Crown Contaminated Sites Biennial Report 2006

Sustainable benefits for British Columbians through the remediation of Contaminated Sites

BRITISH COLUMBIA
The Best Place on Earth

Crown Contaminated Sites Biennial Report 2006

BRITISH COLUMBIA

Ministry of
Agriculture and Lands

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Message from the Minister

I am delighted to present the first biennial report of the Crown Contaminated Sites Program of the Ministry of Agriculture and Lands.

There is nothing more rewarding than returning our precious land resources back into practical space for people to use and enjoy. Land that was once contaminated through decades of use as industrial centres, mines or landfill sites is being cleaned up across B.C. I'm proud of the progressive position our government has taken on this issue and the work we've accomplished since the establishment of a dedicated arm of government to look after this work.

The important work done by the Crown Contaminated Sites Branch supports government's goal to lead the world in sustainable environmental management and three of this Ministry's key themes: finding ways to increase access to capital; improving access to Crown land; and enhancing the flow of knowledge.

Reclaiming our land is vital to the health and well being of our communities—rural or urban, large or small—everyone benefits. Whether it's a vibrant, new waterfront development in downtown Vancouver or a piece of the province's wilderness that is cleaned up, these sites become an integral and useful part of the communities in which they're located.

This work will pay big dividends to the communities in which these sites are located and to the overall health and prosperity of our province. Inner cities are rejuvenated and people have new places to call home, businesses can prosper in revitalized areas and environmental quality is enhanced where cleanup takes place.

We are committed to this work—to restoring our communities, our environment, and revitalizing our future—and look forward to leading the way with continued progress in the years ahead.

Honourable Pat Bell
Minister of Agriculture and Lands

Restoring our communities

Revitalizing our future

Executive Summary

British Columbia's natural resources make a significant contribution to its economic, environmental and social health and prosperity. The vast majority of the province's land base—94 per cent—is under Crown ownership. The provincial government has a responsibility to manage and protect this valuable resource.

Since August 2001, the B.C. government has committed $116.5 million to identify, clean up and return to productive use a number of the province's contaminated sites. An additional $47.2 million is earmarked for this program in 2007 – 2009.

In response to the Auditor General's report, *"Managing Contaminated Sites on Provincial Lands, 2002/2003: Report 5"*, the B.C. government established the Crown Contaminated Sites Program.

Its purpose is to provide action and public accountability on the management of contaminated sites for which the province is responsible in B.C. It provides cross-government policy development and management of specific projects. It is also responsible for supplying information on contaminated sites, including projects that are underway, progress that has been made and upcoming priorities.

Yankee Girl tailings, Ymir – Erosion barrier adjacent to Salmo River

HELPING ACHIEVE GOVERNMENT GOALS

The Crown Contaminated Sites Program directly supports *Goal 4* of the *"Five Great Goals"* developed by the B.C. government to unify the focus of ministries' work.

Goal 4 states the government will *"Lead the world in sustainable environmental management, with the best air and water quality and the best fisheries management, bar none."* The Crown Contaminated Sites Program, through its work on cleaning up and returning previously contaminated and unusable land to productive use, contributes significantly to this effort. From helping ensure healthy, sustainable communities to creating jobs and business opportunities, actively improving B.C.'s land use pays dividends today and leaves lasting benefits for the future.

Britannia town site

LINK TO MINISTRY OF AGRICULTURE AND LANDS SERVICE PLAN

Ladysmith Harbour – Soil and groundwater testing

The Crown Contaminated Sites Branch is responsible for the Crown Contaminated Sites Program and as such contributes to the goals of the Ministry of Agriculture and Lands as outlined in the *2006/07 – 2007/08 Service Plan*. In particular, the following two goals presented in the service plan dovetail the work of the Crown Contaminated Sites Branch:

Goal 3: Coordinated Crown land administration and allocation that optimizes the flow of sustainable benefits for British Columbia

The effective management of Crown land contributes to the economy and provides social benefits to the province. The Crown Contaminated Sites Branch helps ensure that its potential to do so is achieved through coordinated and effective remediation strategies.

Goal 4: A centre of excellence promoting sustainability through the management and remediation of contaminated sites that are the responsibility of the province

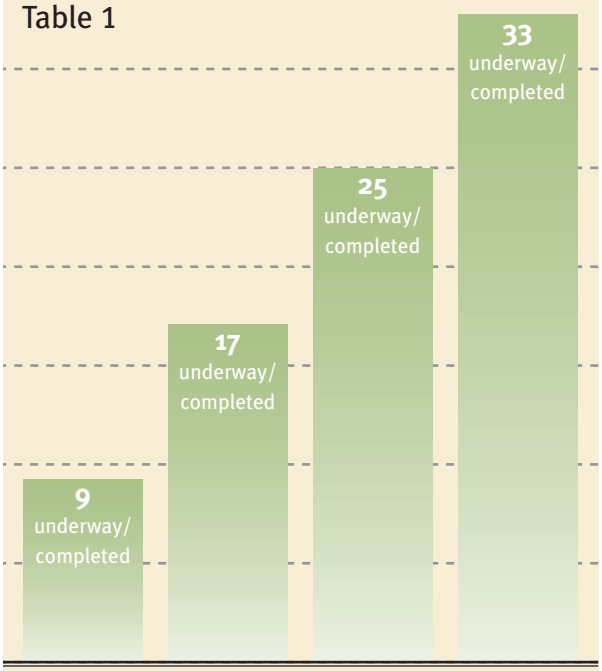
The Ministry of Agriculture and Lands, through the Crown Contaminated Sites Branch, leads a cross-government effort to identify and take action on the cleanup of contaminated sites. This approach creates a centre of excellence within the ministry and enables all agencies with a role in contaminated sites to collaborate on an effective, coordinated, government program.

