



# Horizontal Evaluation of the Federal Contaminated Sites Action Plan

**Final Report**

**December 2018**

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The evaluation was conducted in accordance with the 2016 Treasury Board [Policy on Results](#). It was identified in the 2016 to 2017 Integrated Risk-Based Audit and Evaluation Plan. This report was approved by the Deputy Ministers of Crown-Indigenous Relations and Northern Affairs Canada and of Indigenous Services Canada on December 10, 2018 and by the Deputy Heads of Environment and Climate Change Canada on December 21, 2018. It is available on the Environment and Climate Change Canada website in both official languages.

This report was prepared by the Evaluation Division of the Audit and Evaluation Branch.

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## List of acronyms and abbreviations

ADM	Assistant Deputy Minister
AEB	Audit and Evaluation Branch
AFFF	Aqueous film-forming foams
ASCS	Aquatic Sites Classification System
BCIP	Build in Canada Innovation Program
CCME	Canadian Council of Ministers of the Environment
CIRNAC	Crown-Indigenous Relations and Northern Affairs Canada
CSMWG	Contaminated Sites Management Working Group
DEW	Distant Early Warning
DFO	Department of Fisheries and Oceans
DG	Director General
DND	Department of National Defence
ECCC	Environment and Climate Change Canada
ESD	Expert Support Department
EPA	Environmental Protection Agency
FCSAP	Federal Contaminated Sites Action Plan
FCSI	Federal Contaminated Sites Inventory
FSDS	Federal Sustainable Development Strategy
HC	Health Canada
IDEA	Interdepartmental Data Exchange Application
IRWG	Interdepartmental Regional Working Group
NCSCS	National Classification System for Contaminated Sites
PAC	Public Accounts of Canada
PFAS	Per- and polyfluoroalkyl substances
PMF	Performance measurement framework
PSPC	Public Services and Procurement Canada
R/RM	Remediation and risk management
TBS	Treasury Board of Canada Secretariat
U.S.	United States

## Executive summary

This report presents the results of the horizontal evaluation of the Federal Contaminated Sites Action Plan (FCSAP). FCSAP is a cost-shared program that supports federal departments, agencies and consolidated Crown corporations in addressing the contaminated sites for which they are responsible. The program is administered by Environment and Climate Change Canada's (ECCC) FCSAP Secretariat, with support from Treasury Board of Canada Secretariat (TBS). It involves expert support departments (ESD) and custodians responsible for assessing and remediating contaminated sites. Established in 2005, FCSAP has been funded in three phases:

- Phase I, from fiscal year (FY) 2005 to 2006 to FY 2010 to 2011
- Phase II, from FY 2011 to 2012 to FY 2015 to 2016
- Phase III, from FY 2016 to 2017 to FY 2019 to 2020

The primary objective of FCSAP is to reduce environmental and human health risks from known federal contaminated sites and associated federal financial liabilities.

The evaluation is part of ECCC's 2016 Risk-based Audit and Evaluation Plan. In collaboration with 17 federal partners, it was conducted by ECCC's Audit and Evaluation Branch (AEB) in FY 2017 to 2018, in accordance with the 2016 Treasury Board (TB) [Policy on Results](#). The evaluation is intended to help inform decisions about the renewal and future direction of the program, since current funding for FCSAP Phase III ends in March 2020. The last evaluation of FCSAP was completed in FY 2013 to 2014, covering the timeframe from FY 2005 to 2006 to FY 2011 to 2012.

The evaluation focused on a six-year period including the last four years of FCSAP Phase II (from FY 2012 to 2013 to FY 2015 to 2016) and the first two years of Phase III (from FY 2016 to 2017 to FY 2017 to 2018). It covered issues of relevance, efficiency of overall program design and delivery and achievement of expected results. Data collection methods included document and data review, interviews with 66 key informants, an analysis of similar programs in five other jurisdictions, five case studies and an expert panel.

## Findings and conclusions

Overall, the FCSAP program is an effective approach to addressing federal contaminated sites. The evaluation identified opportunities to:

- improve alignment with federal priorities
- enhance efficiencies through changes in program design
- enhance performance measurement to improve the program's ability to report on its successes in a way that resonates with Canadians

## Relevance

There is a clear ongoing need for FCSAP or a similar program to address outstanding liability and risks to the environment and human health associated with federal contaminated sites. Significant progress has been made since the start of the program, including the closure of more than 16,300 sites. However, as of August 2017, there remain more than 7,400 suspected or active contaminated sites in Canada, including more than 3,600 FCSAP-funded sites. As well, an estimated \$4.0 billion in federal liabilities is expected to continue beyond 2020. Furthermore, the need for long-term monitoring at some sites, along with growing recognition of the need to address emerging contaminants, attest to the program's ongoing relevance. Alternative sources of funding are likely insufficient to address the liability and risks to the environment and human health associated with federal contaminated sites.

The FCSAP program is a priority for the federal government. It aligns well with current federal priorities such as environmental protection, job creation and skill development, and is seen as an important contributor to the reconciliation agenda. However, it is less clearly aligned with priorities related to innovation and climate change. There is strong support among stakeholders, including Indigenous communities, program representatives and external stakeholders, for enhancing alignment with the government's reconciliation priority through increased engagement and involvement by Indigenous communities in all stages of the FCSAP process.

Federal responsibility in relation to contaminated sites is articulated in Treasury Board policies. In addition, FCSAP is consistent with existing federal legislation pertaining to environmental considerations such as the [Fisheries Act](#), the [Canadian Environmental Protection Act, 1999](#), the [Canadian Environmental Assessment Act, 2012](#), the [Species at Risk Act](#), the [Migratory Birds Convention Act, 1994](#) and the [Arctic Waters Pollution Prevention Act](#).

## Program efficiency

The roles and responsibilities associated with FCSAP's key program functions are appropriate, although there are opportunities to improve how they are carried out, to enhance efficiencies. For example, the FCSAP Secretariat could support continuous improvements to the Interdepartmental Data Exchange Application (IDEA), fostering increased stakeholder use. It could also work to improve strategic communications, to ensure nationally consistent messaging about FCSAP. Similarly, improved communication, interaction and collaboration among ESDs and custodians could promote efficiencies in the context of work at specific sites, including through regional forums. In response to a recommendation from the 2014 evaluation, Public Services and Procurement Canada (PSPC) has taken steps to increase awareness and use of its products and services. However, available evidence indicates an ongoing need for efforts in this area.

While the overall design of FCSAP is appropriate, encouraging geographic bundling of co-located sites, regardless of assessed risk, could improve efficiency and promote the achievement of program outcomes. Many program stakeholders supported revising the site prioritization process



to include socio-economic, political and cultural factors. This has the potential to enhance alignment with the reconciliation agenda and benefit Indigenous peoples.

Based on current estimates, program resources will not be sufficient to address federal liabilities by the end of FCSAP Phase III in 2020. Increasing funding for assessment activities could help to address the approximately one third of FCSAP sites that have not yet been assessed. This could, in turn, reduce associated uncertainty and potentially mitigate against project cost escalation.

The efficiency of the FCSAP program has improved since the 2014 evaluation. During Phase II, about \$1.10 in program costs were required to reduce federal liabilities by \$1.00, compared to \$1.20 in program costs in Phase I. In addition to allowing the bundling of sites and facilitating more extensive use of multi-year contracting, there is the potential to further enhance efficiency by, among other measures:

- encouraging the implementation of risk management approaches or less intensive remediation approaches, where appropriate
- improving the use of technology in program operation and management
- improving procurement processes

The FCSAP governance structure is appropriate and is operating effectively. FCSAP has a well-developed performance measurement infrastructure, and performance data is timely and reliable. Finding ways to tell a meaningful performance story is an issue, particularly in light of the ongoing reliance on liability reduction as an outcome measure. Moving forward, greater emphasis should be placed on performance metrics that convey the achievement of risk reduction objectives. In addition, the program logic model should be refined to eliminate duplication and ensure that all expected outcomes are represented and supported by a clearly articulated narrative or theory of change. The program logic model should specify how program activities and outputs are expected to lead to each outcome.

### **Achievement of expected results**

Overall, FCSAP assessment and risk reduction activities have reduced the uncertainty associated with risk from federal contaminated sites. They have contributed to reducing the risk to the environment and human health associated with these sites, although the program does not measure risk reduction directly. While aggregate liability associated with federal contaminated sites has not been reduced since the start of the program, the majority of FCSAP expenditures for risk reduction have been liability-reducing.

- **Assessments and risk reduction plans.** FCSAP funded assessment activities at 1,919 federal contaminated sites and completed assessments at 1,022 sites during Phase II and the first year of Phase III, reducing uncertainty associated with the risk from these sites. Although the program experienced some challenges in meeting performance targets for development, implementation and completion of risk reduction plans, remediation and risk

management (R/RM) activities were completed at 271 FCSAP-funded Class 1 and Class 2 sites over this period.

- **Reduced federal liability.** While more than 90% of FCSAP expenditures for R/RM have contributed to reducing liability, aggregate liabilities for federal contaminated sites have not been reduced since the start of the program. They were \$2.2 billion higher at the end of Phase II than they were at the beginning. To a large extent, this outcome can be attributed to significant increases in liability at Giant Mine and Faro Mine. Of the \$4.0 billion in total estimated liabilities expected to continue beyond the end of FCSAP Phase III, slightly more than half will rest with these two sites.
- **Reduced risk to the environment and human health.** By the end of FY 2016 to 2017, 1,169 FCSAP-funded Class 1 and Class 2 sites had completed risk reduction activities since the start of the program. As such, risks to the environment and human health have also been reduced at these sites. The FCSAP program does not directly measure risk reduction. As noted previously, there is widespread agreement that this is an area in which the program could improve its performance measurement and reporting.
- **Employment creation in the environmental services industry.** Program stakeholders believe FCSAP has contributed to job creation, not only in the environmental services industry but also within government and Indigenous communities. However, some stakeholders think more could be done to ensure that the socio-economic benefits associated with the program flow to Indigenous communities. Applying an employment multiplier indicates that approximately 6,604 person-years of employment were generated or maintained through Phase II FCSAP expenditures.

In addition to these formal expected outcomes, there is anecdotal evidence that FCSAP has generated positive secondary benefits, including some that were not necessarily foreseen at the outset. Examples include increased knowledge, skills and expertise within the environmental services industry and the Government of Canada related to contaminated sites, consolidation of the environmental services industry and increased capacity within Indigenous communities.

## Recommendations

[Recommendation 1](#) is directed to ECCC's Assistant Deputy Minister (ADM) of Environmental Protection Branch, as the senior departmental official responsible for the FCSAP Secretariat.

[Recommendation 2](#) is directed to Crown-Indigenous Relations and Northern Affairs Canada's (CIRNAC) ADM of Lands and Economic Development and ADM of the Northern Affairs Organization.

[Recommendation 3](#) is directed to ECCC's ADM of Environmental Protection Branch, in consultation with Treasury Board Secretariat.

### Recommendation 1

It is recommended that Environment and Climate Change Canada's Assistant Deputy Minister, Environmental Protection Branch, promote efficiency in program delivery by encouraging bundling

of geographically co-located sites, potentially combining higher-risk and lower-risk sites, for purposes of assessment, remediation and risk management and long-term monitoring.

## **Recommendation 2**

It is recommended that Crown-Indigenous Relations and Northern Affairs Canada's Assistant Deputy Minister, Lands and Economic Development, and Assistant Deputy Minister, Northern Affairs Organization, improve information-sharing, engagement and collaboration with Indigenous communities throughout all stages of the FCSAP process, including assessment, prioritization and remediation of contaminated sites.

## **Recommendation 3**

It is recommended that Environment and Climate Change Canada's Assistant Deputy Minister, Environmental Protection Branch, enhance the approach to performance measurement and reporting to more clearly and meaningfully convey the Federal Contaminated Sites Action Plan program's successes to Canadians.

## 1. Context

The Federal Contaminated Sites Action Plan (FCSAP) is a horizontal, cost-shared program that supports federal departments, agencies and consolidated Crown corporations in addressing the contaminated sites for which they are responsible. Established in 2005, FCSAP has been funded in three phases:

- Phase I, from fiscal year (FY) 2005 to 2006 to FY 2010 to 2011
- Phase II, from FY 2011 to 2012 to FY 2015 to 2016
- Phase III, from FY 2016 to 2017 to FY 2019 to 2020

This report presents the results of the horizontal evaluation of FCSAP. The evaluation is part of Environment and Climate Change Canada's (ECCC) 2016 Risk-based Audit and Evaluation Plan. It was conducted by ECCC's Audit and Evaluation Branch (AEB) in 2017 to 2018 in accordance with the 2016 Treasury Board (TB) [Policy on Results](#) and to meet a funding renewal commitment to evaluate the program. The evaluation focused on a six-year period consisting of the last four years of FCSAP Phase II (from FY 2012 to 2013 to FY 2015 to 2016) and the first two years of Phase III (from FY 2016 to 2017 to FY 2017 to 2018). FCSAP was last evaluated in FY 2013 to 2014.

### The Federal Contaminated Sites Action Plan (FCSAP)

FCSAP consolidates the federal government's approach to dealing with contaminated sites. Prior to FCSAP, federal departments, agencies, and consolidated Crown corporations spent approximately \$100 million in total annually to remediate or manage risks associated with contaminated sites. Since the program was established in 2005, a total of \$4.5 billion has been allocated over three phases for the assessment and remediation of federal contaminated sites. Although other sources of federal funding for remediation of contaminated sites are available, such as the Port Hope Area Initiative, the FCSAP program represents the majority of federal funding for this purpose.

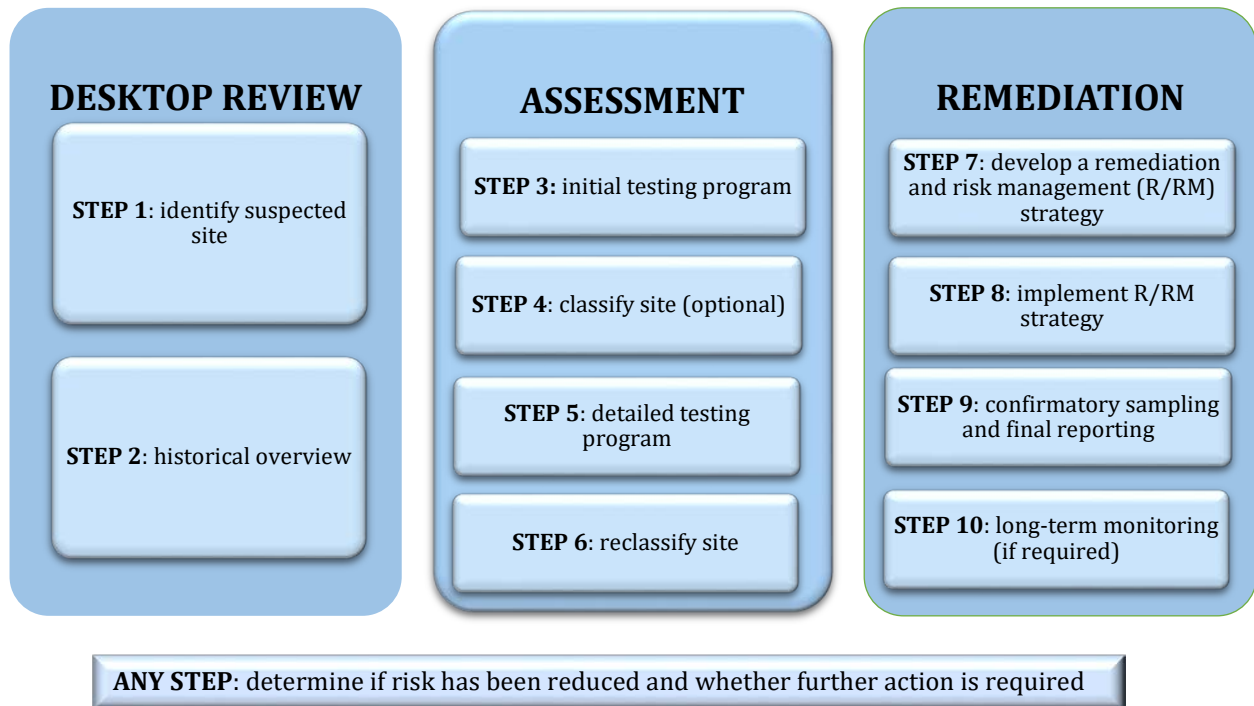
Eighteen federal partners participate in FCSAP (see [Table 8](#)). The program is administered through a dedicated Secretariat at ECCC, with support and policy guidance from the Treasury Board of Canada Secretariat (TBS). Fourteen custodial departments, agencies and consolidated Crown corporations receive funding under the program to conduct assessment and remediation activities at federal contaminated sites. In addition, there are four expert support departments (ESD) that assist custodians in a technical or project management capacity: ECCC, Health Canada (HC), Fisheries and Oceans Canada (DFO) and Public Services and Procurement Canada (PSPC). Program oversight is the responsibility of the Assistant Deputy Minister (ADM) and the Director General (DG) Steering Committees. Operational issues are addressed by the Contaminated Sites Management Working Group (CSMWG) and the Interdepartmental Regional Working Groups (IRWG) (see [Appendix A](#)).

The primary objective of FCSAP is to reduce environmental and human health risks from known federal contaminated sites, as well as associated federal financial liabilities in the Public Accounts

of Canada (PAC)<sup>1</sup>. Priority is given to higher-risk sites. In addition to addressing contaminated sites, the FCSAP program helps support skills development, training and employment of Canadians, including Indigenous communities and others who live in northern and rural areas. It also encourages Canada’s environmental industry to develop innovative and sustainable remediation technologies and approaches.

A 10-step process, represented in Figure 1, is used for managing federal contaminated sites.

**Figure 1: the 10-step process to assess and manage federal contaminated sites**



Sites where contamination is suspected are first assessed to determine whether contamination above guideline levels is present. Custodians must have reason to believe that a given site is contaminated before requesting funding for assessment. On the basis of the assessment results, the terrestrial sites are classified and prioritized according to the Canadian Council of Ministers of the Environment’s (CCME) National Classification System for Contaminated Sites (NCSCS); aquatic sites are assessed against the FCSAP program’s Aquatic Sites Classification System (ASCS).

The NCSCS defines Class 1 and 2 sites as follows:

- **Class 1, high priority for action:** “The available information indicates that action (for example, further site characterization, risk management, remediation) is required to

<sup>1</sup> The cost to remediate a site (that is, reduce a risk) is booked as a liability in the Public Accounts.

address existing concerns. Typically, Class 1 sites show a propensity to high concern for several factors, and measured or observed impacts have been documented.”

