Chapter 3
Section
3.10

Management of Contaminated Sites

1.0 Background

1.1 Contaminated Sites

Contamination is the presence of a chemical, organic or radioactive material or live organism in the air, soil, water or sediment. Contamination can arise from commercial or industrial activity, improper waste disposal, improper chemical storage, or chemical leaks and spills. Areas of land or water that are affected by contamination, such as hazardous waste or pollution in concentrations that pose health and safety risks, and exceed specific levels under environmental standards are referred to as contaminated sites.

Governments may have a responsibility to remediate (that is, clean up) contaminated sites in their jurisdictions. Remediation refers to action taken to remove, stop or mitigate a site's risks or adverse effects on the environment or on human health. Such actions may range from completely removing the contamination ("dig and dump" measures) to reducing its impact (risk management measures), at times by simple means such as fencing off waste areas to ensure site security. Remediation's aim is to remove or minimize the risks that the contamination will affect the environment or the public, as well as to allow for the future productive use of the site.

Once a contaminated site is identified, it is important to eliminate, contain or reduce the risk it poses to public health and safety and to the environment.

1.2 *Environmental Protection Act*

Although federal and provincial or territorial governments share legal responsibility for protecting the environment, most legislation regarding contaminated sites is issued by provincial or territorial governments. In Ontario, a number of provincial statutes deal directly or indirectly with environmental protection and contamination, with the most comprehensive being the *Environmental Protection Act*. All other provinces have similar legislation.

The *Environmental Protection Act* defines a contaminant very broadly as "any solid, liquid, gas, odour, heat, sound, vibration, radiation or combination of any of them resulting directly or indirectly from human activities that causes or may cause an adverse effect" on human health or safety or on the environment. According to environmental scientists, the risk of an adverse effect is considered higher when a pollutant linkage exists—that is, when a pollution source (contaminant), a receptor (something that could be harmed by the contaminant), and a pathway are all present. **Figure 1** defines these terms and shows how they connect.

Figure 1: Elements in a Pollutant Linkage

Source of data: Environmental Scientifics Group (www.esg.co.uk)

Pollutant Linkage	Description
Source	A substance (also called a contaminant) in, on or under land that can cause harm to or pollute the surrounding environment and anything living in that environment.
Receptor	People or assets that could be adversely affected by a contaminant. Receptors can include communities, ecological systems, properties, or bodies of water.
Pathway	A route or means by which a receptor can be exposed to or affected by a contaminant.
Pollutant linkage	The simultaneous presence of a source, a receptor, and a pathway between them.

The *Environmental Protection Act* requires that remediation must be undertaken if the contaminant causes or may cause an adverse effect on human health or safety or the environment. Remediation plans typically aim to remove either the contamination source or a receptor, or to block the pathway from the source to the receptor in a way that reduces or eliminates the risk that the contaminant will have a damaging effect. Several different approaches may be possible to remediate a particular site, and remediation costs can vary significantly depending on the strategy chosen. Although remediation can be costly, additional environmental damage may occur if such efforts are not made, and this damage may ultimately cost the province considerably more. As a result, remediation decisions that the government makes today will have a significant impact on the availability and allocation of its future resources.

1.3 Provincial Responsibility for Contaminated Sites

The Province can become responsible for a contaminated site in a number of ways. In many cases, the Province is responsible because it owns the site or directly caused the contamination of the site through its own activities. For example, some Ontario sites contain leaking fuel tanks. The Province in this case is the polluter, and accordingly must recognize a liability for the estimated costs of cleaning up the sites.

Although some of the Province's sites became contaminated due to its own operations, in many other cases the Province has assumed responsibility for sites where contamination was caused by other third parties. The Province may have had to assume responsibility because the original third-party owner or operator became insolvent, ceased to exist, or had insufficient funds to remedy environmental damage that had occurred on the property. The Province may also implicitly accept responsibility for contaminated sites by taking remedial action in emergency situations.

Several government ministries and agencies share responsibility for managing the Province's contaminated sites (see **Figure 2**). These ministries and agencies are individually responsible for contaminated sites they own and for any additional sites they have accepted responsibility for, which can include:

- orphaned sites, where owners cannot be located or are unwilling or unable to remediate;
- forfeited sites, where a corporation created by Ontario statute has been dissolved;
- public housing sites, where the Province, as the former owner, has agreed to pay for remediation in accordance with an agreement with a public provider (such as a municipality); and

