly stuffed in to a partially de-seeded shoe to avoid a burn. What a phenomenal job the plants and soil are doing to attenuate the heat! While I am paying extra heed to where and how I am walking, it doesn’t compete with the cathedral-like awe I feel of this most glorious ‘room without a roof’. I’ve been on green roofs before, but this is different. Is it scale? Yes. Is it the riotous array of obviously thriving plants? Yes. Is it the fact this space is not accessible to the public? I suppose the exclusivity factor makes it more special. But it feels like more, like something really *right* has been achieved here.

At just over one-hectare, the Target Center roof is the fifth largest extensive green roof and the first green roof on an arena in North America. In this case, a green roof was chosen because it was shown to be the most cost-effective option to replace a conventional roof. That a green roof was even on the spreadsheet is a result of a Minneapolis ordinance requiring its consideration when replacement is needed. Minneapolis also has a stormwater utility fee. Since the green roof is expected to keep 3.8 million litres of precipitation from turning in to runoff annually, savings in the order of \$10,000 in utility fees assisted to tip the decision in favour of a green roof.

Whimsical plant groupings feature Dotted Blazingstar, Pearly Everlasting, Purple Prairie Clover (seed in my shoes!), Wild Strawberry, Columbine, several kinds of Sedum, and other natives for a total of more than 30 species. It’s hard to believe that this robust vegetation is thriving on a mere 7 to 9 centimetres of media. This broad range of plant material is expected to provide the level of redundancy and resilience that will be needed to meet the 20-year maintenance guarantee: no more than 1.2 square metres of bare ground at any time.

Neighbours are happy too: Office space overlooking the roof commands a premium, and insects and pollinators don’t need to pay extra to enjoy the benefits of this oasis. Looks like a home-run for all.

Four Strategic Areas

There are numerous hurdles and opportunities to achieving LID. The ALIDP has identified four strategic ‘areas of need’ to be addressed in order to move forward:

1. Public/social acceptance
2. Technical competence
3. Feasibility
4. Enabling regulatory environment

Areas of Activities in 2013

In 2013, the ALIDP continued to focus its efforts in Strategic Areas 2, 3 and 4, and it supported other agencies working in Strategic Area 1. In 2012, we told you that we would explore grants for research, best vehicles to get knowledge to you, a revamped website, and streamlined member services. These priorities were all addressed in 2013 and will continue to be worked on in 2014.

At our last AGM in June 2013, you told us your top priorities for tasks and activities were:

1. Bioretention research
2. Education/training/events
3. Website
4. Developing an online database
5. Advising government

This report shares our progress in these areas.

Of course, all of this is made possible by your partnership dollars, your participation in events, and by the time donated by generous employers and employees, and passionate volunteers, including some fabulous seniors and students.

Bioretention Research

In 2012 and early 2013, steady progress on designing a bioretention research pilot was made, with more than 500 hours invested by ALIDP staff and partners. This included extensive consultation on the priority investigation-question, site selection, lead-investigator selection, securing major-partner support, and obtaining commitments from industry for material donations and discounts.

Several factors contributed to an inability to finalize the sampling and analysis plan, final layout, costing, and to move forward to construction in 2013:

- The flood meant that most partners were engaged with other priorities.
- We had a delay in securing partner commitment from The City of Edmonton, resulting in the loss of funds committed by The City of Calgary, which were required to be used in 2013.
- The lead investigator at Olds College took a new position in another country.

- The horticulture program at Olds College was under external review, prompted by provincial government funding cutbacks of 7%.

We are in a holding pattern pending more information from the 2015-18 business plans of the large municipalities, and to see how implementation of the Phosphorus Management Plan and other upcoming initiatives will relate.

A new project in the works with Cows & Fish - from Street to Stream

A new development in 2013 was the conception of a joint project between the ALIDP and Cows & Fish (The Alberta Riparian Habitat Management Society). The ALIDP has piggybacked on the charitable status of Cows & Fish in order to obtain funding from the Alberta Real Estate Foundation, the Calgary Foundation, and the RBC Blue Water Fund.

