Federal Contaminated Sites Action Plan
Annual Report
2005-2006

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Executive Summary

The 2004 federal budget included a commitment of $3.5 billion in multi-year funding to address federal contaminated sites, resulting in the establishment of the Federal Contaminated Sites Plan (FCSAP) program in May 2005. The FCSAP is a collaborative effort among federal departments, agencies and consolidated Crown corporations to ensure effective risk management and/or remediation of the highest risk contaminated sites. These sites include those that are the result of historic federal actions or operations, and those that are now the direct responsibility of the federal government, such as abandoned mines in the North.

FCSAP, which expands on the previous Federal Contaminated Sites Accelerated Action Plan (FCSAAP), provides a mechanism to accelerate the remediation or risk management of these higher-risk federal contaminated sites, thereby reducing their associated financial liabilities. Environment Canada and the Treasury Board Secretariat jointly administer the FCSAP Program. The FCSAP Secretariat is located within Environment Canada, and is the centre of the coordination activity.

Fiscal year 2005-2006 represented the first year of the FCSAP program. With the groundwork that had been laid in the prior two years under the accelerated plan, FCSAAP, this new enhanced program has provided the federal government with the increased funding and a longer term (15 year) commitment with the similar objectives to the initial program. These include the reduction of human health and ecological risks at specific highest risk contaminated sites and the reduction of their associated financial liabilities.

The following enhancements were made to the initial program in fiscal year 2005-2006 to intensify action on federal contaminated sites:

- the eligibility criteria were expanded to include both Class 1 (Action required) sites and Class 2 (Action likely required) sites as defined under the Canadian Council of Ministers of the Environment (CCME) National Classification System for Contaminated Sites.
- eligibility was extended to include consolidated Crown Corporations thus providing a mechanism to further reduce federal financial liabilities.
- available funding for the completion of assessment activities increased five-fold from $4.48M in 2004-2005 to $25M per year in the new program.
- Public Works and Government Services Canada (PWGSC) was added as an expert support department to provide advice on project management, innovative technologies and industry liaison.
- linkages to other government priorities were also added as secondary benefits to the program. These include Aboriginal training and employment, innovative technologies and federal Brownfield re-development.

Several key activities were also undertaken in this fiscal year that will set the course for progress in future years including the development of new program policies and procedures for effective program implementation, and development of guidance and training materials for custodians to ensure inter-departmental consistency in program and project implementation.

This strong foundation has resulted in an almost two-fold increase in the number of priority contaminated sites where work was undertaken in the first year of this expanded program. The results obtained in 2005-2006 also show a significant increase in the number of assessment projects where work was carried out.

Fiscal year 2005-2006 - by the numbers…

$155.65	million in total FCSAP expenditures, including Federal Contaminated Sites Projects, Program Management, and Secretariat/Expert Support Services
$130.45	million of FCSAP program funds spent on contaminated sites care and maintenance and remediation/risk management projects
$22.22	million of federal custodian funds spent on FCSAP-funded care and maintenance and remediation/risk management projects
$11.63	million of FCSAP Program funds spent on assessment projects
98	Priority care and maintenance and remediation/risk management projects funded
660	Assessment sites funded (as 183 projects)

Over the 2005-2006 fiscal year, the Government of Canada recorded an increase of 5% in the accrued liability related to contaminated sites (from $2.87M to $3.01M). This is expected given that the five-fold increase in available funding to complete assessment work also identifies new sites where remediation/risk management work may be necessary. The increased assessment funding results in a more accurate estimate of the federal financial liabilities due to federal contaminated sites. However, as the program progresses and all sites requiring assessments are completed, it is expected that its impact on increasing the liabilities will taper off.

If you have questions or comments on this report, or wish to obtain additional copies, please contact:

FCSAP Secretariat
Contaminated Sites Division
Environmental Protection Operations Directorate
Environment Canada
70 Crémazie Street, 6th floor Gatineau, Québec K1A 0H3
Tel: (819) 934-2155
Fax: (819) 994-0502
E-mail: fcsap.pascf@ec.gc.ca

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1.0 Introduction

The Federal Contaminated Sites Action Plan (FCSAP) was created following the 2004 federal budget commitment of $3.5 billion in multi-year funding to address high-priority federal contaminated sites. The FCSAP program was approved in 2005 as a 15-year, cost-shared program whose aim is to support federal departments, agencies and consolidated Crown corporations (custodians) in reducing the risks to human health and the environment, on the contaminated sites for which they are responsible. The FCSAP is a collaborative effort among custodians to identify, assess and prioritize contaminated sites and ensure that they are managed effectively based on the level of risk they pose to human health and the environment. This fiscal year (2005-2006), 14 custodians were involved with the program.

The FCSAP program has a number of objectives:

1. Remediate and/or risk manage federal contaminated sites classified as requiring action or likely to require action under the National Classification System (NCS) or an accepted alternative classification system (i.e., Class 1 and 2);
2. Reduce federal financial liability, or in the case of care and maintenance sites, prevent increases in federal financial liability related to known federal contaminated sites;
3. Reduce human health and ecological risks at the highest risk federal sites; and
4. Increase public confidence in the overall management of federal contaminated sites and in the remediation/risk management of individual federal contaminated sites.

A contaminated site is defined as a site at which substances occur at concentrations: (1) above background levels (background is defined as an area not influenced by chemicals released from the site under evaluation) and pose or are likely to pose an immediate or long-term hazard to human health or the environment, or (2) exceeding levels specified in policies and regulations.[1] Federal contaminated sites are a result of past practices for which environmental consequences were not appreciated but which may pose significant human health and ecological risks to communities, wildlife and fisheries. These sites include, but are not limited to, harbours and ports, military bases, Distant Early Warning (DEW) line sites, Lightstations and First Nation reserve lands. The federal government also manages contamination at sites on Crown land that were contaminated by others, but are now the responsibility of the federal government, such as abandoned mines in the North.

The FCSAP builds on the previous two-year Federal Contaminated Sites Accelerated Action Plan. Prior to the creation of the two-year program, the majority of departments and agencies reallocated funding from other priorities in order to risk-manage or remediate federal contaminated sites. These funding reallocations have been estimated at $100 million per year.[2] Most of this spending was concentrated in a small number of departments who were responsible for the highest proportion of contaminated sites in the Federal House.

Fiscal year 2005-2006 was the first year of the enhanced program, the FCSAP. Key program changes and augmentations included:

- The inclusion of consolidated Crown corporations as eligible custodians to access program funding ;
- The expansion of program eligibility criteria to include Class 2 sites and those sites with total project cost estimates under $1million;
- An increase in the maximum total funding available for assessment projects (up to $25M), as well as a significant increase in available funding for priority projects;
- An increase in flexibility for custodians to transfer funds between assessment and priority projects;
- Public Works and Government Services (PWGSC) was added to the group of expert support departments providing technical support to the FCSAP Secretariat and custodians.

For more details on the eligibility criteria and funding formula, please refer to Appendix 1 - FCSAP Project Selection Methodology and Appendix 2 - Evaluation of Human Health and Ecological Risks at Federal Contaminated Sites.

[1] "A Federal Approach to Contaminated Sites", developed by the Contaminated Sites Management Working Group, November 1999.
[2] "Taking Action on Federal Contaminated Sites: An Environmental and Economic Priority", Environment Canada, July 2005, page ii

1.1 Program Structure

The FCSAP complements ongoing federal contaminated sites management activities undertaken by custodians. Program funding is intended to be applied to those priority sites where the nature and mobility of the contaminants represent the highest risk to human health and the environment. Responsibility and accountability for managing contaminated sites rests with custodians. Custodians are the project champions and are responsible for program delivery by identifying and prioritizing sites of concern; conducting risk evaluations, developing risk management/remediation plans and project funding proposals consistent with their Contaminated Sites Management Plans; delivery of approved projects; and for achieving their contaminated sites management objectives as set out in their Contaminated Sites Management Plans and their project proposals. Custodians are also expected to maximize linkages to other areas such as Aboriginal training and employment, innovative technology usage and federal brownfields, where possible.

Environment Canada (EC) and the Treasury Board Secretariat (TBS) jointly administer the FCSAP program. The FCSAP Secretariat is housed in EC and serves, in conjunction with TBS, to provide program oversight, administration, coordination and progress monitoring. The FCSAP Secretariat administers the non-financial aspects of the program, including management of the project selection process, secure website development and maintenance, communications, reporting and progress monitoring. TBS ensures consistency with Treasury Board policies on the management of federal real property, including federal contaminated sites, reviews the financial aspects of proposals, assesses custodian's reallocation capacity, administers the Fund and advises the FCSAP Secretariat on the monitoring of government-wide progress in addressing federal contaminated sites funded under FCSAP.

Three science-based expert support departments (EC, Health Canada (HC), and Fisheries and Oceans Canada (DFO)) provide advice to the Secretariat in order to develop and promote best practices to ensure that custodians adopt a consistent approach to human health and ecological risk assessment work across the program. These three science-based expert support departments also:

- provide project-specific advice and training to custodians;
- assist in communicating the rules and policies of the program to custodians;
- assist in the development of guidance materials, and in the understanding and managing of health and ecological issues;
- liaise with provincial and territorial counterparts;
- lead and coordinate interdepartmental regional working groups;
- advise on risk management, risk communication and communication strategies, public outreach; and
- act as sources of expert knowledge related to the federal environmental laws (e.g., Canadian Environmental Protection Act, Fisheries Act, Species at Risk Act, *Canadian Environmental Assessment Act* (CEAA), etc).

These three departments also carry out their respective mandates related to regulatory compliance. EC and HC focus on improving and promoting environmental and health risk assessments as a key part of the project selection process, while DFO ensures that prior, post and current site remediation or risk management activities do not further compromise any fish or fish habitat resources.

As a new program addition in 2005-2006, PWGSC provides expert support to the program through the development of project management tools for use by custodians to assist in the successful implementation of remediation projects. PWGSC also acts as the lead department in disseminating information on innovative technologies such that custodial departments, other levels of government and industry can benefit from these technological advances and program implementation. As well, PWGSC acts as industry liaison so that industry is aware of and can build capacity to meet future demand under the program.

Two other departments, Industry Canada and Human Resources and Social Development Canada (HRSDC) provide support to the program related to their specific mandates. Industry Canada works to optimize the participation of the Canadian remediation industry and to facilitate the introduction and use of innovative remediation technologies at federal sites. HRSDC, on the other hand, provides support to the program through maximizing socio-economic linkages such as labour market supply and demand side studies and promoting training and employment opportunities.

Two interdepartmental groups provide support to the FCSAP program:

1. **Federal Contaminated Sites Steering Committee.** The Steering Committee is an Assistant Deputy Minister (ADM)-level interdepartmental group overseeing the implementation of the FCSAP program. It is co-chaired by EC and the TBS and is composed of representatives from all federal custodians with contaminated sites, expert support departments as well as other departments, agencies and consolidated Crown corporations with an interest in the program. The Steering Committee oversees program implementation and is responsible for setting project priorities, monitoring progress and providing recommendations on the funding of sites under FCSAP. The Steering Committee recommends strategic direction, approves workplans of the Secretariat and expert support departments, guides the development of the strategic plan, approves funding options and makes funding recommendations.
2. **Contaminated Sites Management Working Group (CSMWG).** The CSMWG was originally established in 1995 to investigate and propose a common federal approach for the management of contaminated sites under federal custody and related issues. This working-level committee comprises all federal custodians with contaminated sites and the expert support departments. CSMWG has contributed to the development of procedures, tools, guidance and other key FCSAP program outputs, as well as reviewing the list of high-risk sites.

1.1 Program Administration

The FCSAP was developed as a comprehensive, 15-year program to support federal custodians in reducing risks to human health and the environment by addressing higher risk federal contaminated sites as well as reducing federal financial liabilities associated with these sites. FCSAP funds can be used for site assessment, remediation/risk management, and care and maintenance activities. Sites eligible for remediation/risk management funding must have been classified as Class 1 or 2 as defined by the Canadian Council of Ministers of the Environment (CCME) NCS[3].

In recognition of the "polluter pays" principle underlying the program, the FCSAP operates on a cost-shared basis with custodians. To assist custodians in classifying their contaminated sites, assessment funding is available through the FCSAP at an 80/20 (FCSAP/custodian) cost-share, up to a program maximum of $25 million per year. For remediation/risk management, and care and maintenance (R/RM/CM) projects with total estimated project costs of $10 million or less, the cost-share is also 80/20 ratio (FCSAP/custodian). However, once estimated project costs for R/RM/CM projects exceed $10 million, the custodian's share is reduced to 10% on the amount exceeding $10 million, with the balance eligible for FCSAP funding. Certain exceptionally large projects with total costs in excess of $90 million may be eligible for full funding of project costs.

The FCSAP Secretariat and expert support departments review the projects submitted by custodians against the selection criteria (see Appendix 1: FCSAP Project Selection Methodology). Funding options are developed in consultation with the CSMWG. The list of priority sites is expected to change in future years as remediation/risk management projects progress, newly assessed sites are considered, and remediation/risk management plans are fine-tuned.

1.3 Program Resources

The February 2004 Speech from the Throne and the 2004 Budget committed $3.5 billion in multi-year funding to address contaminated sites for which the Government of Canada is responsible. Subsequently,

[3] The Canadian Council of Ministers of the Environment (CCME) provides the principal forum among governments in Canada for the joint development of environmental policies and technical guidance for environmental management. The National Classification System (NCS) is a screening tool for the evaluation of contaminated sites according to their current or potential adverse impacts on human health and the environment. Sites are classified as:

- Class 1 – Action Required
- Class 2 – Action Likely Required
- Class 3 – Action May Be Required
- Class N – Action Not Likely Required
- Class I – Insufficient Data

in 2005, the FCSAP was created as a 15-year funding program, and a national amount of $1.4541 billion over five years was approved as the first increment of this $3.5 billion.

In 2005-2006, funding was approved for assessment projects, remediation/risk management projects, care and maintenance projects, program management activities, and program support activities for expert support departments, the FCSAP Secretariat, and the TBS. Up to $190 million was available for allocation to remediation/risk management, care and maintenance and assessment projects in 2005-2006, with no more than $25 million of this amount to be used to conduct assessment projects. Custodians requested a total of $153 million of the $190 million available in 2005-2006.