Figure 2: Responsibility for Managing Contaminated Sites

Prepared by the Office of the Auditor General of Ontario

Ministry	Responsibilities
Ministry of the Environment and Climate Change	Regulates environmental mitigation or remediation efforts province-wide, primarily through the *Environmental Protection Act* and the *Ontario Water Resources Act*. Responds to real or potential risks of harm to public health and safety or to the environment if a responsible party cannot be found.
Ministry of Natural Resources and Forestry	Responsible for contaminated sites on Crown land (primarily forests and wilderness), as well as a number of dams that are used to enclose mine waste.
Ministry of Northern Development and Mines	Through its Abandoned Mines Rehabilitation Program, addresses environmental and public safety issues associated with abandoned mines.
Ministry of Economic Development, Employment and Infrastructure	Buys, manages, and sells provincially owned real estate (i.e., land and buildings); also manages properties forfeited to the province. Infrastructure Ontario manages real estate on MEDEI's behalf, and this management can include mitigating and remediating contaminated sites.
Ministry of Transportation	Responsible for contaminated sites along all provincially owned highways and roads.
Ministry of Municipal Affairs and Housing	Has agreed to pay for remediation of certain former provincially owned public housing sites that are undergoing redevelopment.
Government agencies	Ontario government agencies own or manage some of the province's contaminated sites. Examples include Ontario Place Corporation, the Ontario Northland Transportation Commission, and the Ontario Mortgage and Housing Corporation.

- abandoned mines, defined as any private or Crown-owned mines not in operation when certain provisions of the *Mining Act* were enacted in 1991.

For financial risk purposes, the Ministry of the Environment and Climate Change and the Ministry of Northern Development and Mines each maintain their own financial assurance funds. These funds provide the government with financial security for certain activities inherently risky to the environment. The Ministry of the Environment and Climate Change's Financial Assurance Trust Fund addresses private waste facilities (e.g., landfill sites) and mobile PCB destruction facilities, while the Ministry of Northern Development and Mines' Mine Reclamation Fund addresses mining operations. Before commencing these environmentally sensitive activities, business operators, whether individuals or corporations, must deposit monies or provide other forms of financial security, such as bank letters of credit or performance bonds, to the Funds. These securities provide resources for and evidence of the operator's financial commitment to complete any necessary future site remediation work when operations cease. Necessary remediation can include the cost of private waste facility closures or mining land reclamation, as well as post-closure costs such as longer-term site monitoring and reporting, and other contingencies. The Province can draw on the financial resources in these Funds if it incurs costs related to alleviating environmental risks or damage at a site.

Provincial government agencies, such as the Ontario Northland Transportation Commission, are responsible for contaminated sites on properties they own.

1.3.1 Ensuring That Land and Business Owners Meet Environmental Obligations

Private land and business owners in Ontario are responsible for maintaining their properties. This responsibility typically includes cleaning up any contamination that is on their property and/or taking necessary action to prevent neighbouring properties from being impacted by the contamination.

Much of the responsibility for remediating contaminated sites in Ontario therefore rests with private business operators and private property owners. As described earlier, for some high-risk business activities the province has additional mechanisms, such as requiring financial security, to ensure that owners appropriately discharge their environmental obligations. Another mechanism is to take legal action.

Under the *Environmental Protection Act*, the Province has the right to seek compensation from a third party for any costs it incurred for the prevention or remediation of damage to the environment caused by that third party. This loss or damage could be from a chemical spill or other contaminating event, and would include all reasonable costs incurred by the Province when cleaning up a contaminated site not properly cleaned up by the third party. However, exercising this right can be difficult or impossible for the Province if a contaminated site's owner is insolvent or if the business in question is no longer operating. Although the Province can take legal action against polluters, legal action can be costly. Therefore, the Province does not initiate legal action if it considers the likelihood of financial recovery to be remote or if it expects any amount recovered to be negligible. In such situations, the Province typically assumes full responsibility for site cleanup and all associated costs.

1.3.2 A Co-ordinated Approach to Contaminated Sites

The government has long recognized that it lacked a co-ordinated approach or method for assessing contamination risks across ministries and agencies. It has also long recognized the need for a system for centrally prioritizing the actions necessary to address contaminated sites as a whole. The government needs this co-ordinated approach and system in order to:

- consistently assess the risks associated with its contaminated sites;
- consistently prioritize sites to identify those most in need of remediation;
- consistently allocate appropriate funding to sites that pose the greatest risk; and
- develop a long-term funding model to ensure that remediation resources are allocated, on an ongoing basis, to where they provide the most benefit.

Recognizing that its approach to managing contaminated sites was fragmented, the government in its 2011 Budget announced its intention to co-ordinate its environmental cleanup activities across the province. Accordingly, the Treasury Board directed the ministries whose activities included the management of contaminated sites to together develop a comprehensive environmental cleanup strategy. The strategy was to include three initiatives: the consolidation of funding, the establishment of a single inventory of contaminated sites, and the development of a risk-based approach to prioritizing remediation projects. The Treasury Board also recommended the eventual creation of a centralized governance structure for contaminated sites managed by a new Contaminated Sites Project Office.