Our joint project has the working title ‘From Street to Stream’. Our goal is to present harmonized messaging that highlights the connection between upland land management and riparian area management. This project will assist us to develop widely applicable case-study videos (our long-awaited virtual tour!), testimonials, and a workshop about emerging practices and products aimed at realtors, builders, green practitioners and community leaders.

The workshop will roll out in early 2015, to five or six communities across Alberta. At the workshop, a call to action will be given to participate in a joint upland-riparian stewardship activity, which will likely involve both an upland and riparian planting. At this time, only one stewardship activity is funded, but more could be done with additional financial support.

Supporting AUMA's Stormwater Policy Project

At the request of its members, in 2013 the Alberta Urban Municipalities Association began an initiative to develop Municipal Water Policies on stormwater. The purpose of the policies is to create an enabling environment for municipalities to more effectively manage stormwater to protect local communities and the natural environment by:

- restoring natural drainage capacity to pre-development levels
- protecting water quality and the health of aquatic ecosystems and
- mitigating flooding

The ALIDP has been providing advice and logistical support to AUMA on this excellent initiative. At the time of writing, the draft policies have been compiled.

Designing for Tomorrow: Calgary Training

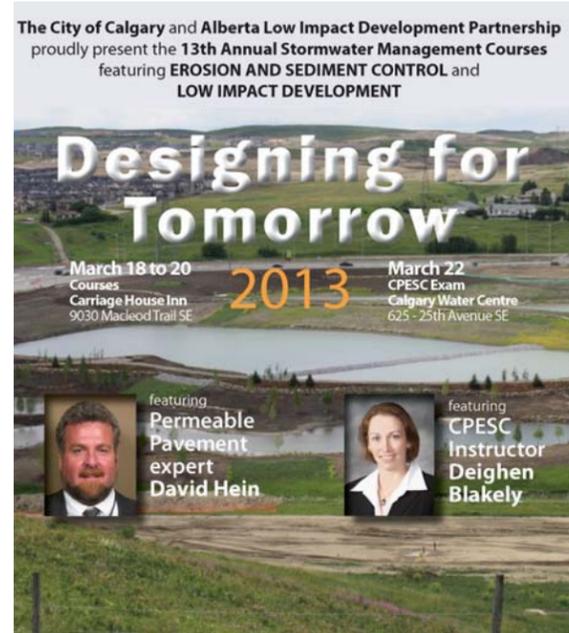
ESC Track:

- ESC1-INT: Introduction to Erosion and Sediment Control for Urban Construction Sites (1/2 day)
- ESC29-RAD: Tips, Tools & Templates for Creating Successful ESC Reports & Drawings (1/2 day)
- ESC16-CPE: Certified Professional in Erosion and Sediment Control (CPESC) Review Course (full day)
- ESC34-EIC: Erosion & Sediment Control Inspector (full day)
- EXM1-CPE: Certified Professional in Erosion and Sediment Control (CPESC) Exam (half day)

SWM and LID Track:

- LID3-IN1: Introduction to LID Level 1 (1/2 day)
- LID3-IN2: Introduction to LID Level 2 (1/2 day)
- LID3-PER: Permeable Pavements (full day)
- SWM3-WBS: Water Balance Spreadsheet (1/2 day)
- SWM3-DES: Stormwater Design Brilliance (1/2 day)

Two external instructors were retained. Deighen Blakely, Calgary, for the CPESC Review Course; and David Hein, Toronto, for the Permeable Pavements Course.

