



# Northern city explores ecologically sustainable landscaping

City of Prince George, British Columbia

## Green Municipal Fund Case Study



Prince George's experiments in sustainable landscaping ran into many problems, but the Wabooz Garden on the university campus was one enduring success (Photo: Annie Booth).

### Prince George Northern Sustainable Landscaping Initiative (GMEF 7117)

Date project completed: May 2009

Total project value: \$1,298,236

GMF grant: \$266,970

- Researchers experimented with sustainable landscaping in a northern ecosystem
- Goals were to use less water, protect the environment from harsh chemicals and save money
- The team planted hardy, low-maintenance perennials and trees and tested herbicide-free ways of controlling weeds
- The team learned what plants will thrive, in which locations and under what soil conditions

**OVERVIEW** In collaboration with the City of Prince George, the University of Northern British Columbia tested sustainable landscaping practices on plots throughout the city. The city was interested in protecting the environment and saving money spent on chemicals and plant maintenance. The project team studied plant combinations that would require less watering and fewer herbicides and pesticides. They also matched plants to the selected sites (e.g., plants tolerant of road salt or poor soil conditions). Goals also included increasing public awareness of sustainable landscaping, exploring non-herbicide weed control measures and developing vegetation choices that would not attract wildlife to the Prince George Regional Airport. After five years, the team had identified trees and perennials suitable for sustainable landscaping in Prince George's climate. They also concluded that goats and vinegar application could control weeds. Unfortunately, only a few test sites were left intact after the study. The airport study was ongoing, but early results looked promising.

### PROJECT TEAM

City of Prince George  
University of Northern British Columbia  
Prince George Regional Correctional Centre  
Recycling and Environmental Action  
Planning Society  
Prince George Regional Airport  
Prince George Regional Youth Custody Centre  
British Columbia Ministry of Transportation  
Stewards in the City  
Green Streets (Tree Canada)

**CONTEXT** Known as British Columbia's northern capital, Prince George is a city of more than 70,000 people. The lumber industry drives the local economy, with sawmills and pulp mills being major employers. Recently, though, the mountain pine beetle epidemic has closed some sawmills. The city is also a government services centre, has other small industry and is home to a university and a community college. Researchers at the university wanted to explore ecologically sound landscaping in a northern ecosystem. Prince George's growing season is short, and spring deposits of road salt are hard on most



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plants. The city, for its part, was interested in using fewer herbicides and pesticides, to save money and out of concern for ecosystem and human health. Also, the airport was looking for novel ways to discourage wildlife around its runways.

**APPROACH** Between 2005 and 2009, 30 acres of highly visible city land were chosen to be replanted with native plants and other species known to thrive in northern environments. The study team monitored the plants to see how they survived in different locations and conditions. The sites were on the university campus, on city parkland and streets, and on the grounds of public buildings. The plants were cared for by the project staff, city staff and inmates of the Prince George Regional Correctional Centre, depending on the test site.

Some plant species were tested for salt tolerance in a laboratory. Donkeys and goats were brought in to graze on certain sites (for example, around two sewage lagoons) as an alternative to applying herbicides. Hand-mowing and vinegar were also tested to control weeds.

The airport joined the project in 2007. The study team surveyed animal and bird species living near the airport that can pose problems on runways and in flight paths. They then planted vegetation that would be least attractive to these species. The last step was to measure subsequent wildlife incursions in runway areas.

Throughout the study, efforts to increase and gauge public understanding and support of the project included surveys, a website, presentations at community events, and regional and national news coverage.

**RESULTS** The researchers compiled a list of plants suitable for sustainable landscaping in the Prince George climate. Many of the plants are drought-resistant and salt-tolerant and can withstand a wide range of temperatures. Some limited the spread of weeds through their growth patterns. Four species of rose and one

shrub called kinnickinnick showed partial salt tolerance in laboratory studies.

“The city now has a list of species that can be planted as alternatives to high-maintenance species and still be attractive and interesting,” said Annie Booth, associate professor in the ecosystem science and management program at the University of Northern British Columbia.

Hand-mowing for weed control was abandoned because it was too labour-intensive. The donkeys were not suitable for the Prince George climate. However, the introduction of four Boer goats to two sites was successful in controlling Canada thistle, hawkweed, horsetail, oxeye daisies and dandelions. An eight per cent concentration of vinegar also showed some success in controlling thistle and dandelion growth, although Booth said this requires further study with a longer timeline.

“If you want to wipe thistle out tomorrow, vinegar isn’t going to do it. If you’re interested in seeing a reduction over the course of time, then it seems to be reasonably effective,” she said. Booth estimates that over five years, goat grazing and vinegar application combined would cost no more than single-application herbicides, with much less damage to the environment.

In the end, only 10 acres of land were converted to sustainable landscaping. Some of the planned sites fell through and some plantings failed because of damage from snow removal, construction or under-watering.

One shining success is the Wabooz Garden at the university, which has become a popular place for weddings and university functions. A list of the plants is posted in the garden for people who want to re-create the planting.

Most of the test sites have now been dug up and returned to grass. Booth blames a lack of public buy-in. “We have only one remaining city site. We had to dig up everything else at the



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water

end of the project because the city got some complaints,” Booth said. Some of the non-city sites were never adopted by their user groups or were abandoned by project partners once the study was over.

The airport study was ongoing, but initial results looked promising. “Our plantings seem not to be attracting deer. They don’t seem to be heavily used by birds for nesting, but we will have to see in the spring whether geese are attracted to them,” Booth explained.

**NEXT STEPS** The city was interested in using goats for weed control, but no concrete plans were in place. Results from the public survey will be available once they have been analyzed, as will results from the airport study.

**LESSONS LEARNED** Public acceptance of sustainable landscaping was a huge problem. More education might have solved this. Sustainable landscaping uses perennials, which can take four to five years to look their best. Booth says to avoid complaints, municipalities should warn citizens that the landscaping will not look great instantly, as a garden full of freshly planted annuals might.

“We probably should have invested a year in education about the benefits of sustainable landscaping. And perhaps we should have done our public opinion survey ahead of time, before doing the plantings,” Booth said.

Since this was a research project, positive results were not guaranteed. Booth suggests that for highly visible areas, other municipalities should pick plants they are sure will succeed; they can experiment with other plant combinations and weed control in out-of-sight areas. Also, she said low-maintenance does not mean no maintenance: plants need some attention to look their best.

### CONTACTS

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**ADDITIONAL RESOURCES** To read the full report or to learn about other GMF-funded initiatives, please visit the GMF website at <[www.fcm.ca/gmf](http://www.fcm.ca/gmf)> or contact us at 613-907-6208 or at [gmf@fcm.ca](mailto:gmf@fcm.ca).

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