In August 2012, an Inter-ministerial Contaminated Sites Assistant Deputy Ministers' Steering Committee (ADMs Steering Committee) was established to lead the government's co-ordination efforts. Its members included assistant deputy ministers from the Ministry of the Environment and Climate Change; the Ministry of Economic Development, Employment and Infrastructure; the Ministry of Northern Development and Mines; and the Ministry of Natural Resources and Forestry. As requested by the Treasury Board, this committee launched four working groups, each tasked with specific responsibilities under the three Treasury Board initiatives. The Inventory Working Group was to develop a single enterprise-wide inventory of all the Province's contaminated sites. The Risk Prioritization Working Group was to create a risk assessment model. The Policy Working Group and the Governance Working Group were to examine

potential policy changes and governance frameworks, respectively, to enable better management of the Province's contaminated sites and minimize its future environmental liabilities.

A key outcome expected from this co-ordinated approach was the development and adoption of a single risk prioritization model for ranking all of Ontario's contaminated sites. As of spring 2015, the model was substantially complete and awaiting approval; however, the party responsible for approval has yet to be determined. The goal of the model is to provide a common methodology, using health and safety factors and other environmental considerations, for quantifying the risks associated with each contaminated property. Once assessed and quantified, each site could and would then be ranked. Ideally, all site data would be maintained in the new single inventory system. Ongoing review would keep the inventory current by adding new sites, updating information about existing sites, and regularly reassessing site rankings and funding priorities. The database would allow the relative risks associated with all provincial sites to be continually compared and prioritized, providing assurance to the Treasury Board that decisions about the ministries' funding requests to remediate contamination were based on government-wide priorities.

The Ministry of the Environment and Climate Change was responsible for reporting to the Treasury Board on its August 2012 initiatives. Specifically, the Ministry was to report to the Treasury Board in fall 2012 on the progress of the three working groups via the government's results-based planning process, with a final report to the Treasury Board in July 2013 containing detailed recommendations for establishing and operating the Contaminated Sites Project Office. However, although there has been some interim reporting to the Treasury Board, as detailed throughout this report, progress on the government's initiatives has been slow, and the final report remains outstanding.

1.3.3 Accounting for Contaminated Sites

New Accounting Standard

A new standard issued by the Public Sector Accounting Board titled PS 3260, *Liability for Contaminated Sites* (PS 3260), addresses accounting for and reporting liabilities associated with contaminated sites and their remediation. This standard is effective for the Province's fiscal year ending March 31, 2015.

Under PS 3260, a liability for remediation of contaminated sites must be recognized when, as of the financial statement reporting date, all of the following criteria have been met:

- an environmental standard exists;
- contamination exceeds the environmental standard;
- the government or government organization is directly responsible for or has accepted responsibility for the site;
- it is expected that future economic benefits will be given up to remediate the contamination; and
- a reasonable estimate of the cost of remediation can be made.

The standard calls for the government to calculate its contaminated site liabilities on a best estimates basis. All costs directly attributable to remediation activities are to be included in the liability, and the costs to be estimated are those deemed necessary to bring a site up to a level appropriate for its use. Directly attributable costs include, but are not limited to, payroll and benefits, equipment and facilities, materials, and legal and other professional services related to the remediation of the contaminated site, and would include any post-remediation operations, maintenance or required monitoring that are integral to the remediation strategy. The total liability recognized is based on the best available information, and is net of any expected recoveries.

The government recognized its liabilities for contaminated sites for the first time in accordance with PS 3260 in its March 31, 2015 consolidated financial statements. We concurred with the

decision by the Office of the Provincial Controller Division (Provincial Controller's Office) of the Treasury Board Secretariat to implement this 2015 accounting change retroactively as an adjustment to the opening accumulated deficit with no restatement of the financial statements from previous periods. This treatment is supported by PS 2120, *Accounting Changes*.

The implementation of PS 3260 and the government's recognition of its liability for contaminated sites increased the environmental liabilities recognized in the province's consolidated financial statements by $1.685 billion, from $107 million recognized in previous years to a new total liability as of March 31, 2015 of $1.792 billion. The Provincial Controller's Office had the lead responsibility for implementing the new standard. Ministries and their consolidated agencies were required to identify, estimate and report to the Provincial Controller's Office all liabilities related to contaminated sites in their respective jurisdictions. Although this report details several concerns we have regarding the precision of the government's liability estimate and the need to improve it over time, we were satisfied with the completeness of the ministries' efforts in identifying all of their high-risk sites. However, it is possible that changing circumstances over time will result in more sites being recorded as a contaminated sites liability. That is, future events or new information could change the status of a site that currently does not meet PS 3260's requirements for a contaminated sites liability.

In reaching our conclusions, we were comforted by the PS 3260 standard, which itself recognizes that the government's initial estimate of its contaminated site liability may lack precision and allows for improvements over time. For example, PS 3260.48 states: "A government's total liability may not necessarily become determinable at a specific point in time. The amount of a liability may become determinable over a continuum of events and activities as information becomes available. For example, the estimate of costs may only become known as the government completes the various stages of assessing the extent of the contamination. In these cases, the government would recognize a liability based on management's best estimate at the time."