- **Class 2, medium priority for action:** “The available information indicates that there is a high potential for adverse impacts, although the threat to human health and the environment is generally not imminent. For Class 2, there is typically no direct indication of off-site contamination. However, the potential for off-site migration tends to be rated as high and therefore some action is likely required.”

The ASCS defines Class 1 and Class 2 sites as follows:

- **Class 1, high priority for action:** “The available information indicates that action (further site characterization or risk management) is required to address existing concerns. Typically, Class 1 contaminated aquatic sites indicate high concern for several factors, and measured or observed impacts have been documented.”
- **Class 2, medium priority for action:** “The available information indicates that there is potential for adverse impacts, although the threat to human health and the environment is generally not imminent. Additional investigative work may be carried out to confirm the site classification, and some form of action may be required.”

Depending on the results of the assessment, custodians may apply for additional FCSAP funding to finance the remediation or risk management (R/RM) of contaminated sites. These applications are submitted for review by ESDs using the program’s Interdepartmental Data Exchange Application (IDEA). To be eligible for FCSAP funding, federal contaminated sites must comply with the following criteria.

- Sites must have been contaminated through activities that occurred prior to April 1, 1998, with the exception of sites funded through Federal Infrastructure Program funding in Budget 2016.
- Sites must be on lands owned or leased by the federal government. If the site is on non-federal lands, the federal government must have accepted full responsibility for the contamination.
- Consistent with the “polluter-pays” principle, contaminated land that the custodian wants to acquire is not eligible for FCSAP funding.
- Site assessment funding must be prioritized by custodians to focus on the highest priority sites (Class 1 or those expected to be Class 1). In Phase III, assessment funding has been limited for use only at Class 1 or expected Class 1 sites. Custodians must have documented reasons for believing that a site may be contaminated and would be a high priority for action.
- Sites proposed for remediation must meet the [Policy on Management of Real Property](#) definition of a contaminated site: “a site at which substances occur at concentrations that: (1) are above background levels and pose, or are likely to pose, an immediate or long-term hazard to human health or the environment, or (2) exceed the levels specified in policies and regulations.”

- Sites proposed for remediation must also be classified as Class 1 using an appropriate site classification system. Or they can be classified as Class 2, with FCSAP remediation expenditures prior to April 1, 2011. However, sites funded through the Federal Infrastructure Program funding in Budget 2016 are excluded. The proposed sites must also have a financial liability associated with them that are reported in the PAC and in the TBS Federal Contaminated Sites Inventory (FCSI).

Depending on the results of the classification and prioritization exercise, the custodian may develop and implement a Remedial Action Plan or a Risk Management Plan. The plan consists of remediation (removal, reduction or destruction of contaminants or pollution), risk management (activities aimed at controlling or managing contaminants or pollution), or both. In many cases, the assessment may conclude that no remedial action or risk management is needed. Once the objectives for the site have been reached (for example, no further action is required and the federal financial liability has been fully addressed), the site may be closed. However, long-term site monitoring (Step 10 of the process) may be required in some circumstances.

Consistent with the “polluter pays” principle, FCSAP operates on a cost-shared basis with custodians. The FCSAP program funds 80% of total assessment costs and 85% of the total remediation costs for sites under \$90 million, with the balance funded by custodians. Sites with total cost estimates over \$90 million are fully funded for remediation by the FCSAP program.

While FCSAP is scheduled to sunset in March 2020, the estimated liability remaining in 2020 for approximately 1,300 FCSAP-eligible sites is projected to be \$4.0 billion. Recognizing the scope of the work that will remain at the end of FCSAP Phase III in 2020, a long-term strategy is currently being developed. It looks at options to address federal contaminated sites after 2020. The present evaluation results will help to inform this strategy.

## About the evaluation

The scope of the evaluation included the 18 federal departments and agencies and the three core program elements (secretariat, expert support and custodians) involved in FCSAP. It also included all contaminated sites and projects that were identified, assessed or remediated over the six-year period from FY 2012 to 2013 to FY 2017 to 2018. Multiple lines of evidence were used, including:

- An extensive review of publicly available and internal program documents, including a wide range of internal documents available through the IDEA, the 2014 evaluation, annual reports and reports on FCSAP Secretariat consultations with regional custodians and expert support representatives and on engagement sessions with Indigenous stakeholders in regions across the country.
- An analysis of financial and program administrative data, including the review of an August 2017 data extract from the FCSI. Administrative data were provided for Phase II (from FY 2011 to 2012 to FY 2015 to 2016) and the first year of Phase III (FY 2016 to 2017).

- In-depth interviews with a total of 66 key informants, including 28 custodians, 18 ESDs, five FCSAP Secretariat and TBS staff, five senior managers and 10 external stakeholders.
- A review of contaminated site assessment and remediation programs in selected national and international jurisdictions (British Columbia, Quebec, United States, New Zealand and Germany)
- Five case studies, focusing on the following topics:
  - Unique challenges to the remediation of contaminated sites in the North: Giant Mine, Northwest Territories
  - Use of innovative technologies in remediation: Lobstick Maintenance Yard, Prince Albert National Park, Saskatchewan
  - Emerging contaminants, with a focus on per- and polyfluoroalkyl substances (PFAS)
  - Long-term monitoring of remediated sites: the Distant Early Warning (DEW) Line site in Cape Dyer, Nunavut
  - Socio-economic benefits of remediation, with a focus on Indigenous communities: Kitasoo Environmental Remediation Project, British Columbia
- An expert panel conducted by teleconference with eight participants from industry, provincial and territorial governments and academia from across Canada, which focused on selected key themes and issues arising from the evaluation

[Appendix B](#) provides a more detailed description of the evaluation approach.

The evaluation team encountered the following limitations while conducting the evaluation and put in place strategies to mitigate their impact.



Limitations	Mitigation strategies
<ul style="list-style-type: none"> <li>The document and data review required the processing and analysis of a large number of documents and significant volumes of complex administrative data. Both data sources were initially characterized by gaps and were supplemented with new information as the evaluation progressed. Because the administrative data was highly technical, there was a risk that the results of the data review would contain errors or be interpreted incorrectly.</li> </ul>	<ul style="list-style-type: none"> <li>Collaboration and coordination with program partners and application of appropriate tools for managing and analyzing the documents and data were central to mitigating this risk and executing this task successfully. Zotero, a reference management software package that collects research materials in a single location, facilitated the organization of program documents, so that they could rapidly be classified, sorted, filtered and searched. For the administrative data review, the FCSAP Secretariat and TBS played an essential role in validating the results of the analysis of FCSI data and in ensuring that they were interpreted accurately. In addition, analysis of FCSI data was designed and implemented with R, a software environment for sophisticated statistical computing and graphics.</li> </ul>
<ul style="list-style-type: none"> <li>Despite attempts by the evaluation to reach 18 external stakeholders, relatively few (n=10) ultimately participated. As a result, the evaluation findings may not adequately reflect the views of external stakeholder groups.</li> </ul>	<ul style="list-style-type: none"> <li>To the extent possible, information obtained from key informants has been corroborated with information from other lines of evidence. In addition, the views of Indigenous communities and organizations that were not included among the key informants were sought through a separate engagement exercise led by the FCSAP Secretariat. In this exercise, 199 communities or organizations were consulted in meetings held at 10 locations across the country. This allowed a larger number of Indigenous communities and organizations to participate, compared to relying on key informant interviews. The results of these engagement sessions were incorporated into the report. As well, the evaluation consulted an eight-member panel of external experts.</li> </ul>
<ul style="list-style-type: none"> <li>Due to significant differences in jurisdictional context and budgetary constraints, a systematic comparison of programs in other jurisdictions relative to FCSAP could not be undertaken as part of this evaluation.</li> </ul>	<ul style="list-style-type: none"> <li>The comparative analysis was framed as an exercise that aimed to identify best practices or potential elements of program design and delivery that could be considered for implementation in the Canadian context. Relevant information from the comparative analysis was integrated into the evaluation report with this in mind, particularly when it could supplement information about potential changes to FCSAP arising from other lines of evidence.</li> </ul>

Key findings are presented in the next three sections. A rating is provided for each element assessed, based on a judgment of the evaluation findings, in keeping with the following rating statements and definitions.

<b>Statement</b>	<b>Definition</b>
Expectations met	The intended outcomes or goals have been achieved.
Further work required	Considerable progress has been made to meet the intended outcomes or goals, but attention is still needed.
Priority attention required	Insufficient progress has been made to meet the intended outcomes or goals and attention is needed on a priority basis.
Unable to assess	Insufficient evidence is available to support a rating.

## 2. Findings: relevance

This section summarizes the evaluation findings related to the relevance of FCSAP by examining the continued need for the program, its alignment with government priorities and the extent to which it is consistent with the roles and responsibilities of the federal government.

Relevance criteria	Expectations met	Further work required	Priority attention required	Unable to assess
1. Continued need for the program	•			
2. Alignment with government priorities	•			
3. Consistency with federal roles and responsibilities	•			

### 2.1 Continued need for the program

**Findings:** There is strong evidence of a continued need for FCSAP or a similar program to address outstanding liability and the risks to the environment and human health associated with federal contaminated sites. Significant progress has been made since the start of the program. However, as of August 2017, there remain more than 7,400 suspected or active contaminated sites in Canada. An estimated \$4.0 billion in federal liabilities is expected to persist beyond 2020. Alternative sources of funding are likely insufficient to address liability and the risks to the environment and human health associated with federal contaminated sites.

At the start of FCSAP in 2005, it was estimated that there were 6,200 suspected or known federal contaminated sites in Canada. At the time of the last FCSAP evaluation in 2014, about 22,000 sites were listed on the Federal Contaminated Sites Inventory (FCSI), of which about 48% had been closed. More recent FCSI data indicates that there were 23,769 suspected or known contaminated sites in Canada as of August 2017, of which 16,361 (68.8%) have been closed. This suggests that although custodians have made discernable progress towards site closure since FY 2011 to 2012, additional work will be required in the coming years to reduce liability and address the risks to the environment and human health stemming from federal contaminated sites. Indeed, as of August 2017, there remain more than 7,400 suspected or active contaminated sites on the FCSI. This figure includes more than 3,600 FCSAP-funded sites. Of those, nearly one third have not yet been classified (see Table 1: [suspected](#) and active federal contaminated sites on the Federal Contaminated Sites Inventory, August 2017

Furthermore, it is estimated that \$4.0 billion in FCSI site liabilities will persist beyond FCSAP Phase III (see section 4.2 for findings on the reduction of federal liabilities).

**Table 1: suspected and active federal contaminated sites on the Federal Contaminated Sites Inventory, August 2017**

Priority level	Suspected sites		Active sites	
	All sites on FCSI	FCSAP-funded sites	All sites on FCSI	FCSAP-funded sites
High priority (Class 1)	-	-	713	549
Medium priority (Class 2)	-	-	1,738	1,025
Low priority (Class 3)	-	-	1,353	723
Insufficient information	1	1	120	48
Not a priority for action	-	-	396	163
Not yet classified	2,143	860	944	260
<b>All sites</b>	<b>2,144</b>	<b>861</b>	<b>5,264</b>	<b>2,768</b>

Notes: Consistent with the 2014 evaluation, a FCSAP site is defined as a site in the FCSI for which FCSAP expenditures were recorded in any year since the start of the program in any category. Suspected sites have not yet been classified.  
Source: Federal Contaminated Sites Inventory (Treasury Board of Canada Secretariat, 2017).

The ongoing need for the program is also driven in part by the fact that long-term monitoring and risk management will be required at some sites long after the FCSAP program sunsets in 2020. Long-term monitoring (step 10 of the 10-step process) is implemented at some sites to ensure that the risk management measures put in place to protect the environment and human health continue to perform as intended. While FCSAP currently funds up to five years of long-term monitoring, many sites, such as the DEW Line sites in the North, will require monitoring by the custodian, the Department of National Defence (DND), over a much longer time horizon or in perpetuity.

There is also a growing recognition of the need to address emerging contaminants at federal sites. This term is used to refer generally to contaminants for which there is insufficient scientific information and evidence to inform the effective management of contaminated sites. Emerging contaminants:

- generate unexpected increases in federal liability for contaminated sites
- may lead to the reassessment of current sites or the reopening of closed sites
- may require or benefit from technological solutions that do not presently exist or must be developed further before they can be effectively and efficiently applied in Canada

Per- and polyfluoroalkyl substances (PFAS) are an example of an emerging contaminant. Historically, PFAS were used in the production of consumer and commercial products and in the manufacture of firefighting “aqueous film-forming foams” (AFFF). In Canada, PFAS have been identified as a likely contaminant of concern in Canadian harbours as a result of shipping and port-related activities. The historical use of AFFFs for firefighting activities and training at airports has also resulted in confirmed or suspected contamination at numerous Canadian airports, as well

as at storage and training sites connected to aviation. The significant knowledge gaps related to PFAS and other emerging contaminants, such as 1,4-dioxane, as well as chemicals found in pesticides, pharmaceuticals and personal care products, pose challenges for the assessment and remediation of federal sites at which they are present. These gaps include an incomplete understanding of their compounds and precursors, a lack of clear guidelines regarding acceptable concentrations, insufficient toxicology data, unknown fate and transport properties and costly and untested remediation options.

Other than FCSAP, there are few alternative sources of funding for addressing federal contaminated sites. Some custodians are able to draw on their existing budgets or revenues from the sale of assets to finance this work, but these are not regarded as sufficient to address liabilities and the environmental and human health risks at federal contaminated sites. While some work at contaminated sites may continue even in the absence of the program, it would likely be undertaken much more slowly and less consistently than is currently possible. Custodians would lose access not only to funding, but also to the tools, expertise and venues for collaboration and coordination that FCSAP provides. As such, there is broad agreement among stakeholders that there is a continuing need for FCSAP or a similar program to address federal contaminated sites.

## 2.2 Alignment with government priorities

**Findings:** The FCSAP program is a priority for the federal government. It aligns well with current federal priorities such as environmental protection, job creation and skill development, and is seen as an important contributor to the reconciliation agenda. However, the program is less clearly aligned with priorities related to innovation and climate change. There is strong support for enhancing alignment with the reconciliation priority through increased engagement with Indigenous communities at all stages of the FCSAP process.

Remediation of federal contaminated sites is a federal priority. FCSAP is mentioned in six of nine federal Budget Plans since 2009. [The 2016 Budget](#) announced \$3.4 billion in infrastructure funding, of which \$217 million was to expedite work at contaminated sites.

FCSAP also aligns well with several current federal priorities, most notably **environmental protection** as articulated in the [2016-2019 Federal Sustainable Development Strategy](#) (FSDS). In particular, FCSAP activities contribute to Goal 13 of Safe and Healthy Communities, one of 13 overarching goals identified in the strategy. FCSAP contributes to this goal by demonstrating leadership on assessing and remediating contaminated sites and providing information to support decision making by federal custodians of contaminated sites. To track progress towards this goal, the FSDS identifies four short-term milestones, including one on FCSAP: by FY 2019 to 2020, remediate 599 of the highest priority sites under the Federal Contaminated Sites Action Plan. In addition, within the federal government's Whole-of-Government Framework, FCSAP aligns with the outcome of a clean and healthy environment, which encompasses all program activities that "aim to ensure that Canada's environment is restored and protected, and that natural resources are used in a sustainable manner for future generations" (Treasury Board Secretariat, 2015).

Some expert panellists and internal key informants noted that as currently designed, FCSAP does not address the prevention of ongoing and future contamination. They suggested that alignment with the government's environmental protection priority could be enhanced through an emphasis on prevention. A specific example highlighted by these program stakeholders concerned fuel storage tanks in Indigenous communities. These stakeholders noted that FCSAP does not take steps to ensure that Indigenous communities are aware of the [Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations](#) and that they are in compliance. As well, FCSAP does not encourage the replacement of diesel fuel as a source of energy in Indigenous communities. Rather, it funds the replacement of leaky diesel fuel storage tanks with new ones. On the other hand, some internal key informants pointed out that FCSAP's mandate is focused on remediation and as such, activities pertaining to the prevention of future contamination are currently outside of the program's scope.

FCSAP is widely seen by internal and external stakeholders as an important contributor to the **reconciliation** agenda. It helps to satisfy the federal government's obligation to address contamination in Indigenous communities, and generates socio-economic benefits for Indigenous peoples (see section 4.4). That said, there is considerable support among key informants and expert panellists for increasing the program's alignment with the reconciliation agenda through measures such as:

- increased engagement with Indigenous communities
- improved guidance and training for custodians on collaborating and engaging with Indigenous communities
- procurement practices that promote greater participation by Indigenous peoples
- explicit consideration of factors of importance to Indigenous peoples in site assessment and prioritization (see section 3.2)

Over one third (37%) of 4,345 sites on reserves<sup>2</sup> have received FCSAP funding since the start of the program, compared to 69% of 23,769 suspected or known sites overall which have been closed as of August 2017. There has been less program activity on reserves to date because FCSAP has focused on the highest priority (Class 1) sites. Only about 12% of the sites on reserves are considered Class 1, and only about 9% of northern sites managed by CIRNAC are Class 1.

Engagement sessions conducted by the FCSAP Secretariat with Indigenous communities across the country revealed that most had experience with contaminated sites in or near their communities. However, awareness and knowledge of the FCSAP program is relatively limited at present, albeit with some regional differences. Participants from all regions expressed concern about limited or inconsistent collaboration, engagement and information sharing with Indigenous communities with regard to contaminated sites. There is a strong desire for more involvement by Indigenous

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<sup>2</sup> There are 4,345 sites in the Federal Contaminated Sites Inventory that are defined as "a Reserve as defined in the Indian Act".

communities at all stages of the FCSAP program, from assessment to prioritization to remediation and long-term monitoring. Participants in all regions also emphasized the need for prevention.

FCSAP's role in **job creation and skill development** has been formally recognized by the addition of employment creation in the environmental services industry as an ultimate outcome in the Phase III Performance Measurement Framework (PMF). Key informants and expert panellists acknowledged FCSAP's role in job creation and skill development, including with respect to Indigenous communities. However, when asked to comment on which federal priorities should be the focus of the program, the expert panellists did not see job creation and skill development as being as central a priority for the program as environmental protection.