In order to give custodians the flexibility to better manage their contaminated sites programs, the FCSAP program allowed custodians to internally reallocate FCSAP funds in-year, among care and maintenance, remediation/risk management and assessment projects, to a maximum of the greater of $100,000 or 5% of their FCSAP funds for care and maintenance and remediation/risk management projects. This provides custodians with the flexibility to respond to unforeseen circumstances within a fiscal year, while continuing to make progress and meet the requirements of the FCSAP program.

1.4 Project Types

Three types of projects are funded under the FCSAP program: assessment, care and maintenance, and remediation/risk-management.

Assessment Projects – Funding assessment work is an important part of the FCSAP program. Assessment projects involve detailed analysis to identify the nature and extent of the contamination at the site, which helps determine the risks to human health and the environment. A full-scale assessment of the severity of contamination for a specific site is a lengthy and complex process (see steps 1 to 5 in the *Ten Step Process*). By assessing contaminated sites, the federal government is able to develop a more accurate estimate of the level of financial liability it faces.

Remediation/Risk Management Projects – A remediation/risk management project plan describes the various alternatives under consideration and identifies the preferred option to reduce the risk to human health and the environment. This plan is developed for priority sites after a site assessment is completed. The chosen remediation method is designed to address the unique conditions at the site where it will be implemented. Common remediation activities involve reducing exposure to dangerous contaminants by removing, destroying or containing them. A site has been properly addressed when the remediation and/or risk management plan has been implemented. Long-term monitoring, where necessary, would then be undertaken.

An important element of the remediation process is public consultation and information sharing, especially with communities in close proximity to projects where work has or will be done. Custodians share information with surrounding communities by holding public information sessions, workshops, and undertake other communication activities.

Care and Maintenance Projects – Care and maintenance activities are initiated in exceptional circumstances to prevent severe environmental damage or catastrophes from occurring before a site assessment is completed and/or an action plan developed. These activities are undertaken to avoid an imminent environmental disaster that would harm human and wildlife populations. They are typically implemented at abandoned or idled mines or other large properties where there is extensive contamination.

Short-term care and maintenance measures are used to reduce or prevent the spread of contamination while remediation options can be fully developed and studied (see steps 5 to 7 in the *Ten Step Process*). These projects involve managing health and environmental concerns and maintaining necessary infrastructure such as retaining structures and other risk management measures used to collect and treat contaminated water. Various methods and approaches can be used depending on the circumstances, including:

- monitoring the site,
- posting warnings,
- restricting access to the site,
- changing land use patterns at or around the site,
- isolating contaminants or pollutants by stabilizing them,
- erecting barrier walls,
- capping the site, and
- partial remediation.

The approach to each site differs depending on the nature of the risks that are present. It should be noted that care and maintenance projects are treated under the same funding envelope as remediation projects because project selection is based on health and environmental risks/impacts for both categories.

Progress in managing FCSAP projects is tracked according to the ten steps of the CSMWG *Federal Approach to Contaminated Sites* (see box at right).

Managing a contaminated site is a complex and multifaceted undertaking, particularly on large or highly contaminated sites. Contaminated sites may contain various types of contaminants in different media (e.g., soil, groundwater). This variability may require that different remediation activities be undertaken at different times throughout the project lifecycle, which can impact how progress is described. Additionally, activities on contaminated sites do not necessarily progress in the linear manner described by the Ten Step Process. This is particularly true for sites undergoing care and maintenance activities, where it may be necessary to urgently carry out activities that are normally undertaken in later steps to prevent a severe environmental event from occurring, even though activities that are part of earlier steps may not have been completed.

Federal Approach for Addressing Contaminated Sites -Ten-Step Process

Step 1 – *Identify Suspect Sites:* Identifies potentially contaminated sites based on activities (past or current) on or near the site.

Step 2 – *Historical Review:* Assembles and reviews all historical information pertaining to the site.

Step 3 – *Initial Testing Program:* Provides a preliminary characterization of contamination and site conditions.

Step 4 – *Classify Contaminated Site Using the CCME National Classification System:* Prioritizes the site for future investigations and/or remediation/risk-management actions.

Step 5 – *Detailed Testing Program:* Focuses on specific areas of concern identified in Step 3 and provides further in-depth investigations and analysis.

Step 6 – *Reclassify the Site Using CCME National Classification System:* Updates the ranking based on the results of the detailed investigations.

Step 7 – *Develop Remediation/Risk Management Strategy:* Develops a site-specific plan to address contamination issues.

Step 8 – *Implement Remediation/Risk Management Strategy:* Implements the site-specific plan that addresses contamination issues.

Step 9 – *Confirmatory Sampling and Final Reporting:* Verifies and documents the success of the remediation/risk-management strategy.

Step 10 – *Long-Term Monitoring:* If required, ensures remediation and long-term risk-management goals are achieved.

Source: A Federal Approach to Contaminated Sites, 1999.

Note: The Steps indicate the stage a site is at, and not the effort associated with each Step. Much more time and energy is required to complete Step 8 than any other step.

2.0 2005-2006 Program Achievements – FCSAP Projects

In 2005-2006, 14 custodians undertook activities at 9 care and maintenance projects, 89 remediation/risk management projects and 183 assessment projects. The table below outlines the number of assessment, care and maintenance and remediation/risk management projects and the total FCSAP expenditures for each custodian.

Table 1: ***FCSAP Project Expenditures by Custodian***

Custodian	Assessment		Care and Maintenance		Remediation / Risk Management	
	Number	FCSAP funds spent	Number	FCSAP funds spent	Number	FCSAP funds spent
Agriculture and Agri-Food Canada (AAFC)	13	563,200	--	--	--	--
Canada Border Services Agency (CBSA)	--	--	--	--	1	515,076
Canadian Food Inspection Agency (CFIA)	3	29,172	--	--	--	--
Correctional Service Canada (CSC)	13	480,000	--	--	2	8,874
Environment Canada (EC)	13	375,985	--	--	1	1,771,051
Fisheries and Oceans (DFO)	22	2,353,050	--	--	36	832,111
Health Canada (HC)	--	--	--	--	4	1,128,338
Indian and Northern Affairs Canada (Indian and Inuit Affairs Program) (INAC-IIALB)	14	1,738,913	--	--	12	4,249,798
Indian and Northern Affairs Canada (Northern Program) (INAC-NAP)	13	623,806	9	51,102,723	10	18,405,822
National Defence (DND)	13	2,794,324	--	--	17	42,742,674
Natural Resources Canada (NRCan)	5	83,767	--	--	--	--
Parks Canada Agency (PC)	23	828,735	--	--	2	620,000
Public Works and Government Services Canada (PWGSC)	22	1,054,495	--	--	--	--
Royal Canadian Mounted Police (RCMP)	23	183,099	--	--	--	--
Transport Canada (TC)	6	522,184	--	--	4	9,074,530
Total	**183**	**11,630,730**	**9**	**51,102,723**	**89**	**79,348,274**
Total FCSAP Funds Spent on Assessment, Care and Maintenance and Remediation/Risk Management Projects	**142,081,727**					

2.1 FCSAP Program Priority Sites

2.1.1 FCSAP Program Funding Approvals and Expenditures

Table 2 provides the approved FCSAP funding and a summary of the actual FCSAP fund and custodian expenditures, demonstrating that 80/20 and 90/10 funding agreements were upheld or surpassed. Certain exceptionally large projects received 100% FCSAP funding.

Table 2: ***Summary of Project Funding Approvals and Actual Expenditures for FY 2005-2006***

Project Type	FCSAP Funding Allocated	Project Work Undertaken in Fiscal Year 2005-2006				
		Number of Projects	Number of Sites	FCSAP Fund Expenditures	Custodian Expenditures	Adjusted Cost Share (FCSAP / Custodian) [4]
Care and Maintenance	$51.29M	9	9	$51.10M	$3.14M	80/20
Remediation / Risk Management (Steps 6-9)	$87.39M	89	126	$79.35M	$19.08M	81/19
Assessment (Step 1-6)	$14.30M	183	660	$11.63M	$3.76M	76/24
TOTAL	**$152.98M**			**$142.08M**	**$25.98M**	

2.1.2 Assessment Projects

In addition to conducting care and maintenance and remediation/risk management activities for 98 priority projects, FCSAP funding was spent on 183 assessment projects. In some cases, a project is composed of more than one site. For example, in 2005-2006, the Indian and Inuit Affairs Program of Indian and Northern Affairs Canada undertook work on an assessment project called "I Sites Investigation project" representing a total of 73 sites. FCSAP funds for assessment projects are allocated annually.

Most projects that receive assessment funding from FCSAP undergo Steps 1- 6 of the *Ten-Step Process*. Funding of assessment projects is an important part of the FCSAP program, as it involves a detailed identification and analysis of the nature and extent of contamination. This helps determine the risks to human health and the environment, and thereby to obtain a more accurate estimate of the level of financial liability.

Table 3 provides a breakdown of the assessment projects and sites that were carried out in each province or territory. The largest number of assessment sites worked on in 2005-2006 was in British Columbia (198 sites), and this was in large part due to the 106 assessment sites worked on in this province by DFO. Table 4 provides a breakdown of the number of assessment projects and sites by custodian. DFO undertook the most assessment sites in 2005-2006.

[4] Three Care and Maintenance projects (Faro Mine, Colomac Mine and Giant Mine) and three Remediation/Risk Management projects (5 Wing Goose Bay, TCE Valcartier and DYE-M Cape Dyer DEW Line) received 100% FCSAP funding. These projects were therefore removed from the cost share calculation.

Table 3: Number of Assessment Projects and Sites by Province/Territory

Province / Territory	Number of Projects	Number of Sites	FCSAP Funds Spent ($)
British Columbia	18	198	1,161,698
Alberta	16	34	1,360,130
Saskatchewan	4	4	207,265
Manitoba	8	9	232,274
Ontario	30	126	3,138,549
Quebec	42	107	2,043,289
New Brunswick	9	20	191,295
Nova Scotia	11	85	621,770
Prince Edward Island	4	16	118,925
Newfoundland	15	35	508,570
Northwest Territories	10	10	506,670
Yukon	7	7	851,021
Nunavut	8	8	617,815
Canada-wide*	1	1	71,459
TOTAL	**183**	**660**	**11,630,730**

*The Active Firing Ranges assessment project was undertaken by Correctional Services Canada across the country.

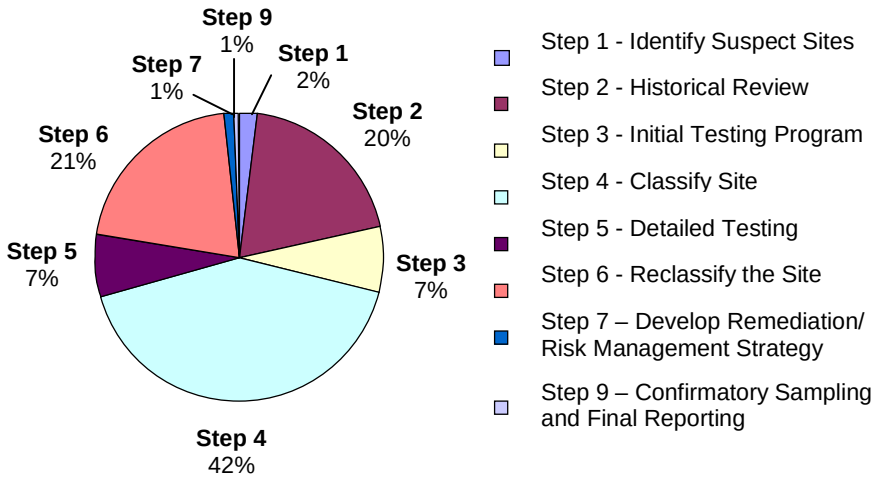
Table 4: Number of Assessment Projects and Sites by Custodian

Federal Custodian	Number of Projects	Number of Sites	FCSAP Funds Spent ($)
Agriculture and Agri-Food Canada	13	13	563,200
Canadian Food Inspection Agency	3	3	29,172
Correctional Services Canada	13	13	480,000
Department of Fisheries and Oceans	22	365	2,353,050
Department of National Defence	13	14	2,794,324
Environment Canada	13	15	375,985
INAC** (Indian and Inuit Affairs Business Line)	14	100	1,738,913
INAC** (Northern Affairs Program)	13	13	623,806
Natural Resources Canada	5	5	83,767
Parks Canada Agency	23	66	828,735
Public Works and Government Services Canada	22	23	1,054,495
Royal Canadian Mounted Police	23	23	183,099
Transport Canada	6	7	522,184
TOTAL	**183**	**660**	**11,630,730**

**INAC = Indian and Northern Affairs Canada

Figure 1 provides an overall picture of the last step in which work was undertaken for FCSAP assessment projects that received funding in 2005-2006. If we consider Steps 1 to 4 as the first "stage" of assessment work (which includes the historical review, the first intrusive testing and the first time the site is classified), then 71% are within or have completed this first stage. Similarly, if we consider Steps 5 and 6 to represent the second "stage" of assessment work (which includes more intrusive testing and re-classification), then 28% are within or have completed this second stage. Occasionally, the last step reported for an assessment project is beyond Step 6, the normal end point for the funding of an assessment project. If the contamination is minimal, it is often more efficient and cost effective to develop the remediation/risk management strategy right after completion of the assessment work. In other cases it is more cost effective, particularly at small remote sites with limited contamination, to undertake the remediation activities at the same time as the assessment activities. This approach is appropriate, for example, for projects such as Environment Canada's hydrometric stations.

Figure 1: Status of FCSAP Assessment Projects by Step



Royal Canadian Mounted Police (RCMP): Assessments across Canada

The RCMP real property portfolio includes 2,300 properties across Canada (as of October 2006). The facilities on these properties include employee housing units, police detachments, administrative offices, training facilities, firearms ranges, air hangars, warehouses and storage facilities, communication sites and laboratories.

Through FCSAP, RCMP is conducting assessments at each of its suspected contaminated sites in order of priority. The highest priority sites are those with known contamination due to reported spills on the site, followed by sites with ecologically sensitive features or high-risk activities such as laboratories, post garage operations, air or marine services, firing ranges, or sites with aging storage tanks.

In 2005-2006, RCMP completed 23 assessment projects across Canada, most of which were historical reviews (Phase 1 environmental site assessments) to identify potential contaminants and environmental concerns.