In Chapter 2 of our *2014 Annual Report*, we noted that PS 3260 would not be an easy standard to implement. Estimating environmental liabilities can require considerable use of specialists, such as site assessors, engineers and others, to determine if and how badly a site is contaminated. We acknowledged that it would take time to establish a complete inventory of sites, and even more time to populate this inventory with accurate, credible and reliable assessment information sufficient to allow for reasonable estimates of the future costs of remediating each site. We also noted that since standards are open to interpretation in places, considerable professional judgment needs to be exercised to implement them.

1.4 Estimate of Liability for Contaminated Sites

1.4.1 Liability for Contaminated Sites by Ministry

The Province's total liability for remediating its contaminated sites is estimated to be $1.792 billion as at March 31, 2015. **Figure 3** provides details of this total by ministry, listing the number of contaminated sites included in the liability estimate. In situations where it is not certain whether the Province will be responsible for future costs for a particular site, the government provides disclosure as a contingent liability in its notes to the financial statements. The government has not yet decided on an approach to funding the work necessary to eliminate its contaminated site liabilities.

1.4.2 Liability for Contaminated Sites by Site Usage

PS 3260 recommends that the government's financial statements disclose information regarding the nature and source of its liabilities for contaminated

Figure 3: Liability for Contaminated Sites by Ministry and Government Agencies

Source of data: 2014/15 Public Accounts and Ministries

Ministry	Potential Number of Contaminated Sites[1]	Number of Contaminated Sites Recorded as Liability	Total Liability as of March 31, 2015 ($ million)	Number of Sites Disclosed as Contingent Liability Note Disclosure	Total Contingent Liability ($ million)[2]
Ministry of the Environment and Climate Change	33	28	**377**	3	**0**
Ministry of Northern Development and Mines	362	44	**303**	12	**69**
Ministry of Natural Resources and Forestry	130	120	**808**	10	**10**
Ministry of Economic Development, Employment and Infrastructure	82	40	**141**	0	**0**
Ministry of Municipal Affairs and Housing	53	3	**62**	50	**295**
Ministry of Transportation	106	41	**42**	0	**0**
Government agencies and broader-public-sector entitites[3]	13	12	**59**	1	**9**
Total	**779**	**288**[4]	**1,792**	**76**[5]	**383**

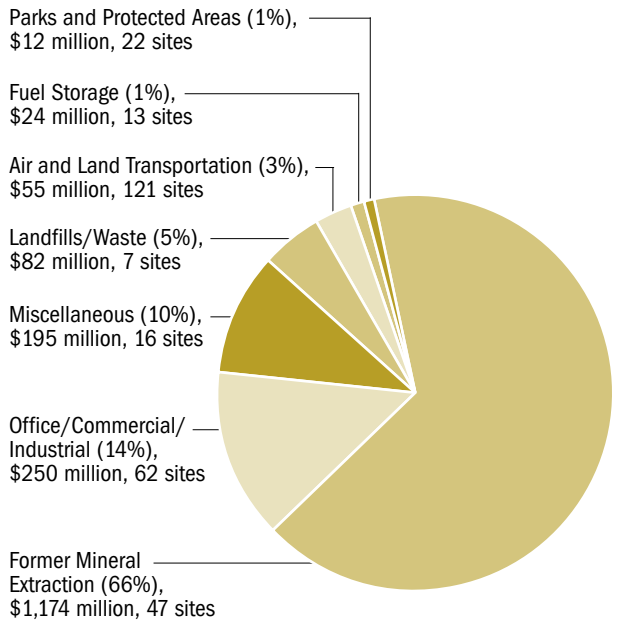
1. Sites include both land and buildings as of March 31, 2015.
2. A contingent liability note disclosure is required when the future event to confirm government's responsibility is not determinable.
3. Government agencies that have a contaminated sites liability include Ontario Place Corporation and Ontario Northland Transportation Commission. Broader-public-sector entities that have a contaminated sites liability include various hospitals, schools and colleges. Those government agencies whose financial statements already include environmental liabilities, based on accounting standards that differ from those of PSAB, are not included in **Figure 4**. Those agencies include Ontario Power Generation Inc. and Hydro One Inc.
4. 288 of the potential total of 779 sites have been recorded as liability. The remaining 491 have not met the recognition criteria in accounting standard PS 3260. Where an estimate can be made, a dollar value has been included.
5. Of the 491 sites for which the government has not recorded a liability, 76 have been disclosed as contingent liabilities in the notes to the government's financial statements because its responsibility for them was not determinable. No liability has been recorded for the remaining 415 sites (491–76) because the contamination on them does not exceed an environmental standard, they are low-risk sites causing no adverse effects, or they are the responsibility of private-sector owners of the sites.

sites. In compliance with this recommendation, the government groups its contaminated sites into seven categories, according to how the sites are or were being used. **Figure 4** details the Province's liability for contaminated sites in the various categories. Two categories dominate: former mineral extraction sites and office/commercial/industrial sites together represent $1.4 billion or 80% of the Province's total liability.