PROVINCIAL CONTAMINATED SITES COMMITTEE

Achieving these goals takes place through the work of the Crown Contaminated Sites Branch with critical support from an interagency Provincial Contaminated Sites Committee, which identifies candidate contaminated sites and determines priorities based on risks to human health and the environment.

The Committee provides a forum for identifying program issues, developing policy, setting priorities, ensuring a coordinated approach, contributing to development of the Crown Contaminated Sites Database and ensuring a consistent approach to reporting of financial liabilities.

Table 1



Performance Measure:
Number of sites for which remediation is underway/completed

CROWN CONTAMINATED SITES TARGETS

Performance measure targets have been identified over the next three years and are presented in Table 1.

PRIORITY PROJECTS

A number of priority projects have been the focus of the Crown Contaminated Sites Program's work since its inception in 2003.

Remediation work has been completed at the Pitt River landfill site on the Lower Mainland and in Goose Bay, a former cannery and fishing camp located on the central coast.

Major progress has been made on significant sites such as Britannia Mine near Squamish, Pacific Place (located on the former Expo lands) in Vancouver, the Yankee Girl mine in the Kootenays, and the Malakwa landfill site on the Eagle River east of Sicamous.

BROWNFIELD PILOT PROJECTS

Three brownfield sites have been identified as pilot projects:

- Millstream Meadows—District of Highlands, Vancouver Island
- Gasworks—City of New Westminster
- Ladysmith Harbour—Town of Ladysmith

PRELIMINARY SITE INVESTIGATIONS

Preliminary Site Investigations (PSI) were initiated at ten candidate sites in 2005/06 to facilitate the identification of priority sites. Further investigative work will continue where results point to potential impacts on human health and/or the environment. PSI work will be undertaken on new candidate sites each year based on a continuing process of assessing sites that pose potential risks.

What is happening nationally and globally?

Taking action on contaminated sites is not unique to British Columbia. In this province, the government has shown leadership by developing a strong program to take action on contaminated sites. Our work here demonstrates a high level of commitment and is among the most effective in the country.

Across the country and around the world, jurisdictions and communities are working together to reclaim land that can be put back to productive use by its citizens and clean up sites to current standards to ensure protection of human health and the environment. In any jurisdiction where there has been a history of industrial activity that has affected the environment, contamination inevitably occurred.

In fact, when the Crown Contaminated Sites Program was developing its policies and operating structure, it looked to other jurisdictions for input and guidance including work done to manage such sites in the U.S., Great Britain, Australia and New Zealand as well as other Canadian provinces/territories. Many remedial projects are underway across the country and around the world, and jurisdictions typically share information, best practices and other processes to help in the global effort to clean up our environment.

Contaminated sites under federal jurisdiction are managed by the federal government. The Treasury Board of Canada web site reports that the federal government has 2,013 contaminated sites on its books at this time and that 322 of those sites are in B.C. Ontario has 329 and Quebec has 483 contaminated sites under federal jurisdiction. These three provinces have the highest number of such sites in the country, a testament to their past as industrial and mining centres.

Why has B.C. made cleaning up Crown contaminated sites a priority?

Taking a walk on Vancouver's glittering downtown waterfront illustrates perfectly why taking action on contaminated sites is a priority in B.C.

Smokestacks have been replaced by seawalks on the 82-hectare parcel of land known as Pacific Place in Vancouver's downtown area. Pacific Place is now home to thousands of residents and boasts housing, childcare facilities, commercial businesses, marinas and green space. It's a remarkable example of what can happen when a formerly contaminated site is reclaimed and becomes a place where people can live, work and play. Cleanup of this extraordinary waterfront property has also resulted in substantial improvements to the aquatic environment within False Creek by preventing the migration of contaminants into the waterway. This has helped make False Creek a safe and attractive place for a wide range of water-based recreational activities.

This jewel in the crown of British Columbia's largest city was not always this attractive or viable. For over 100 years two coal gasification plants, over a dozen saw mills, metal shops and a CPR rail yard sat on this land with predictable results. The site became contaminated and a massive cleanup was in order.

False Creek seawall

In British Columbia, hundreds of contaminated sites lie abandoned and underutilized, the product of an industrial era when environmental risks were not known. As time went on and the results of soil and water contamination became apparent, it was clear that something needed to be done.

The B.C. government's Crown Contaminated Sites Program was established as a result of the Auditor General's report, *"Managing Contaminated Sites on Provincial Lands, 2002/2003: Report 5."* In the report, it was recommended that a provincial strategy be developed to reflect stronger leadership and public accountability for the management of contaminated sites for which the province is responsible.

Remediating B.C.'s contaminated sites makes good sense for a number of reasons. It helps contribute to sustainable, healthy communities that enhance the social, economic and environmental health of British Columbia. Risks to human health and the environment can be averted, as toxic substances are removed or contained.

This work also returns land to productive use and enables communities to reap the benefits of newly revitalized land. Contaminated sites are often located close to existing services, enabling municipalities to realize new development without urban sprawl. Inner cities can be rejuvenated and new communities and business opportunities created.