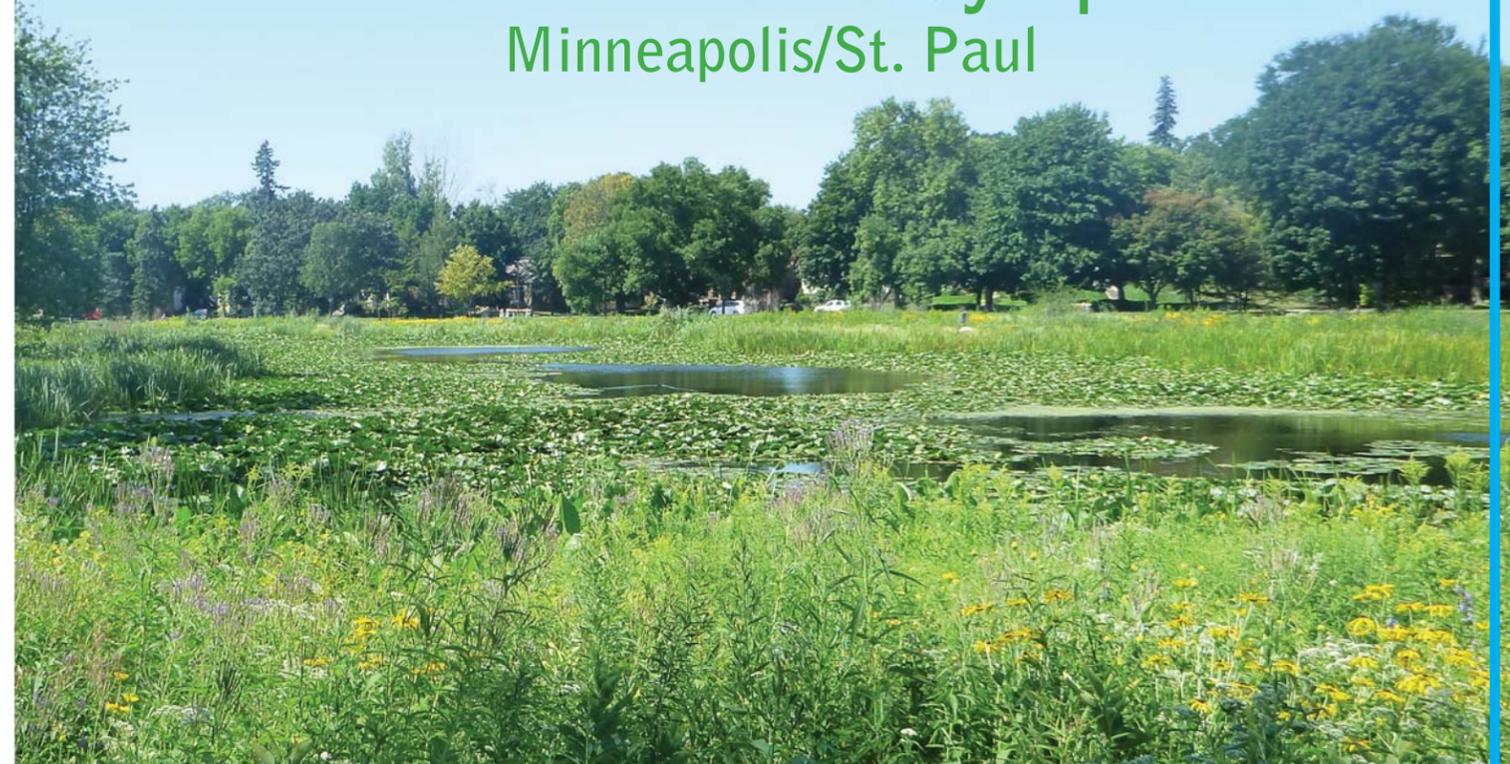


40% said course content exceeded their expectations - an additional 50% said course content met their expectations.

**Three days in March,
685 participants**



International LID Symposium Minneapolis/St. Paul



ABOVE AND INSETS: An impressively diverse array of native vegetation frames the Lake Nokomis constructed wetlands. Now more than a decade old, the project addressed phosphorus, algae and clarity issues by enlarging three wetlands, installing two grit chambers, modifying the lake's outlet structure, and stabilizing the lakeshore. This was coupled with an intensive public education program about the effects of lawn fertilizer, pet waste, and other runoff hazards that affect water quality. In addition, the winter before construction of the wetlands, 8000 pounds of carp were seined out of the lake, since the fishes' habit of stirring up bottom sediment was thought to contribute significantly to the phosphorus problem. The wetlands now support vegetation ranging from floating water lilies through to mesic upland species, which thrive under an attentive maintenance program including hand weeding, spot herbicide applications, and prescribed burns every three years. The surrounding area is suburban residential. LEFT: On downstream Minnehaha Creek, David Seeliger provides a sense of scale beside *Silphium perfoliatum* (Cup Plant). This plant provides a dramatic, highly functional transition between the creek's wetter riparian zone and the upland manicured turf in the surrounding park. Many projects are ongoing along the creek to deal with chloride, dissolved oxygen, and bacteria impairments as well as morphological issues. FACING PAGE: Community rain garden retrofits are part of measures to address nutrient impairment in Como Lake.