FCSAP is less clearly aligned with the federal government's priorities on **innovation** and **climate change**. The Federal Contaminated Sites Decision-Making Framework contains guidance on incorporating sustainability in contaminated sites management. As well, PSPC is specifically mandated to promote the application of best practices and the adoption of innovative technologies and approaches to custodians. In addition, there is evidence that innovative or sustainable remediation practices have been applied at some federal contaminated sites under FCSAP. For example, the remediation of the Lobstick Maintenance Compound site in Prince Albert National Park (Parks Canada, custodian) used an innovative technology, in situ chemical oxidation<sup>3</sup>, that was significantly less disruptive to the natural environment than traditional approaches would have been. Moreover, it was also seen as the most cost-effective of the available options. It is unknown what proportion of remediated sites have employed innovative or sustainable remediation approaches.

During recent consultations, industry representatives and program partners noted that the current procurement process offers little or no incentive to use innovative technologies in the assessment and R/RM of contaminated sites. For instance, industry representatives observed that the current tendering process favours lower cost bids, and innovative approaches may not be the least costly. As well, short work cycles inhibit the use of experimental or leading-edge technologies that often take time to test and assess in the field. Custodians are also perceived as preferring "tried and true" technologies. While most expert panellists and some internal key informants supported encouraging innovative approaches or technologies, sustainable remediation practices or climate change adaptation approaches, other internal key informants expressed ambivalence about doing so, particularly if those approaches could lead to increased costs.

Among the five programs examined as part of the comparative analysis, the United States (U.S.) Superfund explicitly includes provisions for adaptation to climate change by, for example, screening projects for potential areas of vulnerability to climate change. These provisions are consistent with the broader U.S. Environmental Protection Agency's (EPA) Climate Change Adaptation Implementation Plan. In addition, the Superfund Green Remediation Strategy outlines actions for the inclusion of green remediation technologies at Superfund sites.

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<sup>3</sup> In-situ chemical oxidation is a technique that involves injecting chemical oxidizers directly into contaminated soil and groundwater. This creates a chemical reaction that destroys the contaminants.

Quebec's new [Programme ClimatSol-Plus](#) has as its long-term goals to increase resilience to climate change, decrease greenhouse gas emissions and improve the quality of the. Part 1 of the program supports measures that aim to improve the resilience of urban environments to climate change as well as support projects that create new purpose for remediated land. Part 2 funds the remediation of contaminated sites with strong potential to foster economic development and to enable population densification. For both parts, site prioritization is based on a set of criteria that include the use of green technologies, as well as the extent to which they enable the use of the land, support commercial or industrial activity and combat climate change.

Examples such as these may be useful models for FCSAP to consider if it wishes to pursue greater alignment with the climate change adaptation agenda or sustainable remediation approaches.

## 2.3 Consistency with federal roles and responsibilities

**Findings:** FCSAP is consistent with federal roles and responsibilities for the management of federal real property, including contaminated sites, and with key federal legislation. Legislation pertaining to environmental considerations includes the [Fisheries Act](#), the [Canadian Environmental Protection Act, 1999](#), the [Canadian Environmental Assessment Act, 2012](#), the [Species at Risk Act](#), the [Migratory Birds Convention Act, 1994](#) and the [Arctic Waters Pollution Prevention Act](#).

Federal responsibility in relation to contaminated sites is articulated in the TB [Policy on Management of Real Property](#), which states that deputy department heads are responsible for ensuring that (among other things), “known and suspected contaminated sites are assessed and classified and risk management principles are applied to determine the most appropriate and cost-effective course of action for each site”, that sites should be prioritized according to the risks contamination poses to human health and the environment, and that “management activities (including remediation) must be undertaken to the extent required for current or intended federal use” (Treasury Board Secretariat, 2006). The federal government may be responsible for contaminated sites in the following circumstances:

- when the lands are owned or leased by the federal government
- when the contamination is on reserve lands or non-federal lands where the contamination was caused by federal government activities, or where the government accepts responsibility

FCSAP aligns with key existing federal legislation pertaining to environmental considerations including the [Fisheries Act](#), the [Canadian Environmental Protection Act, 1999](#), the [Canadian Environmental Assessment Act, 2012](#), the [Species at Risk Act](#), the [Migratory Birds Convention Act, 1994](#) and the [Arctic Waters Pollution Prevention Act](#). In addition, Section 64(2) of the [Financial Administration Act](#) stipulates that the Public Accounts of Canada should include environmental liabilities. However, this legislation only establishes an obligation to report this information, not to address the source of the liability.



### 3. Findings: program efficiency

This section provides the evaluation findings pertaining to the efficiency of FCSAP, including program design and delivery, governance and management, economy and efficiency and performance measurement.

Efficiency criteria	Expectations met	Further work required	Priority attention required	Unable to assess
1. Program delivery model is appropriate for achieving intended outcomes		•		
2. Program design is appropriate for achieving intended outcomes		•		
3. Program resources are adequate		•		
4. Program is being delivered in an efficient and economic manner		•		
5. Governance structure is clear, appropriate and efficient for achieving expected results	•			
6. Performance data is being collected, reported and used to inform senior management and decision makers		•		

#### 3.1 Program delivery model

**Findings:** The roles and responsibilities associated with FCSAP's key program functions are appropriate, although there are opportunities to improve how they are carried out. The program has recently examined the possibility of consolidating program delivery within a single organization. There is currently no consensus among internal program stakeholders on the desirability of doing so, nor is there any objective evidence to indicate that it would produce efficiencies or benefits relative to any costs this move might entail.

FCSAP is a decentralized program with key program functions distributed among 18 federal partners. Program administration is the responsibility of the FCSAP Secretariat at ECCC, with support and policy guidance from TBS. Assessment and remediation activities are carried out by 14 custodial departments, agencies and consolidated Crown corporations. In addition, four ESDs provide science-based technical and project management advice to custodians. The science-based ESDs (DFO, HC and ECCC) are engaged in such tasks as reviewing site scoring, examining scientific and technical documents, providing advice on project, program and regulatory compliance and developing technical advice and guidance, training and tools for custodians. In its role as an ESD, PSPC is tasked with developing program management tools and procurement solutions, sharing information on innovative technologies and carrying out and disseminating the results of demand forecast analyses.

Overall, the roles and responsibilities associated with these functions are appropriate and the program is being delivered effectively. Federal participants in recent consultations regard FCSAP as a model of horizontal program delivery across government.

Nevertheless, there are opportunities to improve how the various roles and responsibilities are carried out. For example, while internal stakeholders generally see the roles and responsibilities of the FCSAP Secretariat as appropriate, they also identified areas in which the Secretariat could improve. Suggestions included supporting continuous improvement to IDEA and for stakeholder use of the application (see section 3.4), as well as strategic communications to ensure nationally consistent messaging about FCSAP.

Similarly, the roles and responsibilities of the science-based ESDs are seen as appropriate by internal stakeholders. However, based on the interviews and the results of stakeholder consultations, the use of ESD services varies widely among custodians. This may reflect differences in technical capacity and expertise across custodial departments<sup>4</sup>, as well as differences in the nature of the contaminated sites across their portfolios.

Internal stakeholders identified opportunities to improve the value that ESDs can provide in several ways. One way is by improving the timeliness of site eligibility reviews. The FCSAP performance measurement framework (PMF) calls for a service standard of 15 working days for review of site scoring to be met 90% of the time. However, performance data indicates that this was accomplished in only 71.8% of the 149 cases with which the ESDs dealt between FY 2013 to 2014 and FY 2016 to 2017. However, nine of the 10 cases the ESDs managed in FY 2016 to 2017 were completed within this timeline, suggesting recent improvements. Over the evaluation period, ESDs performed well with respect to the achievement of service standards for the review of technical documents, that is, completion within 30 working days, 90% of the time. The service standard was met in 89.4% of the 435 cases with which the ESDs dealt between FY 2013 to 2014 and FY 2016 to 2017. ESD representatives participating in the program consultations indicated that this level of performance is challenging to sustain, especially at year-end or when reviews require specific expertise from other teams. ESD representatives interviewed for the evaluation raised similar concerns, given current resource levels. Accordingly, they recommended that custodians give more advance notice of technical reviews for complex sites.

More broadly, key informants participating in the evaluation suggested that the ability of the ESDs to provide value to custodians could be enhanced through increased collaboration. Specifically, they proposed a more active and earlier engagement between ESDs and custodians in the context of work at specific sites, as well as promoting greater interaction between ESDs and custodians at regional forums such as the Interdepartmental Regional Working Groups.

Finally, ESD representatives participating in interviews identified opportunities to take on new, different or more specialized responsibilities, such as providing custodians with expert advice on

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<sup>4</sup> During recent program consultations, having the required skills in-house was commonly identified by custodians as a reason they do not use ESD services.

emerging contaminants and community outreach advice in the form of risk communication services. However, the evaluation could not determine the extent to which custodians might use such services, or whether they could be offered in the context of current resource levels.

PSPC is unique among the FCSAP partners since it is both an ESD and a service delivery provider. However, it is important to mention that only its expert support role is funded through FCSAP. Results from a recent internal survey indicate that most custodians who use PSPC for expert support services were satisfied with the quality of support they received with respect to procurement and innovative and sustainable technologies. Responses indicated, however, that there are opportunities to improve awareness and use of its products and services, echoing a finding from the previous FCSAP evaluation. For example, recent consultations with industry indicated that firms do or would find PSPC's Annual Demand Forecast useful. However, many firms are unfamiliar with this tool, with some stating they were unsure even where to look for it. Similarly, although some interviewees were aware of tools or training provided by PSPC and its Build in Canada Innovation Program (BCIP), relatively few reported having used these resources. No interviewees offered a specific example of how the BCIP had been applied in the context of FCSAP. PSPC has taken steps to increase awareness and use of its products and services in response to a recommendation from the 2014 evaluation by, for example, distributing fact sheets and other communications materials and delivering online sessions. However, there appears to be an ongoing need for efforts in this area.

In addition to its role as an ESD, PSPC acts as a service delivery provider for eight of the 14 custodians, although it is not funded to perform this function through FCSAP. As such, this role does not fall strictly within the scope of this evaluation. The nature of this role appears to vary depending on each client's specific needs. Some custodial departments, or regional offices within those departments, use PSPC mostly to tender contracts. Others rely on it to perform functions ranging from contracting to project, site-level and portfolio-level management and planning. Interviewees, as well as the custodians who responded to a recent internal survey, identified a number of concerns about this role, including the lack of consistency in service provision, insufficient capacity or expertise, variability in PSPC fees, the lack of value for money and variability in the contracting approaches and tools used, in the knowledge and expertise of project managers and in the quality of consultants hired.

Recent internal consultations examined the possibility of consolidating the program delivery function within a single organization, that is, taking a "whole-of-government" approach to program delivery. Some internal stakeholders who participated in interviews also advocated for a more centralized approach. However, there is currently no consensus among internal program stakeholders on the desirability of consolidating the program delivery function, nor is there any objective evidence to indicate that such consolidation would produce efficiencies or benefits relative to any costs this move might entail.

## 3.2 Program design

**Findings:** While the overall design of FCSAP is appropriate, encouraging geographic bundling of co-located sites, regardless of assessed risk, could improve efficiency and promote the achievement of program outcomes. Many program stakeholders support revising the site prioritization process to include socio-economic, political and cultural factors. Such a revision could enhance alignment with the federal government's reconciliation priority, but it could also increase administrative complexity.

FCSAP is a complex horizontal program consisting of numerous components, activities and design elements. The evaluation examined several key aspects of the FCSAP design to assess their appropriateness and determine if changes could improve overall efficiency or effectiveness. The key elements examined include:

- [eligibility criteria](#)
- [site prioritization process](#)
- [funding model](#)
- [treatment of mega-sites](#)

### Eligibility criteria

Many internal stakeholders see the FCSAP eligibility criteria as being excessively restrictive. There was considerable support among interviewees and participants involved in recent program consultations for expanding eligibility to include lower-risk sites. They felt that this would make it easier for custodians to address contamination at their sites. Related to this, most internal stakeholders believe efficiencies could be gained by encouraging geographic bundling of sites, potentially combining high-priority with lower-priority sites. Bundling could help to control the cost of remediation in rural or remote regions of the country where necessary materials, expertise and equipment are not locally available and where unfavourable weather or ground conditions may impose restrictions on when remediation work can be undertaken.

Geographic bundling is already being implemented in some contexts, although it does not appear to be widespread at the present time. For example, key informants reported that Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) generated substantial efficiencies by bundling 21 sites into a single project. As well, DND uses a bundling technique for long-term monitoring of its DEW Line sites in the North. This approach reduces the number of contracts, the time spent on contract procurement and the money and time spent on mobilization. Expert panellists agreed that bundling, including bundling of high and lower-priority sites, should be permitted whenever it makes economic sense to do so. One expert went further, arguing that remediation efforts should be integrated with initiatives to improve water, sewage and solid waste systems, to improve overall livability of Indigenous communities.

In all other cases, expert panellists were divided on the question of expanding the eligibility criteria to include lower-risk sites. Some argued in favour of expanding eligibility to lower-class sites and suggested that the program should adopt a broader “opportunity creation” rather than “risk reduction” framework for decision making. Others maintained that higher-risk sites should remain the primary focus and priority of the program, at least until all of those sites have been addressed.

In program consultations and interviews, some internal key informants flagged as an issue the criterion that limits eligibility for FCSAP funding to sites contaminated prior to 1998. Many federal sites, including many First Nations communities, were contaminated after this date. It should be noted that sites contaminated after 1998 were eligible for remediation funding through the Federal Infrastructure Program, which ended in FY 2017 to 2018. Most expert panellists did not favour extending eligibility to sites contaminated after 1998. They observed that custodians have been aware of the pre-1998 criterion since the program was introduced and that consequently, they should pay for remediation of sites contaminated since that date within their own budgets. That said, one expert noted that reality can be more complicated: decisions are sometimes made over which the custodian has no influence, especially in the case of First Nations on reserve (for example, issuing of permits).

### Site prioritization

Some internal stakeholders identified concerns with the NCSCS/ASCS scoring mechanism used to prioritize sites, arguing that:

- it should account for a broader range of prioritization factors such as socio-economic, political or legal considerations<sup>5</sup>
- it can produce arbitrary results; for example, incremental changes in site scoring can cause the site to be reclassified and potentially affect eligibility for FCSAP funding
- certain characteristics, such as the sites with high cultural significance or a strong potential of being sold, should carry more weight in the decisions
- custodians should have more flexibility to determine which sites to address

Expert panellists had mixed views on the desirability of revising the site prioritization process. Those opposed observed that introducing “subjective” factors, such as socio-economic, cultural or political considerations, would make the process more difficult to administer and publicly defend. Others argued in favour of introducing such considerations, particularly in the case of First Nations communities on reserve. Given that some of these communities have very small land bases, these experts emphasized the need to consider the cultural significance of the site and its importance to the community’s current and future well-being and growth in the prioritization process. Similarly, participants in the Indigenous engagement sessions recommended that site prioritization should

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<sup>5</sup> Currently, the Priority of Assessment Tool allows custodians to consider socio-economic, legal or political factors when identifying the sites to prioritize for assessment. However, the NCSCS/ASCS scoring mechanism, which is applied during the assessment process to classify sites, does not take these factors into consideration.

consider factors such as the community's traditional use of the land and its resources, the importance of the site for community and economic development and the cultural importance of the site, as well as factors such as the impact on human health and the environment. Participants emphasized that each community is best positioned to determine for itself which of its contaminated sites should be priorities for remediation.

Among the five programs examined as part of the jurisdictional review, the prioritization tool used by New Zealand's [Contaminated Sites Remediation Fund](#) assigns scores based on cultural, social, heritage and economic benefit factors. High, medium or low scores are applied based on a subjective assessment of these factors. The other jurisdictions examined, namely British Columbia, Quebec, the U.S. and Germany, do not appear to formally include these kinds of factors in the prioritization process. In the Canadian context, formally introducing such criteria into the prioritization process could be explored as a means of enhancing program alignment with some federal priorities, most notably reconciliation with Indigenous peoples. However, it should be recognized that doing so could increase the administrative complexity of the process. Several expert panellists noted that subjective factors, such as legal, political, socio-economic and cultural considerations, may already be taken into consideration after site prioritization has occurred, when custodians decide which high-priority sites they will address first.

### **Funding model**

Consistent with the polluter pays principle, FCSAP operates on a cost-shared basis with custodians. The program funds 80% of total assessment costs and 85% of the total remediation costs for sites under \$90 million, with the balance funded by custodians. Sites with total cost estimates over \$90 million may be fully funded for remediation by FCSAP. Most custodians view the cost-share as a hindrance to completing work at contaminated sites, citing challenges in securing the needed funds. They mentioned that all federal funding for contaminated sites ultimately comes from the taxpayer. On the other hand, non-custodial program stakeholders see the cost-sharing scheme as appropriate, noting that requiring custodians to contribute financially is a way of acknowledging their responsibility to remediate the sites in their portfolio. The evaluation did not find strong evidence to indicate that the cost-sharing scheme should be adjusted or eliminated.

Some custodians also see a problem with the relative difficulty of establishing multi-year contracts. They argued that this can and does affect the continuity and pace of work, particularly at larger sites. The perceived value of multi-year contracting was also mentioned in the previous evaluation, conducted in 2014, as well as during recent consultations with program partners and industry representatives. However, the evaluation did not have access to any data that would indicate how widespread this issue is or what its impact might be for project costs or the program as a whole.

### **Treatment of mega-sites**

Slightly more than half of the \$4.0 billion in total estimated liabilities expected to persist beyond the end of FCSAP Phase III will rest with two contaminated sites at the Giant and Faro mines. These sites are significantly larger and more complex than most other sites in the portfolio. For example,

the Giant Mine site, a former gold mine in Yellowknife, is contaminated with 237,000 tonnes of arsenic trioxide dust stored underground, as well as 16 million tonnes of arsenic-contaminated tailings in surface tailings ponds. The mine is located on traditional lands of the Yellowknives Dene First Nation, the Akaitcho Territory Dene First Nation and other lands included in land claim agreements. CIRNAC has primary responsibility for this land, but the Government of Canada and the Government of the Northwest Territories have shared responsibility for the remediation project. Governance and oversight are provided by a complex structure involving multiple stakeholders and include unique requirements for stakeholder engagement.

The Giant Mine Remediation Project first received FCSAP funding in 2006. It is currently in the project definition phase, which is expected to continue until 2021. Work is underway to comply with 26 measures required by an environmental assessment completed in 2014, prior to an application for a water licence, a necessary precondition to commencing the remediation work. The implementation phase of the project, when the remediation work will occur, is expected to begin in 2021. In addition to the factors described above, climate and geography make for a shortened field season for some types of work and are contributing to the long timeframe and high cost of the Giant Mine Remediation Project.

