Welcome!
We are developing an Integrated Stormwater Management Plan (ISMP) to responsibly manage the stormwater that falls on campus, and to accommodate the future growth of campus sustainably.

The Campus Planning and Development team needs your help to inform the development of the ISMP by inviting broad participation and input from the campus community and stakeholders through a public consultation process.

What is Integrated Stormwater Management?
It is the management of rainwater and storm runoff to protect the natural and developed campus landscape. Storms can range from minor storms, statistically seen once every 6-months to once every 5 or 10 years; to major storms with water volumes seen only once in every 100 to 200 years.

Stormwater management planning helps planners determine what infrastructure is required to manage the rainwater and stormwater runoff that results from these storms. This may include drainage solutions to address flooding concerns, stream protection to ensure that the landscape is protected, or measures to address potential water quality concerns.

Another dimension is land use planning. As the campus grows over time, the effects of this growth on the stormwater system need to be anticipated to ensure that flooding and other concerns are addressed, while preserving the natural landscape.

What’s Stormwater?
Stormwater is rainwater that has fallen to the ground. An integrated stormwater management system looks at the complete rainwater cycle for a watershed and outlines stormwater management tactics that also aim to improve the local environment, mitigate risk, and maintain wildlife and their habitats.
# Why Develop an ISMP?

Effective stormwater management will ensure that our diverse wetland areas are sustained, reduce the need for irrigation and reduce stormwater runoff from buildings and hard surfaces – all critical to supporting a healthy ecosystem.

## Approach

Thinking of stormwater as a resource to be managed rather than wasted, our approach will seek to move away from traditional collection and diversion of rainwater through concrete and piping, to a system that incorporates natural elements and values rainwater as a resource and amenity. We will also continue our commitment to handle all stormwater on campus, without using the municipal system.

## Scope

- Follow the direction set out in the Okanagan Campus Plan and Whole Systems Infrastructure Plan to enable sustainable expansion
- Use a whole systems approach that is responsive to current and future conditions by acknowledging the interactions between water, air, ecology, waste and energy systems.
- Plan for major storm events and day-to-day needs
- Take into account soil conditions and topography across the campus with a focus on infiltration and runoff, and recharging the aquifer
- Be in line with City of Kelowna bylaws and relevant regulatory approval processes and requirements

## Objectives

- Address several existing stormwater related issues on campus such as seasonal flooding in Parking Lot H and flooding across Innovation Drive
- Divert 100% of our stormwater from the municipal system
- Be coordinated with future areas of growth and the Okanagan Campus Plan
- Anticipate the impacts of climate change and incorporate risk mitigation
- Inform campus development projects currently underway
- Minimize the overall lifecycle costs of the stormwater system and infrastructure
- Support campus landscape and ecology to enhance ecosystem services and biodiversity
The Okanagan Campus is situated along the McKinley Escarpment where north-south-aligned ridges and valleys formed during the last glaciation.

### Topography

The Okanagan Campus is situated along the McKinley Escarpment where north-south-aligned ridges and valleys formed during the last glaciation. Positioned along the ridgeline, the campus has three distinct benches and slopes and several low-lying areas that have developed into stormwater retention areas and wetlands.

### Soil permeability

Permeability and soil conditions vary largely throughout campus and include a variety of soils, silts, clays, beach sands and cobbles. Surface drainage has been extensively modified through ongoing development within the campus core.

### Snow pack

Potential changes to the Okanagan climate resulting from climate change will be considered in planning the ISMP. Trends for the Okanagan Region are expected to include:

- increased annual temperature
- increased annual precipitation (likely in shorter and more intense rainfall events), and
- decreased snowfall and snow pack leading to an overall decline in the creation of groundwater and glacier-fed water systems.

### Annual rainfall

Average annual rainfall (Kelowna Airport) is 298 mm, of which 102 mm (34%) falls as snow.
The campus currently maintains nearly all of its stormwater on site through the existing storm pipe network, overland flow routes, ditches, swales and ponds – collectively conveying water within 12 major catchment areas.

**Stormwater Catchment Areas**
1. Main campus
2. Lower Cascades Townhouse – Parking Lot
3. University Way – Main Parking Lot
4. Second Pond
5. Sport Field Main Parking Lot
6. Maintenance Yard
7. Sustainability House
8. Building W – Okanagan Centre
9. Okanagan Landscape
10. Main Parking Lot – Phase 2
11. Lower Research Park
12. Agricultural Lands (Tutt Land)

**Existing Stormwater Infrastructure**

The campus infrastructure network consists of the following interconnected systems, which must be considered as we develop a new stormwater management plan:
- District Energy System (DES): a hot water pipe system to heat most academic buildings on campus.
- Central Heating Plant used to heat six legacy academic buildings.
- Natural gas system
- Power system
- Potable (drinking) water system
- Sewage system

**Main Pond**

Increasing levels of sediment and plant growth in recent years is reducing the amount of water the pond can hold, essentially reducing its water storage functionality. The pond has also been identified as an ecological hotspot, providing wetland habitat to a number of species.

**Existing Stormwater Related Issues**

Past flooding of Parking Lot H and flooding across Innovation Drive.
5 Opportunity Areas

There are several areas of opportunity that we could pursue to effectively managing our stormwater as the campus grows.

Future development sites
This map shows the proposed areas of growth as identified in the Okanagan Campus Plan.

Potential Technologies
The following are examples of stormwater management features that the University could pursue:

- **Infiltration Swales**: A swale is a low tract of land, especially one that is wet or marshy. Swales can be natural landscape features or a human-created ones, often incorporated to manage water runoff, filter pollutants, and increase rainwater infiltration.
- **Infiltration Trench**:
- **Absorbent Landscapes**:
- **Detention Tanks**:
- **Rain Gardens**:
- **Daylighted Streams**:
- **Permeable Paving**:
- **Green Roof (Engineering, Management and Education [EME] Building)**:
- **Constructed Wetlands**: 
Public Consultation Process and Timeline

We want to hear from you! Our campus community has great capacity for innovation and creativity, please share your ideas on how UBC could manage its stormwater.

There are two ways to participate:
1. Feedback forms are available at the registration table.
2. Online between March 23 – April 10 at sustain.ok.ubc.ca

The process to develop the ISMP is taking place with multiple opportunities for input from the campus community, extensive notification and outreach to stakeholders.

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**Process Timeline**

**PHASE 1 - SPRING 2016**

- Phase 1 of the public consultation process to gather community and stakeholder feedback on opportunities for stormwater management on campus.

**PHASE 2 - FALL 2016**

- A consultant will be hired to perform a soils analysis, develop a storm water model and run various scenarios, and propose options for how the University could proceed.
- Phase 2 of the public consultation process will gather input from the campus community and stakeholder on the proposed options.
- Finally, an Integrated Stormwater Management Plan will be developed by the consultant and presented for executive endorsement.