Several appendices to this report provide supplementary information about contaminated sites in general and Ontario's contaminated sites in particular. Contamination can take many forms and arise from many sources. **Appendix 1** provides details on the nature and sources of the contamination for each of the government's site usage categories. There are also many different approaches to remediating contaminated sites. To illustrate this variety and the complexity of the issues faced in remediating the Province's contaminated sites, **Appendix 2** provides an example of a contaminated site for each site usage category, along with background information on the site and the contamination on it. **Appendix 3** provides a glossary of common terms related to contaminated sites. **Appendix 4** provides the location for each contaminated site in Ontario for which the government has recorded a liability as of March 31, 2015.

Figure 4: Contaminated Sites Liability by Site Usage

Prepared by the Office of the Auditor General of Ontario



Total liability is $1,792 million for a total number of 288 sites.

Appendix 5 provides details on the 10 sites for which the province has recorded its largest contaminated site liabilities.

1.4.3 Environmental Site Assessments

An environmental site assessment is a study of a property's past use and its current environmental condition. An environmental site assessment addresses whether a site is contaminated, or, if uncertainty exists, whether contaminants are likely to be present. Environmental site assessments also consider whether contaminants are moving or have the potential to move off-site, and thus affect adjoining properties. An environmental site assessment may be required by law, such as when a change of land use is being considered, or the government may conduct an environmental site assessment at a particular site for its own purposes.

Ministries often engage outside experts to carry out environmental site assessments on their behalf. These experts then often recommend appropriate remediation strategies for addressing any site contamination identified in the assessment. The Canadian Standards Association has guidelines for carrying out such site assessments, which are typically done in two phases—a preliminary phase (Phase 1) and an in-depth or detailed phase (Phase 2). **Figure 5** describes these phases more fully.

The Ontario government uses environmental site assessments to identify contaminants, assess the nature and degree of contamination on its sites, and develop remediation plans. Environmental site assessments were often the basis for the liability recorded by the Province for its contaminated sites.

With the information obtained from both Phase 1 and Phase 2 environmental site assessments, contaminated sites can be classified in accordance with a federal National Classification System (System) developed in 1992 by the Canadian Council of Ministers of the Environment. This System provides a documented and uniform approach to classifying sites as high, medium or low risk, and was designed to help prioritize sites for

Figure 5: Environmental Site Assessment Phases

Source: Canadian Standards Association

Phase 1	• A preliminary investigation conducted to reveal any potential significant environmental concerns • Determines if there is sufficient risk to necessitate further assessment work • Commonly includes such procedures as researching the site's history and past records and performing surface and perimeter inspections (e.g., taking soil samples)
Phase 2	• A detailed site investigation to confirm and quantify any contamination identified in a Phase 1 assessment • Commonly includes drilling deeper into the site to obtain a number of soil and groundwater samples for laboratory testing and analysis

future investigative work, remediation or other risk management actions. The government chose not to use this System because it would have automatically given sites that had not been assessed either no priority or too low of a priority. However, in developing its own risk prioritization model, Ontario used aspects of this System and other models used in international jurisdictions, which resulted in a risk-based approach to assessing its contaminated sites, classifying them as high risk or low risk.

High-risk sites are those determined to have adverse effects on human health or the environment, typically when there is contamination on the site combined with a means, route, or pathway by which communities, ecological systems, properties, or bodies of water are being or could be adversely affected by that contamination. Low-risk sites are those that are not creating any adverse effects on the communities, ecological systems, properties, or bodies of water in the area.

1.4.4 Ministry of Northern Development and Mines Rehabilitation Value-for-Money Audit Report

This year, our Office audited the Ministry of Northern Development and Mines' Rehabilitation program. **Section 3.11** of this year's *Annual Report* (Mines and Minerals audit report) details the findings from this audit, highlighting a number of mine sites for which the government is potentially financially responsible. It should be noted that the scope of that audit is broader with respect to mines than this one, in that it examined a wide range of risks the government faces in its management and oversight of provincial mining operations, including both contaminated sites and non-contaminated sites. This report's focus is narrower, examining only those operations for which the government has or may be required to record a contaminated site liability under PS 3260. **Appendix 6** provides a reconciliation of the 4,412 mining sites maintained in the Ministry of Northern Development and Mines' Abandoned Mines Information System (AMIS) to the 56 sites from that system for which the government has either recorded a contaminated site liability (44 sites) or provided contaminated site contingent liability note disclosure (12 sites).

Physical hazards are not contamination and are not covered by PS 3260, and therefore the estimates for contaminated sites exclude the cost of rehabilitating any physical hazards. The Mines and Minerals audit report discusses the possible rehabilitation work needed to remove a number of physical hazards at Ontario mines. The estimated costs for rehabilitating physical hazards do not meet the PSAB accounting standard requirements for recording them as a liability. However, the government will continue to monitor these physical hazards.