As a result of the complexities, cost and extended timeframe of the remediation projects at the Giant and Faro mine sites, some internal key informants believe their management is not well-served by a time-limited program such as FCSAP. Moreover, because these sites account for a large proportion of the liabilities reported in the FCSI, upward adjustments of estimated liabilities can obscure progress being made in addressing aggregate liability at FCSAP-funded sites. As a result, it is difficult to communicate FCSAP achievements. Accordingly, one of the recommendations emerging from stakeholder consultations held in 2017 was to remove these sites from FCSAP and fund them separately. Some key informants also made this suggestion during the interviews conducted as part of this evaluation.

### 3.3 Adequacy of resources

**Findings:** Based on current estimates, program resources will not be sufficient to address federal liabilities by the end of FCSAP Phase III. Increasing the funding for assessment activities could help to address the approximately one third of FCSAP sites that have not yet been assessed. It could also help to reduce associated uncertainty and potentially mitigate against project cost escalation.

#### Overall adequacy of resources

Based on current estimates, FCSAP resources will not be sufficient to address federal liabilities by the end of FCSAP Phase III. The adequacy of program funding to address the liabilities of eligible sites was originally flagged as an issue in the 2014 evaluation. Recent analyses suggest that liabilities amounting to approximately \$4.0 billion at over 3,000 sites will continue beyond the end of Phase III. This is due in part to substantial increases in estimated remediation and risk management costs and, to a lesser extent, to new liability for newly identified sites, over the last several years. These liability amounts have tended to exceed the amounts of the reductions



stemming from the allocation of FCSAP program expenditures to R/RM at contaminated sites and from downward adjustments to liability estimates because of increased certainty with regard to the risks associated with these sites.

### Adequacy of resources for particular functions and activities

Table 2 summarizes the allocation of program resources, excluding the custodian cost-share, across the three main categories of program expenditure during FCSAP Phase II. The allocation of funds was weighted heavily towards R/RM activities during the period from FY 2011 to 2012 to FY 2015 to 2016, followed by program management and finally assessment.

**Table 2: allocated FCSAP resources (excluding custodian cost-share), FY 2011 to 2012 to FY 2015 to 2016 (millions)**

Activity	FY 2011 to 2012		FY 2012 to 2013		FY 2013 to 2014		FY 2014 to 2015		FY 2015 to 2016		Phase II total	
	\$	%	\$	%	\$	%	\$	%	\$	%	\$	%
Assessment	\$10.7	4.7%	\$11.4	3.1%	\$7.2	2.2%	\$5.8	2.6%	\$4.7	2.0%	\$39.7	2.9%
Remediation	\$195.7	85.5%	\$332.5	90.7%	\$297.3	91.1%	\$202.2	88.5%	\$208.9	89.5%	\$1,236.6	89.4%
Program management	\$22.6	9.9%	\$22.6	6.2%	\$21.8	6.7%	\$20.5	9.0%	\$19.8	8.5%	\$107.3	7.8%
<b>Total</b>	<b>\$229.0</b>	<b>100%</b>	<b>\$366.4</b>	<b>100%</b>	<b>\$326.3</b>	<b>100%</b>	<b>\$228.5</b>	<b>100%</b>	<b>\$233.3</b>	<b>100%</b>	<b>\$1,383.5</b>	<b>100%</b>

Source: FCSAP Secretariat

FCSAP Phase II set aside about 2.9% (\$39.7 million) of total funding (\$1.384 billion) to help custodians carry out site assessment activities. Only about 1.5% (\$19.6 million) of all Phase III funding (\$1.348 billion) is allocated to this activity. As such, assessment funding declined by about half, both as a proportion of FCSAP funding and in absolute terms, between FCSAP Phases II and III. However, it is important to note that [Budget 2016](#) allocated \$49.9 million to assessment in Phase III through the Federal Infrastructure Program.

The program says that it reduced assessment funding because the number of suspected sites on the FCSI has declined significantly over time. As of August 2017, however, unassessed sites continued to account for about 30.9% of active or suspected FCSAP sites (see [Table 1](#)).

Many internal key informants who participated in this evaluation expressed concern that the current level of funding for site assessment is inadequate. Moreover, during recent internal consultations, it was noted that the funding required to complete a review of the remaining unassessed sites (\$107 million) is modest compared to overall liability. Based on the number of sites expected to proceed to R/RM and applying current and historical costs, estimated liabilities for 4,300 unassessed sites amounting to \$320 million have been recorded prospectively in the PAC.

Increasing the funding for assessment would address the immediate outcome of reducing uncertainty associated with the risk from federal contaminated sites. It would also mitigate against cost escalation arising from, for example, the need to revisit sites to collect additional samples or



resolve contamination issues that had not previously been identified. Industry stakeholders consulted by ECO Canada on the program's behalf made this point in support of post-Phase III planning. A similar point was made by one expert panellist, who noted that many projects are over budget because they have insufficient information.

As with resources for site assessment, some stakeholders argued that the funding available to support program management activities and the delivery of the expert support function is inadequate and should be increased. For example, some custodians reported that available funding is insufficient to secure the human resources needed to manage their contaminated sites portfolios. ESD and Secretariat representatives, among others, described capacity issues within ESDs. They also suggested that the expert support function could be strengthened with additional resources to support the development of guidance documents or participation in risk communication activities. This recommendation was also offered during recent program consultations held with custodians and ESDs.

Some internal key informants, as well as certain documents, flagged as a problem the absence or limited availability of program resources for a variety of other activities. For example, some stakeholders participating in the DYE-M Cape Dyer DEW Line case study noted that although FCSAP will fund up to five years of long-term monitoring as part of remediation work at contaminated sites, a need for this activity will persist well beyond this interval. This puts pressure on federal departments to find alternative sources of funding for this purpose. Additionally, some interviewees and program consultation participants asserted that the program should consider loosening or eliminating eligibility restrictions on some or all of the following: archaeological work, the removal of [Unexploded Explosive Ordnance](#), the implementation of risk prevention or risk minimization activities and research and development.

Analysis of the extent to which available funds were spent as planned, transferred across fiscal years or lapsed shows that although year-to-year variances associated with R/RM funding were substantial, relatively little of this funding was permitted to lapse. Conversely, while variances for assessment and program management funding were much smaller, as was the available funding for these activities, larger proportions of these amounts were ultimately lapsed. Program representatives attributed this phenomenon to a reluctance by the Finance Canada to allow relatively small amounts of unspent assessment dollars to be transferred between fiscal years. As well, the accrual impact of these funds can make it difficult to build the case in funding proposals for additional resources to implement assessment activities.

### 3.4 Program economy and efficiency

**Findings:** Evaluation findings underscore the importance of acknowledging and accounting for the impact of market forces on the cost of program inputs. They also highlight the need to take steps to promote continuity when carrying out assessment and remediation activities at the individual site level. The efficiency with which FCSAP operates has improved since the last evaluation, but there are still some opportunities for improvements.

#### Program economy

The available data did not allow the evaluation to determine whether program inputs are being obtained at least cost, especially with regards to hiring human resources, management and administrative support. Economy is an especially important consideration in the context of procurement, because market forces may significantly influence the price at which services can be acquired. The costs of procuring these services may be high because of an increase in program resources available for such services (for example, funding from the Federal Infrastructure Program) or competition among custodians. If this is the case, custodians could pay more for what is essentially the same product, which clearly detracts from program economy. The cycling of consultants and contractors is another factor that can affect program economy, since it can result in work being redone unnecessarily.

There was insufficient data to substantiate the impact of factors such as the infusion of additional resources, through the Federal Infrastructure Program for example, or competition among custodians on the cost of procuring services. However, potential cost impacts can be addressed to some extent by carefully coordinating and scheduling project activities, to avoid overlap among large projects, or by implementing changes to program design that promote continuity when carrying out assessment and R/RM activities. For example, a competitive process could be established that awards contracts over multiple years or multiple phases of the work done at particular locations.

#### Program efficiency

Available evidence suggests that the efficiency of the FCSAP program has improved since the 2014 evaluation. In Table 3, administrative data is combined with information collected from the FCSI. The data shows that about \$1.10 in total program costs are required to reduce federal liabilities by \$1.00. This is a slight improvement over the 2014 evaluation, which found that about \$1.20 in program costs were needed to reduce \$1.00 of federal contaminated sites liability. As noted in the 2014 evaluation, the ratio of FCSAP costs to liability reduction tended to be higher during periods where a larger proportion of program funding was used to accelerate site assessment. Reductions in assessment expenditures over the same interval could be one reason why the value of the ratio improved over Phase II.

**Table 3: cost/benefit ratio, FCSAP costs and liability reduction for Phase II**

Fiscal year	Total expenditures reducing liability (millions) <sup>1</sup>	Total FCSAP costs (millions) <sup>2</sup>		Ratio of FCSAP costs: liability reduction	
		Custodians only	All costs	Custodians only	All costs
FY 2011 to 2012	\$179.0	\$198.24	\$211.79	1.11	1.18
FY 2012 to 2013	\$196.3	\$212.61	\$225.50	1.08	1.15
FY 2013 to 2014	\$291.6	\$297.92	\$310.03	1.02	1.06
FY 2014 to 2015	\$255.5	\$264.21	\$275.11	1.03	1.08
FY 2015 to 2016	\$247.5	\$252.43	\$262.90	1.02	1.06
<b>Total for Phase II</b>	<b>\$1,169.9</b>	<b>\$1,225.41</b>	<b>\$1,285.33</b>	<b>1.05</b>	<b>1.10</b>

Note: Consistent with the 2014 evaluation, a FCSAP site is a site in the FCSI for which FCSAP expenditures were recorded in any year since the start of the program in any category.

<sup>1</sup> This includes FCSAP and cost-shared expenditures reducing liability for sites reporting total expenditures reducing liability.

<sup>2</sup> The "custodians only" columns include costs related to custodian assessment, R/RM, and program management expenditures, whereas the "all costs" columns also include expenses associated with the expert support function, the Secretariat and TBS.

Source: Federal Contaminated Sites Inventory (Treasury Board Secretariat, 2017)

In addition, although the proportion of resources spent on administering FCSAP (12.6%) exceeded the amounts allocated for Phase II (11.9%), program administrative data indicates that the difference is relatively minor.

The evaluation evidence suggests a number of opportunities for enhancing efficiency. Some of these opportunities have been discussed or alluded to in other sections of this report. These opportunities include:

- Encouraging greater consistency among custodians in estimating remediation liabilities
- Improving procurement by facilitating the use of multi-year contracting, improving consistency in the tools used to facilitate procurement and designing contracts to help achieve secondary program outcomes such as innovation or reconciliation
- Improving the functionality and user-friendliness of the IDEA by:
  - Enhancing the search function and navigation
  - Allowing bulk document uploads
  - Improving accessibility, for example by removing the password protection on guidance documents and facilitating the sharing of IDEA materials with consultants
  - Reorganizing or restructuring documents, for instance by structuring the application according to the 10-step process or by creating a separate section within IDEA that contains key documents like analytical guidelines and the criteria to be applied at federal sites

- Addressing errors in IDEA submissions, for example by providing additional user training or by requiring custodians to verify that uploaded submissions have been correctly implemented
- Exploring the possibility of modifying the IDEA to capture the informal advice by ESDs to custodians, which can require significant investments of time and effort and constitutes an important service to custodians
- Providing human resources to help custodians and other stakeholders use the IDEA, for example, by answering questions, providing guidance and addressing technical issues
- Enhancing the FCSI by improving the functionality and searchability of the interface, ensuring that it contains up-to-date information and making sure it contains all of the information
- Streamlining the Site Closure Tool so that it is less onerous and time-consuming to complete, particularly for small and less complex sites
  - The FCSAP Secretariat recently put out a new version of the tool that may address these issues. However, one expert panellist proposed a more comprehensive site closure report that includes information about all the compounds found at sites in amounts exceeding baseline levels. This would allow the program to respond more quickly and effectively to new contaminants of concern, since the site closure reports would be an accessible source of information on where these contaminants are present.
- Encouraging the implementation of risk management approaches or less intensive remediation approaches, where appropriate, as a means of generating cost savings
- Exploring the use of information technology applications, data management and drone technology to facilitate the long-term monitoring required to support risk management approaches at contaminated sites, as is currently being done in British Columbia
- Facilitating the more timely development and access to guidelines and standardized templates, which many stakeholders regard as one of the program's strengths
- Helping ESDs to improve how they meet program service standards
  - Enhancing communication, collaboration and engagement with external stakeholders, including Indigenous communities, provinces and territories, industry and other stakeholders, by formalizing FCSAP's approach to stakeholder engagement, using the the U.S. and New Zealand approaches as potential models.
  - In the U.S., the EPA is required by Superfund legislation to carry out specific community engagement activities at various points in the remediation process. Superfund has a formal [Community Involvement Program](#), which gives community members the opportunity to participate in decision making through public meetings, information sessions, community interviews and Community Advisory

Groups. A Community Involvement Coordinator is appointed to work with community members during assessment and clean-up.

- In New Zealand, many remediation projects require consent from the community, and in all of these cases, Māori must be among the groups providing consent. Māori are also included on the project boards or steering groups that are required for larger or more complex sites. In some cases, Māori are also the landowners, so they are closely involved throughout the project, as all landowners are. More broadly, the [Resource Management Act 1991](#) contains various provisions aimed at increasing Māori participation in resource management processes.

### 3.5 Governance and management

**Findings:** Overall, the FCSAP governance structure is appropriate and is operating effectively, although opportunities may exist to encourage the committees and working groups to be more engaged.

The objective of the FCSAP governance structure is to promote horizontal collaboration and administrative oversight through the FCSAP Secretariat and various interdepartmental committees, sub-committees and working groups. Overall, the roles and responsibilities of these groups are clearly defined and are well understood by internal program stakeholders. In short, the governance structure appears to be operating effectively. However, there may be opportunities to more actively engage some of the committees.

- The roles and responsibilities of the FCSAP Secretariat are viewed as appropriate and the Secretariat is perceived to be effectively carrying out its responsibilities. However, some opportunities for improvement were identified (see section 3.1).
- The ADM and DG Steering Committees meet on an ad hoc basis, as needed. Some program stakeholders see this as appropriate, given that FCSAP is a mature program. Others, however, recommended a more active role for senior management, particularly during renewal efforts.
- Key informant suggestions for improving engagement by the CSMWG and the IRWGs included providing more opportunities to share information on best practices and lessons learned and promoting interaction between custodians and ESDs. Participants in recent program consultations also offered a range of recommendations for IRWG meetings, including an expanded allowance for travel, more and longer face-to-face meetings that also include training sessions, increased custodian involvement, incorporating an industry perspective into meetings and setting aside more time to discuss new guidance.

A more centralized governance structure, consisting of a central Contaminated Sites Office/ Secretariat and Board of Custodians, was considered during internal consultations; they also examined the possibility of a more centralized program delivery structure. Such a structure could promote program effectiveness, efficiency and alignment with federal priorities, but might also

reduce custodian control over site management, generate internal frictions and increase the administrative burden.

### 3.6 Performance measurement

**Findings:** FCSAP has a well-developed performance measurement infrastructure. Performance data is timely and reliable. Finding ways to tell a meaningful performance story is an ongoing issue, particularly in light of the reliance on liability reduction as an outcome measure. Moving forward, greater emphasis should be placed on performance metrics that convey the achievement of risk reduction objectives. In addition, the program logic model should be refined to eliminate duplication and ensure that all expected outcomes are represented and supported by a clearly articulated theory of change, explaining how program activities and outputs are expected to lead to outcomes.

A logic model was developed for the FCSAP program and was updated in 2012. A review of the logic model suggests two main ways in which it could be refined and strengthened to support performance reporting.

- The current logic model includes two outcomes (intermediate and ultimate) related to liability reduction, with different performance measures associated with each one. This makes it difficult to report on liability reduction in a straightforward way. It is also unclear how the outcomes differ from one another. Eliminating duplication within the logic model could clarify and simplify performance reporting.
- For Phase III, the program added “employment creation in the environmental services industry” as an ultimate outcome. However, the new outcome was not formally added to the logic model and the program did not clearly state how and why program activities, outputs and immediate and intermediate outcomes are expected to lead to this outcome. Future refinements could focus on ensuring that all expected outcomes are represented in the logic model and supported by a clearly articulated narrative or theory of change. This applies to existing outcomes as well as any new ones that the program may add in the future, particularly if it considers potential changes to program design to improve alignment with federal priorities.

Extensive performance measurement frameworks (PMF) have been developed for both Phase II and Phase III. In addition, FCSAP performance indicators are included in ECCC’s March 2018 performance information profile (PIP) for the Substances and Waste Management Program. There is also a well-designed infrastructure in place for collecting and reporting on performance data, consisting of the FCSI and the IDEA. According to program representatives, the FCSI is regularly enhanced to promote the timeliness, reliability and relevance of the data it contains. However, several expert panellists feel that the public-facing FCSI does not compare well to contaminated sites registries in other jurisdictions. They suggest that the FCSAP program improve the information available to the public through the FCSI, in the interests of transparency and accountability. For example, it was suggested that the FCSI should include information about the

nature of the activities historically carried out at each site, as well as information on all contaminants found at each site in amounts exceeding baseline levels, and not just information on contaminants of concern, as is currently the case.

In addition to the FCSI, the IDEA collects some types of performance data in real time, such as information on meeting service standards by the FCSAP Secretariat and the ESDs, which means that the information is timely and relevant.

Overall, FCSAP performance data is timely and reliable, although minor gaps exist. The program has also attempted to address the reporting burden on custodians. Prior to 2009, custodians were required to report both to the FCSI and the FCSAP Secretariat. They are now required to report mostly to the FCSI.

To date, FCSAP has focused much of its performance reporting efforts on liability reduction. The 2014 evaluation voiced concerns that this could overshadow other program impacts and could drive custodian decision making in ways that hinder the achievement of some program objectives. Similarly, in the present evaluation, many key informants expressed concern that the program's ongoing reliance on liability estimates as an outcome measure makes it difficult to tell a meaningful and complete performance story. This is an issue that was also articulated by consultation participants, as well as in some program documentation. To some extent, the program has addressed these issues by adding "employment creation in the environmental services industry" as a third ultimate outcome to the Phase III PMF. While this outcome may be more meaningful to Canadians than liability reduction, it does not improve the program's ability to report on its contribution to reducing risk to the environment and human health, which is arguably its most important outcome, in a way that resonates with Canadians.