The players

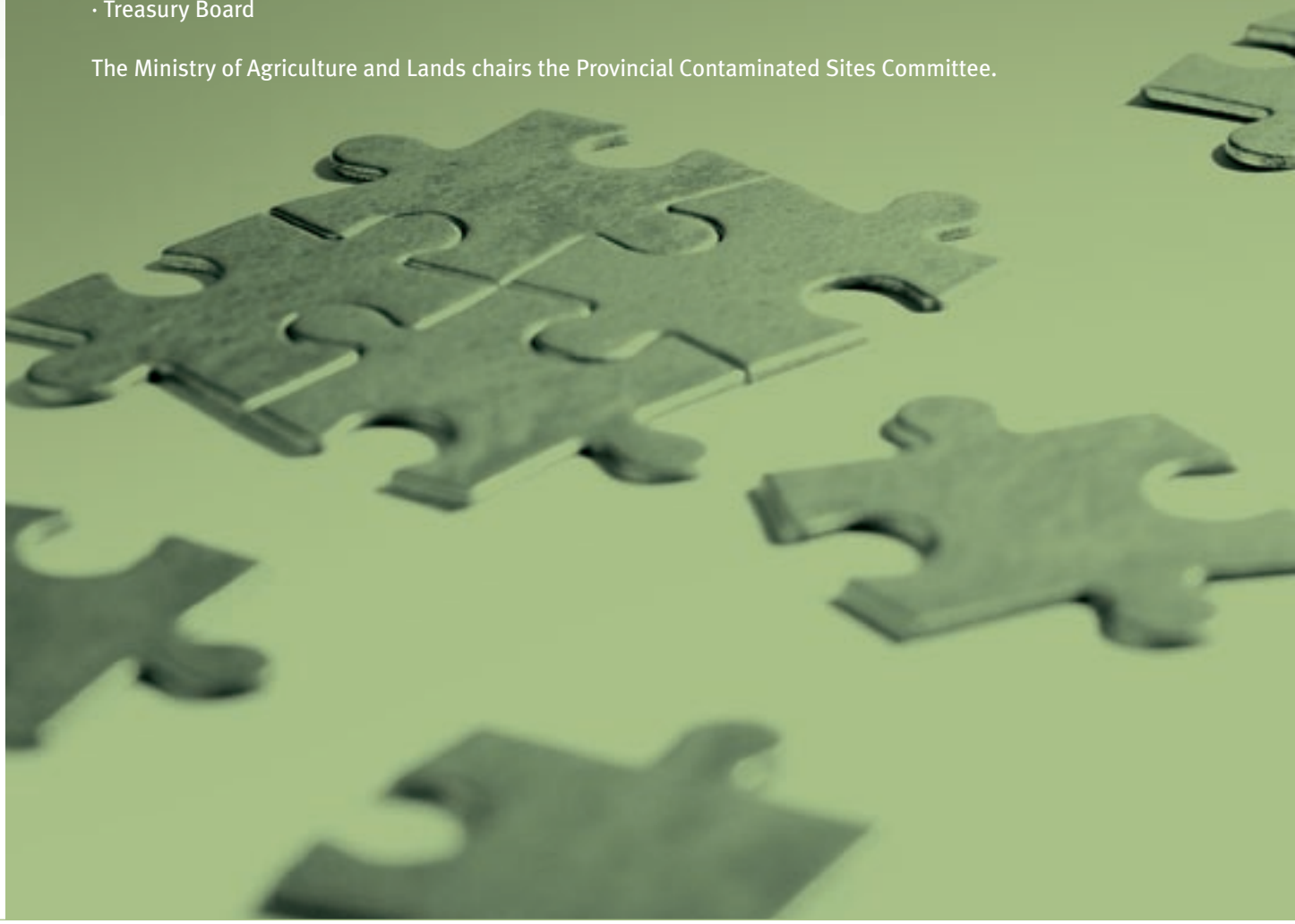
The Crown Contaminated Sites Branch of the Ministry of Agriculture and Lands is responsible for the management of provincial contaminated sites. The Ministry of Environment looks after the regulatory side under the *Environmental Management Act* and the Contaminated Sites Regulation.

Managing the province's contaminated sites involves a number of government ministries and agencies. The Provincial Contaminated Sites Committee provides the Ministry of Agriculture and Lands with input on issues that affect government regarding contaminated sites so the most practical and effective solutions can be developed and implemented.

Committee members include representatives from:

- Ministry of Labour and Citizens' Services
- Ministry of Energy, Mines and Petroleum Resources
- Ministry of Forests and Range
- Office of the Comptroller General
- Treasury Board
- Ministry of Attorney General
- Ministry of Finance – Risk Management Branch
- Ministry of Transportation
- Crown Agencies Secretariat

The Ministry of Agriculture and Lands chairs the Provincial Contaminated Sites Committee.



About the Crown Contaminated Sites Branch

The Crown Contaminated Sites Branch has the lead role in the management of contaminated sites in B.C. It is the lead agency for the development and implementation of the government-wide policy framework to manage B.C.'s Crown contaminated sites.

The branch has also developed the Crown Contaminated Sites Database as a central repository for provincial contaminated sites information. The database houses information to allow for informed decision-making in establishing priorities and an accountability framework for reporting on financial liabilities and program accomplishments. It also provides information on contaminated sites, including projects that are underway, progress that has been made and upcoming priorities.

CROWN CONTAMINATED SITES BRANCH KEY OBJECTIVES

- Developing and promoting a scientifically valid and coordinated government-wide approach to identify, prioritize, assess and remediate contaminated sites for which the province is responsible and that pose the greatest potential risk to human health and the environment.
- Identifying and managing government's financial liability for contaminated sites.
- Maintaining a database of provincial contaminated sites to support sound management and decision-making.
- Providing public reporting on the management of provincial contaminated sites.
- Increasing the flow of economic and social benefits to British Columbians that may result from the remediation of contaminated sites and the future use of sites.
- Promoting approaches that reduce the risk of contamination of provincially-owned lands.

