

# KWANTLEN POLYTECHNIC UNIVERSITY

## INSTITUTE OF SUSTAINABLE HORTICULTURE



### PROJECT DETAILS

**Area**  
493 m<sup>2</sup>

**Location**  
Langley, BC

**Completed**  
2009

**Achievement**  
LEED Gold

### GENERAL FACTS

- Greenhouse with state-of-the-art geothermal heating system
- Microbiology Lab with dedicated growth rooms and suites
- Animal care insect rearing suites

The Institute of Sustainable Horticulture is an innovative research facility that celebrates KPU's commitment to sustainable design. With full consideration of sustainability principles, the new facility has been designed as an architectural enhancement and seamless addition to an existing Langley campus building.

### INNOVATION

- ISH objectives is to advance sustainable horticulture development through collaborative research and innovation.
- Synergistic research includes pest management through biocontrols, food sovereignty through urban agriculture, and energy efficient construction methods for greenhouses.
- Reduction of water usage within the building exceeded the aggregate by 43%.



### SUSTAINABLE SITE

- A bioswale was installed to reduce water pollution from roof runoff.
- Trees created shade for natural cooling.
- Minimal walkways allow ground water absorption and light coloured concrete mitigate heat absorption.
- Roofing system with a high solar reflective index to mitigate the heat island effect.





## WATER EFFICIENCY

- Local indigenous and drought resistant plants were used; no permanent irrigation system was required and landscape water usage was reduced by 50%.
- Ultra low flush fixture was installed that resulted in significant water use reduction.

## INDOOR ENVIRONMENTAL QUALITY

- Materials contain low volatile organic compounds (VOC) and do not off-gas.
- Outdoor views and daylight to interior spaces.

## MATERIALS + RESOURCES

- The design included recycled content and regionally sourced materials.
- 78.4% of construction waste was diverted from the landfill.
- Robust assemblies were chosen for roof and exterior walls.
- Trees on site were relocated on campus ensuring 100% survival.



## ENERGY + ATMOSPHERE

- Zero use of CFC-based refrigerant.
- Use of reclaimed heat from laboratory process equipment and exhaust air, in combination with a water to water heat pump, efficiently heats and cools the building.
- Radiant slab heating and cooling allows for low grade thermal energy to be used effectively to heat and cool the space.
- Improved envelope thermal performance and lighting controls.
- Use of renewable energy for 50% of the buildings' energy consumption for the first 2 years.
- Measurement and verification plan implemented to monitor energy usage.