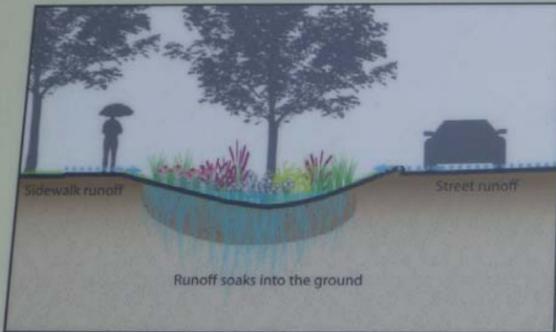
COMO PARK RAIN GARDENS

Capitol Region Watershed District



RAIN GARDENS

Controlling Water Pollution and Improving Habitat



YOU CAN HELP

Every citizen can help prevent pollution in Como Lake:

- Prevent pollution in your own yard by planting a rain garden
- Rake and bag your leaves from the street in front of your house
- After mowing, sweep up grass clippings from streets and sidewalks
- Redirect your gutter downspouts from driveways or alleys onto lawn or garden areas
- Pick up after your pet
- Never put anything in a storm drain



Rain gardens in the Como neighborhood were planted in 2006 to help clean the water in Como Lake. Rain gardens help filter pollution from the stormwater that runs off surrounding streets. This runoff pollutes our lakes and the Mississippi River with too many leaves, road salt, trash, and auto fluids. This garden reduces water pollution by collecting runoff after a rain or snowmelt and allowing it to soak into the ground.

Rain gardens also provide food and habitat for butterflies, birds and other wildlife. Unlike the surrounding turf grass which requires much more upkeep, rain gardens contain plants that need little maintenance once they are established.

Rain gardens keep about 95% of the runoff pollution entering them from entering lakes and rivers. For more information about the effectiveness of rain gardens, or for rain garden grant information, contact Capitol Region Watershed District at (651) 644-8888 or capitolregionwd.org.



Implementing LID: Edmonton Training

Two days in November, 158 participants, Featuring the City of Edmonton LID Design Guide

Review of the Design Guide (1/2 day)

Making it Real: Vegetative Practices - Bioretention | Green Roofs | Silva Cells (1/2 day)

Planning, Analysis and Design of LID Practices Within an Overall Urban Drainage Context (1 day)



Low Impact Development
Best Management Practices
Design Guide
Edition 1.0

November 2011



The City of Edmonton and
Alberta Low Impact Development Partnership
proudly present

Implementing Low Impact Development 2013

Artists rendering courtesy ISL Engineering and Land Services

What content would you like to have covered in the future?

- More focus on examples from practitioners.
- More information on how vegetation helps with LID.
- More group discussion and workshops.
- LID strategies for new parks design.
- Implementing LID - design and construction for the Edmonton area.
- Engaging clients - getting them to consider LID over traditional methods.
- The best presentations are those with design information. That's what tends to be lacking, although this has improved over the last few years.
- Parking lot LID designs.
- Further technical details on design and modeling of LID features.
- Training on LID construction and maintenance.

Calgary Centre Site Tour; IECA-NP Road Show



ABOVE: Site tour participants observe the Marlowe Place bioretention pilot in action.

INSET ABOVE: 2nd Avenue Silva Cell Stormwater Pilot

LEFT: The ALIDP provided logistics and marketing for a field workshop at Calgary Olympic Park featuring erosion control techniques.

BELOW: Did you know that Marlowe Place is part of the National CMHC Bioretention Monitoring Project?



Here Rene Letourneau, City of Calgary (left) and Chris Denich, Aquafor Beech (right) observe the performance of a Guelph permeameter. This is one of six sites across the country being studied for runoff reduction, quality improvement, plant health, maintenance inputs, regulatory issues, and long-term costs.