THE CROWN CONTAMINATED SITES BRANCH HAS BEEN RECOGNIZED BY THE OFFICE OF AUDITOR GENERAL FOR:

- Leadership in developing and implementing the management of B.C.'s Contaminated Sites Policy
- Taking significant steps in establishing site inventories
- Implementing innovative and effective performance measures

– from the Office of Auditor General report, "Managing Contaminated Sites on Provincial Lands," November 2004

A strategic approach: B.C.'s contaminated sites policy

Taking action on contaminated sites requires a clear blueprint that encompasses scientific, fiscal and performance measures.

Pitt River – Landfill reclamation

The Management of Contaminated Sites Policy is a risk-based framework that provides a consistent approach across ministries and government agencies. Developed with the guidance of the Provincial Contaminated Sites Committee, it is based on work undertaken in other jurisdictions, including the U.S., Great Britain, Australia and New Zealand as well as other Canadian provinces/territories.

The policy contains broad principles that allow for a complete and balanced approach to the management of contaminated sites in B.C.

Ocean Falls – Former pulp and paper operation

MANAGEMENT OF CONTAMINATED SITES POLICY PRINCIPLES

- A provincial priority-based approach to human health and environmental issues, as well as legal and financial liability issues, is followed.
- The "polluter pays" principle is utilized, in which the person or organization responsible for the pollution pays for pollution control, cleanup and any consequential costs including damages.
- Consultation and cooperation take place across agencies and with First Nations.
- Consistency and fairness in processes and standards are employed.
- There is accountability and transparency in government's management of provincial contaminated sites.
- Innovative leadership approaches are developed when managing provincial contaminated sites including Private Public Partnerships and brownfield re-development opportunities.
- Promotion of prevention to minimize the creation of future contaminated sites on provincial lands is a priority.
- Sound science and technology guide the management of contaminated sites.

What is a contaminated site?

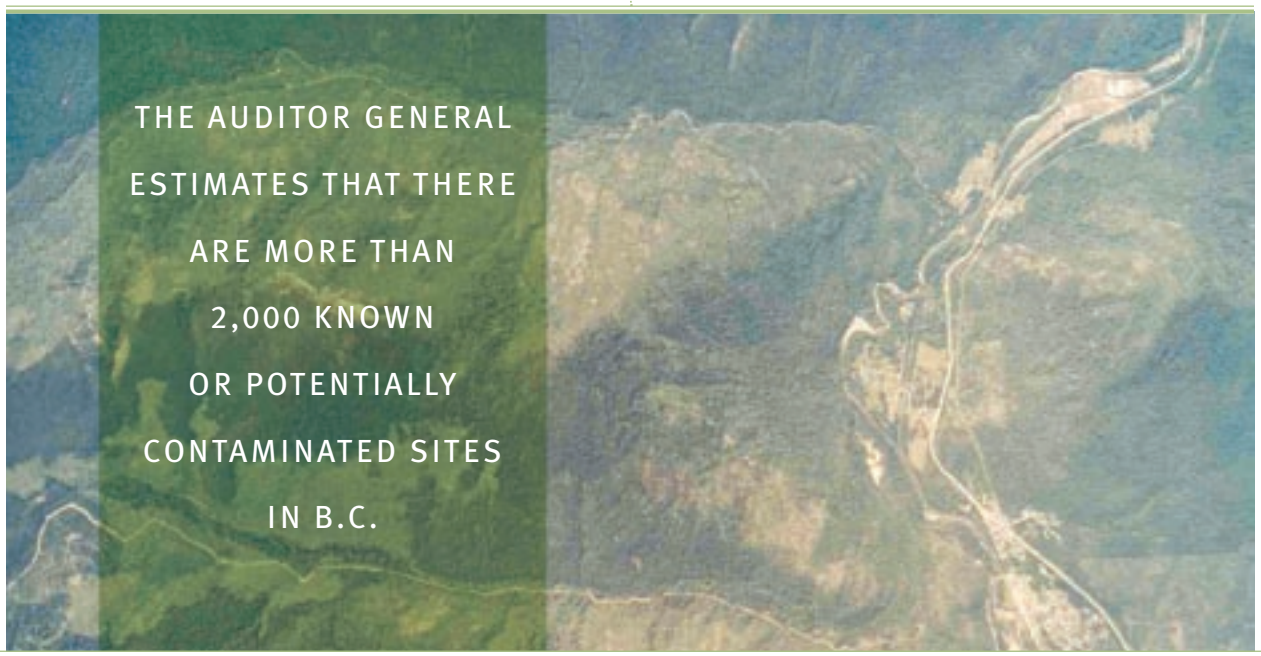
Land can become contaminated from a number of different sources and is usually the result of industrial activity that took place decades ago, before environmental impacts and health risks were understood as they are today. Over the past 150 years of growth, development and industrial use have altered thousands of tracts of land from their natural state. In many instances, this activity is superficial and does not require action. In some cases, however, the contamination may threaten human health and the environment.

Goose Bay – Hazardous materials cleanup

B.C. has a range of sites that have become contaminated from the following activities.

- Operation of gas stations with underground and above-ground storage tanks
- Use of chemical processes
- Dumping at landfills, waste disposal areas and scrap yards
- Metal smelting, processing, finishing and cleaning
- Iron, steel and metal processing
- Mining and milling
- Wood treatment
- Oil and gas exploration
- Pulp and paper mills
- Farming
- Forestry

These sites are important to a thriving provincial economy and must be managed effectively to ensure long-term protection of human health and the environment.



Taking action on contaminated sites in B.C.

PRIORITY CONTAMINATED SITES

When a contaminated site poses significant risks to human health, the environment, or both, it becomes a priority for action. The Provincial Contaminated Sites Committee identifies candidate sites that are assessed to determine their priority.

