

# Strathcona Shooting Range site remediation

City of Edmonton, Alberta

## Green Municipal Fund Case Study



City of Edmonton cleaned up a 65-hectare shooting range  
(Photo: City of Edmonton).

### Strathcona Shooting Range Site Remediation (GMF 9391)

Date project completed: April 2010

Total project value: \$3.9 million

GMF grant: \$964,597

- City of Edmonton cleaned up a 65-hectare shooting range, removing lead and other contaminants from the soil
- Site will be transformed into a sports and recreation facility that will be used by an estimated 9,200 people a day
- City saved at least \$2 million by testing for soil contamination on site rather than in a laboratory
- Much of the project's success was attributed to good planning and good consultants

**OVERVIEW** The City of Edmonton rehabilitated a 65-hectare site that had been a shooting range for 30 years, removing lead and other contaminants from the soil. With its growing population and a demand for recreational facilities, the city decided to convert the Strathcona Shooting Range to a multi-use sports and recreational facility that would be used by more people. Consultants assessed the extent of the contamination and supervised the cleanup, which involved taking soil samples, testing them on site, and removing contaminated material to the appropriate landfill. Although early cost estimates were as high as \$9 million, the cleanup was done for \$3.9 million.

#### PROJECT TEAM

City of Edmonton

AECOM

Quantum Murray LP

**CONTEXT** The City of Edmonton identified a need for high-quality baseball diamonds and tournament sites for sports like soccer, football and rugby. The city owned the 65-hectare site of the Strathcona Shooting Range, built for the 1978 Commonwealth Games. While the site was being used by about 250 shooters a day, the city estimated it could serve thousands every day if converted to a multi-use sports and recreation facility.

The first step toward that conversion would be to clean up the legacy of 30 years of shooting. The site contained lead and other metals from shot and bullets, and polycyclic aromatic hydrocarbons from shattered clay targets.

**APPROACH** The city hired AECOM to do a detailed site assessment, develop remedial strategies and supervise the remediation.



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The first step was to determine the extent of contamination with lead, nickel, copper, antimony, arsenic and polycyclic aromatic hydrocarbons, and to identify the parts of the site where it was at hazardous levels. The city developed GPS-based grid maps for the skeet and trap field area and the pistol ranges. Samples from each 20-metre-square cell were analyzed at the site using X-ray fluorescence technology. Soil was removed from contaminated cells in 150-millimetre layers. A “clean” sample marked the end of excavation from a cell; materials from “dirty” layers were removed from the site to an appropriate landfill.

A plan to monitor air quality and exposure to contaminated dust, and to avoid tracking dust from the work site on footwear and tires, was developed and 148 air samples were analyzed.

**RESULTS** During the site remediation, 58,861 tonnes of contaminated soil was hauled to a Class 2 landfill; 3,151 tonnes of soil with hazardous lead concentrations and 1,100 kilograms of hazardous building materials (lead paint) were hauled to a Class 1 landfill.

All the air samples tested below occupational exposure limits.

“We got lucky,” project officer Ken Friedrich said. While initial cost estimates were as high as \$9 million, the cleanup was done for \$3.9 million. Much of that saving was the result of the decision to do on-site (rather than laboratory) testing for lead and other contaminants.

Access to those test results on site meant the consultant could better direct the contractor. Immediate test results also meant that only contaminated soils were removed — and replaced — saving time and money.

Given the slope of the landscape being excavated, soil erosion in the event of heavy rainfall was a major concern. Speedy decision-making meant that there were fewer open holes on the site at any given time. This reduced the

risk of erosion, although the weather was unexpectedly favourable over the course of the project.

Testing of the site margins confirmed that there had been no contamination of neighbouring properties, and initial concerns about contaminated dust blowing about or being tracked off the site during excavation proved to be unfounded.

**NEXT STEPS** The city will build roads and other infrastructure. Baseball, softball, soccer, football and rugby fields will be developed by local sports groups.

This project has added to Edmonton’s considerable body of knowledge on environmental remediation. Sharing the lessons of experience is important, and Edmonton has offered its expertise to other communities, particularly smaller ones with more limited resources.

**LESSONS LEARNED** All testing and work was undertaken with a commitment to getting it right the first time, following best practices and thoroughly documenting every step. Project officer Friedrich said he was confident that every test could be repeated with consistent results.

He described the approach that made this possible: “Plan well and hire good consultants who understand the requirements.”

A risk management approach — leaving contaminants in place, monitoring, and remediating only when necessary — would have been less expensive. But long-term monitoring is also costly, and it might still have become necessary to clean up the site in the future. Leaving contaminants in place might also have limited the uses of the site.

While “nothing went wrong” during this remediation, not everything went as expected. A few months after the cleanup was thought to be finished, the Alberta government made the



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guidelines for site remediation more rigorous. The city had to clean the site to the new provincial standard.

### 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).

#### About the Green Municipal Fund

The Government of Canada endowed the Federation of Canadian Municipalities (FCM) with \$550 million to establish the Green Municipal Fund™ (GMF). The Fund provides low-interest loans and grants, builds capacity, and shares knowledge to support municipal governments and their partners in developing communities that are more environmentally, socially and economically sustainable.

#### Federation of Canadian Municipalities Green Municipal Fund

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