The Living City; Earth Rangers Centre at Kortright



“The quality of life on Earth is being determined in rapidly expanding city regions. Our vision is for a new kind of community, The Living City, where human settlement can flourish forever as part of nature’s beauty and diversity.”

Conservation Authorities were created in 1946 by an Act of the Ontario legislature and are mandated to ensure the conservation, restoration

and responsible management of Ontario’s water, land and natural habitats through programs that balance human, environmental and economic needs. After 50 years of a watershed management approach, The Toronto and Region Conservation Authority (TRCA) has come to appreciate that neither political or watershed boundaries should confine action. **“The watershed approach teaches us that management at the scale of the problem requires connecting with stakeholders across bureaucratic boundaries - geographic and otherwise, and that sustainability challenges must be confronted at the scale on which they occur. Many of the environmental, social and economic challenges we must address in building The Living City transcend the watershed model.”** A deeper understanding of the complex climate, ecological, social and economic systems and how to respond to them will be necessary in order to create complete communities that integrate nature and the built environment. ABOVE: The Archetype Sustainable House at the Living City Campus is a sustainability education centre owned and operated by TRCA. The basement is full of monitoring equipment and the upper levels are used for public, school, and corporate education, in the areas of water, air and energy. BELOW: Concrete and rubber permeable pavers being monitored and evaluated at the Living City Campus-- just one project in the Sustainable Technologies Evaluation Program (STEP).



International Erosion Control Association
The International Erosion Control Association - Northern Plains Chapter (IECANP) presents a ROAD SHOW event:

UNDERCOVER

A Field Workshop on Planning and Implementing Effective Erosion Control / Soil Stabilization and Re-vegetation Practices

October 10, 2013
Calgary

THE CITY OF CALGARY WATER RESOURCES

winsport Winter Sport Institute CANADA OLYMPIC PARK

Alberta Low Impact Development Partnership

Site tour with the Toronto and Region Conservation Authority

Honda Canada Campus Markham, Ontario

45 000 m² building area
1100+ vehicle parking lot
Soccer and baseball fields

1500 m³ rainwater
harvesting tanks

Irrigated bioswale with
infiltration, gravel storage
and underdrain

Permeable pavement

Vegetated swales

Overflow storage area

Granular fitness path

LEFT: From left to right - Bert van Duin, City of Calgary; Glenn MacMillan, TRCA; project designer Mark Schollen, Schollen & Company at the Honda Campus, discussing inlets from the entrance road to the bio-swale. Inlets have a micro-weir and a 100-mm-thick river-rock 'forebay' pretreatment area. Maintenance for the infiltration system is indicated when a particular corner of the parking lot develops standing water. FACING PAGE RIGHT: Monitored bio-swale at the TRCA Earth Rangers Centre.



Our Board of Directors got creative... and our 2013/14 promotional item was born. Did you get yours? If you attended training recently, you did! Version 2.0 is slated to arrive in early 2015.

Bow River Phosphorus Management Plan



ALIDP PARTNER ENGAGEMENT

Our partners were heavily involved in developing this plan. There were three stakeholder task teams: urban point, urban non-point, and rural non-point sources. Our Executive Director, Leta van Duin, chaired the urban non-point sources team, and almost all the participants in this team were partners in the ALIDP. The process provided many opportunities to dialog about the value of the various emerging stormwater practices intended for achieving water quality outcomes.

The urban non-point sources task team developed its recommended strategies and actions between the summer of 2012 and early 2013. Once drafted, the ALIDP hosted a 1/2-day engagement session of its own for its partners to review the recommendations, which was attended by 30 municipal, industry and non-profit representatives. (See photos at left.)

The ALIDP was then invited by the Water Management Committee of the Urban Development Institute to present the plan and briefly discuss the recommendations. One of the main concerns expressed was that requirements be preceded by adequate preparatory work, in order to ensure that industry is ready for implementation of any P-related requirements. Several actions in the plan are geared to ensure this occurs.

Discussions of the Steering Committee in the fall of 2013 and winter of 2014 were aimed at bringing the recommendations of the various teams to a cohesive whole.