Internal key informants and expert panellists agreed that the program should continue to report on liability reduction. However, they stressed the need to place greater emphasis on risk reduction and on how to report progress on this outcome in a way that speaks to Canadians. The evaluation identified several alternative or additional measures that could be used to demonstrate the program's impact on risk reduction. Expert panellists and key informants suggested "hectares of land remediated or returned to productive use", as an appropriate indicator. Variations of this measure specific to Indigenous lands included "hectares of traditional territory returned to productive use" and "hectares of land made available for hunting, fishing and trapping". In the U.S., the EPA uses a similar indicator in Superfund performance reporting, which it calls "Sitewide Ready for Anticipated Use". Other suggested indicators include the number of communities, sensitive habitats or species no longer exposed to contaminated sites. Some key informants emphasized the need to report not only quantitative measures, but also descriptive information to Canadians. For example, the program should report not only the land area returned to productive use, but also the use being made of the land, such as to develop parkland and for recreational or traditional use.

Other stakeholders called for more rigorous or scientific measures of risk reduction. For example, one expert panellist recommended reporting on the site hazard or risk quotient before and after remediation. Similarly, some program representatives representing ESDs argued that the most

accurate way to measure the extent to which FCSAP has reduced risk to the environment and human health would be to complete a risk assessment at the project outset and then again after project completion. While such analyses would facilitate causal attribution, it is unclear if the results would be any more meaningful to the Canadian public than the current liability estimates. It is worth noting that one expert panellist highlighted the challenge of identifying a measure of reduced risk to human health that resonates with Indigenous peoples, whose view of health may be rooted in traditional knowledge.



## 4. Findings: expected results

This section summarizes the evaluation findings related to the achievement of FCSAP's expected results. Expected results are organized thematically in this section to maximize clarity and minimize duplication of information.

Expected results	Expectations met	Further work required	Priority attention required	Unable to assess
1. Reduction of uncertainty associated with the risk from federal contaminated sites		•		
2. Risk reduction plans developed and implemented at higher-risk federal contaminated sites		•		
3. Risk reduction activities completed at higher-risk federal contaminated sites		•		
4. Reduction in liability through implementation of risk reduction activities at higher-risk contaminated sites		•		
5. Reduced liability at higher-risk federal contaminated sites		•		
6. Reduced risk to the environment and human health from federal contaminated sites		•		
7. Employment creation in the environmental services industry		•		

### 4.1 Assessments and risk reduction plans

**Findings:** During Phase II and the first year of Phase III, FCSAP funded assessment activities at 1,919 federal contaminated sites and completed assessments at 1,022 sites. In the process, it reduced uncertainty associated with the risk from these sites. The program experienced some challenges in meeting performance targets for development, implementation and completion of risk reduction plans during Phase II and the first year of Phase III. However, R/RM activities were completed at 271 FCSAP-funded Class 1 and Class 2 sites over this period.

By using site assessments, FCSAP activities are expected to contribute to the reduction of uncertainty associated with the risk from federal contaminated sites. In addition, FCSAP activities contribute to reducing liability and risk to the environment and human health through the development, implementation and completion of risk reduction plans at higher-risk or high-priority sites.

### **Reduction of uncertainty associated with risk from federal contaminated sites (immediate outcome)**

Available evidence indicates that FCSAP has reduced uncertainty associated with federal contaminated sites through its assessment activities. During Phase II, 1,725 sites reported assessment expenditures, which represented 75% of the program's five-year target of 2,300 sites. As well, another 323 sites reported assessment expenditures in FY 2016 to 2017.<sup>6</sup> FCSAP funded assessment activities at a total of 1,919 sites during this time, although it should be noted that some sites recorded FCSAP assessment expenditure in both Phase II and the first year of Phase III. Furthermore, data provided by the program indicates that assessment activities were completed at 1,022 sites over this period, including 880 sites during Phase II and a further 142 sites in FY 2016 to 2017.

In addition, the number of suspected sites in the FCSI, as well as those that are active in assessment, has decreased steadily over time. Between FY 2011 to 2012 and FY 2016 to 2017, the number of suspected sites declined by 52%, from 4,929 to 2,353, while the number of sites in active assessment declined by 23%, from 4,993 to 3,869.

Some internal key informants suggested that the reduction in funding for site assessment activities between Phases II and III may be hindering efforts to address unassessed sites. Similarly, participants engaged in recent stakeholder consultations suggested that allocating more program funds for assessment activities could help promote achievement of this outcome. The adequacy of FCSAP resources for site assessment and other activities is discussed in detail in section 3.3.

### **Risk reduction plans developed and implemented at higher-risk federal contaminated sites (immediate outcome)**

FCSAP has made progress towards developing and implementing risk reduction plans at higher-risk and high-priority sites. In total, FCSAP R/RM expenditures were recorded for 806 sites during Phase II and the first year of Phase III (see Table 4). It should be noted that the Phase II figures are limited to Class 1 and Class 2 sites, while the Phase III figures and the total number of sites that recorded R/RM expenditures include all sites, irrespective of classification. The program did not succeed in meeting its targets for Phase II. This may be because:

- custodians applied remediation funding to a smaller number of larger or more complex sites than in Phase I
- unanticipated weather or contracting delays affected the ability to carry out remediation activities at particular sites
- some sites ultimately may not have required R/RM

However, it appears likely that FCSAP will meet its two-year performance target for Phase III.

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<sup>6</sup> It is important to note that the program's Phase II targets for assessment and R/RM were based on extrapolations from Phase I data, whereas the Phase III targets were based on planned site information from custodians.

**Table 4: FCSAP-funded R/RM activity at federal contaminated sites, Phases II and III<sup>7</sup>**

Indicator	Target	Actual	% of target achieved
Number of Class 1 and Class 2 sites reporting R/RM expenditures in the first three years of Phase II	1,100	491	44.6%
Number of Class 1 and Class 2 sites reporting R/RM expenditures by the end of Phase II	1,500	591	39.4%
Number of sites reporting R/RM expenditures in the first two years of Phase III	*914	**551	*60.3%
Number of sites reporting R/RM expenditures during Phase II and the first year of Phase III	N/A	806	N/A
<p>* Includes Federal Infrastructure Program funding. ** As of FY 2016 to 2017.            Note: Consistent with the 2014 evaluation, a FCSAP site is defined as a site in the FCSI for which FCSAP expenditures were recorded in any year since the start of the program in any category (that is, assessment, R/RM, care and maintenance or monitoring).            Source: Federal Contaminated Sites Inventory (Treasury Board Secretariat, 2017)</p>			

### **Risk reduction activities completed at higher-risk and high-priority sites (intermediate outcome)**

During Phase II and the first year of Phase III, R/RM activities were completed at 177 sites during Phase II and 94 sites during the first year of Phase III, for a total of 271 FCSAP-funded Class 1 and Class 2 sites. However, these results fell short of the program's performance targets of 368 sites in Phase II and 319 sites in the first two years of Phase III. It is important to note that the number of sites at which custodians could conduct and complete both remediation and assessment activities was limited by the amount of available funding. In some cases, custodians were not able to spend all of the FCSAP funding available to them because unpredictable weather conditions prevented access to sites or limited the type of work that could be carried out, there were contracting delays or unanticipated technical issues resulted in delays or postponement of planned activities at some sites.

The completion of risk reduction plans is an intermediate outcome. As well, it is an indicator of the FCSAP program's ultimate outcome of reduced risk to the environment and human health. Additional information about completed risk reduction activities is provided in section 4.3.

<sup>7</sup> The Government of Canada (2017) recently published its FCSAP annual report for FY 2015 to 2016, in which it presents estimates for the number of Class 1 and Class 2 sites reporting R/RM expenditures during Phase II. These numbers are slightly higher than the figures presented here. In particular, the report finds that risk-reduction activities were conducted at 531 and 640 priority FCSAP-funded sites by the end of FY 2013 to 2014 and FY 2015 to 2016, respectively, representing 48.3% and 42.7% of the three-year and five-year Phase II performance targets. Since the report was published following completion of the FCSI data analysis, it was not possible to identify the source of the discrepancy. However, both sets of estimates support the finding that FCSAP has not achieved its targets.

## 4.2 Reduced federal liabilities

**Findings:** FCSAP did not meet its Phase II performance targets with regards to liability reduction at higher-risk and high-priority sites. In fact, liability associated with these sites increased by more than \$1.0 billion, driven primarily by significant increases in liability at Giant Mine and Faro Mine. While more than 90% of FCSAP expenditures for R/RM have reduced the liability, aggregate liabilities for federal contaminated sites have not been reduced. They were \$2.2 billion higher at the end of Phase II than at the beginning.

The characterization of the risk associated with federal contaminated sites and the development, implementation and completion of risk reduction plans are expected to result in a reduction in federal liabilities at these sites. A challenge for the program in achieving its overall expected results is that on the one hand, assessment activities identify risks and, as a result, identify increased liabilities. On the other hand, however, remediation and risk management activities are intended to reduce liabilities and risks.

The FCSAP logic model includes both an intermediate and an ultimate outcome related to liability reduction. Each outcome is associated with different performance measures. Both are discussed below.

### Liability reduction at higher-risk and high-priority sites (intermediate outcome)

For the purpose of the intermediate outcome, FCSAP assesses the reduction in federal liabilities by looking at the changes occurring within specific groups of high-priority sites. For Phase II, this included 73 high-priority FCSAP sites, consisting of the top 20 highest liability sites and the top five liability sites from each custodian. For Phase III, this included 442 FCSAP-funded high-priority sites for which a risk reduction plan had been completed as of FY 2015 to 2016. The available evidence indicates the following.

- The Phase II performance target of reducing liability by \$576 million was not met. Liability at the 73 high-priority sites increased by \$1.043 billion between the end of FY 2010 to 2011 and the end of FY 2015 to 2016. To a large extent, this result was driven by substantial increases at the Faro Mine and the Giant Mine, where liability grew by \$941 million and \$196 million, respectively. However, the target would not have been met even if those sites had been excluded.
- Estimated liabilities at the 442 high-priority sites targeted for Phase III declined by about \$13.0 million during FY 2016 to 2017. This result indicates that in the first year of this phase, the program progressed 2.3% towards meeting its four-year target (\$574 million). As such, much work will need to be done during the rest of Phase III to meet FCSAP's intended liability reduction targets.

Although the program did not succeed in achieving its Phase II liability reduction targets, liabilities would have been significantly higher in the absence of FCSAP funding, assuming the extent of

liability would have been known in the absence of the program. In reality, of course, the extent of risk and liability is known because of the assessment activities of the FCSAP program.

Table 5 shows the reductions in liability at all FCSAP Class 1 and Class 2 sites during the first two Phases of the program, as well as for FCSAP as a whole so far, relative to the counterfactual (that is, what would have been the case if there were no FCSAP program). As shown, liability at Class 1 and Class 2 sites was reduced by \$2.040 billion relative to the baseline (that is, liability at the beginning of FY 2011 to 2012) during Phase II, a result attributable in part to FCSAP expenditures and custodian contributions at contaminated sites (\$1.168 billion, or 57.3% of the total) and in part to downward adjustments made to liability estimates (\$871 million, or 42.7% of the total).

Similarly, liability at Class 1 and Class 2 sites was reduced by \$2.68 billion during Phase II and in FY 2016 to 2017, and by \$4.42 billion over the entire 12 years of the program, relative to what would have been the case in the absence of the program, assuming that risks, and therefore liabilities, would have been known in its absence. As noted, in reality the extent of risk and liability is known because of the FCSAP program.

**Table 5: reduction in liability at FCSAP Class 1 and Class 2 sites (millions), relative to counterfactual**

Indicator	Phase I - FY 2005 to 2006 to FY 2010 to 2011	Phase II - FY 2011 to 2012 to FY 2015 to 2016	Phase III - FY 2016 to 2017	Total - FY 2005 to 2006 to FY 2016 to 2017
<b>Total reduction in liability of FCSAP Class 1 and Class 2 sites</b>	<b>\$1,735.18</b>	<b>\$2,039.62</b>	<b>\$644.71</b>	<b>\$4,419.51</b>
Expenditures reducing liability	\$1,062.55	\$1,168.17	\$319.99	\$2,550.71
Downward adjustment to liability estimate	\$672.63	\$871.45	\$324.72	\$1,868.80
Note: Consistent with the 2014 evaluation, a FCSAP site is defined as a site in the FCSI for which FCSAP expenditures are recorded in any year since the start of the program in any category (that is, assessment, R/RM, care and maintenance or monitoring).				
Source: Federal Contaminated Sites Inventory (Treasury Board Secretariat, 2017)				

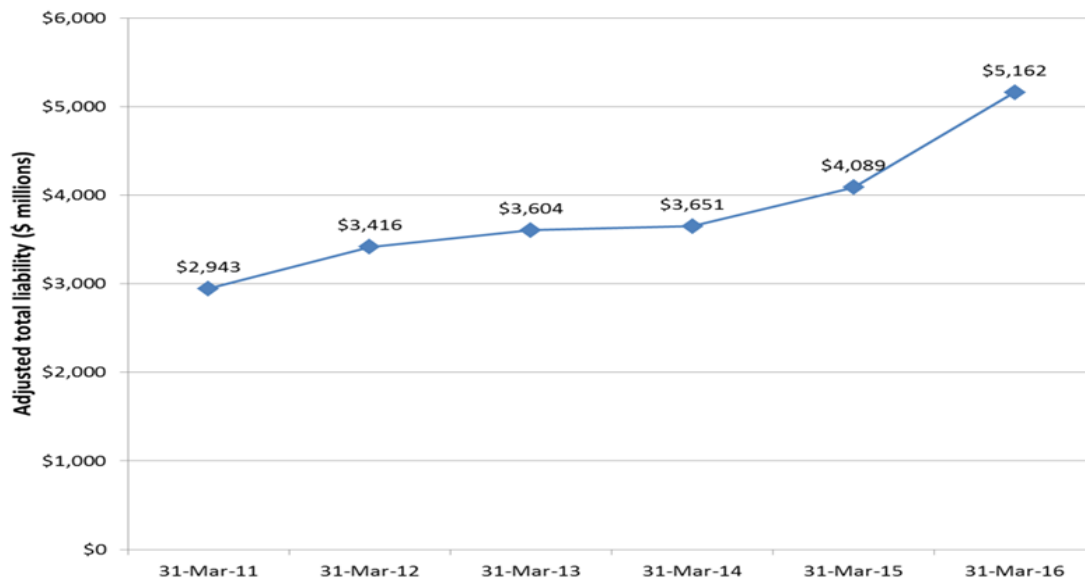
### Reduced liability at higher-risk contaminated sites (ultimate outcome)

FCSAP measures the achievement of its ultimate outcome of reducing liability in relation to the proportion of FCSAP R/RM expenditures that reduce liability at FCSAP-funded sites, against a set target of 95%. For Phase II, this is limited to expenditures at high- and medium-priority sites. For Phase III, it includes all FCSAP-funded sites. Program documentation indicates that about 95% of Phase II FCSAP expenditures were liability-reducing, while FCSI data suggests the same was true of 91.9% of R/RM spending occurring during FY 2016 to 2017 (GoC, 2016b). Based on this measure, FCSAP has been successful in working towards the outcome of liability reduction.

Many key informants noted that assessment and remediation activities at individual contaminated sites have successfully addressed liability at those locations, or should reduce liability if sustained

over a sufficient period of time. Nevertheless, aggregate liability has not been reduced since the start of the program. Increases have been driven primarily by a small number of large and complex sites, particularly the Giant Mine and the Faro Mine. In addition, some increases in liability are due to assessment and remediation activities at other sites that reveal more information about the cost to remediate or to newly identified sites. As shown in Figure 2, adjusted liabilities for FCSAP eligible federal contaminated sites rose from \$2.94 billion at the end of FY 2010 to 2011 to \$5.16 billion in FY 2015 to 2016. On March 31, 2016, the adjusted liabilities for FCSAP-eligible federal contaminated sites were 75% higher than at the beginning of Phase II.<sup>8</sup>

**Figure 2: adjusted total environmental liability for federal contaminated sites, Phase II (\$ millions)**



### 4.3 Reduced risk to the environment and human health

**Findings:** By the end of FY 2016 to 2017, risk reduction activities had been completed at 1,169 FCSAP-funded Class 1 and Class 2 sites since the start of the program, representing 42.2% of active FCSAP Class 1 and Class 2 sites. This implies that risks to the environment and human health have been correspondingly reduced at these sites, although FCSAP does not directly measure risk reduction.

Ultimately, the completion of risk reduction activities and resulting liability reductions are expected to lead to reduced risk to the environment and human health from federal contaminated sites. At present, the FCSAP program does not directly measure reduced risk to the environment and human

<sup>8</sup> Adjusted liability is an estimate of liability for contaminated sites that may be eligible for funding through FCSAP, based on figures in the PAC. The adjustment is necessary because certain consolidated Crown corporations or other organizations reporting liabilities to the PAC are not eligible for FCSAP funding, while some sites (for example, Port Hope and the Sydney Tar Ponds) have their own funding sources.

health. Instead, progress towards meeting this outcome is measured by calculating the proportion of high- and medium-priority sites on the FCSI where FCSAP-funded risk reduction plans have been completed by various dates, as well as the proportion of FCSAP-funded high- and medium-priority sites that closed during Phase III.

By the end of Phase II, 864 Class 1 and Class 2 sites whose R/RM strategies were funded by FCSAP had completed the implementation of these strategies. This rose to 936 sites by the end of FY 2016 to 2017, while another 766 sites had closed.

Similar information is presented in Table 6 for all Class 1 and Class 2 sites funded by FCSAP, regardless of whether FCSAP funding supported risk reduction activities or other activities such as assessment, care and maintenance or monitoring. At the end of FY 2011 to 2012, a total of 879 sites had completed risk reduction activities, representing 37% of all active Class 1 and Class 2 sites funded by the program. By FY 2016 to 2017, this figure had risen to 1,169 sites or 42% of all active Class 1 and Class 2 sites funded by FCSAP.

**Table 6: completion of risk reduction activities, Class 1 and Class 2 sites funded by FCSAP (FY 2011 to 2012 versus FY 2016 to 2017)**

Indicator	Total FCSAP Class 1 and Class 2 active sites		FCSAP Class 1 and Class 2 sites with completed risk reduction activities			
	FY 2011 to 2012	FY 2016 to 2017	Number of sites		% of total	
			FY 2011 to 2012	FY 2016 to 2017	FY 2011 to 2012	FY 2016 to 2017
<b>Class 1 and Class 2 sites</b>	<b>2,379</b>	<b>2,774</b>	<b>879</b>	<b>1,169</b>	<b>36.9%</b>	<b>42.2%</b>
Class 1 sites	1,013	1,112	554	659	54.7%	59.3%
Class 2 sites	1,366	1,660	325	510	23.8%	30.7%

Note: Consistent with the 2014 evaluation, a FCSAP site is defined as a site in the FCSI for which FCSAP expenditures are recorded in any year since the start of the program in any category (that is, assessment, R/RM, care and maintenance or monitoring).