Contamination found on RCMP properties differs by property type but generally, hydrocarbons are the most prevalent contaminant and are typically associated with storage tanks on site. Other common contaminants include heavy metals and pesticides.

There are several challenging factors that affect contaminated sites management planning for the RCMP. Many RCMP properties are located in northern and remote locations resulting in difficult working conditions, with limited site access and short construction seasons. Project costs are proportionately increased because sites are accessible only by air, water or winter roads. Also, access to RCMP sites requires a specialized security clearance that causes additional administrative processing for the RCMP project manager, as well as increased time for the contract period.

A total of $14,301,559 was approved for assessment activities in 2005-2006. As shown in Table 2, custodians contributed funds amounting to $3,763,400 and utilized $11,630,730 of FCSAP funding for assessment activities. As indicated in the financial table in Appendix 3b, the difference between planned and actual expenditures for assessment projects overall was $2,731,865, after adjusting for the funds transferred from the previous fiscal year ($61,036[5]). The variance is due to the following factors:

1. Custodians who received funds and could not complete the assessment work in 2005-2006 rescheduled the work for the next season and transferred unspent FCSAP funds in the amount of $275,153[6] to fiscal year 2006-2007.
2. The Department of National Defence spent $831,276 of FCSAP assessment funds on their remediation/risk management projects.
3. Indian and Northern Affairs Canada (Indian and Inuit Affairs Business Line) spent $382,734 of their FCSAP remediation/risk management funds on their assessment projects.
4. FCSAP funds in the amount of $2,007,933 were not spent. One cause of this was a delayed access to funding as a result of the federal election, which was called in November 2005. This meant that custodians did not have access to FCSAP assessment funding until after the peak work season was over, and they therefore, scaled back their work plans.

[5] Two custodians transferred FCSAP assessment funds from fiscal year 2004-2005 to 2005-2006 in the amount of $32,021 (Royal Canadian Mounted Police and $29,015 (Parks Canada). During fiscal year 2005-2006 reporting, Parks Canada adjusted the amount of funding that they transferred from fiscal year 2004-2005 to 2005-2006 from $18,620 to $29,015. As well, Correctional Service Canada had identified that $187,866 of their assessment funds would be brought forward from 2004-2005 to 2005-2006, however, these funds were spent on remediation projects in 2005-2006. Therefore, this adjustment amount has been included in the calculation of the remediation/risk management variance. As a result of these modifications, the total amount of assessment funding brought forward from 2004-2005, as reported in the 2004-2005 FCSAP Annual Report was adjusted from $238,507 to $61,036.

[6] Three custodians transferred FCSAP assessment funds from fiscal year 2005-2006 to 2006-2007 in the amount of $224,231 (Parks Canada), $42,000 (Natural Resources Canada), and $8,922 (Royal Canadian Mounted Police).

Variance between planned and actual expenditures for individual assessment projects can be attributed to a variety of factors including the reallocation of funding from previously approved sites to address a more urgent assessment requirement, shifting custodian demands or priorities and the difficulty in initial estimation of the projected costs of assessments as the nature and extent of contamination is unknown at the outset of the project.

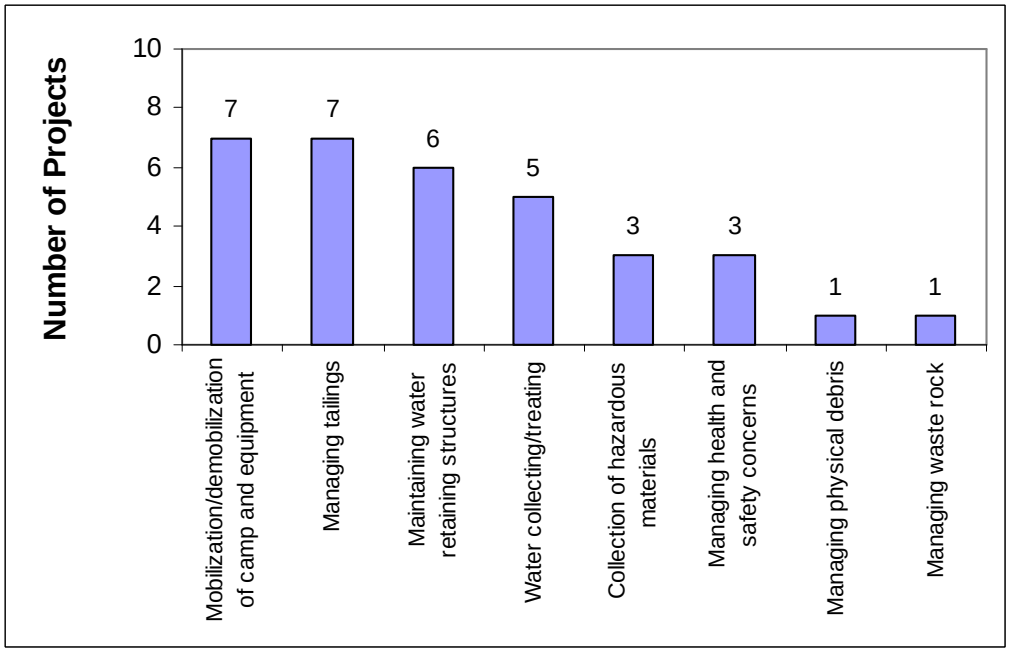
The Secretariat has identified a number of gaps in the reporting of assessment projects. The information gaps include inconsistent reporting of site classification, Federal Contaminated Sites Inventory number, and results of assessment. These issues will be resolved for future reporting exercises.

2.1.3 Care and Maintenance Projects

In 2005-2006, nine care and maintenance projects were funded under the FCSAP program. Many of these projects are abandoned/idle mines in the North that are now the responsibility of INAC. When private owners relinquished their properties according to the legislation of the day, or when companies went bankrupt, many of these sites became the responsibility of the Government of Canada, under the custodianship of INAC.

Figure 2 shows the breakdown of care and maintenance activities that occurred on FCSAP-funded care and maintenance projects in 2005-2006. On some projects more than one type of care and maintenance activity was undertaken.

Figure 2: Care and Maintenance Activities



Note: Other activities include vibration and air quality monitoring and the geotechnical inspection of dams.

In 2005-2006, $51,293,584 was approved for care and maintenance projects. As shown in Table 2, over the course of the year, custodians contributed funds amounting to $3,144,299 and utilized $51,102,723 of the FCSAP funding. The difference between allocated FCSAP funding and actual expenditures is $190,861. This variance will be included in the discussion of the variance between allocated FCSAP funding and expenditures for remediation/risk management projects.

It should be noted that the categories of remediation/risk management and care and maintenance are not mutually exclusive – some of the activities that are classified as care and maintenance can be undertaken on a remediation/risk management project, and vice versa.

2.1.4 Remediation / Risk Management Projects

After completing site assessments, custodians prepare remediation/risk management action plans. Custodians oversee the development of the plan while working closely with various experts (e.g., consultants, contractors, and trades people) that are hired to design and implement the action plan. The plan identifies the various options available after considering the unique conditions on the site in question, and ultimately recommends the preferred method for reducing the risks to human health and the environment. The most common remediation activities reduce exposure to various contaminants by removing, destroying or containing them.

The implementation of the remediation/risk management plan falls under Step 8 of the *Ten-Step Process*. Step 8 is composed of a wide variety of activities which includes obtaining permits, selecting a contractor and developing an environmental quality-monitoring program for incineration activities. The step encompasses care and maintenance, remediation and risk management activities. Due to the large number and variety of activities that can be undertaken, it could be many years before a project is ready to move beyond Step 8. Projects that have moved through Step 9 in the *Ten Step Process* are considered to have been addressed, and long-term monitoring is then conducted where necessary.

Figure 3 demonstrates that the most utilized remediation activities undertaken in 2005-2006 included environmental quality monitoring (53% or 52 of 98 projects), containment/encapsulation (35% or 34 of 98 projects) and excavation (26% or 25 of 98 projects). Environmental quality monitoring is a crucial activity for a risk management plan and is used to monitor and evaluate the effectiveness of the activity being used to control or reduce the risk.

Indian and Northern Affairs Canada, Northern Affairs Program: United Keno Hill Mine, Yukon

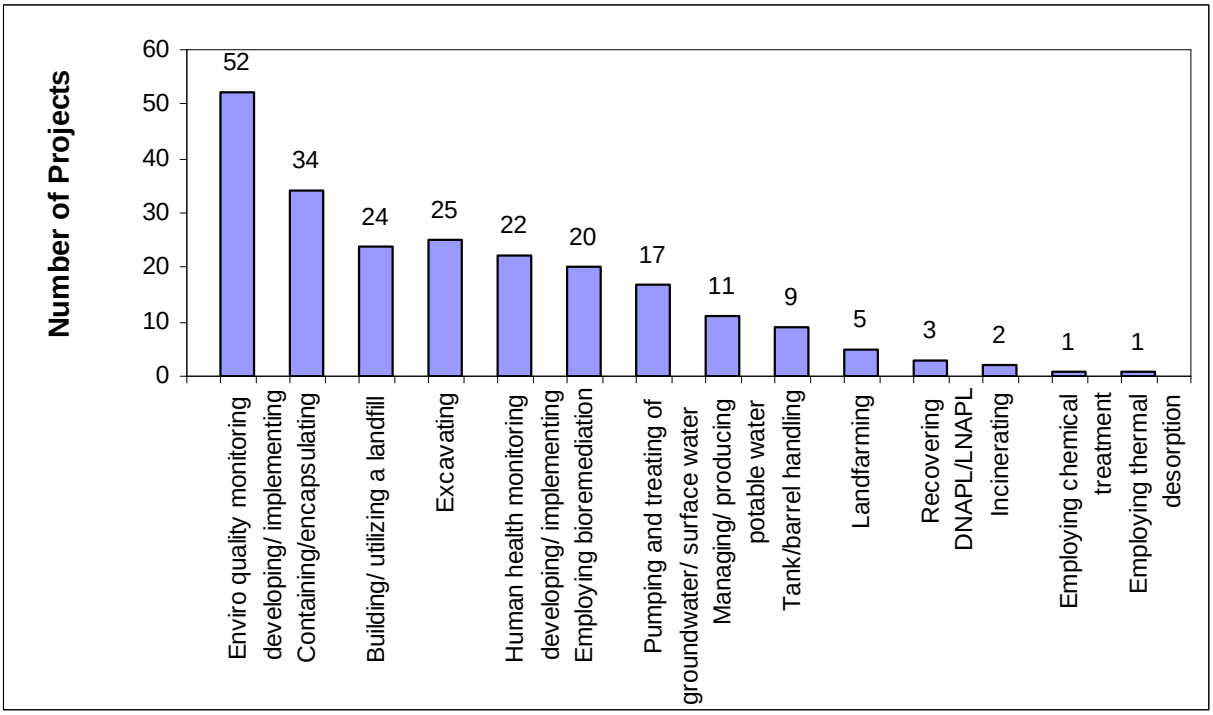
Silver and lead deposits were first discovered in 1903 at the site of the United Keno Hill Mine (UKHM), about 350 km north of Whitehorse, Yukon. The mine operated until 1989, when it closed due to low silver prices and high operating costs. A number of underground workings discharge water that is high in zinc and other metals. These waters need to be treated prior to release to the environment. Conventional lime treatment is carried out on a year round basis at four adits (a horizontal entrance to a mine) as well as in the tailings impoundment (location of material rejected from a mill after most of the recoverable valuable minerals have been extracted) during spring freshet (when ice melt causes rivers and streams to reach their peak flow).

In April 2004, the Government of Yukon and INAC put UKHM into receivership. In 2005-2006, the courts approved the sale of UKHM, and the final sale is expected to occur in 2007. The purchaser initiated a baseline environmental study in September 2005 as part of the purchase and sales agreement, and will have to conduct site assessments that will aid in the closure plan as part of its final closure plan obligations. Site remediation under the Final Closure Plan will take place in 2010-2011.

Care and maintenance activities are ongoing at a large tailings impoundment containing approximately five million tonnes of zinc bearing tailings. Remediation activities undertaken in 2005-2006 include the removal and disposal of all polychlorinated biphenlys (PCBs) and hazardous chemicals, power-line remediation (removal of abandoned poles and wires), and addressing safety issues. Water treatment and monitoring are also ongoing.

Source: Performance Report: 2005-06. Indian and Northern Affairs Canada, Contaminated Sites Program.

Figure 3: Remediation/Risk Management Activities Undertaken on Care and Maintenance and Remediation/Risk Management Projects



Transport Canada: Nitchequon Remediation Project, Quebec

The Nitchequon Site is located in northern Québec near Lake Nichicun, which is part of the La Grande River watershed. The Site is accessible only by air; the closest road being located 100 km northwest of the site. Transport Canada used the Nitchequon Site as a meteorological station from 1942 to 1985. The land is owned by the Province of Québec and is leased to The Cree Nation of Mistissini, which is interested in redeveloping the land once environmental contaminants are no longer a concern.

Extensive environmental investigations between 1997 and 2003 confirmed the presence of hydrocarbon impacted soils in several portions of the site. Groundwater was also found to be impacted with hydrocarbons. Risks to human health were found to be acceptable (negligible risks). However, risks from hydrocarbons in soil were identified to soil-dwelling organisms (bacteria, worms, etc.) and to some small species of mammals and birds.

Results from the benchscale and pilot testing demonstrated that acceptable removal of hydrocarbons from soil could be achieved using chemical oxidation with potassium permanganate in ex-situ reactors.

In 2005-06, remediation activities included decommissioning of fuel storage tanks, commencement of the chemical oxidation treatment process, and groundwater and surface water quality monitoring to evaluate potential impacts from the use of potassium permanganate (found to be negligible).

The remediation activities resulted in the treatment of 1,749 m^3 of soil and the removal of 16,577 kg of hydrocarbons. The remediation project will continue in 2006-07.

The Annual Report Expenditure tables (Appendix 3) provide an overview of FCSAP expenditures by custodian and project. As with assessment projects, some remediation/risk management projects are composed of more than one site.