2.0 Audit Objective and Scope

Our audit objectives were to assess whether, in its implementation of accounting standard PS 3260, *Liability for Contaminated Sites*, the government had:

- effective processes and systems in place to ensure that it had identified its contaminated sites, sufficiently assessed their risks, and developed appropriate remediation plans to address their contamination; and
- sufficient and appropriate evidence to support its measurement and reporting of the Province's contaminated sites liability in Ontario's March 31, 2015 consolidated financial statements.

2.1 Key Ministries

Our work focused primarily on six key ministries with responsibilities for known contaminated sites: the Ministry of the Environment and Climate Change; the Ministry of Northern Development and Mines; the Ministry of Natural Resources and Forestry; the Ministry of Economic Development,

Employment and Infrastructure; the Ministry of Municipal Affairs and Housing; and the Ministry of Transportation.

We held discussions with officials from the Treasury Board Secretariat's Office of the Provincial Controller Division at the beginning of the engagement and throughout it to review progress and resolve issues as they arose. We also met with staff from the six key ministries to review and document the risks of, and the processes they followed in, implementing PS 3260 at the program level.

Our work included reviewing ministry policies, procedures manuals, and documentation such as environmental reports and site assessments. We performed detailed walkthroughs of each ministry's contaminated site assessment process and documented each ministry's key controls for identifying, measuring and reporting on its contaminated sites. We also selected a sample of contaminated-site files at each ministry for detailed testing.

The government reporting entity comprises over 300 consolidated provincial agencies. The liabilities for contaminated sites reported by most of these agencies were recorded in the Province's financial statements through a consolidation process. In this regard, we relied on the work of both audit teams in our own Office and the external auditors of these agencies. However, certain agencies that had significant land and property and infrastructure holdings were subject to more scrutiny during our audit. This scrutiny included meeting with the agencies' staff, examining the environmental assessments done on the agencies' contaminated sites, reviewing related analyses, and discussing liability estimates with the agencies' management and their auditors.

2.2 Ontario Internal Audit Division Work

We used the work of the Ontario Internal Audit Division (Division) to support our audit of the Province's contaminated sites liability. The Division, at the request of the Office of the Provincial Controller, had recently completed an assessment of the Province's financial processes and controls supporting the implementation of PS 3260 with the objective of identifying opportunities to strengthen:

- ministry processes for identifying, measuring and reporting potential liabilities for contaminated sites for the purposes of 2014/15 and ongoing Public Accounts financial reporting;
- corporate guidance to help support ministries to effectively report their liabilities for contaminated sites; and
- processes supporting the establishment of an Ontario Public Service-wide centralized listing including related monitoring and reporting of contaminated sites information.

The engagement was performed across four ministries that the Division identified as likely having contaminated sites and that had been included in the Treasury Board's earlier direction to the government regarding contaminated sites: the Ministry of the Environment and Climate Change; the Ministry of Northern Development and Mines; the Ministry of Natural Resources and Forestry; and the Ministry of Economic Development, Employment and Infrastructure.

We obtained and reviewed the Division's work as well as its final audit report. We determined that we could rely on the Division's work for the purposes of our audit, and did so in gaining our understanding of a number of ministry processes and procedures with respect to its contaminated sites.

2.3 Reliance on External Experts

To assist in our audit, we engaged an environmental expert. This specialist assessed the reasonableness of certain environmental site assessments the government had commissioned, its remediation strategies, and its cost estimates. The specialist also helped us assess key assumptions used by the government, such as the number of years it would take for a site to be remediated, or the appropriateness of an inflation rate used when estimating expenditures related to a particular remediation project.

We also held discussions with staff from Auditor Generals' offices in several other jurisdictions to review the implications and requirements of the new accounting standard, discuss implementation issues with them, and compare our audit observations.

3.0 Summary

Contaminated sites can pose serious risks to public health and safety. Governments either have or, under certain circumstances, may need to assume responsibility for cleaning up contaminated sites. To fulfill this public responsibility, governments need robust systems for identifying contaminated sites in their jurisdictions, assessing the nature and extent of contamination on these sites, developing and implementing programs to mitigate the risks posed by these sites to the public and the environment, and remediating these sites for future use.

Our audit found weaknesses in the government's processes for identifying, measuring, and reporting on its contaminated sites liability. These weaknesses heightened the risk that the Province's liability could be misstated. We reduced this risk by developing and performing a number of audit procedures, and our audit work identified errors totalling $95 million in ministry calculations that initially understated their environmental liabilities. Ministries adjusted their records for these errors. Based on our work, we were able to conclude that the government's estimate of its contaminated sites liability as reported in the Public Accounts for the year ending March 31, 2015 was reasonable.