Sources: Environment Canada (2014, p. 18); Federal Contaminated Sites Inventory (Treasury Board Secretariat, 2017)

Nearly all key informants believe that FCSAP has reduced risk to the environment and human health from federal contaminated sites. They pointed out that the process of characterizing the nature and extent of contamination at particular sites, and ultimately addressing it through R/RM, can reasonably be expected to reduce the risks those sites pose to the environment and human health. Specific examples mentioned by key informants include the clean-up by Transport Canada (in collaboration with BC Hydro) of a coal gasification plant at Rock Bay, which was fully remediated and returned to Indigenous groups in the area. Other examples provided by key informants included the DEW Line sites, Goose Bay, Kingsview Park and a variety of other remediation projects at locations across Canada. However, as already discussed, there is general agreement that the FCSAP program should work to enhance performance reporting in relation to its risk reduction outcome.



## 4.4 Employment creation

**Findings:** Program stakeholders believe FCSAP has contributed to job creation, not only in the environmental services industry but also within government and Indigenous communities. However, some think more could be done to ensure that the socio-economic benefits associated with the program flow to Indigenous communities. Using an employment multiplier, it was determined that about 6,604 person-years of employment were generated or maintained through Phase II FCSAP expenditures.

Beginning in Phase III, FCSAP incorporated employment creation in the environmental services industry as an ultimate outcome in its PMF. However, it did not update its logic model to reflect this change. Specific targets were established for jobs created with FCSAP funding. Because the data available during the evaluation period did not include estimates of employment creation and maintenance beyond FY 2015 to 2016, it is not possible to say whether the program is currently on track to meet these targets. However applying an employment multiplier developed by ECO Canada allowed the evaluation team to estimate the extent of job creation during FCSAP Phase II. As shown in Table 7, about 6,604 person-years of employment were generated or maintained through Phase II FCSAP expenditures. However, without a clear basis for reference, it is not clear what this number means for the industry or for the government.

**Table 7: employment creation associated with FCSAP expenditures, FY 2011 to 2012 to FY 2015 to 2016**

	FY 2011 to 2012	FY 2012 to 2013	FY 2013 to 2014	FY 2014 to 2015	FY 2015 to 2016	Phase II total
FCSAP expenditures, millions <sup>1</sup>	\$208.70	\$221.40	\$308.90	\$271.30	\$259.70	<b>\$1,270.10</b>
Employment multiplier <sup>2</sup>	5.2 person-years per million dollars of FCSAP expenditure					
Person-years of employment	1,085.40	1,151.00	1,606.40	1,410.90	1,350.60	<b>6,604.40</b>
<sup>1</sup> Excludes expenditures associated with program management, but includes custodian cost-share.						
<sup>2</sup> Developed by ECO Canada.						
Source: FCSAP Secretariat						

Nearly all key informants who spoke about this believe that FCSAP has positively contributed to job creation, both within the federal government as well as in the environmental industry. Similarly, industry representatives participating in post-Phase III planning generally think that FCSAP has contributed to job creation and maintenance. They observed, for instance, that the availability of a consistent source of funding in an uncertain economic climate has driven growth in the environmental services industry and has contributed to the establishment of new firms.

Industry representatives also suggested that FCSAP had stimulated job creation in Indigenous communities. However, they noted that these benefits are tempered by such as factors as the short-term nature of the projects and incentive structures that mean employers are reluctant to hire and reuse local and Indigenous workers. Similarly, many internal key informants and experts believe the program has contributed to job creation in Indigenous communities through



mechanisms such as procurement contracts that contain stipulations regarding local and Indigenous inclusion. Others, however, cautioned that job creation stemming from remediation projects is often short-term. A few internal key informants, as well as several expert panellists, argued that more could be done to ensure that the socio-economic benefits of FCSAP-funded assessment and remediation activities flow to Indigenous communities.

The case study on the Kitsoo Environmental Improvement Project in Klemtu, British Columbia (CIRNAC, custodian) is an example of how FCSAP-funded assessment and remediation activities can build capacity and generate significant socio-economic benefits for Indigenous communities. Through extensive engagement with residents, CIRNAC implemented remediation activities in Klemtu to address several sources of contamination. This ultimately benefitted community members in numerous ways. For example, the project employed community members to support remediation activities. As well, the project indirectly stimulated employment by generating demand for food, accommodation and equipment in the community.

## 4.5 Other considerations

**Findings:** There is anecdotal evidence that FCSAP has generated positive secondary benefits, including some that were not necessarily foreseen at its outset. Examples include increased knowledge, skills and expertise within the environmental services industry and the Government of Canada related to contaminated sites, as well as increased capacity within Indigenous communities.

In addition to its formal expected outcomes, the evaluation found mostly anecdotal evidence that the FCSAP program has generated a number of positive secondary benefits, some of which were not necessarily foreseen at the outset of the program. Examples include:

- increased knowledge, skills and expertise within the environmental services industry and within the Government of Canada
- growth and consolidation of the environmental services industry
- training and increased capacity within Indigenous communities
- use and reuse of previously contaminated sites
- increased innovation and uptake of sustainable remediation practices

In addition, stakeholders believe the program has led to increased collaboration and coordination among FCSAP partners and external stakeholders and the dissemination and implementation of new standards and guidelines.

Some positive unintended outcomes were also identified through the case studies. For instance, the long-term monitoring program implemented as part of the R/RM activities at the DYE-M Cape Dyer DEW Line informed the development of subsequent long-term monitoring plans under FCSAP. As

well, from an engineering or scientific perspective, it has served more generally as a benchmark for Northern monitoring programs.

Another example, the Kitsoo Environmental Improvement Project, helped to build capacity among community members by providing education, training and opportunities for skills development such as on-the-job training and skills development that some individuals are expected to continue to apply even after the project concludes. It also provided opportunities for residents to engage in a process of comprehensive community planning, bringing residents together to share their thoughts and needs regarding the project or other issues.

The evaluation identified relatively few unintended negative outcomes. A few stakeholders suggested that the availability of FCSAP funds could provide an opportunity for some custodians to allocate to other priorities the departmental funding that had been set aside for contaminated sites. Others mentioned that competition among custodian departments and between FCSAP partners and external stakeholders could, in some instances, lead to project cost inflation.

Achievement of intended outcomes has been affected by a wide range of external factors, some of which could be addressed through enhancements to program design.

- **Market forces.** When and where the demand for assessment and R/RM activities outstrips supply, such as in remote locations or when commodity prices are high, the cost of procuring these services tends to rise. This may be worse during periods when the resources available for site assessment and R/RM activities significantly increase, such as when Canada's Economic Action Plan and the Federal Infrastructure Program funding became available. It may be possible to partially manage the impacts of market forces on program efficiency through careful scheduling and coordination of activities across sites and custodians.
- **Discovery of new contaminated sites or new sources of contamination.** When the federal government identifies or accepts responsibility for new sites or new sources of contamination, estimated federal liabilities typically increase. This can make it more challenging to achieve expected outcomes and to convey program accomplishments to the public. Related to this is the challenge of finding new emerging contaminants. These can generate additional federal liabilities and can require custodians to reassess current sites or reopen closed sites. The knowledge and technologies needed to address many emerging contaminants have not yet been or are currently being developed. This is a gap that the program has attempted to address by developing guidance and sustaining venues for information-sharing.
- **Other external factors.** Other external factors that can affect outcome achievement include geographic remoteness, the length of field seasons, weather conditions, restrictions to on-site access and other influences that can hinder assessment and remediation activities. The Giant Mine and Kitsoo projects, for example, demonstrated how factors such as shortness of field seasons and extreme cold can drive up project costs by amplifying the effects of project delays and reducing equipment lifespans. The Kitsoo case study demonstrated that it may be possible to partially address challenges related to the length of field seasons by

increasing the flexibility of funding mechanisms, to ensure that the availability of resources aligns with optimal on-site conditions for conducting assessment and R/RM activities.

## 5. Conclusions, recommendations and management response

### 5.1 Conclusions

Overall, the Federal Contaminated Sites Action Plan (FCSAP) program is an effective approach to addressing federal contaminated sites. There are opportunities to improve alignment with federal priorities, enhance efficiencies through changes in the program design and improve performance measurement to allow the program to report more effectively on its successes in a way that resonates with Canadians.

#### Relevance

There is a clear ongoing need for FCSAP or a similar program to address outstanding liability and risks to the environment and human health associated with federal contaminated sites. Significant progress has been made since the start of the program, including the closure of more than 16,300 sites. However, as of August 2017, there remain more than 7,400 suspected or active contaminated sites in Canada, including more than 3,600 FCSAP-funded sites. An estimated \$4.0 billion in federal liabilities is expected to persist beyond 2020. Furthermore, the need for long-term monitoring at some sites, along with growing recognition of the need to address emerging contaminants, attest to the program's ongoing relevance. Alternative sources of funding are insufficient to address the liability and risks to the environment and human health associated with federal contaminated sites.

The FCSAP program is a priority for the federal government. The program aligns well with current federal priorities, including environmental protection, job creation and skill development, and is seen as an important contributor to the government's reconciliation agenda. Nevertheless, the engagement sessions with Indigenous communities revealed that their awareness and knowledge of FCSAP is relatively limited. They expressed a strong desire for more involvement at all stages of the program, from assessment to prioritization to remediation and long-term monitoring.

Similarly, internal and other external stakeholders strongly support enhancing alignment with the federal government's reconciliation agenda through measures such as:

- increased engagement with Indigenous communities
- improved guidance and training for custodians on collaborating and engaging with Indigenous communities
- procurement practices that promote greater participation by Indigenous peoples
- explicit consideration of factors of importance to Indigenous peoples in site assessment and prioritization

The FCSAP program is less clearly aligned with priorities pertaining to innovation and climate change. Alignment with these priorities could be enhanced by adjusting the procurement process to place greater weight on innovative technologies, sustainable remediation and climate change adaptation approaches. Improvements to program design to align more closely with federal

priorities, particularly significant ones, may warrant changes to the FCSAP logic model. These changes could include identifying additional activities, outputs and expected outcomes, as well as modifying the program's approach to performance measurement and reporting.

Federal responsibility in relation to contaminated sites is articulated in Treasury Board policies. In addition, FCSAP is consistent with existing federal legislation such as the [Fisheries Act](#), the [Canadian Environmental Protection Act, 1999](#), the [Canadian Environmental Assessment Act, 2012](#), the [Species at Risk Act](#), the [Migratory Birds Convention Act, 1994](#) and the [Arctic Waters Pollution Prevention Act](#).

### **Program efficiency**

The roles and responsibilities associated with FCSAP's key program functions are appropriate. There are, however, opportunities to enhance efficiencies by improving how they are carried out. For example, the FCSAP Secretariat could support continuous improvements to the Interdepartmental Data Exchange Application (IDEA), fostering increased stakeholder use. It could also work to improve strategic communications, to ensure nationally consistent messaging about FCSAP. Similarly, improved communication, interaction and collaboration among ESDs and custodians could promote efficiencies in the context of work at specific sites, including through regional forums. In response to a recommendation from the 2014 evaluation, Public Services and Procurement Canada (PSPC) has taken steps to increase awareness and use of its products and services using various methods such as distributing fact sheets and other communications materials and delivering online sessions. However, available evidence indicates an ongoing need for efforts in this area.

Although the program has recently examined the possibility of consolidating program delivery within a single organization, there is currently no consensus among internal program stakeholders on the desirability of doing so, nor is there any objective evidence to indicate that such consolidation would produce efficiencies or benefits relative to any costs this move might entail.

While the overall design of FCSAP is appropriate, encouraging geographic bundling of co-located sites, regardless of assessed risk, could improve efficiency and promote the achievement of program outcomes. Many program stakeholders supported revising the site prioritization process to include socio-economic, political, and cultural factors. This has the potential to enhance alignment with some federal priorities, particularly reconciliation with Indigenous peoples. It should be considered if the program determines that further alignment with the reconciliation agenda should be pursued. However, it should be recognized that revising the site prioritization process to include such factors could increase administrative complexity.

Based on current estimates, program resources will not be sufficient to address federal liabilities by the end of FCSAP Phase III in FY 2019 to 2020. Increasing funding available for assessment activities could help to address the approximately one third of FCSAP sites that have not yet been assessed. This could, in turn, reduce associated uncertainty and potentially mitigate against project cost escalation.

The efficiency of the FCSAP program has improved since the 2014 evaluation. During Phase II, about \$1.10 in program costs were required to reduce federal liabilities by \$1.00, a slight improvement over what was found in the previous evaluation. In addition to allowing the bundling of sites and facilitating more extensive use of multi-year contracting, there is the potential to further enhance efficiency by, among other measures:

- encouraging the implementation of risk management approaches or less intensive remediation approaches, where appropriate
- improving the use of technology in program operation and management
- improving procurement processes

The evaluation findings also underscored the importance of acknowledging and accounting for the impact of market forces on the cost of program inputs, as well as taking steps to promote continuity in how assessment and remediation activities are carried out at the individual site level.

The FCSAP governance structure is appropriate and is operating effectively. FCSAP has a well-developed performance measurement infrastructure, and performance data is timely and reliable. Finding ways to tell a meaningful performance story is an issue, particularly in light of the ongoing reliance on liability reduction as an outcome measure. Moving forward, greater emphasis should be placed on performance metrics that convey the achievement of risk reduction objectives. In addition, there is a need to refine the program logic model to eliminate duplication and ensure that all expected outcomes are represented and supported by a clearly articulated narrative or theory of change. This applies to existing outcomes as well as any new ones that the program may consider adding in the future.

### **Achievement of expected results**

Overall, FCSAP assessment and risk reduction activities have reduced uncertainty associated with risk from federal contaminated sites. They have contributed to reducing the risk to the environment and human health associated with these sites, although the program does not measure risk reduction directly. While aggregate liability associated with federal contaminated sites has not been reduced since the start of the program, the vast majority of FCSAP expenditures for risk reduction have been liability-reducing.

- **Assessments and risk reduction plans.** FCSAP funded assessment activities at 1,919 federal contaminated sites and completed assessments at 1,022 sites during Phase II and the first year of Phase III, reducing uncertainty associated with the risk from these sites. Although the program experienced some challenges in meeting performance targets for development, implementation and completion of risk reduction plans, remediation and risk management (R/RM) activities were completed at 271 FCSAP-funded Class 1 and Class 2 sites over this period.
- **Reduced federal liability.** While more than 90% of FCSAP expenditures for R/RM activities have contributed to reducing liability, aggregate liabilities for federal

contaminated sites have not been reduced since the start of the program. They were \$2.2 billion higher at the end of Phase II than they were at the beginning. To a large extent, this outcome has been driven by significant increases in liability at the Giant Mine and the Faro Mine. Of the \$4.0 billion in total estimated liabilities expected to continue beyond the end of FCSAP Phase III, slightly more than half will rest with these two sites.

- **Reduced risk to the environment and human health.** By the end of FY 2016 to 2017, a total of 1,169 FCSAP-funded Class 1 and Class 2 sites had completed risk reduction activities since the start of the program. As such, risks to the environment and human health have also been reduced at these sites. The FCSAP program does not directly measure risk reduction. As noted above, there is widespread agreement that this is an area in which the program could improve its performance measurement and reporting.
- **Employment creation in the environmental services industry.** Program stakeholders believe FCSAP has contributed to job creation, not only in the environmental services industry but also within government and Indigenous communities. However, some think more could be done to ensure that the socio-economic benefits associated with the program flow to Indigenous communities. Applying an employment multiplier indicates that approximately 6,604 person-years of employment were generated or maintained through Phase II FCSAP expenditures.

In addition to these formal expected outcomes, there is anecdotal evidence that FCSAP has generated positive secondary benefits, including some that were not necessarily foreseen at the outset. Examples include increased knowledge, skills and expertise within the environmental services industry and the Government of Canada related to contaminated sites, consolidation of the environmental services industry and increased capacity within Indigenous communities.

## 5.2 Recommendations and management response

[Recommendation 1](#) is directed to Environment and Climate Change Canada's Assistant Deputy Minister (ADM) of Environmental Protection Branch, as the senior departmental official responsible for the FCSAP Secretariat. [Recommendation 2](#) is directed to Crown-Indigenous Relations and Northern Affairs Canada's ADM of Lands and Economic Development and ADM of the Northern Affairs Organization. [Recommendation 3](#) is directed to Environment and Climate Change Canada's ADM of Environmental Protection Branch, in consultation with Treasury Board of Canada Secretariat.

## Recommendation 1

**Recommendation 1: it is recommended that Environment and Climate Change Canada’s Assistant Deputy Minister, Environmental Protection Branch, promote efficiency in program delivery by encouraging bundling of geographically co-located sites, potentially combining higher-risk and lower-risk sites, for purposes of assessment, remediation and risk management and long-term monitoring.**

Evaluation evidence indicates that geographic bundling of sites, regardless of assessed risk, could help to control costs in rural or remote regions of Canada. In these areas, necessary materials, expertise and equipment are not locally available, in whole or in part, and unfavourable weather or ground conditions may impose restrictions on when work can be undertaken. Geographic bundling has produced efficiencies in the limited contexts in which it has been implemented, but its use is not currently widespread.

### Statement of agreement or disagreement

The Assistant Deputy Minister of the Environmental Protection Branch at Environment and Climate Change Canada agrees with the recommendation, in the event that the FCSAP program is renewed post-2020 and is provided sufficient resources to enable the necessary planning involved.

### Management response

The bundling of Class 1 or ongoing Class 2 sites with lower priority sites based on geography, as well as bundling on reserve or Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) northern sites, represents an opportunity to increase efficiencies and accelerate actions at federal contaminated sites.