As indicated in Table 2, the total funding approved in 2005-2006 for FCSAP remediation/risk-management projects was $87,390,025. Over the course of the year, custodians contributed funds amounting to $19,077,051 and spent $79,348,274 of FCSAP funding. The variance between allocated FCSAP funding and actual expenditures is $7,926,411, after adjusting for the funds transferred from the previous fiscal year ($806,260[7]), and for the funds that were not requested by Health Canada ($921,600[8]). The combined variance for remediation/risk management and care and maintenance projects is $8,117,272. This variance is due to several factors:

1. Custodians rescheduled some planned 2005-2006 work activities for the next season, transferring FCSAP funding in the amount of $6,505,373[9] to fiscal year 2006-2007.
2. The Department of National Defence spent $831,276 of their approved FCSAP assessment funding on their remediation/risk management projects.
3. INAC (Indian and Inuit Affairs Business Line) spent $382,734 of their approved FCSAP remediation/risk management funds on assessment projects.
4. FCSAP funds in the amount of $2,335,594 were not spent. One cause of this was a delayed access to funding as a result of the federal election, which was called in November 2005. This meant that custodians did not have access to FCSAP funding until after the peak work season was over, and they therefore scaled back their work plans. Other reasons for this funding not being spent can include:

    - Change in scope of work;
    - Actual costs different from estimates;
    - Some activities were postponed to future years;
    - Required access to site was not possible due to weather, transportation, or other factors; and
    - Litigation or legal issues prevented work from proceeding.

2.2 Location of FCSAP Care and Maintenance and Remediation/ Risk Management Projects

The FCSAP program supports federal custodians in addressing contaminated sites in all parts of Canada. The provincial/territorial distribution of the care and maintenance and remediation/risk management projects where work was undertaken in 2005-2006 is shown on the map on the following page (Figure 4). The relatively large concentration of remediation/risk management projects in British Columbia is due to the work being done by DFO. In 2005-2006 DFO worked on 31 projects in British Columbia as part of its risk management program for lightstations.

[7] Four custodians transferred FCSAP funds from fiscal year 2004-2005 to 2005-2006, in the amount of $288,120 (INAC, Indian and Inuit Affairs Business Line), $25,936 (Parks Canada),), $187,866 (Correctional Service Canada, which had been originally identified for assessment project expenditures in 2004-2005) and 304,338 (Health Canada). During the 2005-2006 reporting process, Parks Canada adjusted the amount of funding that they transferred from fiscal year 2004-2005 to 2005-2006 from $26,236 to $25,936. The modifications to the Correctional Service Canada and Parks Canada data increased the total amount of funding brought forward for remediation/risk management projects from 2004-2005 to 2005-2006 from $618,694 to $806,260.

[8] In order to meet their cost share requirements over the period of fiscal year 2003-2004 to 2005-2006, Health Canada did not access approved FCSAP funding in the amount of $921,600.

[9] Five custodians transferred FCSAP funds from fiscal year 2005-2006 to 2006-2007, in the amount of $2,552,974 (Transport Canada), $1,058,950 (INAC, Northern Affairs Program), $1,485,968 (INAC, Indian and Inuit Affairs Business Line), $758,992 (Correctional Service Canada), and $373,336 (Parks Canada).

In 2005-2006 the three major participants in terms of the number of remediation/risk management and care and maintenance projects were DFO (36 projects), Indian and Northern Affairs Canada (19 projects), and the Department of National Defence (17 projects). It should be noted that DFO has a larger number of small remediation/risk management projects, whereas Indian and Northern Affairs Canada and the Department of National Defence, who have fewer projects, have many large scale projects (i.e., over $1 million). The Department of National Defence and Indian and Northern Affairs Canada account for approximately 90 percent of total FCSAP expenditures on care and maintenance and remediation/risk management projects. Please refer to Appendix 3 for detailed financial information and to Table 1 for the number of projects undertaken by each custodian.

Figure 4: FCSAP Care and Maintenance and Remediation/Risk Management Projects Where Work Was Undertaken in FY 2005-2006

The table below shows the distribution of care and maintenance and remediation/risk management projects by province and territory. British Columbia has the largest number of projects, but this represents only 10 percent of expenditures. Approximately 78 percent of FCSAP expenditures for care and maintenance and remediation/risk management projects are made by the Department of National Defence and Indian and Northern Affairs Canada in the North (Northwest Territories, Yukon and Nunavut).

Table 5: Distribution of Care and Maintenance and Remediation/Risk Management Projects and Sites by Province/Territory

Province / Territory	Number of Projects	Number of Sites	FCSAP Funds Spent ($)
British Columbia	42	54	13,151,430
Nunavut	17	17	47,325,139
Northwest Territories	8	11	32,207,630
Yukon	4	4	21,361,204
Manitoba	6	10	1,764,436
Ontario	6	8	1,568,338
Quebec	6	15	5,070,880
Newfoundland	3	6	5,019,295
Alberta	2	6	234,827
Nova Scotia	2	2	2,223,671
New Brunswick	1	1	5,945
Saskatchewan	1	1	518,201
Total	**98**	**135**	**130,450,997**

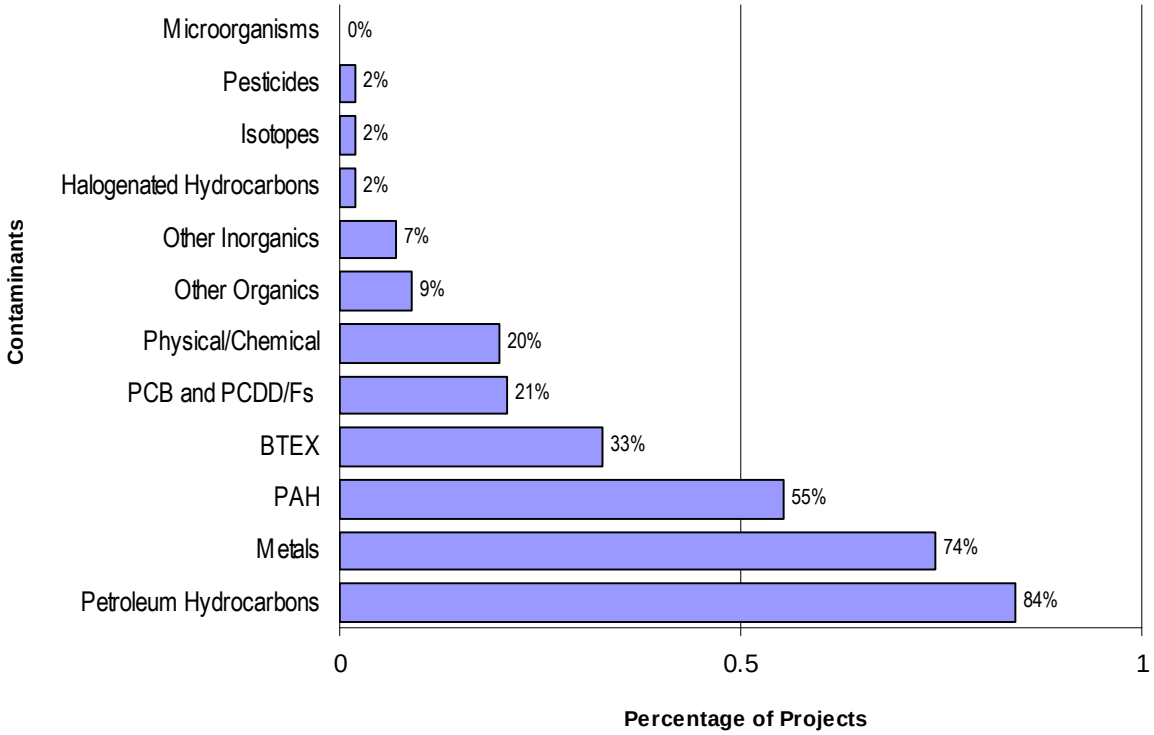
2.3 Nature of Contamination at FCSAP Funded Care and Maintenance and Remediation/ Risk Management Projects

A contaminated site is an area in which substances occur at concentrations above normally occurring background levels and pose, or are likely to pose, an immediate or long-term hazard to human health or the environment. Determining the risk posed by the presence of these substances involves identifying the potential receptors, determining potential exposure pathways and estimating the level of risk based on the pathways. Please refer to Appendix 2 for more information on how human health and ecological risks are evaluated under the FCSAP program.

These sites are primarily a result of past practices and activities the environmental consequences of which were not appreciated at the time. The size and scope of federal contaminated sites vary greatly. Examples include: abandoned mines on federal Crown land in the North, airports, government laboratories, ports, lighthouse stations, military bases and training facilities, and reserve lands.

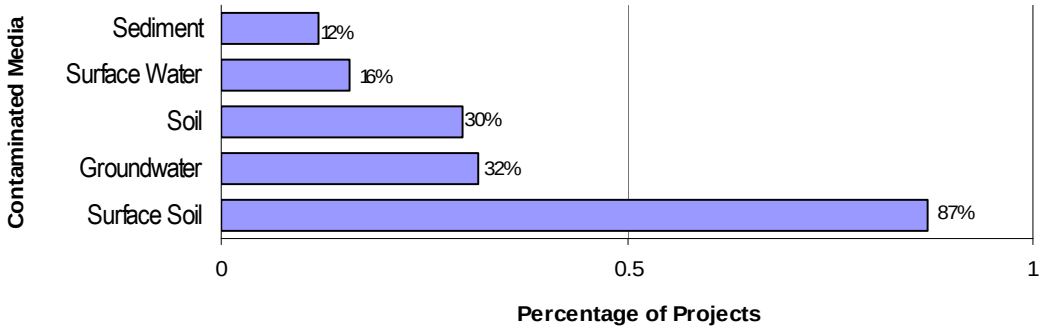
The sites targeted for FCSAP funding are contaminated with a wide variety of substances. Figure 5 depicts the distribution of different groups of contaminants across the FCSAP projects. The contamination is most often due to the presence of petroleum hydrocarbons (84 percent), metals (74 percent), and polycyclic aromatic hydrocarbons (PAHs) (55 percent). Figure 6 depicts the distribution of contamination in the different media and illustrates contaminants on FCSAP projects were most commonly found in surface soils (87 percent).

Figure 5: Types of Contamination on Remediation/Risk Management and Care and Maintenance Projects



Note: The Physical/Chemical category includes such factors as temperature, pH, turbidity, and total dissolved solids.

Figure 6: Contaminated Media on Remediation/Risk Management and Care and Maintenance Projects



2.4 Achievements at FCSAP Care and Maintenance and Remediation/ Risk Management Projects

Over the course of 2005-2006, FCSAP funded 46 new and 52 previously approved federal contaminated site projects, where activities were undertaken to reduce the risk to human health and the environment. Information on the work accomplished at each of the 98 priority projects is provided in the document "Report on Progress of FCSAP Priority Projects".

Figure 7 illustrates, using the *Ten-Step Process* (see page 10), the progress made at FCSAP-funded care and maintenance projects in 2005-2006. As demonstrated in Figure 7, projects can occasionally experience an apparent "jump" in the step that is reported at fiscal year end. This is because on large, complex projects remediation and assessment work are often done simultaneously. Remediation work may be undertaken at one of the sites in the project while at another site, there may still need to be assessment work or remediation planning work to be done. The last step completed on the project, indicated in the figure, may reflect only the most advanced part of the project. In addition, for those sites undergoing care and maintenance activities, it may be necessary to urgently carry out activities that are normally undertaken in later steps to prevent a severe environmental event from occurring, even though activities that are part of earlier steps may not have been completed.

Figure 7: Progress at FCSAP-funded Care and Maintenance Projects in FY 2005-2006

Steps in the Ten-Step Process (from the Federal Approach to Contaminated Sites)													
Federal Custodian	**Project**	1	2	3	4	5	6	7	8	9	10	**FCSAP Funds spent on Project ($) during FY 05-06**	**FCSAP Funds spent on Project ($) since FY 03-04**
Care and Maintenance													
INAC-NAP	Faro Mine											16,328,634	36,854,010
INAC-NAP	Giant Mine											10,011,900	22,587,146
INAC-NAP	Colomac Mine											11,953,068	30,784,168
INAC-NAP	Mount Nansen Mine											1,091,249	2,690,591
INAC-NAP	Silver Bear Mines											1,198,420	1,989,659
INAC-NAP	Tundra-Taurcanis Mine											2,538,894	3,746,698
INAC-NAP	United Keno Hill Mine											3,587,331	7,578,647
INAC-NAP	Discovery Mine											4,039,237	6,592,283
INAC-NAP	Clinton Creek Mine											353,990	1,758,213

: Steps completed up to the end of FY **2004-2005**

: Steps worked on during fiscal year **2005-2006**

: Step 10 - long-term monitoring

Figure 8: Progress at FCSAP-funded Remediation/Risk Management Projects in FY 2005-2006 with Project Expenditures Greater Than $1 Million

Federal Custodian	Project	Steps in the Ten-Step Process (from the Federal Approach to Contaminated Sites)										FCSAP Funds spent on Project ($) during FY 05-06	FCSAP Funds spent on Project ($) since FY 03-04
		1	2	3	4	5	6	7	8	9	10		
Remediation/ Risk -Management Projects													
INAC-NAP	Resolution Island											9,248,436	25,339,530
INAC-NAP	CAM F-Sarcpa Lake											2,987,006	3,899,235
INAC-NAP	FOX C - Ekalugad Fjord											2,783,687	3,835,548
INAC-NAP	Port Radium Mine											1,884,427	3,186,016
DND	Valcartier											2,966,662	4,936,062
DND	14 Wing Greenwood											2,173,071	2,731,330
DND	FOX-M											4,480,196	11,343,600
DND	FOX-5											5,392,955	5,392,955
DND	DYE-M											11,017,527	15,207,205
DND	Colwood											1,582,914	2,805,712
DND	5 Wing Goose Bay											3,968,632	4,455,381
DND	CAM-2											4,574,509	7,817,896
DND	CAM-3											2,077,086	2,077,086
DND	CAM-4											2,973,406	2,973,406
TC	Rock Bay											6,050,473	10,501,982
TC	Nitchequon											1,719,947	1,719,947
EC	Pacific Environmental Centre											1,771,051	3,292,074

: Steps completed up to the end of FY **2004-2005**

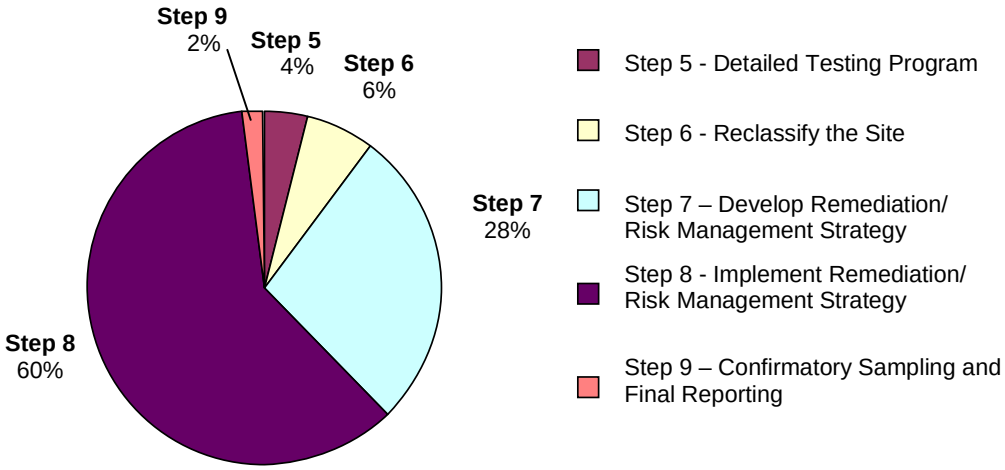
: Steps worked on during fiscal year **2005-2006**

: Step 10 - long-term monitoring

Figure 8 illustrates the progress made on the FCSAP funded remediation/risk management projects in 2005-2006 that spent $1M or more of FCSAP funds in year. As demonstrated in Figure 5, projects can also occasionally experience an apparent "back-tracking" in the step that is reported at fiscal year end. This is because on large, complex projects, new contamination is found or the extent of contamination needs to be confirmed and hence additional assessment work is undertaken. As well, decisions are sometimes made to revamp or enhance a remediation plan. The end result is that more work is required than previously planned, and consequently the last step completed or in progress at fiscal year end may have been revised to reflect this change in scope.