As with any estimate, there remains an inherent risk that the government's calculation of its contaminated site liability is incomplete and inaccurate. Given the unique nature of many contaminated sites, estimating the Province's liability for them is undoubtedly complex, often requiring specialized and costly expertise and resources. While we were satisfied with the government's efforts to identify all sites for which it is financially responsible, we do have concerns regarding the accuracy of the government's estimate of its liability for these sites, and would like to see a continued focus on improving the precision of this estimate in future years as more assessment work is done and updated site or other new information becomes available.

Overall we found that there was no centralized ministry oversight over the ministries' processes for managing their contaminated sites and estimating their contaminated site liabilities. Without proper oversight, government initiatives are rarely implemented effectively or on a timely basis. This lack of oversight is ultimately responsible for most of the errors and issues identified throughout this report. For example, poor oversight negatively affected the government's planned introduction of a centralized database of contaminated sites and its implementation of a risk prioritization model for remediating these sites. Both areas need future attention to ensure that the government effectively manages its contaminated sites and minimizes their impact on public health and safety.

The following are our key observations related to measuring, prioritizing and managing the risks associated with the province's contaminated sites:

- **Centralized inventory for contaminated sites needed**—Without a centralized inventory, it is difficult to form a complete picture of, or track progress in, managing the government's contaminated sites. We found a few instances where more than one ministry reported being responsible for the same contaminated site. Confusion over responsibility can result in unnecessary duplication in both accounting records and site management efforts. A centralized inventory of contaminated sites would greatly reduce the risk of such situations arising, thus reducing the risk of duplicating both efforts and costs.
- **High-risk sites need to be prioritized for remediation**—Without an Ontario Public Sector-wide risk prioritization model that captures all contaminated sites and prioritizes

them together, the government risks funding low-priority sites for remediation before high-priority sites that have a higher impact on public health or safety.

- **Lack of funding and resource allocation strategy for remediation**—Although the government has identified all of its high-risk contaminated sites, it lacks a central leader (such as the contemplated Contaminated Sites Project Office) to manage this cleanup process from a government-wide perspective. Without a funding and resource allocation strategy, the government may leave the public exposed to long-term risks to human health or the environment. We found that the government has no plan or fund in place for cleaning up its contaminated sites. The government should firmly commit to remediating its contaminated sites in a timely manner, and this means ensuring that ministries and government agencies have access to sufficient funds to clean up the sites they are responsible for. The government also needs a system of periodic reporting on the progress made in remediating its sites. For this process to be effective, it needs to be done within the context of an approved funding plan. We note that, despite the Treasury Board's 2012 call for a co-ordinated approach to the Province's contaminated sites, very little remediation work has been completed to date, and a prime reason for this is the lack of funding. The government should consider establishing a central funding program to provide ministries with the resources they need for their cleanup work, and combine this with proper oversight to ensure that these funds are managed appropriately and spent on the highest-priority cleanup projects. Ideally, such a funding program would be long-term in nature.

The following are our key observations related to improving the process for estimating the Province's contaminated sites liability:

- **Improved guidance needed to ensure consistent liability estimates**—Without clear direction, ministries may make errors in accounting for and reporting their contaminated sites. The Provincial Controller's Office can reduce this risk by providing ministries with additional guidance in several areas, such as clarifying the types of costs that should be included in the liability calculation; clarifying if, when and how present value accounting techniques should be applied; and providing approaches to estimating a liability in the absence of an environmental site assessment.
- **Inadequate documentation supporting the contaminated sites liability**—Without adequate documentation, there is a risk of misstating the number of contaminated sites the government has responsibility for and/or the cleanup costs associated with these sites. There is also the broader risk of loss of critical information when key staff who have this knowledge retire or leave government. We noted the ministries had poor documentation concerning identifying contaminated sites, applying risk-based approaches to classifying sites, choosing remediation strategies, and estimating a contaminated site's cleanup costs. There was also incomplete support for the assumptions made by ministries both in their decision-making processes and in estimating liabilities.
- **No policies or processes for updating liability estimates**—Without formal updating processes, there is a risk that the calculations supporting the government's reported contaminated sites liability will lose accuracy over time. Ministries need to monitor their sites and review them annually to determine if updated environmental site assessments are required or if liability estimates need to be revised to reflect changes in technology, site conditions, environmental standards, inflation or other factors.

Our recommendations focus on strengthening the government's processes for managing its contaminated sites and its processes for estimating the cost of remediating these sites. This report contains seven recommendations, consisting of 12 actions to address the findings noted during this audit.

We appreciate the cooperation we received during the audit from the Provincial Controller's Office, Internal Audit Division, and the ministries and agencies reporting contaminated sites.

OVERALL MINISTRIES' RESPONSE

Contaminated sites can impose a high cost on Ontarians, both financially and in terms of health and safety risks, and the Province will respond to those risks as they arise. Implementation of a central oversight function will support effective risk mitigation and coordinated management of contaminated sites across government. In addition, the government is finalizing a formal site assessment framework (supported by a centralized inventory of contaminated sites) which will facilitate prioritization, risk management and reporting for contaminated sites.