Site work is currently planned by individual custodians and reviewed by the Contaminated Sites Management Working Group (CSMWG). As of FY 2020 to 2021, the FCSAP program would take a more integrated approach to planning in order to bundle sites cost-effectively. This would include advanced planning of projects in-year and within the context of five-year work plans. Also, site prioritization would include lower priority sites where existing Class 1 and ongoing Class 2 sites can be bundled geographically with new Class 2 or Class 3 sites and where sites are located on reserves or in the North under the custody of Indigenous Services Canada or CIRNAC. Existing regional working groups that include custodians and expert support departments would take on new responsibilities to maximize collaboration among program partners, including bundling of sites for assessment and remediation activities and concurrent identification of contingency sites that could be moved forward quickly if other projects are unexpectedly delayed. Procurement specialists from Public Services and Procurement Canada (PSPC) and Defence Construction Canada (DCC) would be involved from the earliest planning stages through to project completion. They would work with program partners and industry to expedite work and ensure that the necessary tools and resources are available to meet project deadlines. The ADM Oversight Board would have the ultimate decision on work plans and strategic opportunities for investment.

The deliverables listed below will be developed by the FCSAP Secretariat in collaboration, as appropriate, with Treasury Board Secretariat, the ADM Oversight Board, expert support departments, PSPC, DCC and custodians/CSMWG.



<b>Deliverable(s)</b>	<b>Timeline</b>	<b>Responsible party</b>
Draft detailed approach to bundling, including principles and performance metrics	March 2019	Director General, Environmental Protection Operations Directorate
Pilot exercise of bundling approach to be implemented in Ontario beginning in October 2018 and running for one year Summary of lessons learned provided	October 2018 to October 2019	Director General, Environmental Protection Operations Directorate
Report on the review of the project management services, tools and resources required to realize effective planning of bundling through to project completion	June 2019	Director General, Environmental Protection Operations Directorate
Custodians' initial annual five-year work plans (FY 2020 to 2021 to FY 2024 to 2025), with Class 2 and Class 3 sites identified as possible in-department "bundled" sites and alternative sites (Class 2 and Class 3 sites that can be bundled with Class 1 and ongoing Class 2 sites, plus on reserve and northern CIRNAC sites, to a maximum of 15% of program remediation funding)	June 2019	Program Manager, Environmental Protection Operations Directorate
Revised custodians' annual five-year work plans (FY 2020 to 2021 to FY 2024 to 2025), with Class 2 and Class 3 sites chosen as "bundled" and alternate sites submitted and approved by the ADM Oversight Board	January 2020	Associate Assistant Deputy Minister of the Environmental Protection Branch

## Recommendation 2

**Recommendation 2: it is recommended that Crown-Indigenous Relations and Northern Affairs Canada's Assistant Deputy Minister, Lands and Economic Development, and Assistant Deputy Minister, Northern Affairs Organization, improve information-sharing, engagement and collaboration with Indigenous communities throughout all stages of the FCSAP process, including assessment, prioritization and remediation of contaminated sites.**

Although experiences varied regionally, the engagement sessions with Indigenous communities revealed that details on the FCSAP program are not widely known within communities across Canada. Furthermore, there is a desire for more involvement by communities in the FCSAP program, from assessment and prioritization to remediation and long-term monitoring. Ensuring consistent information-sharing and engagement with Indigenous communities at all stages of the process would support the federal government's current emphasis on reconciliation.

### Statement of agreement or disagreement

The Assistant Deputy Ministers of the Lands and Economic Development and the Northern Affairs Organization (Crown-Indigenous Relations and Northern Affairs Canada) agree with the recommendation.

### Management response 1 (Lands and Economic Development)

In partnership with Environment and Climate Change Canada, Crown-Indigenous Relations and Northern Affairs Canada's Contaminated Sites on Reserve Program will improve information-sharing, engagement and collaboration with Indigenous communities throughout all stages of the Federal Contaminated Sites Action Plan (FCSAP) process, including assessment, prioritization and remediation of contaminated sites. This will include continuing to:

- engage with and build upon the existing positive relationships with Indigenous communities that have had experience managing FCSAP-funded contaminated sites projects
- work with Indigenous communities to share information to increase awareness and knowledge of the FCSAP program
- explore options with Environment and Climate change Canada to increase opportunities for Indigenous communities and organizations to become more involved in managing and prioritizing FCSAP contaminated sites projects
- share engagement best practices across all regional offices as part of the work of the Contaminated Sites on Reserve Program National Contaminated Sites Management Committee
- explore long-term options with Environment and Climate Change Canada to increase capacity both internally and externally related to information-sharing, engagement and collaboration with Indigenous communities
- work with departmental communications experts to produce updated content for the ISC/CIRNAC Contaminated Sites on Reserve Program internet pages to share additional information on the FCSAP and the Contaminated Sites on Reserve Program

<b>Deliverables</b>	<b>Timeline</b>	<b>Responsible party</b>
Produce updated content for Contaminated Sites on Reserve Program internet page	November 2019	Assistant Deputy Minister, Lands and Economic Development
Engage with additional Indigenous communities and produce a Report on Additional engagement	August 2020	Assistant Deputy Minister, Lands and Economic Development
Create a list of potential indigenous-led and co-delivered activities related to contaminated sites	March 2021	Assistant Deputy Minister, Lands and Economic Development
<b>Management response 2 (Northern Affairs Organization)</b>		
<p>In partnership with Environment and Climate Change Canada (ECCC), Crown-Indigenous Relations and Northern Affairs Canada's Northern Contaminated Sites on Reserve Program will improve information-sharing, engagement and collaboration with Indigenous communities throughout all stages of the FCSAP process, including assessment, prioritization and remediation of contaminated sites. This will include:</p> <ul style="list-style-type: none"> <li>• continuing to engage with and build upon the existing positive relationships with First Nations communities that have had experience managing FCSAP-funded contaminated sites projects with the NCSP program using FCSAP funding</li> <li>• continuing to work with Northern regional offices to share engagement best practices and support relationship-building on contaminated sites projects at the regional level</li> <li>• continuing to provide ongoing communications updates on the progress of the major projects</li> </ul>		
<b>Deliverables</b>	<b>Timeline</b>	<b>Responsible party</b>
A roll-up of socio-economic data, including information on the number of engagement events and participants	Annual completion, starting on July 30, 2019	Social policy analyst, program management directorate
Minutes from regional planning and implementation committees	TBD, awaiting schedule details from FCSAP program renewal in FY 2019 to 2020	Social policy analyst, program management directorate
For the Faro Mine, quarterly newsletters and ad-hoc updates to the "What's new" section of the Faro Mine Remediation Project website. For the Giant Mine, monthly/ bimonthly newsletter published on the Giant Mine Remediation Project website	For the Faro Mine, quarterly updates For the Giant Mine, bi-monthly updates	Director, Faro Mine Remediation Project. Director, Giant Mine Remediation Project

### Recommendation 3

**Recommendation 3: it is recommended that Environment and Climate Change Canada's Assistant Deputy Minister, Environmental Protection Branch, enhance the approach to performance measurement and reporting to more clearly and meaningfully convey the Federal Contaminated Sites Action Plan program's successes to Canadians.**

The Federal Contaminated Sites Action Plan (FCSAP) program's reliance on liability reduction as an outcome creates challenges when trying to tell a meaningful and complete performance story. There is widespread agreement that the program should continue to report on liability reduction. However, it should also place greater emphasis on its risk reduction outcomes, to convey its successes to Canadians in a more meaningful way.

Related to this, review of the logic model suggests two main ways in which it could be refined and strengthened to support performance reporting:

- eliminating duplication to clarify and simplify performance reporting
- ensuring that all expected outcomes are represented in the logic model and supported by a clearly articulated narrative or theory of change

This applies to existing outcomes such as "employment creation", which is not currently represented in the logic model, as well as any new ones that the program may add in the future. Refinement of the logic model is particularly important if the program considers making changes to program design to improve alignment with federal priorities.

#### Statement of agreement or disagreement

The Assistant Deputy Minister of the Environmental Protection Branch at Environment and Climate Change Canada agrees with the recommendation, in the event that the FCSAP program is renewed post-2020.

#### Management response

While continuing to collect and record liability reduction data in a renewed program, the FCSAP Secretariat, in consultation with the Treasury Board Secretariat (TBS), will place greater emphasis on the program's risk reduction outcomes for reporting purposes. The platform for this change will continue to be the FCSAP Performance Measurement Framework (PMF) and the goal will be to have in place the means and methods of collecting risk reduction data by the start of the renewed program in FY 2020 to 2021.

This will include a review of the current FCSAP logic model and PMF in order to strengthen and refine performance reporting by (1) eliminating any unnecessary duplication within the current logic model and PMF, and (2) revising the current FCSAP logic model to represent all of the program's expected outcomes, along with a clearly articulated theory of change specifying how program activities and outputs are expected to lead to the outcomes. The updated logic model will include any new expected outcomes that are included as part of the program's renewal. The review and refinement of the logic model and PMF will be done by the FCSAP Secretariat in consultation with TBS, custodians and ESDs.

<b>Deliverable(s)</b>	<b>Timeline</b>	<b>Responsible party</b>
Report on a review of current FCSAP PMF parameters and definitions, to identify and eliminate any unnecessary duplication	February 2019	Director General, Environmental Protection Operations Directorate
Findings from a survey of program partners, to determine the order of priority for any new program outcomes associated with the program's renewal	April 2019	Director General, Environmental Protection Operations Directorate
Determine parameters, definitions, methodology and reporting requirements for inclusion of risk reduction data in the PMF	June 2019	Director General, Environmental Protection Operations Directorate
Draft PMF and logic model revisions, including narrative/theory of change, based on custodian and stakeholder feedback	September 2019	Director General, Environmental Protection Operations Directorate
Final ADM-approved logic model, PMF and data collection methodology	January 2020	Associate Assistant Deputy Minister of the Environmental Protection Branch

## Appendix A: program description

### Overview

In 2005, the Federal Contaminated Sites Action Plan (FCSAP) was established with \$4.0 billion in funding from the federal government of Canada with additional funding allocated over time to a total of \$4.5 billion.

FCSAP is divided into three phases:

- Phase I, from fiscal year (FY) 2005 to 2006 to FY 2010 to 2011
- Phase II, from FY 2011 to 2012 to FY 2015 to 2016
- Phase III, from FY 2016 to 2017 to FY 2019 to 2020

The action plan is a horizontal, cost-shared program that supports federal departments, agencies and consolidated Crown corporations in addressing contaminated sites for which they are responsible.

A total of 18 federal partners participate in FCSAP, as custodians, expert support departments and a Secretariat.

**Table 8: role of participating federal departments, agencies and crown corporations**

FCSAP participating organization	Type	Secretariat	Expert Support Department	Custodian
Agriculture and Agri-food Canada	Department			•
Canada Border Services Agency	Agency			•
Correctional Service Canada	Agency			•
Crown-Indigenous Relations and Northern Affairs Canada	Department			•
Environment and Climate Change Canada	Department	•	•	•
Fisheries and Oceans Canada	Department		•	•
Health Canada	Department		•	
Innovation, Science and Economic Development Canada	Department			•

FCSAP participating organization	Type	Secretariat	Expert Support Department	Custodian
Jacques Cartier and Champlain Bridges Incorporated	Crown Corporation			•
National Capital Commission	Crown Corporation			•
Department of National Defence	Department			•
National Research Council of Canada	Agency			•
Natural Resources Canada	Department			•
Parks Canada Agency	Agency			•
Public Services and Procurement Canada	Department		•	•
Royal Canadian Mounted Police	Agency			•
Transport Canada	Department			•
Treasury Board Secretariat	Department	•		

Note: These 18 federal departments, agencies and crown corporations participated in FCSAP during the evaluation timeframe (FY 2012 to 2013 to FY 2017 to 2018). All of these organizations received funding under FCSAP Phase III, with the exception of: the NRC and NRCAN, who are partners in Phase III and received FCSAP funding for FY 2016 to 2017 and FY 2017 to 2018 in Budget 2016 under the Federal Infrastructure Program; and CBSA, ISEDC (formerly Industry Canada) and the RCMP, who received funding under FCSAP Phase II.

As can be seen in Table 8, there are 14 custodian departments, agencies and consolidated Crown corporations who receive funding as a part of the FCSAP program. Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) and the Department of National Defence (DND) are two of the key custodians with responsibility for many high priority federal contaminated sites. This includes military sites and installations and former mines in the North that the government has acquired as a result of abandonment or foreclosure. Expert support is provided by Health Canada, Department of Fisheries and Oceans Canada (DFO), ECCC and Public Services and Procurement Canada (PSPC).

ECCC has three roles under FCSAP:

- First, ECCC acts as the program Secretariat providing overall leadership and day-to-day management of the program. ECCC is supported by the Treasury Board Secretariat of Canada (TBS), which ensures consistency with TB policies on the management of federal real property.
- It also serves as an expert support department providing scientific advice to custodians on managing their sites.
- ECCC is also a custodian department that is responsible for addressing its own contaminated sites.

The FCSAP program consolidates the federal government's approach to dealing with contaminated sites. Prior to FCSAP federal departments, agencies and consolidated Crown corporations spent approximately \$100 million annually to remediate or manage risks associated with contaminated sites. Since the program began in 2005, approximately \$4.3 billion has been spent under FCSAP, including the cost share provided by custodians on assessment, remediation, and risk and program management activities. Under the Federal Infrastructure Program, Budget 2016 provided \$217 million in 'top-up' funding for FCSAP that could be used for assessment and remediation of any site on the inventory in FY 2016 to 2017 and FY 2017 to 2018.

The FCSAP program is scheduled to sunset in 2020, however, it is projected that 1,300 Class 1 and Class 2 sites (currently FCSAP eligible) will remain with a total of \$4.0 billion liability. A long-term strategy is in development to consider options to address federal contaminated sites post-2020.

## **Program objectives and activities**

The primary objective of this program is to reduce environmental and human health risks from known federal contaminated sites and associated federal financial liabilities. In addition to addressing contaminated sites, the FCSAP program helps support skills development, training and employment of Canadians, including Indigenous communities and others who live in northern and rural areas. It is also encouraging Canada's environmental industry to develop innovative and sustainable remediation technologies and approaches.

Custodians follow a ten-step approach for managing federal contaminated sites, which is outlined below. Sites may be closed at any step of the process if no further action is required at the site and there is no federal financial liability.



**Table 9: the 10-step process to assess and manage federal contaminated sites**

<b>SUSPECTED</b>	STEP 1	Identify suspect site.	
	STEP 2	Complete a historical review to identify past activities and potential risks of contamination at the site.	
<b>ACTIVE</b>	<b>ASSESSMENT</b>	STEP 3	Conduct initial testing program. Includes site visits and physical assessments of the site and surroundings.
		STEP 4	Based on findings from initial assessments, classify site as high, medium or low priority for action.
		STEP 5	Conduct detailed testing program. Includes site visits and detailed physical assessments of the site and surroundings including soil and water testing. Record a liability if a reasonable cost estimate can be made.
		STEP 6	Update site classification based on new data.
	<b>REMEDIATION</b>	STEP 7	Develop a remediation and risk management strategy (R/RM). May include remediation or risk management technologies or a combination of both. Update or record a liability if a reasonable cost estimate can be made.
		STEP 8	Implement the R/RM strategy.
		STEP 9	Conduct confirmatory sampling.
	STEP 10	Provide long-term monitoring, if required.	
<b>CLOSED</b>	ANY STEP	Determine that risk has been reduced and no further action is required.	

## Site eligibility

To be eligible for FCSAP funding, federal contaminated sites must comply with the following criteria.

- Sites must have been contaminated through activities that occurred prior to April 1, 1998, with the exception of sites funded through Federal Infrastructure Program funding in Budget 2016.
- Sites must be on lands owned or leased by the federal government. If the site is on non-federal lands, the federal government must have accepted full responsibility for the contamination.
- Consistent with the “polluter-pays” principle, contaminated land that the custodian wants to acquire is not eligible for FCSAP funding.
- Site assessment funding must be prioritized by custodians to focus on the highest priority sites (Class 1 or those expected to be Class 1). In Phase III, assessment funding has been limited for use only at Class 1 or expected Class 1 sites. Custodians must have documented

reasons for believing that a site may be contaminated and would be a high priority for action.

- Sites proposed for remediation must meet the [Policy on Management of Real Property](#) definition of a contaminated site: “a site at which substances occur at concentrations that: (1) are above background levels and pose, or are likely to pose, an immediate or long-term hazard to human health or the environment, or (2) exceed the levels specified in policies and regulations”.
- Sites proposed for remediation must also be classified as Class 1 using an appropriate site classification system. Or they can be classified as Class 2, with FCSAP remediation expenditures prior to April 1, 2011. However, sites funded through the Federal Infrastructure Program funding in Budget 2016 are excluded. The proposed sites must also have a financial liability associated with them that are reported in the PAC and in TBS’s Federal Contaminated Sites Inventory (FCSI), a publicly-accessible repository of information about sites with known or suspected contamination for which federal departments, agencies and consolidated Crown corporations act as custodians, or for which the federal government has accepted responsibility (TBS, 2017).

Sites where contamination is suspected are first assessed to determine whether contamination above guideline levels is present. Custodians must have reason to believe that a given site is contaminated before requesting funding for assessment. On the basis of the assessment results, the terrestrial sites are classified and prioritized according to the Canadian Council of Ministers of the Environment’s (CCME) National Classification System for Contaminated Sites (NCSCS); aquatic sites are assessed against the FCSAP program’s Aquatic Sites Classification System (ASCS).

The NCSCS defines Class 1 and 2 sites as follows:

- **Class 1, high priority for action:** “The available information indicates that action (for example, further site characterization, risk management, remediation) is required to address existing concerns. Typically, Class 1 sites show a propensity to high concern for several factors, and measured or observed impacts have been documented.”
- **Class 2, medium priority for action:** “The available information indicates that there is a high potential for adverse impacts, although the threat to human health and the environment is generally not imminent. For Class 2, there is typically no direct indication of off-site contamination. However, the potential for off-site migration tends to be rated as high and therefore some action is likely required.”

The ASCS defines Class 1 and Class 2 sites as follows:

- **Class 1, high priority for action:** “The available information indicates that action (further site characterization or risk management) is required to address existing concerns. Typically, Class 1 contaminated aquatic sites indicate high concern for several factors, and measured or observed impacts have been documented.”

- **Class 2, medium priority for action:** “The available information indicates that there is potential for adverse impacts, although the threat to human health and the environment is generally not imminent. Additional investigative work may be carried out to confirm the site classification, and some form of action may be required.”

## Funding for sites

Consistent with the “polluter-pays” principle, FCSAP operates on a cost-shared basis with custodians. The FCSAP program funds 80% of total assessment costs and 85% of the total remediation costs for sites under \$90 million with the balance funded by custodians. Sites with total cost estimates over \$90 million are fully funded for remediation by the FCSAP program.