Figure 9 provides an overall picture of the last step in which work was undertaken as a percentage of the total number of FCSAP projects that received remediation/risk management and care and maintenance funding in 2005-2006. 60 percent of all projects are in Step 8 of the CSMWG *Federal Approach to Contaminated Sites*. Of the total amount of projects in Step 8, over half (56 percent) are DFO lightstations.

Figure 9: Status of FCSAP Care and Maintenance and Remediation/Risk Management Projects by Step



3.0 2005-2006 Program Achievements – Linkages

In addition to its primary objectives, the management of federal contaminated sites through the FCSAP program provides opportunities to maximize value for money by promoting linkages with other socio-economic priority areas. Examples of this include skills development, training and employment of Canadians, particularly in Aboriginal communities and in northern or rural areas, and competitiveness and technological advancement in the environmental industry. While custodians are generally responsible for identifying opportunities to incorporate such linkages into the assessment, remediation and management of their contaminated sites portfolio, they are broadly supported in these activities by a small number of other departments where there is alignment with their departmental mandates.

Human Resources and Social Development Canada (HRSDC) has committed to working with custodians, Aboriginal organizations, the Environmental Careers Organization (ECO), the private sector, learning institutions and other stakeholders to develop synergies between investments in the clean up of contaminated sites and the building of capacity both for individual Canadians through training and skills development, and for the environmental industry as a whole.

Similarly, through its expert support role, PWGSC, with support from Industry Canada, provides information on innovative technologies such that custodians, other levels of government and industry can benefit from the technological advances that will accrue from this long-term program. PWGSC also provides liaison with the environmental industry that will deliver the remediation services required for the program implementation such that they are aware of, and can build capacity in response to future demand.

3.1 Key Activities in 2005-2006

3.1.1 Socio-economic Linkages

HRSDC, in collaboration with custodians, has supported various initiatives to promote FCSAP socio-economic linkages in 2005-2006. Their major accomplishments in 2005-2006 included:

- Launch of the Environmental Careers Organization (ECO) Canada Contaminated Sites Demand-Side Labour Market Study
    - HRSDC and PWGSC provided funding for the ECO Canada Labour Market Demand-Side Study for the environmental industry. The purpose of the study is to identify the human resources and skills requirements associated with addressing non-federal and federal contaminated sites in Canada.
    - A National Forum on Contaminated Sites was held in March 2006 in Vancouver to increase awareness of the project and obtain feedback on preliminary research. The Forum provided an opportunity for various stakeholders, including government, academia, professional associations and industry to provide informed expert feedback regarding the development of the study methodology. The final study is expected to be released in spring 2007.
- Socio-Economic Linkages Case Studies
    - In collaboration with EC and the TBS, HRSDC completed case studies with INAC, PWGSC, DND and Natural Resources Canada (NRCan) to identify best practices in promoting the socio-economic policy linkages of FCSAP.

As the Government of Canada follows through on its commitment to support the clean up of federal contaminated sites over the coming years, there will be a significant increase in labour demand in the environmental sector. The economic injection of sustained funding to address federal contaminated sites provides the opportunity to help build over the long term, a world-class, highly skilled, Canadian environmental workforce. In 2005-06, the demand for skills and services generated by FCSAP has already helped create new jobs in the environmental sector, as the following case studies illustrate. Where appropriate, custodians applied a variety of mechanisms in support of regional economic development through FCSAP projects including the Procurement Strategy for Aboriginal Business, Aboriginal Benefits Packages, and soliciting bids locally on lower-value contracts. On northern sites, where minimum levels of

Aboriginal/Inuit employment are often dictated by Comprehensive Land Claim Agreements, targets are being met and often surpassed. When combined with activities in support of training and skills development as well as provisions for local purchasing, contaminated sites remediation projects can become important economic and social drivers in northern communities.

INAC – Northern Affairs Program (NAP)

As custodian of most federal lands in the North, INAC-NAP is responsible for managing contaminated sites in the Northwest Territories and Nunavut and for providing funding to address sites in the Yukon. In an effort to create positive social and economic impacts for people in northern communities, INAC-NAP has actively supported local Aboriginal employment and workforce training. In a sample of 15 INAC-NAP projects that submitted socio-economic performance data in 2005-2006, a total of 375 people were employed, of which 75 percent were Northerners and over 40 percent were Northern Aboriginals. A total of 93 employees received training on six projects, 86 percent of whom were Northerners and 85 percent of whom were Northern Aboriginals.

Eleven projects reported doing business with a total of 134 Northern suppliers, 28 of which were Northern Aboriginal suppliers. The total value of business from Northern suppliers was over $31 million, 50 percent of which was from Aboriginal suppliers. At Faro mine, for example, over $7 million or 70 percent of total expenditures were directed to Yukon businesses.

Resolution Island
At Resolution Island, 95 percent of project staff was Inuit in 2005-2006. Since initiation of the Resolution Island Remediation Project in 1997, an average of 70 workers has been employed for up to 13 weeks every summer. These employees have historically come from the nearby communities and represent over $15 million worth of business opportunities in Nunavut, with an estimated 30 organizations directly benefiting from the project. The historically high turn over rate (50 percent) throughout this project has shown that the skills that have been acquired while working on-site have been used at other projects and/or companies across Nunavut.

Colomac Mine
A number of INAC-NAP projects are also heavily engaged in training. For example, Colomac has entered into a partnership with the Tli Cho Government and the Mine Training Society to train up to 12 people to the apprenticeship level for heavy equipment operation and/or skilled mining trades. The Colomac Remediation Project will participate in the training program via an in-kind contribution for transportation, food and accommodation at the Colomac project for 12 apprentices and an adult educator. The program will last for four years, and the apprentices will gain two to three years experience at Colomac and complete their program of study at one of Tli Cho Logistics commercial sites.

Source: Performance Report 2005-06 Indian and Northern Affairs Canada, Contaminated Sites Program

3.1.2 Innovative Technology Linkages

The scope of FCSAP presents a valuable opportunity for the Canadian remediation industry sector to respond to the needs and challenges of cleaning up federal contaminated sites with effective new solutions.

For the purposes of the FCSAP program, the term innovative technology is initially defined as follows:

Innovative Technology
Any treatment method for soil, groundwater or vapour, excluding traditional excavation and disposal or pump and treat technologies (i.e. ex situ treatment technologies where cost and performance data is readily available.

FCSAP Expert Support for Remediation Solutions

As a function of FCSAP expert support, (1) PWGSC and (2) Industry Canada are available to assist federal custodians of contaminated sites in the selection of appropriate remediation solutions.

1. Public Works and Government Services of Canada

In 2005-06, PWGSC established a strategy to promote the more widespread use of innovative technologies within FCSAP. One of the key elements of the strategy involved the design of initiatives intended to overcome such barriers as the lack of awareness related to innovative technology performance and cost. As part of the strategy, the Technology Advancement Working Group, chaired by PWGSC, was created to engage key federal stakeholders involved in FCSAP.

PWGSC also worked towards the development of a consistent process for the collection of information related to the use of innovative technologies at federal sites. The intention is that in future years, a database will be readily available for sharing and promoting innovative technologies amongst internal and external stakeholders.

2. Industry Canada

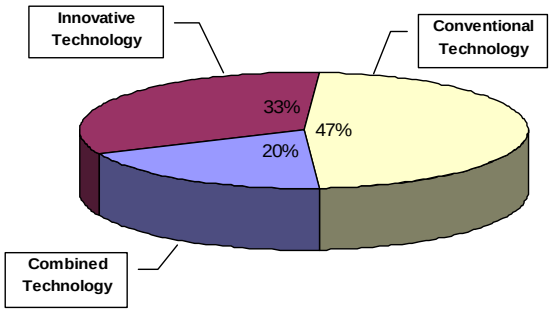
Through its mandate to strengthen the Canadian remediation industry sector, Industry Canada is involved in achieving the FCSAP objective of promoting innovative remediation technologies.

In 2005-06, Industry Canada's activities focussed on the characterization of Canada's remediation industry sector, its capabilities, and the opportunities presented by way of FCSAP. From this work, came the recommendation to have a standardized decision making process available to ensure that innovative remediation technologies are considered by federal custodians, whenever appropriate.

2005-2006 Remediation Activities and the Use of Innovative Technologies

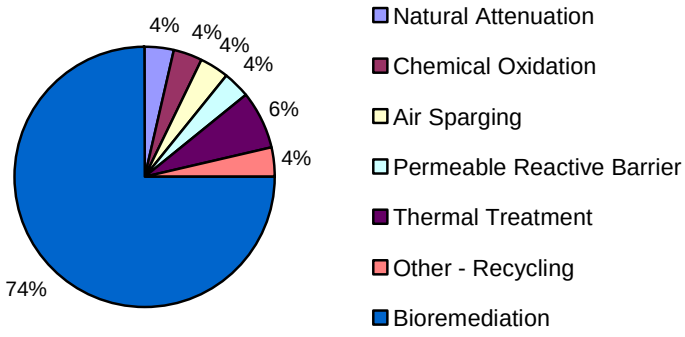
In 2005-2006, 46 of 98 Care and Maintenance (5 of 9) and Remediation/Risk Management (41 of 89) projects undertook remediation activity. Of these, 53% of the projects reported using one or more type of innovative remediation technology. Within the 53% of projects using innovative technology, 37.5% (9) used innovative technology exclusively and 62.5% (15) used a combination of innovative and conventional technologies. Entirely conventional remediation activities occurred in the remaining 47% (22) of projects. (Figure 10)

Figure 10: Conventional Versus Innovative Remediation Options



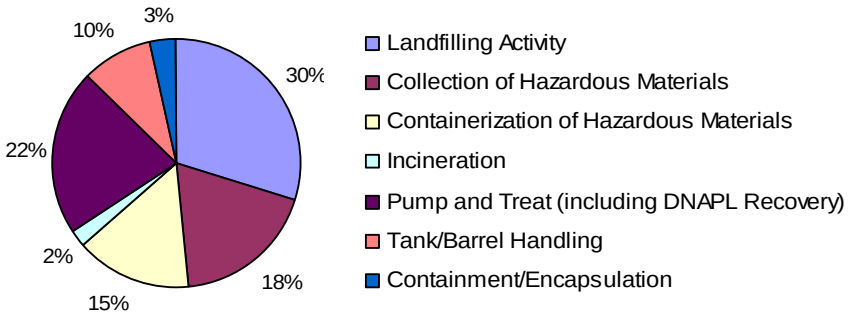
Under the current definition of innovative technology, 24 2005-2006 FCSAP-funded projects incorporated one or more of the following seven types of innovative remediation technologies: bioremediation (onsite and/or offsite), thermal treatment (including desorption and ground freezing), chemical reduction/oxidation, the use of permeable reactive barriers, monitored natural attenuation, air sparging, and materials recycling. Bioremediation, including landfarming, comprised the most significant portion (74%) of the innovative activity. (Figure 11a)

Figure 11a: Distribution of Innovative Remediation Activity (2005-2006)



Over the same period, conventional remediation activities including landfilling, incineration, tank and barrel handling, the collection/containerization of hazardous materials, containment/encapsulation, and the process of pumping and treating groundwater and surface water (including the act of DNAPL recovery) were utilized. As is shown in Figure 11b, landfilling activities, pump and treatment of water, and the collection of hazardous materials were the most prevalent types of conventional remediation used in 2005-2006.

Figure 11b: Distribution of Conventional Remediation Activity (2005-2006)



Going Forward:

In the first years of the FCSAP program, the collection of data pertaining to remediation technologies was broad in scope. Consequently, the innovative technologies presented in this report encompass all remediation efforts outside of standard *ex situ* practices (i.e. soil excavation and disposal and the pumping and treatment of surface water and/or groundwater). Still, given the rate at which once innovative technologies are being implemented and the increase in readily available cost and performance data for *in situ* treatment, it is likely that the manner in which innovative technologies are analysed will change in future years of the program. In the event that the current definition is refined by the federal contaminated sites community, the proportion of activities that appear as innovative technology will likely decline - not necessarily as a function of trend but rather as the result of a modified baseline.

Examples of the innovative remediation technologies used by three federal custodians at multiple contaminated sites are highlighted in the following pages.