Priority sites are those that have been identified for current action because they pose potential risks to human health and the environment.

Identification of new sites takes place annually and the list of priority sites is updated on a regular basis.

CURRENT PRIORITY SITES

SITE NAME	LOCATION	TYPE	STATUS
Britannia	Britannia Beach (Sea-to-Sky Highway)	Mine	Under remediation
Pacific Place	City of Vancouver (False Creek on former Expo lands)	Urban Industrial	Under remediation
Meadow Ave.	City of Burnaby (Fraser River)	Urban Industrial	Under remediation
Oak Street	City of Vancouver	Urban Industrial	Under remediation
Yankee Girl	Town of Ymir (West Kootenays)	Mine Tailings	Under remediation
Goose Bay	Central Coast (Rivers Inlet)	Cannery	Remediated
Ocean Falls	Central Coast	Pulp Mill	Under remediation
Pitt River	Lower Mainland	Landfill	Remediated
Malakwa	Columbia/Shuswap Regional District	Landfill	Under remediation

BROWNFIELD PILOT SITES

SITE NAME	LOCATION	TYPE	STATUS
Millstream Meadows	District of Highlands	Landfill	Under investigation
Ladysmith Harbour	Town of Ladysmith	Industrial	Under investigation
Gasworks	New Westminster	Urban Industrial	Under investigation

Locations of Priority Crown Contaminated Sites

An up-close look at progress on B.C.'s contaminated sites

BRITANNIA MINE

Before: One of the largest sources of metal pollution in North America

After: A beachside community located on the Sea-to-Sky corridor that's undergoing a major transformation

Until now, the former Britannia Mine had the dubious distinction of being one of the largest metal pollution sources in North America due to contaminated water entering local waterways. Now the area has a new lease on life thanks to implementation of a remediation program that includes a water treatment plant that removes contaminants from the mine water discharge before it enters Howe Sound.

Britannia Mine, located 50 kilometres north of Vancouver adjacent to Howe Sound on the Sea-to-Sky corridor, was the largest copper producer in the British Commonwealth in 1929. The mine closed in 1974. Surface water from precipitation and melting snow entering the old mine becomes contaminated as it passes through the mineralized rock in the mine workings. Until December 2005, the resulting contamination, known as acid rock drainage (ARD), exited the old mine and flowed directly into Howe Sound.

In recognition of the need to address this environmental problem, the provincial government reached an agreement with a group of former mine operators in which they contribute $30 million towards remediation. In conjunction with $45.9 million of provincial funding, cleanup of the site is well underway and, in March 2005, the government and EPCOR Britannia Water Inc. (EPCOR) unveiled plans for a new water treatment plant, which is the key component of the remediation program for the Britannia Mine.

Under a Private Public Partnership (P3), EPCOR has financed the design and construction of the water treatment plant and will operate it for 20 years. The province pays EPCOR a monthly fee based on the volume of water treated, provided it complies with the environmental standard established by the Ministry of Environment. The plant became operational in December 2005.

Britannia Mine water treatment plant under construction, Fall 2005

Britannia town in the foreground

"Working in partnership with the B.C. government, we're confident that this facility will enhance the marine ecosystem of Howe Sound, and help preserve the natural environment for future generations."

Dr. Steve Stanley, EPCOR president

The Britannia Beach community, assured of a clean and bright future, has embraced its redevelopment. The partnership model continues as developer Britannia Bay Properties renovates existing homes and historic buildings, builds roads, adds services and develops a new residential subdivision. New homes have also been built on 90 lots and, as part of this phase, the developer contributed to a cleanup fund.

PACIFIC PLACE

Before: A sprawling, contaminated industrial wasteland
After: A vibrant component of Vancouver's downtown core

Land along city waterfront areas is often contaminated as early industrial development meant construction that was hardly environmentally friendly, and Vancouver's north shore of False Creek was no exception. The 82-hectare property was Vancouver's industrial centre for over 100 years, which left the soil and groundwater contaminated from pollutants left behind by coal gasification plants, over a dozen saw mills and wood preserving operations, metal shops and rail yards.

The area now known as Pacific Place was purchased by the B.C. government for Expo '86. Following the world's fair, the province sold the property to Concord Pacific Development Ltd. (Concord) for redevelopment. The province, City of Vancouver and Concord collaborated to achieve an arrangement that allows site remediation to continue as new development takes place. Cleanup has been underway since 1991 and much of the land has undergone a transformation. It now consists of attractive and usable space including parkland, community space, residential housing and commercial areas.

YANKEE GIRL

Before: A source of multiple pollutants along a Kootenay riverfront
After: A legacy of clean land and water for future generations

B.C.'s rich mining history has left its mark on our landscape, and a notable example is the Yankee Girl mine, which operated near the community of Ymir, south of Nelson, in the Kootenays from the late 1800s until the 1950s.

Gold, silver, lead, iron, zinc and cadmium were mined at Yankee Girl, which left behind a significant number of tailings (the waste that is left after the valuable minerals are extracted from the rock). The tailings, which have been on the site for decades, are found on the banks of the Salmo River and Ymir (formerly Wildhorse) Creek over a two-hectare area, across from the community of Ymir.

Yankee Girl – Erosion barrier construction, Fall 2005

The major stepping-stones in cleaning up the Yankee Girl mine were as follows:

- A preliminary site investigation in 2004 found the site contained elevated concentrations of heavy metals including lead, zinc, cadmium and arsenic.
- A site investigation and options for cleanup were developed in 2005.
- A barrier to stop the erosion of tailings into the Salmo River was built in 2005.
- Assessment of risks to human health and the environment, and a remediation plan, will be completed in 2006. Cleanup will start in 2007.