IMPLEMENTATION PHASE

The plan is on our website and also available from the GoA. Strategies and Actions presented on the facing page are from the Implementation phase, which has recently started. The ALIDP represents urban NGOs on the Implementation Committee. There is also an Education & Outreach sub-committee and a Performance Measures sub-committee, which are open to participation from interested individuals.

THE ROAD AHEAD

It remains to be seen who will take the lead on many of the recommendations, how long implementation will take, where funding is supposed to come from, and how that funding will be allocated. Whether or not a market for phosphorus is ever established, it is clear that we need to create a better understanding of which land-based interventions have what effects on our receiving bodies, and to create a path to implement the best solutions in a cooperative manner.

POLLUTANT MANAGEMENT

The accepted wisdom in pollutant management is firstly PREVENTION: to keep pollutants out and keep runoff from being generated, followed by REDUCTION of runoff, followed by REDUCTION of pollutants. Cost and complexity increase as one contemplates interventions later in the treatment train.

EARLY WIN

In the urban non-point sources task team, dialog about phosphorus in fertilizer led to action. Parks departments in both the Cities of Calgary and Airdrie committed to removing the Phosphorus component of their turf-maintenance fertilizer. Since this is a pollution prevention strategy, it's an easy win for our watersheds.

STRATEGY-AND-ACTION EXCERPTS from the Bow River PMP pertaining to urban stormwater

Objective: Improve understanding and change behavior to reduce phosphorus entering the Bow River

Create education sub-team of BRPMP Implementation Committee to coordinate education activities and develop common messaging for various audiences.

By jurisdiction, determine the status and content of good housekeeping/pollution prevention programs and bylaws. (Ensure that programs address behaviors such as the following:

- Wash vehicles at car washes rather than at home
- Pick up pet feces
- Maintain vehicles to reduce/eliminate oil leakage
- Dry sweep rather than hose driveways).

Develop and coordinate urban public education programs such as:

- Green Calgary Rain Barrels, Yellow Fish Road, Conservation landscaping management practices, Downspout management, How-to guides.

Support stormwater practitioners and associated disciplines with education, tools and training to plan, design, implement, operate and maintain urban storm drainage systems.

Objective: Increase knowledge about phosphorus sources, the planning area, and phosphorus management practices.

Develop policy to distribute load allocations among contributing parties and develop policy tools to address cumulative effects issues.

Implement appropriate stormwater monitoring, and report on findings.

Foster and coordinate research opportunities related to phosphorus management and mitigation (e.g. new technologies). Disseminate research to relevant stakeholders.

Evaluate urban and rural stormwater management practices for their ability and efficiency to treat phosphorus.

Evaluate the contribution of urban stormwater management practices on private land.

Conduct a regulatory review to evaluate municipal legislative and policy options to address implementing urban BMPs on private land.

Remove regulatory barriers to the use of innovative BMPs for rainwater, stormwater and wastewater, including reuse of same.

Objective: Reduce additions of phosphorus.

Investigate the feasibility and desirability of a phosphorus fertilizer restriction for both private and public realms for various urban contexts (Provincial scale).

Objective: Reduce the movement of phosphorus to the river.

Require the adoption of Erosion and Sediment Control (ESC) BMPs during construction and repair activities and coordinated compliance of ESC (BMPs include erosion control at the source, reduction of the allowable size of open construction sites, length of time these sites can be left exposed and minimization of soil compaction.) Require Erosion and Sediment Control (ESC) designers and inspectors to obtain professional certification. Consider this in the revision of the Municipal Government Act.

Objective: Remove excess phosphorus from water before it reaches the river.

Establish and enforce runoff volume targets for development in all watersheds in the planning area. Establish protocols for compensation in particular land development instances where achieving the applicable volume target onsite is demonstrated to be infeasible.

Establish and enforce, where possible, phosphorus loading targets for development in all watersheds in the planning area. Establish protocols for compensation in particular land development instances where achieving the applicable phosphorus quality target onsite is demonstrated to be infeasible.



ALIDP Stakeholder engagement session- ABOVE: Yin Deong, City of Calgary (left, now retired) Rob Simieritsch (right).

BELOW: (Left to Right) Asif Aslam, Andrew Chan, George Patton, Jason Wilkins, James Borrow, Pam Duncan