INAC-NAP: Remediation Plan for Giant Mine
Yellowknife, Northwest Territories

The Giant Mine remediation plan and project description was completed in 2005-2006 for the long-term management of 237,000 tonnes of arsenic trioxide dust. The project involves an in situ (or 'leave underground') solution whereby rock surrounding the chambers and the dust contained within them will be frozen to create solid, impenetrable frozen blocks that will contain the arsenic trioxide indefinitely and isolate it from the environment.

The technology consists of an active freezing system that is very similar to what is used to freeze the ice in indoor rinks. A super-cooled liquid will be circulated through a series of underground pipes to freeze the designated areas around and within each of the chambers and stopes (irregular, mined-out cavities). The blocks will be kept frozen over the long term by using thermosyphons, which are tall, metal tubular devices that take heat out of the ground. Thermosyphons are self-sustaining, meaning they do not require an external source of power.

Ground freezing technology has been used successfully throughout the world in the mining industry and in underground construction. Examples include several potash and uranium mines in Saskatchewan, the Alaska pipeline, and the Boston and Tokyo subway systems.

Canada Border Services Agency (CBSA): Remediation of Pleasant Camp Border Crossing
Pleasant Camp, British Columbia

Pleasant Camp Border Crossing is located on the British Columbia / Alaska border.

In 1983, a storage tank spill released approximately 800 litres of diesel fuel into the environment. Detailed environmental site assessments revealed that the petroleum product had contaminated groundwater and the resultant plume had grown to 1,500 m^3.

After evaluating several remediation technologies it was determined that a combination of air sparging and soil vapour extraction (SVE) technologies would be the best approach to remediate the contamination.

Air sparging is the injection of air into contaminated groundwater and soils. It remediates groundwater by turning the petroleum contaminants into vapours, as well as enhancing biodegradation. Because air sparging mobilizes contaminants, SVE is used to extract or "vacuum" harmful vapours, thus preventing them from entering the atmosphere or any adjacent buildings.

By employing an in situ remediation method, CBSA is able to eliminate the contamination on-site, rather than simply moving it to another location. At the same time, CBSA has avoided a costly a large-scale excavation and minimized disturbance to border crossing operations.

The remediation system has been running continuously since May 2006 and it is estimated that 770 kg of petroleum hydrocarbons have removed from the ground thus far. The remediation process is expected last three to four years.

Fisheries and Oceans Canada (DFO): Bioremediation at BC Lightstations
Various Locations in British Columbia

Many of the properties housing lightstations for marine navigation along the BC coast contain soil contaminated with petroleum hydrocarbons. The contamination primarily occurred from the use and storage of fuel over the many years of operation of the lights and the light-keepers residences.

DFO has found bioremediation to be an effective way of remediating petroleum hydrocarbon contaminated soil, especially considering the remote locations and access restrictions at many of the lightstations, which limits the remediation options available. Another benefit is that the contaminants are treated on-site which avoids the need for off-site landfill disposal.

The bioremediation process involves natural soil microorganisms consuming the soil contaminants as a food-source, eventually breaking-down the contaminants into carbon dioxide and water.

Several field trials were undertaken to find the optimum process that fit the space restraints and the weather conditions at these locations. The duration of the remediation projects range from five to seven years depending on the age of the contamination and other factors like soil type. Ongoing maintenance and monitoring is also required.

3.1.3 Federal Brownfields

For purposes of the FCSAP program, a federal brownfield is defined as idle or underused property for which the Government of Canada has accepted all or part of the responsibility for past environmental contamination but which, nevertheless, exhibits good potential for other uses (or upgrading) and/or provides viable social/economic opportunities. Brownfields are typically located in established areas, where existing municipal services are readily available or along transportation corridors.

The scope of the FCSAP program presents an opportunity for custodians to redevelop brownfields that are part of their real property portfolio, by providing access to funding through FCSAP. PWGSC initiated the development of a Brownfields Portfolio Classification Tool in 2005-2006 that is intended to assist custodians in identifying candidate brownfield redevelopment sites.

In order to establish an inventory of federally owned brownfields, custodians will be expected in future years to report on whether sites they are seeking funding for under the program are considered brownfields.

4.0 2005-2006 Program Achievements – Program Administration

The first year of the FCSAP was focused on laying the groundwork for successful program implementation – namely the design of a government-wide strategy and mechanisms to identify and address higher-priority federal contaminated sites by building on the previous Federal Contaminated Sites Accelerated Action Plan program. Custodians received funding to carry out work in 660 assessment and 98 care and maintenance and remediation/risk management projects. Project funds were allocated to custodians using a science-based priority setting process that concentrated on the sites posing the highest risk to human health and the environment.

4.1 Key Activities in 2005-2006

4.1.1 FCSAP Secretariat

Some of the major activities undertaken:

- developing and enhancing components of the secure website,
- developing, with EC Communications, the FCSAP Communications Plan,
- preparing funding approval documents,
- undertaking preliminary work to facilitate the reporting of results,
- coordinating training and workshops,
- developing guidance materials, and
- collaborating with the CSMWG.

Policy related activities were related to:

- the commencement and further development of the FCSAP program; and
- completion of a responsive policy framework for contaminated sites for which the responsibility is shared by the federal government and a non-federal entity.

IDEA website

The Interdepartmental Data Exchange Application (IDEA) is a secure website that was developed in 2003-2004 and allows custodians to exchange FCSAP-related information through a single access point. In 2005-2006 further enhancements were made to the website, including:

- creating new submission models and information flows between various stakeholders,
- continuing development of administrative tools,
- enhancing system stability and security features,
- establishing a reporting module and database for assessment projects, and
- improving the administration aspect of various areas of the site.

Documents

The FCSAP Secretariat developed numerous documents, such as:

- CSMWG, 2005. Taking Action on Federal Contaminated Sites: An environmental and economic priority. ISBN 0-662-69124-5 Cat. No. EN84-22/2005
- SAIC Canada, 2005. Federal guidelines for landfarming petroleum hydrocarbon contaminated soils.
- FCSAP Secretariat, 2005. FCSAP handbook, Overview and Instructions for Submitting Funding Proposals - (internal document for FCSAP program)
- FCSAP Secretariat, 2005. Interim Guidance document on the Determination of Eligible/Ineligible costs – (internal document for FCSAP program).

4.1.2 Treasury Board Secretariat

In 2005-2006, the Real Property and Materiel Policy Division of the Treasury Board Secretariat undertook work related to the FCSAP program, including:

- Supporting the FCSAP Secretariat in program development activities, including the preparation of funding approval documentation and preliminary work to strengthen annual reporting.
- Chairing and coordinating the first bi-annual Federal Contaminated Sites National Workshop (March 7 – 10, 2006). The National Workshop brought together over 400 federal managers, remediation specialists and industry representatives from across the country to learn about technical, scientific and organizational innovations and best practices for the management of federal contaminated sites.
- Designing and developing an enhanced version of the Federal Contaminated Sites Inventory (launched on March 7, 2006).
- Participating in interdepartmental working groups and contributing to the development and refinement of guidance material.
- Developing guidance for the preparation of Contaminated Sites Management Plans and reviewing annual submissions.
- Elaborating content for the Contaminated Sites Web Portal.

4.1.3 Expert Support Departments

In 2005-2006 much of the work of expert support departments was focused on the development and delivery of guidance documents and training, the provision of advice and third-party peer review. For example:

- EC produced a training module for Ecological Risk Evaluation (both ERE 1 and 2) and continued work on the establishment of a regional chemical/toxicological reference database (Atlantic region).
- DFO produced guidance documents for DFO practitioners and held a DFO National Federal Contaminated Sites Workshop, with contributions from other expert support departments and custodians. Additionally DFO expert support staff improved risk assessment tools and refined long-term work planning to improve inter-regional program coordination and information management (i.e., the Program Activities Tracking for Habitat system, or PATH).
- HC continued work on the development and advancement of human health-based soil quality guidelines for several chemicals, which are typical contaminants found at federal contaminated sites across Canada. HC also provided training in the areas of public involvement and risk communication, which resulted in considerable progress in these areas by custodians.
- PWGSC prepared six project management tools (Initiation, Project Charter, Project Delivery Plan, Status Monitoring & Integrated Change Control, Project/Program Closure, and Initial Brownfield Portfolio Classification Tool) to assist custodians in better managing their contaminated sites projects. PWGSC also assisted in developing Federal Contaminated Sites National Workshop and the associated Awards for the Gala Dinner and delivered a seminar Cost Estimating to the workshop.
- Additionally, HC, EC and DFO conducted sites visits to gain further understanding of the unique situation at many sites and to enable them to provide better guidance and advice relating to contaminated site activities. HC, EC and DFO also provided custodians with advice regarding risk assessments, site classifications, regulations, remedial plans and technical requirements.

Detailed information on the activities carried out by expert support departments during the fiscal year can be obtained by contacting the specific expert support department directly:

- **DFO** – Expert Support Federal Contaminated Sites, Habitat Program Services Branch, Habitat Management, Oceans Sector, Fisheries and Oceans Canada, 200 Kent Street, Ottawa, ON, K1A 0E6.
- **EC** - Contaminated Sites Division, Environmental Protection Operations Directorate, Environment Canada, 70 Crémazie Street Gatineau, Québec K1A 0H3.

- **HC** – Contaminated Sites Division, Bureau of Risk and Impact Assessment, Safe Environments Program, Healthy Environments and Consumer Safety Branch, Health Canada, 269 Laurier Avenue West, Ottawa, ON, K1A 0K9.
- **PWGSC** – Environmental Services Directorate, Public Works and Government Services Canada, 11 Laurier Avenue, Gatineau, Quebec, K1A 0S5.

5.0 Measuring Performance and Looking Forward

The key achievements of the FCSAP in its first year of operation included the development and enhancement of program policies and procedures, and further development of guidance material and training for federal custodians. Work was done to address the key program activity objectives of the FCSAP, including reducing the number of high risk sites, reducing human and ecological risks and financial liabilities, and increasing public confidence in the management of federal contaminated sites.

In the first year of the new enhanced federal sites program, there was an almost two-fold increase in the number of care and maintenance and remediation/risk management projects funded over the previous year. Of the 56 projects where work was undertaken in 2004-2005, 52[10] of these projects came forward for continued FCSAP funding in 2005-2006. There was also a significant increase in the number of assessment projects that were undertaken (660 assessment projects versus 371 assessment projects in 2004-2005), and a percentage of these projects are expected to move forward for remediation/risk management in future years.

5.1 Federal Contaminated Sites Financial Liability

The increased funding for assessment projects will result in a more accurate estimate of the federal government's financial liability resulting from contaminated sites, and is an important component of the FCSAP program. However, it is likely that continued assessment work will result in an increase in federal liability in the short term due to the identification of additional contaminated sites that will require risk-management/remediation. As the increased assessment funding allows for significantly more assessments to be undertaken, it is expected that this should level off in the near term.

The recorded liability for contaminated sites includes the estimate of costs to remediate the site to a level appropriate to the land's current or intended federal use. Costs include any estimated expenses related to the remediation and management of federal sites associated with steps 5 to 10 of the *Ten-Step Process* for sites identified as a Class 1, Class 2 and in limited cases Class I sites. However, when a custodian intends to perform the remediation itself, the liability may include estimated project management costs.[11] The liability amount **excludes** any expenses associated with determining the existence of contamination (i.e. steps 1 to 4 of the *Ten-Step Process*), overhead costs and project management costs internal to the custodian. This means that the costs associated with assessment and care and maintenance activities are not included in the liability calculation, as they are undertaken to determine the existence and extent of contamination (assessment), or to mitigate the spread of contamination when the danger to human health or the environment is imminent (care and maintenance).

Each year, financial information is reported to the *Public Accounts of Canada*, including the overall financial liability and contingent liability for federal contaminated sites. Contingent liabilities are potential liabilities that may become an actual liability when more information is known. They are recorded in the Public Accounts when it is likely that a payment will be made, and the amount of the payment can reasonably be estimated.[12]

In 2006, the Government of Canada recorded an increase in the accrued liability related to the management and remediation of federal contaminated sites. As of March 31, 2006, a liability of $3,014 million was recorded for approximately 2,700 sites, compared with a liability of $2,874 million for 2,200 sites in 2005.[13] This five percent increase in accrued liability can be attributed to an increase in the number of federal contaminated sites, which was made possible by the five-fold increase in assessment funding available under the FCSAP. This increased assessment funding resulted in a more accurate estimate of federal financial liabilities resulting from contaminated sites, however, it is expected that its impact on increasing the liabilities should taper off as the program progresses and all sites requiring assessments are completed.

[10] In 2005-2006 the "5 Wing Goose Bay – Survival Tank Farm" and "5 Wing Goose Bay – Upper Tank Farm" were combined to form the "5 Wing Goose Bay" remediation project.
[11] TBS document: *Guidance on Accounting for Environmental Liabilities*, Section 2: Results of Assessment
[12] *Public Accounts of Canada, 2005-2006*; Volume I, Section 11, page 11.20, 11.22.
[13] *Public Accounts of Canada, 2005-2006*; Volume 1, Section 5, page 5.12, and Section 11, page 11.22.

The Public Accounts show an increase in contingent liabilities in 2006, when compared with the records for 2005. In 2006, contingent liabilities were $3,470 million, compared with $2,440 million in 2005. This increase is due to the additional information that was gathered during 2005-2006, which allowed for the estimation of potential liability for certain sites.

The information in Figure 17 shows contaminated sites liability information as reported by custodians in their 2005-2006 Departmental Performance Reports.

Table 6: Contaminated Sites Liability by Custodian as of March 31, 2006

Custodian	Contaminated Sites Liability ($)
Agriculture Canada	580,000
Canada Border Service Agency	900,000
Canadian Food Inspection Agency	264,000
Correctional Service Canada	12,964,000
Environment Canada	83,837,800
Fisheries and Oceans Canada	169,762,000
Health Canada	3,646,000
Indian and Northern Affairs Canada	1,071,014,000
Department of National Defence	442,977,000
Natural Resources Canada	192,148,000[14]
Parks Canada	36,775,000
Public Works and Government Services Canada	318,598,675[15]
Royal Canadian Mounted Police	2,549,512
Transport Canada	149,670,000
Other custodians	141,123,500
Central provision	386,500,873
Total	**3,013,310,360[16]**

5.2 Conclusion

In its first year of operation, the Federal Contaminated Sites Action Plan continued to build on the success achieved under the Federal Contaminated Sites Accelerated Action Plan. The groundwork that was laid to create an accountable and sustainable program to address federal contaminated sites was further refined and developed. The increase in the number of assessments, care and maintenance, and remediation/risk management projects that were undertaken in 2005-2006 when compared with the previous program demonstrates that custodians are committed to the enhanced program.