Yankee Girl tailings – Pre-erosion barrier construction

GOOSE BAY

Before: An abandoned fishing camp and rundown cannery
After: A piece of B.C.'s wilderness preserved

A historic fishing destination and former cannery underwent a cleanup at Goose Bay in September 2005. Located 100 kilometres south of Bella Bella and 483 kilometres north of Vancouver, Goose Bay was the site of many a fishing expedition with a base camp situated on a foreshore water lot. The site was leased to a number of companies from 1973 to 2002.

By the time the Crown Contaminated Sites Program came along, the abandoned fishing camp, cannery and rundown wharf were in sorry condition. A preliminary site investigation showed a toxic stew of heating oil, asbestos, PCBs, solvents, flammable liquids, lead acid batteries, propane cylinders and drums containing aerosols and other hazardous materials littering the site.

The Crown Contaminated Sites Branch conducted the cleanup of the area to protect the safety of the marine environment. This included removal and

Goose Bay – Former cannery building

Goose Bay – Former fuel storage area close to collapsing

A former landfill site that was literally bursting at the seams and spilling debris into Pitt River has been cleaned up in a logistically challenging but successful operation.

disposal of all hazardous materials, which were disposed of in a safe and environmentally friendly manner at five approved disposal sites.

PITT RIVER

Before: A landfill site spilling debris into the Pitt River near Vancouver
After: A clean and stable riverbank and protected aquatic environment

Pitt River landfill – Tire debris

A former landfill site that was literally bursting at the seams and spilling debris into Pitt River has been cleaned up in a logistically challenging but successful operation. The Pitt River landfill, located northeast of Vancouver about 72 kilometres from Pitt Meadows, was a permitted facility for logging operations from 1978 until it closed in 1991. The natural flow of the river resulted in the landfill materials being eroded along its banks and downstream of the site.

The upper Pitt River, located in close proximity to metropolitan Vancouver, is a significant salmon spawning river and a popular destination for fly fishers and wilderness tourists.

Due to the active riverbank erosion, it was determined that complete excavation was needed because of the significant environmental threat caused by the loosening debris. Barges were used for the cleanup operation, and they traveled across Pitt Lake to both dispatch equipment to the site and to bring back tons of garbage from along the riverbank. A separate contract was issued to remove debris that had floated downstream prior to the cleanup operation.

The site cleanup was completed in November 2005. The debris was taken to an approved waste facility in the Lower Mainland. The excavation was backfilled with clean fill material and an erosion barrier was constructed. Vegetation will be planted in the spring of 2006 to further stabilize the riverbank.

Pitt River landfill before excavation

Pitt River – Removal of landfill debris almost complete

MALAKWA

Before: A former landfill site eroding pollutants into the Eagle River
After: A clean and safe environment protecting both human and wildlife

Riverbank erosion exposed a history of landfill use that needed to be cleaned up along the Eagle River at the Malakwa waste disposal site east of Sicamous, B.C. Remediation work began in November 2005 after it was discovered the river was actively eroding old landfill materials which could pose a significant health and environmental threat as the waste erodes into the river.

The landfill site was used by area residents and commercial operators during the 1960s and early 1970s for the disposal of waste materials near the southern bank of the Eagle River. The site was closed in 1975 after the Columbia/Shuswap Regional District opened a new landfill facility.

The initial cleanup and riverbank stabilization was a joint effort between the Crown Contaminated Sites Branch and the Department of Fisheries and Oceans Canada. Waste material along the banks of the Eagle River was excavated and removed and the bank replanted with stockpiled shrubs and undergrowth. Work on this project will continue through 2006.

Malakwa – Pull back of 1m deep garbage layer

Malakwa – Installation of filter layer

Reclaiming brownfield sites: A redevelopment opportunity

Brownfield sites present tremendous potential for turning previously underutilized areas into prime candidates for redevelopment.

The Crown Contaminated Sites Branch is working on three brownfield pilot projects to assess their redevelopment potential and determine if remediation would provide economic, environmental and social benefits to the province. A primary goal is to cultivate active partnerships among key government, community, and industry stakeholders to take on this work.

Brownfields are often located in or near established urban areas and can include decommissioned refineries, former railway yards, old industrial waterfronts and riverbanks, abandoned gas stations and former drycleaners. Left untouched, brownfields have little economic value and can actually be harmful to human health and the environment.

Redeveloped and returned to productive use, brownfield sites can generate significant economic, social and environmental benefits.

Ladysmith Harbour – Sediment investigation at low tide

BROWNFIELD PILOT PROJECTS

In B.C., three brownfield sites have been identified as pilot projects:

- Ladysmith Harbour—Town of Ladysmith
- Millstream Meadows—District of Highlands, Vancouver Island
- Gasworks—New Westminster

WHAT IS A BROWNFIELD?

The National Round Table on the Environment and the Economy has defined a brownfield site as:

"Abandoned, vacant, derelict or underutilized commercial and industrial properties where past actions have resulted in actual or perceived contamination; brownfields differ from other contaminated sites in that they hold active potential for redevelopment."

"This is a major goal for us as a community to restore the harbour and create an attractive gateway for tourists traveling on Vancouver Island."

Robert Hutchins, Ladysmith Mayor

LADYSMITH HARBOUR

A century of heavy industrial uses such as smelting, coal washing and logging operations have taken their toll on Ladysmith Harbour. Now, thanks to the Ladysmith Harbour Framework Agreement, the future holds a great deal of promise.