## Assessment

Funding for assessment activities at sites is essential for understanding the extent of the federal government's risk and liability for its contaminated sites, and will determine whether remediation is required at the sites.

## Remediation

To be eligible for FCSAP funding, a remediation site must first be reviewed by program Expert Support Departments (ESDs) (ECCC, HC and DFO) and the FCSAP Secretariat to confirm that the eligibility criteria have been met. The site must also be approved by the custodian's responsible Director General, or equivalent, for inclusion on the FCSAP priority list of remediation sites. Custodians must also ensure that all activities funded by FCSAP are consistent with the FCSAP Eligible Costs Guidance.

Custodial departments have the flexibility to redistribute their FCSAP remediation funding to any FCSAP eligible site within their portfolio. This allows custodians to adjust plans in a given fiscal year if, for example, projects experience cost increases, decreases or scheduling delays. Custodians maintain a list of stand-by sites where remediation or assessment work can occur if unexpected project delays occur at planned projects, in order to maximize progress. Custodians may also utilize other mechanisms such as internal cash management, carry-forward, or re-profiling to ensure that unused FCSAP funds in a given year are available in future years.

At the program level, the FCSAP Secretariat coordinates a midyear expenditure review process to identify potential shortfall or surplus situations. This process permits the transfer of funding among custodians through the supplementary estimates thereby maximizing annual program expenditures and progress. Custodians that provide the transfers are not reimbursed for this funding.

## Governance and management

Housed in ECCC (Environmental Protection Branch), the FCSAP Secretariat, with support from TBS, is responsible for program administration, including leading and coordinating its development and

ongoing delivery, coordinating the site submission process (including a project eligibility review and updates to the Site Priority List), resolving program issues, monitoring program performance, project planning and reporting processes, and information management. The Secretariat also provides clerical and administrative services to the federal contaminated sites governance committees.

TBS (Real Property and Materiel Policy Division) provides the policy framework for management of federal contaminated sites, and supports the FCSAP Secretariat's work by providing policy advice and ensuring program consistency with TB real property policies and policy instruments. TBS administers and maintains the FCSI, which supports the reporting of liabilities to the Public Accounts of Canada.

The science-based ESDs, comprising ECCC, Health Canada (HC), and Fisheries and Oceans Canada (DFO), contribute to the development of a scientifically credible framework for addressing federal contaminated sites, including tools, guidance and training for managing priority sites in a consistent manner across the federal government. The ESDs review site assessments and classification to confirm that a site is eligible for remediation based on its classification. ESDs are also further engaged in reviewing documents and providing science-based advice to custodians at different steps during a contaminated site project life-cycle. ECCC coordinates the provision of expert support services to custodians through a single-window via the FCSAP Secretariat. Public Services and Procurement Canada (PSPC), the fourth ESD under FCSAP, is responsible for improvements to the procurement process and developing project management tools, best practice documents, and guidance to support custodians and the FCSAP Secretariat.

Responsibility for the management, assessment and remediation of federal contaminated sites rests with custodians. Eighteen federal departments, agencies and consolidated Crown corporations are participating in FCSAP. Custodians identify, assess and classify sites for priority, obtain regulatory approvals, coordinate with other government departments, conduct public outreach, and implement projects. Remediation of sites may include removal or containment of contaminated materials, restricting access, or monitoring the site. Program activity, expenditures and remediation liability associated with the site are recorded annually in the FCSI by the custodian.

The FCSAP governance structure is intended to promote horizontal collaboration and administrative oversight through the FCSAP Secretariat, and through a number of interdepartmental committees, sub-committees and working groups. Key governance bodies include the following:

- **Federal Contaminated Sites Committees** – ECCC and TBS co-chair the Federal Contaminated Sites Assistant Deputy Minister (ADM) Steering Committee, whose mandate is to provide strategic direction for FCSAP in areas such as program design and funding parameters. Support at the operational level is provided by the Federal Contaminated Sites Director General (DG) Committee, which handles operational and tactical issues, provides oversight and direction to the program, and approves priority sites for remediation. Membership includes all federal departments with an interest in management of

contaminated sites (including departments participating in the FCSAP program and a small number of departments with contaminated sites that do not receive FCSAP funds).

- **Contaminated Sites Management Working Group (CSMWG)** – ECCC and the Department of National Defence (DND) co-chair the CSMWG, a working-level committee representing all custodians and the four ESDs, as well as other federal representatives with an interest in contaminated sites management. This interdepartmental working group contributes to the development of procedures, tools and guidance, and other key program outputs. In addition, the CSMWG reviews overall custodian and ESD funding proposals and related work plans.
- **Interdepartmental Regional Working Groups (IRWGs)** – IRWGs provide a mechanism to keep regional custodians apprised of news and updates from the FCSAP Secretariat and ESDs on policies, guidance, tools and upcoming training, and to provide input from regional custodians to the FCSAP Secretariat and ESDs' headquarters. IRWGs provide a venue to facilitate a regionally and nationally consistent application of the program, while creating a community of practice for sharing best practices and lessons learned among regional federal contaminated sites project and program managers.

## Program resources

FCSAP program expenditures over the evaluation timeframe from FY 2012 to 2013 to FY 2017 to 2018 are presented in Table 10. Expenditures are presented for each of the federal partner organizations, in their role as Secretariat, custodian or expert support, and for each of the major areas of program activity. Total expenditures over this six-year period were approximately \$1.85 billion.

## Expected results

FCSAP's expected results, as indicated in the program logic model, are as follows:

### Immediate outcomes

- Reduction of uncertainty associated with the risk from federal contaminated sites.
- Risk reduction plans developed and implemented at higher-risk federal contaminated sites.

### Intermediate outcomes

- Risk reduction activities completed at higher-risk federal contaminated sites.
- Reduction in liability through implementation of risk reduction activities at higher-risk federal contaminated sites.

### Ultimate outcomes

- Reduced liability at higher-risk federal contaminated sites.
- Reduced risk to the environment and human health from federal contaminated sites.

**Table 10: FCSAP program expenditures, fiscal year 2012 to 2013 to fiscal year 2017 to 2018**

Federal Partner	FY 2012 to 2013	FY 2013 to 2014	FY 2014 to 2015	FY 2015 to 2016	FY 2016 to 2017	FY 2017 to 2018	Total (from FY 2012 to 2013 to FY 2017 to 2018)
AAFC	\$408,701	\$385,233	\$492,950	\$560,048	\$1,921,652	\$618,348	\$4,386,932
CBSA	\$0	\$0	\$0	\$2,550,000	\$0	\$0	\$2,550,000
CIRNAC-LED	\$16,293,429	\$19,119,000	\$13,848,060	\$12,645,467	\$42,161,540	\$58,880,363	\$162,947,859
CIRNAC-NAO	\$101,277,136	\$144,191,585	\$163,521,683	\$144,370,125	\$131,061,912	\$169,384,617	\$853,807,058
CSC	\$1,315,134	\$803,499	\$1,538,980	\$815,250	\$860,208	\$679,827	\$6,012,898
DFO	\$5,763,209	\$4,997,043	\$5,770,972	\$4,075,922	\$9,131,413	\$12,668,819	\$42,407,378
DND	\$44,126,004	\$47,668,030	\$29,551,334	\$33,196,375	\$67,051,321	\$107,973,869	\$329,566,933
ECCC	\$3,552,112	\$2,271,592	\$4,750,945	\$5,170,385	\$8,270,673	\$5,161,141	\$29,176,848
ISED	\$54,000	\$37,352	\$0	\$0	\$0	\$0	\$91,352
JCCBI	\$302,000	\$0	\$260,877	\$697,597	\$14,537,217	\$14,993,186	\$30,790,877
NCC	\$3,001,326	\$3,121,157	\$1,787,680	\$991,745	\$1,118,274	\$1,227,869	\$11,248,051
NRC	\$145,000	\$127,000	\$18,000	\$18,000	\$934,000	\$527,000	\$1,769,000
NRCan	\$121,000	\$87,789	\$0	\$0	\$225,567	\$2,568,299	\$3,002,655
PCA	\$2,242,492	\$3,230,459	\$3,497,671	\$3,320,512	\$4,124,210	\$5,882,436	\$22,297,780
PSPC	\$12,857,060	\$46,262,690	\$4,519,994	\$11,341,163	\$45,989,602	\$30,918,407	\$151,888,916
RCMP	\$694,254	\$371,596	\$246,537	\$0	\$0	\$0	\$1,312,387
TC*	\$6,607,610	\$12,210,453	\$22,636,285	\$21,380,221	\$20,514,127	\$33,667,158	\$117,015,854

Federal Partner	FY 2012 to 2013	FY 2013 to 2014	FY 2014 to 2015	FY 2015 to 2016	FY 2016 to 2017	FY 2017 to 2018	Total (from FY 2012 to 2013 to FY 2017 to 2018)
DFO Expert Support	\$1,947,370	\$2,034,184	\$1,909,718	\$1,664,424	\$2,988,554	\$3,057,355	\$13,601,605
ECCC Expert Support	\$3,979,531	\$2,789,000	\$2,893,281	\$2,639,203	\$3,917,885	\$4,618,557	\$20,837,457
ECCC Secretariat	\$2,637,469	\$3,134,454	\$2,175,059	\$2,287,631	\$2,519,550	\$2,350,578	\$15,104,741
HC Expert Support**	\$4,054,841	\$3,835,735	\$3,609,711	\$3,509,000	\$3,620,625	\$4,045,050	\$22,674,962
PSPC Expert Support	\$685,910	\$693,800	\$645,249	\$647,943	\$650,061	\$649,275	\$3,972,238
TBS	\$544,635	\$548,846	\$537,344	\$545,782	\$517,349	\$538,409	\$3,232,365
<b>Total</b>	<b>\$212,610,223</b>	<b>\$297,920,497</b>	<b>\$264,212,330</b>	<b>\$252,426,792</b>	<b>\$362,115,740</b>	<b>\$460,410,564</b>	<b>\$1,849,696,146</b>

\*Transport Canada (TC) figures include a total of \$400,000 for VIA Rail Canada Inc. in FY 2016 to 2017 and FY 2017 to 2018.

\*\*Health Canada (HC) as a custodian did not receive any FCSAP funding in this six-year timeframe.

Source: FCSAP Secretariat, verified by ECCC Financial Management Directorate (October 2018).

Area of Activity	FY 2012 to 2013	FY 2013 to 2014	FY 2014 to 2015	FY 2015 to 2016	FY 2017 to 2018	FY 2018 to 2019	Total (from FY 2012 to 2013 to FY 2017 to 2018)
Assessment	\$9,746,593	\$6,725,421	\$6,555,108	\$5,219,002	\$18,873,420	\$19,721,283	\$66,840,827
Remediation	\$181,688,393	\$270,634,815	\$238,294,962	\$228,457,645	\$318,721,588	\$413,826,601	\$1,651,624,004
Program Management	\$19,672,515	\$19,089,610	\$17,952,332	\$17,387,511	\$22,657,439	\$25,070,080	\$121,829,487
PSPC Accommodations	\$1,502,722	\$1,470,651	\$1,409,928	\$1,362,634	\$1,863,293	\$1,792,600	\$9,401,828
<b>Total</b>	<b>\$212,610,223</b>	<b>\$297,920,497</b>	<b>\$264,212,330</b>	<b>\$252,426,792</b>	<b>\$362,115,740</b>	<b>\$460,410,564</b>	<b>\$1,849,696,146</b>

## Appendix B: evaluation strategy

### Evaluation issues and questions

The following questions related to the relevance and performance of FCSAP were examined in the evaluation:

#### Relevance

##### Continued need for the program

- Is there a continued need for the program?

##### Alignment with government priorities

- Is the program aligned with federal government priorities?

##### Alignment with federal roles and responsibilities

- Is the program consistent with federal roles and responsibilities?

#### Performance

##### Program efficiency

- Is the program design appropriate for achieving its intended outcomes?
- To what extent is the governance structure clear, appropriate, and efficient for achieving expected results?
- Is the program undertaking specific activities and delivering products at a reasonable cost?
  - How could the efficiency of the program's activities be improved?
  - Are there alternative, more efficient ways of delivering program outputs?
- Are performance data being collected and reported?
  - If so, is this information being used to inform senior management/decision-makers?

##### Achievement of expected results

- To what extent have intended outcomes been achieved as a result of the program?
  - To what extent have there been other secondary impacts of the program?
- Have there been any unintended (positive or negative) outcomes?



## Evaluation approach and methodology

Five data collection methodologies were used to address the evaluation issues and questions. Evidence drawn from these methods informed the findings and conclusions.

### Review of documents and administrative data

The document review served to develop a thorough understanding of FCSAP and to contribute as a line of evidence to address all evaluation questions. Examples of the types of documents reviewed included:

- Federal Speeches from the Throne
- Federal budgets
- Departmental performance reports (DPRs) and reports on plans and priorities (RPPs)
- Annual reports and previous evaluation reports
- Training materials, internal communications and other materials
- A wide range of documents contained in the Interdepartmental Data Exchange Application (IDEA)

The document review also incorporated findings from the reports on two key consultation exercises led by the FCSAP Secretariat:

- A report on consultations with regional custodian and expert support representatives
- A report on engagement sessions with Indigenous stakeholders, in which a total of 199 Indigenous communities/organizations (or 305 individuals) were consulted in meetings held in the spring and summer of 2018 at 10 locations across Canada.

In addition, the evaluation reviewed and analyzed financial and program administrative data, including financial information as well as analysis of an August 2017 administrative data extract from the Federal Contaminated Sites Inventory (FCSI). The FCSI administrative data covered the entirety of Phase II (FY 2011 to 2012 to FY 2015 to 2016) and the first year of Phase III (FY 2016 to 2017).

### Key informant interviews

Key informant interviews were used to solicit informed opinions and observations on the evaluation questions from various stakeholders involved in or familiar with FCSAP. A total of 66 key informants (individual and group interviews) were interviewed. Interviews were conducted between July 26 and October 19, 2017. The key informant interviews contributed qualitative evidence that addressed nearly all of the evaluation questions. Table 11 provides the distribution of completed interviews by respondent category.

**Table 11: distribution of interviews by key informant category**

Key informant category	Number of interviews	Number of key informants
Custodians	17	28
Expert Support Departments (ESDs)	5	18
FCSAP Secretariat and Treasury Board Secretariat	4	5
Senior Program Managers	4	6
External Stakeholders	10	10
<b>Total</b>	<b>40</b>	<b>66*</b>
* One individual participated in interviews with two distinct categories of key informant, but in one case, was present only in a supportive role to a senior manager.		

In summarizing the degree to which there was agreement among key informants, the following guidelines were used in reporting:

- a few (15% or fewer respondents)
- some (16% to 40%)
- many (41% to 60%)
- most (61% to 85%)
- almost/nearly all (86% to 100%)

### Comparative program analysis

The evaluation conducted a comparative program analysis of contaminated site assessment and remediation programs in five national and international jurisdictions to identify best practices or efficiencies for potential consideration in the Canadian context. British Columbia, Quebec, United States, New Zealand, and Germany were selected by the FCSAP Secretariat for analysis, based on preliminary information gathered about programs in approximately 20 jurisdictions. Additional information about each program was sought through a key informant interview and further review of publicly available information. Ultimately, interviews were completed with representatives of the BC and New Zealand programs.

### Case studies

Five case studies examined key themes about contaminated site remediation, selected by the FCSAP Secretariat and the Horizontal Evaluation Steering Committee. The case studies provided some case-specific examples of how program activities are leading to expected results as well as context-specific data that supplemented and enriched the information collected through other lines of evidence. Each case study involved a document and data review and interviews with key stakeholders. The case studies covered the following topics:

- Unique challenges to the remediation of contaminated sites in the North (Giant Mine in Northwest Territories)
- Use of innovative technologies in remediation (Lobstick Maintenance Yard, Prince Albert National Park)
- Remediation of emerging contaminants, with a focus on per- and polyfluoroalkyl substances (PFAS)
- Long-term monitoring of remediated sites (Distant Early Warning (DEW) line site in Cape Dyer, Nunavut)
- Socio-economic benefits of remediation, with a focus on Indigenous communities (Kitasoo Environmental Improvement Project, British Columbia)

### **Expert panel**

ECCC gathered perspectives on select preliminary evaluation findings from an expert panel. It gathered the experts' views on selected key themes/issues arising from the evaluation, including: (1) alignment with federal priorities; (2) liability reduction; (3) risk reduction; (4) site eligibility criteria and prioritization; and (5) emerging contaminants.

The expert panel took place on March 6, 2018, with eight participants meeting for 2.5 hours via teleconference. The panel included individuals with particular knowledge and expertise relating to FCSAP or remediation of contaminated sites in general. Participants included academics (n=2), provincial government representatives (n=3), and private sector consultants (n=3). Participants received an information package in advance of the discussion and were offered an honorarium of \$300 for their participation.

## Appendix C: summary of findings

A rating is provided for each element assessed, based on a judgment of the evaluation findings, in keeping with the following rating statements and definitions.

Statement	Definition
Expectations met	The intended outcomes or goals have been achieved.
Further work required	Considerable progress has been made to meet the intended outcomes or goals, but attention is still needed.
Priority attention required	Insufficient progress has been made to meet the intended outcomes or goals and attention is needed on a priority basis.
Unable to assess	Insufficient evidence is available to support a rating.

### Relevance

Relevance criteria	Expectations met	Further work required	Priority attention required	Unable to assess
1. Continued need for the program	●			
2. Alignment with federal government priorities	●			
3. Consistency with federal roles and responsibilities	●			

### Program efficiency

Efficiency criteria	Expectations met	Further work required	Priority attention required	Unable to assess
1. Program delivery model is appropriate for achieving intended outcomes		●		
2. Program design is appropriate for achieving intended outcomes		●		
3. Program resources are adequate		●		
4. Program is being delivered in an efficient and economic manner		●		
5. Governance structure is clear, appropriate and efficient for achieving expected results	●			
6. Performance data is being collected, reported and used to inform senior management/ decision makers		●		

## Achievement of expected results

Expected results	Expectations met	Further work required	Priority attention required	Unable to assess
1. Reduction of uncertainty associated with the risk from federal contaminated sites		•		
2. Risk reduction plans developed and implemented at higher-risk federal contaminated sites		•		
3. Risk reduction activities completed at higher-risk federal contaminated sites		•		
4. Reduction in liability through implementation of risk reduction activities at higher-risk contaminated sites		•		
5. Reduced liability at higher-risk federal contaminated sites		•		
6. Reduced risk to the environment and human health from federal contaminated sites		•		
7. Employment creation in the environmental services industry		•		

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