In the first year of the FCSAP program, $152.67 million was spent (representing approximately $130.45 million of FCSAP funds and $22.22 million of custodian funds) on the care and maintenance and remediation/risk management activities on 98 higher-risk projects. In addition, in the first year a total

[14] Of this amount only $341,979 relates to FCSAP eligible projects. The remainder of the reported liability is related to projects not eligible for FCSAP funding

[15] Of this amount, an amount of $272,202,263 relates to the environmental remediation activity for Sydney Tar Ponds and Coke Ovens remediation project and is not funded under FCSAP.

[16] Custodian liabilities shown in the Departmental Performance Reports (DPR) are mostly unaudited. The liability (one overall amount balance) in the Public Accounts has been audited and included review corrections and audited adjustments. This accounts for the difference between DPR and Public Accounts total contaminated sites liability amounts.

$15.39 million was spent on assessment projects, including $11.63 million in FCSAP funding, and a custodian contribution of $3.76 million.

Significant work was done in 2005-2006 to allow more contaminated sites to be funded and to open the program to new custodians. The FCSAP will continue to grow into the future as more sites are brought forward and work on existing projects is completed. Further tools and resources will be developed to assist custodians in their work to better manage and remediate their federal contaminated sites. Additionally, further work will be done to maximize the linkages that the FCSAP program can create with other government priorities such as training and employment and the use of innovative technologies. The Government of Canada is showing leadership in the area of contaminated sites management and applies the “polluter pays” principle by taking concrete action on federal contaminated sites.

Appendices

1. FCSAP Project Eligibility, Ranking and Selection Process
2. Evaluation of Human Health and Ecological Risks at Federal Contaminated Sites
3. Expenditure Tables a: Program Expenditure
   b: Detailed Department Expenditures

Appendix 1: FCSAP Project Selection Methodology

Three types of projects are eligible for funding under the FCSAP program: assessment, care-and-maintenance (C&M), and remediation/risk management (R/RM). In order for federal contaminated site projects to be eligible for funding consideration under the FCSAP, the following conditions must be met:

a. All sites must be under the custodianship of a federal department or agency subject to Treasury Board policies or a consolidated Crown corporation, (hereinafter referred to as "the custodian") or one of these entities must have accepted full responsibility for the site's contamination. As a rule, the site will have been contaminated by the custodian through activities conducted in support of its mandate.
b. Consistent with the "polluter pays" principle, contaminated sites which a custodian wishes to acquire will not generally be eligible for FCSAP funding. Exceptional sites will be considered on a case-by-case basis and subject to Treasury Board approval.
c. For assessment funding proposals, custodians must have documented reasons for believing that a site is suspected of being contaminated. Assessment proposals will be funded on the basis of departmental priority and program affordability.
d. For care-and-maintenance (C&M) or remediation/risk management (R/RM) funding proposals, all sites must be classified as Class 1 (action required) or Class 2 (action may be required) using the FCSAP classification or CCME NCS classification.
e. All sites must meet the TB definition of a contaminated site, have a liability recorded in the Public Accounts of Canada and be included in the current long-term contaminated sites management plan of the organization.
f. In the case of R/RM projects, Step 5 of the Federal Approach to Contaminated Sites must have been completed. For C&M projects, Step 4 must have been completed.
g. The custodian must report, and update at least once a year, all required information on its contaminated sites to the TBS Federal Contaminated Sites Inventory (FCSI).
h. The custodian must update and submit annually, a three-year contaminated sites management plan to Treasury Board Secretariat. The plan must demonstrate that the custodian has in place policies and practices which allow it to identify and actively manage its contaminated sites, using risk management principles, and giving priority to the most affected sites. The plan must also include the inventory of contaminated sites for which the organization is responsible, remediation and risk management intentions, objectives, strategies and related performance benchmark measures for assessing progress.
i. Sites containing unexploded ordnance (UXO) are eligible for assessment funding and may be eligible for remediation/risk management funding if the custodian can demonstrate that the site meets the TB definition of a contaminated site.

As a general rule, custodians will be required to contribute 20% of the cost of the project for the first $10 million and 10% for project costs over $10 million. This rule also applies for assessment projects. Subject to Treasury Board approval, some exceptional sites may be funded at 100% of project costs.

Ranking Methodology for Care and Maintenance and Remediation/Risk Management Projects

Projects are prioritized according to the nature, severity and immediacy of the risk to human health, safety and to the environment posed by the contaminated sites associated with the projects. Based on the C&M and R/RM cost category, two lists of priority sites are developed following the prioritization of project proposals submitted by federal organizations.

Total project costs up to $250,000

As the vast majority of known federal contaminated sites are associated with estimated financial liabilities under $250,000, projects with total project costs up to $250,000 are ranked separately from those with costs expected to exceed $250,000. For projects with total costs of up to $50,000 the FCSAP classification score or the CCME NCS classification (see Table A below) will be used as the ranking score. Projects with a total

costs between $50,000 and $250,000 will be ranked based on the FCSAP classification score only. The streamlined ranking process for projects up to $250,000 is summarized in Table A.

Table A: Streamlined Ranking Process

	Total R/C&M project cost ≤ 50K	Total R/C&M project cost > 50K and ≤ 250K
Streamlined Process	FCSAP Classification score or CCME NCS score if the latter score has been calculated within the last 5 years.	FCSAP Classification score
Party responsible for calculating the score	Custodian	Custodian
	/100	/100

Total project costs over $250,000

For C&M or R/RM projects with total costs over $250,000, two types of factors are considered during the prioritization of the projects submitted for FCSAP funding. Tier 1 factors are based on the evaluation of human health and ecological risks on each property while Tier 2 considers legal and socio-economic factors. The final relative ranking of Tier 1 (health and ecological risks) to Tier 2 (other factors) is 3:1.

Table B summarizes the ranking process used to produce the list of priority sites for projects with total costs over $250,000. The party responsible for calculating the score is indicated below the name of each risk score.

Table B: Regular Project Ranking Process

Tier 1	FCSAP Classification score	Human Health or SEFR* score	Ecological Risk Score			**Tier 1 subtotal**
	/100	/100	/100			**/300**
	Custodian	Health Canada/ Third Party	Level 1 – Custodian Level 2 – EC/DFO Expert Support			
Tier 2	Special Considerations	Increased Financial Liability (risk of inaction)	Expected Progress by March 2010	Legal Obligations	Federal Brownfield	**Tier 2 subtotal /20 x 5**
	/4	/4	/4	/4	/4	**/100**
	Custodian					
					Total Score	**/400**

* Significant Engineering Failure Risk (SEFR)

Appendix 2: Evaluation of Human Health and Ecological Risks at Federal Contaminated Sites

In order to assist federal custodians in the evaluation of human health and environmental risks at federal contaminated sites, two key analytical tools were developed under the 2003-2005 Accelerated Action Plan and refined under the FCSAP program: (**A**) Health Canada's **Human Health Preliminary Quantitative Risk Assessment** tool and (**B**) Environment Canada's **Ecological Risk Evaluation** framework.

The purpose of each tool is to define the level of risk posed by a contaminated site based on the following three evaluation criteria and their relationship to contaminant movement between source and receptor (human or ecological):

1. Contaminant characteristics – the relative hazard of contaminants present at a site
2. Exposure pathways – the route a contaminant may follow (e.g., groundwater, surface water, direct contact, and/or air) to a receptor
3. Receptors – living beings or resources that may be exposed to and affected by contamination (e.g., humans, plants, animals, or environmental resources)

Source		**Hazard**		**Release**		**Pathway**		**Receptor**
Waste storage at Site A	→	Quantity and nature of waste stored on site	→	Leakage from storage facility	→	Movement of contaminants off site in groundwater	→	Well water -- user drinks contaminated water

To create an accurate representation of the complex source-receptor pathway, multiple sources of information are required. As such, analytical factors can include, but are not limited to any of the following considerations:

- Description of the site location;
- Type of contaminants or materials likely to be present at site (and/or description of historical activities);
- Approximate size of site and quantity of contaminants;
- Approximate depth of water table;
- Geologic map or survey information (soil, over-burden, and bedrock information);
- Annual rainfall data (can be inferred from rainfall map of Canada);
- Surface cover information;
- Proximity to surface water;
- Topographic information;
- Flood potential of site;
- Proximity of drinking water supply;
- Uses of adjacent water resources; and
- Land use information (on site and surrounding).[17]

[17] National Classification System for Contaminated Sites, Canadian Council of Ministers of the Environment, March 1992

(**A**) **Human Health Preliminary Quantitative Risk Assessment (HHPQRA)**

The preliminary quantitative risk assessment for a federal contaminated site, the following factors are considered:

- Historical information to identify previous site uses and the possible contaminants to be investigated in soil and groundwater;
- Identification of contaminants of concern by comparing measured concentrations to regulatory guidelines;
- Identification of potential human exposure, which will vary depending on land use and the accessibility of the site;
- Examination of contaminant exposure pathways, that is, the ways in which the individuals will contact the contaminant (ingestion, inhalation, dermal contact) as well as an estimation of the movement of contaminants in the environment.

Overall, Health Canada's Preliminary Quantitative Risk Assessment tool uses prescribed methods and assumptions, standard exposure pathways, human characteristics and levels of toxicity to ensure that exposures and risk are not underestimated. When combined with site-specific information, the model helps in the assessment of toxicity and hazards associated with exposure to various chemicals.

For more details on the Preliminary Quantitative Risk Assessment, visit the Health Canada web site: http://hc-sc.gc.ca/ewh-semt/pubs/contamsite/index_e.html

(**B**) **Ecological Risk Evaluation (ERE)**

The Ecological Risk Evaluation Framework was developed by Environment Canada as a tool to enable objective, transparent analysis of the ecological risks associated with individual federal contaminated sites.

More specifically, the Ecological Risk Evaluation framework assesses contaminated sites to determine:

- If the contaminated area is affecting or has the potential of affecting specific habitat(s);
- The types of chemicals found at the site and the degree to which individual chemicals exceed environmental guidelines;
- How the chemical(s) are finding their way into the environment; and
- Any physical (non-chemical) impacts or hazards that may affect the quality of the environment or pose a risk to humans or wildlife.

Appendix 3: Expenditure Tables

a: Program Expenditures

	Planned FCSAP Expenditures	Actual FCSAP Expenditures
Federal Contaminated Sites Projects		
Indian and Northern Affairs Canada (INAC)		
INAC (Northern Program)	*72,073,651*	*70,132,351*
INAC (Indian and Inuit Affairs Business Line)	*7,193,703*	*5,988,711*
Total INAC	79,267,354	76,121,062
Agriculture and Agri-Food Canada	563,200	563,200
Canada Border Services Agency	546,240	515,076
Canadian Food Inspection Agency	33,600	29,172
Correctional Service Canada	1,060,000	488,874
Environment Canada	4,165,829	2,147,036
Fisheries and Oceans	3,347,040	3,185,161
Health Canada	1,745,600	1,128,338
National Defence	45,537,000	45,537,000
Natural Resources	160,000	83,767
Parks Canada	1,991,351	1,448,735
Public Works and Government Services Canada	1,075,600	1,054,495
Royal Canadian Mounted Police	160,000	183,099 [a]
Transport Canada	13,332,354	9,596,714
Total Project Expenditures	**152,985,168**	**142,081,727**
Program Management		
Agriculture and Agri-Food Canada	120,000	102,857
Correctional Service Canada	67,670	67,670
Environment Canada	259,249	221,506
Fisheries and Oceans	530,148	387,319
Health Canada	86,051	86,051
INAC (Indian and Inuit Affairs Business Line)	385,893	385,893
National Defence	575,000	575,000
Natural Resources	80,000	0
Parks Canada	233,652	0
Public Works and Government Services Canada	135,000	123,224
Royal Canadian Mounted Police	90,000	90,000
Transport Canada	361,000	125,000
Total Program Management Expenditures	**2,923,663**	**2,164,520**
Secretariat and Expert Support Services		
Environment Canada		
EC Secretariat	*2,834,789*	*2,041,181*
EC Expert Support	*2,336,673*	*1,359,372*
Total EC Secretariat/Expert Support	5,171,462	3,400,553
Treasury Board of Canada Secretariat	342,492	357,439 [b]
Health Canada Expert Support	5,000,000	4,505,589
Public Works and Government Services	750,000	746,000
DFO Expert Support	2,347,099	1,510,000
Total Secretariat and Expert Support Expenditures	**13,611,053**	**10,519,581**
PWGSC Accommodation costs	883,974	883,974
Total FCSAAP Expenditures	**170,403,858**	**155,649,802**

[a] $32,021 transferred from fiscal year 2004-2005

[b] Over expenditure was absorbed by the Real Property and Materiel Policy Division, TBS.

b: Detailed FCSAP and Custodian Expenditures

Federal Contaminated Sites Projects	Planned FCSAP Funding		Adjustments [a]	Actual FCSAP Expenditures		FCSAP Variance planned - actual
	FCSAP Fund	Custodian Share		FCSAP Fund	Custodian Share	
Canada Border Services Agency						
Pleasant Camp Border Crossing (BC)	546,240	136,560		515,076	128,769	31,164
Total Canada Border Services Agency	**546,240**	**136,560**		**515,076**	**128,769**	**31,164**
Correctional Service Canada						
Atlantic Fuel Spill Site (NB)	360,000	90,000		5,945	1,486	354,055
Bowden Fuel Depot Site (AB)	220,000	55,000		2,929	732	217,071
FCS Assessments (13 sites)	480,000	120,000		480,000	124,681	0
Total Correctional Service Canada	**1,060,000**	**265,000**	**187,866** [b]	**488,874**	**126,899**	**758,992**
Environment Canada						
Pacific Environment Centre (BC)	2,080,000	520,000		1,771,051	447,371	308,949
FCS Assessments (15 sites)	2,085,829	521,457		375,985	303,089	1,709,844
Total Environment Canada	**4,165,829**	**1,041,457**		**2,147,036**	**750,460**	**2,018,793**
Fisheries and Oceans						
Belleville Small Craft Harbour (ON)	320,000	80,000		320,000	80,225	0
Active Pass (BC)	4,000	1,000		4,258	1,065	-258
Addenbroke Island (BC)	3,840	960		4,098	1,025	-258
Ballenas Island (BC)	4,000	1,000		4,258	1,065	-258
Boat Bluff (BC)	3,840	960		4,098	1,025	-258
Bonilla Island Sector (BC)	3,840	960		4,098	1,025	-258
Cap au Saumon (QC)	200,000	50,000		47,998	24,398	152,002
Cap de la Tête-de-Chien (QC)	200,000	50,000		216,981	48,338	-16,981
Cape Scott (BC)	3,840	960		4,098	1,025	-258
Cape Beale (BC)	3,840	960		4,098	1,025	-258
Cape Mudge (BC)	3,840	960		4,098	1,025	-258
Carmanah Point (BC)	3,840	960		4,098	1,025	-258

[a] Adjustments include the transfer of funds from the previous fiscal year, and FCSAP funds not requested.