Plans for the harbour, one of three brownfields pilot projects underway in B.C., include a hotel, residential areas, commercial and retail space, a marina and public walkways.

Ladysmith is located 23 kilometres south of Nanaimo and 88 kilometres north of Victoria. The Slack Point area of the harbour is a piece of land made up almost entirely of coal fill, a result of decades of coal washing. The site also contains a number of other contaminants in the soil and marine sediments.

Partners in the agreement to develop the harbour initiative are the Town of Ladysmith, the Integrated Land Management Bureau, Crown Contaminated Sites Branch and the Ministry of Economic Development.

A detailed site investigation was undertaken in July 2005 to assess the type and extent of contamination. This information will be made available to potential developers. In January 2006, project partners issued a Request for Expression of Interest (RFEI) internationally to attract potential developers. Based on the response to the RFEI, project partners have proceeded with a Request for Proposal to a select group of developers.

Ladysmith Harbour

Ladysmith Harbour – Soil sample from drilling comprised of waste coal material

MILLSTREAM MEADOWS

Reclaiming a landfill site historically used for septic discharge is the objective at Millstream Meadows, a 13-hectare site located approximately 10 kilometres northwest of Victoria, within the District of Highlands.

The site has been used as a landfill for septic discharge dating back to 1941 and contains a range of contaminants including household and construction debris, auto parts, metals, oil waste and sewage.

The provincial government, the Capital Regional District (CRD) and the District of Highlands are working together on this project. The Capital Regional District acquired ownership of the land from the province in 1984 and, under the current agreement, can use it only as a sewage lagoon. Future plans include the parties exploring how to proceed with site remediation in a way that is cost effective and complements future use of the site.

GASWORKS

The Gasworks site in New Westminster is a former urban industrial lot first established as a coal gasification plant in 1897. A long history of activities followed, including a metal foundry operation, coal bulk storage, paint manufacturing, wood treatment and automotive vehicle servicing and repair.

The site consists of four lots situated on the northeast corner of the intersection of 12th Street and 3rd Ave. One of the original buildings from the coal gasification operation still remains on the upper portion of the site.

Gasworks has good commercial development potential and the provincial government is working with the city and the private sector on what needs to be done to turn this site into a viable part of the community.

Millstream Meadows

Millstream Meadows

What's on the horizon: Preliminary Site Investigations

Preliminary site investigations are underway on the Crown Contaminated Sites Branch's new list of top ten candidate sites. Candidate sites are those that have been identified as potentially posing risks to human health and the environment on which investigations will begin to determine the extent of the contamination.

TOP TEN CANDIDATE SITES, 2005 – 2006

NAME OF SITE	LOCATION	TYPE OF SITE
Alpine Gold	North of Nelson	Mine
Bralorne-Takla	Northeast of Takla Landing	Mine
Eureka	Southwest of Nelson	Mine
Kenville	West of Nelson	Mine
Little Tim	Northeast of Slocan	Mine
Midway	Southwest of Moyie and Cranbrook	Mine
Red Rose	South of New Hazelton	Mine
Second Relief	Northwest of Salmo	Mine
Sultana	South of New Hazelton	Mine
Tillicum	East of Lower Arrow Lake—community of Burton	Mine

Second Relief Mine – Tailings empoundment

Locations of Preliminary Site Investigations of Candidate Crown Contaminated Sites, 2005 – 2006

Keeping track: The Crown Contaminated Sites Database

The Crown Contaminated Sites Branch initiated the development of a Crown Contaminated Sites Database in 2004. The design of the database is complete and work has begun to populate it with information on provincial contaminated sites. The initial data loaded onto the database include information from the Ministry of Environment and the Ministry of Transportation. The Crown Contaminated Sites Database contains 840 sites and more sites will be added in subsequent years.

The database ensures there is a central, province-wide repository of information on all Crown contaminated sites in the province and allows for informed decision-making in determining priority sites and allocating resources.

Work on the Crown Contaminated Sites Database is ongoing and will include tasks such as defining the operational requirements for agencies that contribute information to the database to ensure that it is a useful tool for the general user.

Site prioritization: How contaminated sites are chosen and cleaned up

The objective of this process is to ensure that public funds are used only on those sites that present the highest risk to human health and the environment.

THE STEP-BY-STEP PROCESS IS:

1. **Candidate Site Identification**
   Provincial Contaminated Sites Committee agency members identify known contaminated sites as candidate sites. Proximity to sensitive environments (such as fish-bearing streams and human drinking water sources) is determined.

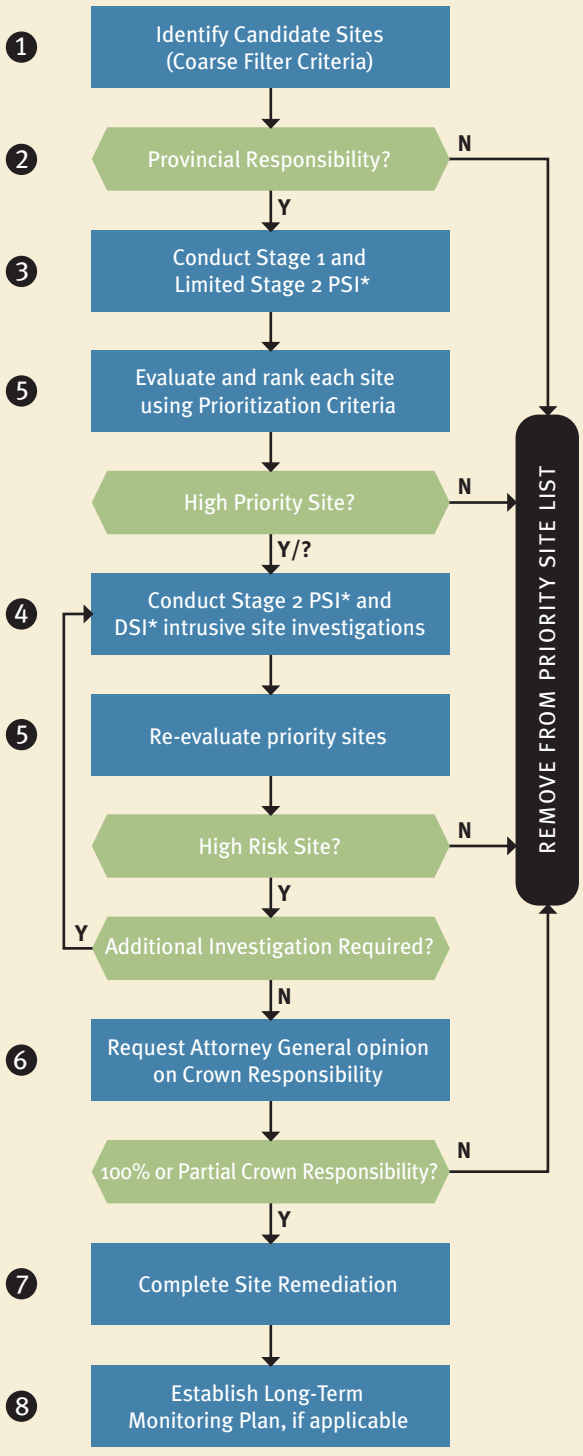
2. **Ownership Evaluation**
   Since the provincial government currently only takes on sites that are Crown responsibility, ownership of the land is verified and potential responsibility for historic contamination is assessed.

3. **Stage 1 and Stage 2 Preliminary Site Investigation (PSI)**
   A Stage 1 PSI is the initial data collection that provides a comprehensive background summary of the site that is used to identify the location and types of contamination. A Stage 2 PSI is an on-site investigation in which soil, groundwater, surface water, and/or sediment samples are collected for analysis. The results are compared to standards developed to protect human health and the environment. Priority sites are identified at this point and will undergo further investigation.

* *PSI = Preliminary Site Investigation*
DSI = Detailed Site Investigation

CROWN CONTAMINATED SITES PROGRAM

Steps for Prioritizing and Evaluating Contaminated Sites



4. **Detailed Site Investigation (DSI)**
   A DSI is completed on those areas of the site that were confirmed during the previous step as areas of environmental concern and that contain contaminants in concentrations greater than allowable standards. During this step, the magnitude of the contamination is identified.

5. **Risk Assessment**
   This step involves establishing the risk to human health and the environment so that the highest priority sites are identified.

6. **Reconfirming Crown Responsibility**
   Before any site remediation begins, the Attorney General's office will review relevant information and provide an opinion on the Crown's responsibility for site cleanup.

7. **Site Remediation**
   The action plan for the site cleanup is developed. This can include removing the contamination from the site or leaving it in place in such a way that it does not pose any health or environmental risks. On-site methods can include covering contaminants, cutting off the way in which they are released into the environment and water treatment.

8. **Site Monitoring**
   Monitoring is an important and essential follow up to site remediation.

Goose Bay – Former cannery and fishing camp

CLEANUP: WHO IS RESPONSIBLE?

The policy and operations of the Crown Contaminated Sites Program support the "polluter pays" principle contained in the *Environmental Management Act*. A careful review of surface and subsurface interests on every site is conducted in an attempt to identify the party responsible for the pollution. The provincial government may be responsible for cleaning up a contaminated site on provincial land *only when* a previous owner, polluter, or person responsible cannot be identified.

Expenditures

A total of $116.5 million has been budgeted by the B.C. Government for the management of the province's contaminated sites since 2001, including $22.6 million for the upcoming 2006 – 2007 fiscal year. An additional $47.2 million is a planned expenditure for 2007 – 2009.

FUNDING FOR SITE INVESTIGATIONS, REMEDIATION COMPLETED AND SITES WHERE REMEDIATION IS UNDERWAY TO DATE:

TYPE OF PROJECT (YEAR INITIATED)	NUMBER OF SITES	FUNDING ALLOCATED
Site Investigations		
2005/06	14	$ 478,690
Total	14	$ 478,690
Remediation Completed		
2005/06	2	$ 3,750,000
Total	2	$ 3,750,000
Remediation Underway		
2003/04	2	$ 173,000,000
2004/05	1	$ 14,000,000
2005/06	1	$ 25,000
Total	4	$ 187,025,000 *

** The majority of this funding has been allocated to the Britannia Mine and Pacific Place projects.*

Yankee Girl

Goose Bay – Hazardous material removal

A look to the future

Since the Crown Contaminated Sites Program was established in 2003, it has made significant progress in taking action on contaminated sites in B.C.

With the government's commitment to a three-year program budget, the Crown Contaminated Sites Branch will continue to work with project partners to clean up contaminated sites and reverse the legacy of pollution left decades ago.

In its November 2004 follow-up report, the Office of the Auditor General of British Columbia reported on progress made after its initial recommendation to establish a central arm of government to provide clear direction and management of the province's Crown contaminated sites. Three major recommendations were made—to identify a lead agency to take on this work, to develop needed information including a prioritized system to manage contaminated sites, and establish an accountability framework—and these have been successfully implemented.

Considerable progress is expected over the next three years as existing sites are evaluated and assessed and new sites are identified. As contaminated sites are cleaned up and their value to human health and the environment is proven to the communities in which they're located, it is expected momentum will grow in continuing this valuable work.

Contact us

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