[b] Funds transferred from fiscal year 2004-2005.

Federal Contaminated Sites Projects	Planned FCSAP Funding		Adjustments [a]	Actual FCSAP Expenditures		FCSAP Variance planned - actual
	FCSAP Fund	Custodian Share		FCSAP Fund	Custodian Share	
Fisheries and Oceans (continued)						
Chatham Point (BC)	3,840	960		4,098	1,025	-258
Chrome Island Range (BC)	3,840	960		4,098	1,025	-258
Discovery Island (BC)	4,000	1,000		4,258	1,065	-258
Dryad Point (BC)	3,840	960		4,098	1,025	-258
Egg Island (BC)	3,840	960		4,098	1,025	-258
Entrance Island (BC)	3,840	960		4,098	1,025	-258
Estevan Point (BC)	3,840	960		4,098	1,025	-258
Green Island (BC)	3,840	960		4,098	1,025	-258
Île Brion (QC)	60,000	15,000		59,646	14,999	354
Ivory Island (BC)	3,840	960		4,098	1,025	-258
Langara Island (BC)	3,840	960		4,098	1,025	-258
Lennard Island (BC)	3,840	960		4,098	1,025	-258
McInnes Island (BC)	3,840	960		4,098	1,025	-258
Merry Island (BC)	3,840	960		4,098	1,025	-258
Nootka Island (BC)	3,840	960		4,098	1,025	-258
Pachena Point (BC)	3,840	960		4,098	1,025	-258
Pine Island (BC)	3,840	960		4,098	1,025	-258
Portlock Point (BC)	4,000	1,000		4,258	1,065	-258
Pulteney Point (BC)	3,840	960		4,098	1,025	-258
Quatsino (Kains Island) (BC)	3,840	960		4,098	1,025	-258
Rocher aux Oiseaux (QC)	60,000	15,000		59,646	14,999	354
Saturna Island Sector (BC)	4,000	1,000		4,258	1,065	-258
Scarlett Point (BC)	3,840	960		4,098	1,025	-258
Trial Islands (BC)	3,840	960		4,098	1,025	-258
FCS Assessments (365 sites)	2,387,200	596,800		2,353,050	700,954	34,150
Total Fisheries and Oceans	**3,347,040**	**836,760**		**3,185,161**	**915,873**	**161,879**

[a] Adjustments include the transfer of funds from the previous fiscal year, and FCSAP funds not requested.

Federal Contaminated Sites Projects	Planned FCSAP Funding		Adjustments [a]	Actual FCSAP Expenditures		FCSAP Variance planned - actual
	FCSAP Fund	Custodian Share		FCSAP Fund	Custodian Share	
Health Canada						
Weagamow Lake (ON)	120,000	30,000		105,856	26,464	14,144
Kasabonika (ON)	52,800	13,200		8,800	32,642	44,000
Lansdowne House (ON)	52,800	13,200		96,800	163,642	-44,000
Moose Factory Hospital (ON)	1,520,000	380,000		916,882	742,220	603,118
Total Health Canada	**1,745,600**	**436,400**	**-617,262** [c]	**1,128,338**	**964,968**	**0**
INAC (Northern Affairs Program)						
Axe Point (NT)	464,000	116,000		327,918	81,979	136,082
BAF 5 - Resolution Island (NU)	10,276,371	1,141,819		9,248,436	1,027,605	1,027,935
BAR D - Atkinson Point (NT)	242,600	60,650		253,766	63,441	-11,166
CAM - D Simpson Lake (NU)	537,600	134,400		328,117	82,029	209,483
CAM F - Sarcpa Lake (NU)	2,245,024	561,256		2,987,006	746,751	-741,982
Cape Christian (NU)	16,000	4,000		0	0	16,000
Clinton Creek Mine (YT)	432,000	108,000		353,990	88,498	78,010
Colomac Mine (NT)	9,992,810	0		11,953,068	0	-1,960,258
Discovery (NT)	4,923,880	1,230,970		4,039,237	1,009,809	884,643
Faro Mine (YT)	16,389,673	0		16,328,634	0	61,039
FOX A - Bray Island (NU)	16,000	4,000		9,511	2,378	6,489
FOX C - Ekalugad Fiord (NU)	3,019,272	754,818		2,783,687	695,922	235,585
Giant Mine (NT)	10,640,000	0		10,011,900	0	628,100
Mount Nansen Mine (YT)	2,535,680	633,920		1,091,249	272,812	1,444,431
Port Radium Mine (NT)	2,618,400	654,600		1,884,427	38,796	733,973
Radio Island (NU)	92,000	23,000		112,585	28,147	-20,585
Roberts Bay Mine (NU)	537,600	134,400		470,369	117,592	67,231
Silver Bear Mines (NT)	940,000	235,000		1,198,420	299,606	-258,420
Tundra-Taurcanis Mine (NT)	934,000	233,500		2,538,894	634,724	-1,604,894
United Keno Hill Mine (YT)	4,505,541	926,459		3,587,331	838,850	918,210
FCS Assessments (13 sites)	715,200	178,800		623,806	155,951	91,394
Sub-total INAC-NAP	**72,073,651**	**7,135,592**		**70,132,351**	**6,184,890**	**1,941,300**

[a] Adjustments include the transfer of funds from the previous fiscal year, and FCSAP funds not requested.

[c] In order to meet their cost share requirements over the period of fiscal year 2003-2004 to 2005-2006, Health Canada did not access approved FCSAP funding in the amount of $921,600. As well, Health Canada brought forward funding from previous fiscal years, which totaled $304,338. ($921,600 - $304,338= $617,262)

Federal Contaminated Sites Projects	Planned FCSAP Funding		Adjustments [a]	Actual FCSAP Expenditures		FCSAP Variance planned - actual
	FCSAP Fund	Custodian Share		FCSAP Fund	Custodian Share	
INAC (Indian and Inuit Affairs Business Line)						
1550 Clifford Road (BC)	0	0		680,000	186,560	-680,000
BlackBridge (BC)	0	0		501,640	152,425	-501,640
Barrenlands/Brochet Frontier School Tankfarm (MB)	320,000	80,000		214,735	0	105,265
Barrenlands Former DOT Site (MB)	800,000	200,000		328,071	277,952	471,929
Former Beren's River Pumphouse Tankfarm (MB)	320,000	80,000		0	0	320,000
Former God's Lake School Tankfarm (MB)	646,278	161,570		331,004	75,716	315,274
Former Northlands School Tankfarm (MB)	567,000	141,750		145,201	0	421,799
Former Red Sucker Lake School Tankfarm (MB)	304,100	76,025		0	0	304,100
Gitxaala Nation Former Power House (BC)	0	0		144,000	229,536	-144,000
God's Lake Band Tankfarm (MB)	764,600	191,150		496,505	113,575	268,095
Kingfisher Lake Omahama Store (ON)	334,480	83,620		120,000	280,000	214,480
Mathias Colomb Area 5B (MB)	1,501,066	375,267		0	0	1,501,066
Mount Lolo (BC)	0	0		759,722	1,831,335	-759,722
Land Reclaimation of Red Bridge Spur (BC)	280,000	70,000		280,000	93,000	0
Oxford House (MB)	0	0		248,920	106,680	-248,920
FCS Assessments (100 sites)	1,356,179	339,045		1,738,913	450,187	-382,734
Sub-total INAC-IIABL	**7,193,703**	**1,798,427**	**288,120** [b]	**5,988,711**	**3,796,966**	**1,493,112**
Total INAC	**79,267,354**	**8,934,019**	**288,120** [b]	**76,121,062**	**9,981,856**	**3,434,412**

[a] Adjustments include the transfer of funds from the previous fiscal year, and FCSAP funds not requested.

[b] Funds transferred from fiscal year 2004-2005.

Federal Contaminated Sites Projects	Planned FCSAP Funding		Adjustments [a]	Actual FCSAP Expenditures		FCSAP Variance planned - actual
	FCSAP Fund	Custodian Share		FCSAP Fund	Custodian Share	
National Defence						
14 Wing Greenwood (NS)	1,808,400	452,100		2,173,071	543,268	-364,671
5 Wing Goose Bay Remediation (NF)	4,562,000	0		3,968,632	0	593,368
CAM-1 Jenny Lind Island DEW Line Cleanup (NU)	24,000	6,000		67,751	16,938	-43,751
CAM-2 Gladman Point DEW Line Cleanup (NU)	4,325,000	925,000		4,574,509	897,392	-249,509
CAM-3 Shepherd Bay DEW Line Cleanup (NU)	1,760,000	440,000		2,077,086	519,271	-317,086
CAM-4 Pelly Bay DEW Line Cleanup (NU)	2,200,000	550,000		2,973,406	1,295,947	-773,406
CAM-5 Mackar Inlet DEW Line Cleanup (NU)	160,000	40,000		170,270	80,067	-10,270
CFB Esquimalt DY-4 FMF Shops Remediation (BC)	1,200,000	300,000		169,314	42,329	1,030,686
Colwood Aggregate (BC)	640,000	160,000		1,582,914	395,728	-942,914
DYE-M Cape Dyer DEW Line Cleanup (NU)	9,500,000	0		11,017,527	0	-1,517,527
FOX-M Hall Beach DEW Line Cleanup (NU)	5,175,000	575,000		4,480,196	3,602,606	694,804
FOX-5 Broughton Island DEW Line Cleanup (NU)	4,325,000	925,000		5,392,955	1,128,151	-1,067,955
PIN-3 Lady Franklin Point DEW Line Cleanup (NU)	720,000	180,000		529,408	132,352	190,592
PIN-4 Byron Bay DEW Line Cleanup (NU)	56,000	14,000		102,321	25,580	-46,321
Shea Heights/Southside Tank Farm Remediation (NF)	456,000	114,000		264,754	66,189	191,246
Suffield EPG Remediation (AB)	1,000,000	250,000		231,898	57,975	768,102
TCE Contamination Valcartier (QC)	4,000,000	0		2,966,662	0	1,033,338
FCS Assessments (sites 14)	3,625,600	906,400		2,794,324	987,546	831,276
Total National Defence	**45,537,000**	**5,837,500**		**45,537,000**	**9,791,339**	**0**
Parks Canada						
Cape Breton Highlands National Park (NS)	50,600	12,650		50,600	13,163	0
Glacier National Park (BC)	916,800	229,200		569,400	142,350	347,400
FCS Assessments (66 sites)	1,023,951	255,988	29,015 [b]	828,735	216,593	224,231
Total Parks Canada	**1,991,351**	**497,838**	**54,951** [d]	**1,448,735**	**372,106**	**597,567**

[a] Adjustments include the transfer of funds from the previous fiscal year, and FCSAP funds not requested.

[b] Funds transferred from fiscal year 2004-2005.

[d] Includes funds Remediation/Risk Management funds transferred from fiscal year 2004-2005. [($25,936 from R/RM) + ($29,015 from Assessment) = $54,951]

Federal Contaminated Sites Projects	Planned FCSAP Funding		Adjustments [a]	Actual FCSAP Expenditures		FCSAP Variance
	FCSAP Fund	Custodian Share		FCSAP Fund	Custodian Share	planned - actual
Transport Canada						
Bushell Public Port Facility Remediation (SK)	4,476,154	1,119,039		518,201	129,550	3,957,953
Former Remote Radar Site 59 (NF)	800,000	200,000		785,909	196,477	14,091
Nitchequon (QC)	2,024,000	506,000		1,719,947	429,987	304,053
Rock Bay (BC)	5,397,000	933,000		6,050,473	1,067,730	-653,473
FCS Assessments (7)	635,200	158,800		522,184	130,546	113,016
Total Transport Canada	**13,332,354**	**2,916,839**		**9,596,714**	**1,954,290**	**3,735,640**
Other FCS Assessments						
Agriculture and Agri-Food Canada (13 sites)	563,200	140,800		563,200	174,185	0
Canadian Food Inspection Agency (3 sites)	33,600	8,400		29,172	2,700	4,428
Natural Resources (5 sites)	160,000	40,000		83,767	20,942	76,233
Public Works and Government Services (23 sites)	1,075,600	268,900		1,054,495	392,960	21,105
Royal Canadian Mounted Police (23 sites)	160,000	40,000	32,021 [b]	183,099	103,066	8,922
Sub-total Other Assessments	**1,992,400**	**498,100**	**32,021**	**1,913,733**	**693,853**	**110,688**
Remediation/Risk Management Total	**87,390,025**	**14,457,234**	**-115,340**	**79,348,274**	**19,077,051**	**7,926,411**
Care and Maintenance Total	**51,293,584**	**3,367,849**		**51,102,723**	**3,144,299**	**190,861**
Total Remediation/Care and Maintenance/Risk Management Projects	**138,683,609**	**17,825,083**	**-115,340**	**130,450,997**	**22,221,350**	**8,117,272**
Total Assessments	**14,301,559**	**3,575,390**	**61,036**	**11,630,730**	**3,763,400**	**2,731,865**
GRAND TOTAL	**152,985,168**	**21,400,473**	**-54,304**	**142,081,727**	**25,984,750**	**10,849,137**

[a] Adjustments include the transfer of funds from the previous fiscal year, and FCSAP funds not requested.

[b] Funds transferred from fiscal year 2004-2005.