During the period over which the formal site assessment framework has been under development, the government has continued to exercise a risk-based approach to managing contaminated sites where ministries have continued to exercise accountability for managing risks for individual contaminated sites.

The implementation of PSAB's new accounting standard resulted in a broader scope of liabilities being recognized in the Province's books which has enhanced transparency and accountability in reporting to the legislature and the public. Important insights were gained through our experience implementing the new accounting standard and we appreciate the efforts of both Ontario's Internal Audit Division and the Office of the Auditor General in helping to refine the government's reported liability and to identify areas for further improvement.

4.0 Key Observations and Recommendations

Our audit found several instances of ministries making errors in initially estimating their liability for contaminated sites. These errors arose from deficiencies in the processes put in place to address the requirements of the new contaminated sites accounting standard. All of these errors were corrected by ministries before the Province's March 31, 2015 consolidated financial statements were finalized. The rest of this report discusses the deficiencies that caused the errors and other deficiencies that will impact the minstries' ability to manage their contaminated sites, and provides our recommendations.

4.1 Need for Centralized Oversight of Contaminated Sites

Without proper oversight, governments cannot ensure that their initiatives are implemented as expected or on a timely basis. We noted poor oversight over the processes used in the government's contaminated sites initiative, and this lack of oversight was ultimately responsible for most of the issues identified and errors found during our audit. We noted that although the Assistant Deputy Ministers' Steering Committee planned to meet monthly under its Terms of Reference, it had met only twice since being created in August 2012. We also noted that the working groups the Committee had established to deliver under the Treasury Board's three contaminated sites initiatives had not fully completed their work, and no new or existing provincial lead body had yet been assigned overall responsibility for overseeing the implementation of the initiatives. Accordingly, while progress has been made, overall we concluded that the work requested by the Treasury Board in the 2011/12 fiscal year had not been satisfactorily completed.

Because oversight was lacking, ministries did not have sufficient direction to ensure that they

correctly assessed their contaminated sites and estimated the liabilities associated with them. For example, one ministry identified 82 sites for which it was responsible as high risk with potential contamination. It then estimated its liability for these sites solely on the potential for contaminants at these sites to move off-site and affect adjacent properties or resources. On this basis, the ministry estimated and recorded a government liability of $64 million for 24 of these sites. After discussion with government legal services and other ministry environmental officials and a review of the *Environmental Protection Act*, we concluded that this approach was incomplete. Under the *Environmental Protection Act*, several factors must be considered when determining whether a contaminated site requires remediation. Contamination can have adverse effects on humans or the environment regardless of whether it is currently moving or could move off-site in the future and affect adjacent properties. Based on our review, we recommended that sites with on-site adverse effects also be reviewed and considered for potential inclusion in the liability estimate.

The Ministry agreed with our recommendation, and, after further review, recorded an additional contaminated site liability of $77 million related to an additional 16 sites. A government liability was not recorded for the remaining 42 sites because any contamination on those sites did not exceed environmental standards and there were no adverse effects associated with the sites. A good oversight process would have identified and addressed this measurement issue prior to our audit.

Accountability for identifying, assessing and evaluating contaminated sites would be enhanced if the government designated a project lead (e.g., a dedicated central unit or ministry group) for centralized oversight of all ministries' management of contaminated sites. This lead would be responsible for managing the centralized inventory database and ensuring that all participating ministries were addressing their inventory of contaminated sites appropriately. It could work to ensure that remediation projects were executed in a consistent manner across government, identify and initiate improvements to the remediation process, and provide guidance on the risk-based approach to ranking contaminated sites province-wide. The project lead should ideally consist of an integrated team of subject matter experts, and would need to be provided with appropriate authority and resources. The lead could also help ensure that ministries adopt remediation strategies that make sense, monitor the government's progress in remediating its sites, and ensure that the government's liability estimate is updated appropriately on an annual basis. The government could establish a new entity (such as a division or branch) for this lead role, such as the contemplated Contaminated Sites Project Office, or the role could be fulfilled by one of the stakeholder ministries or by a team of representatives from the stakeholder ministries.

RECOMMENDATION 1

To ensure that contaminated sites for which the government is responsible are identified and properly assessed, and that provincial liabilities are identified and valued on a timely basis:

- the government should designate a central unit or ministry group with overall responsibility for managing contaminated sites; and
- The Inter-ministerial Contaminated Sites Assistant Deputy Ministers' Steering Committee should be reconvened to perform an oversight role until this function or coordinated team is established.

MINISTRIES' RESPONSE

The government recognizes the benefit of a central oversight function to support effective risk mitigation and management of contaminated sites. We concur with the Auditor General's recommendations and will establish a central oversight function to ensure a coordinated and consistent approach to the identification, tracking, risk assessment and prioritization of

contaminated sites across government. Ministries will continue to exercise their accountability for managing risks for individual sites.

The government will implement the appropriate governance structure to address both immediate and long-term needs for central oversight of contaminated sites.

4.2 Improvements Needed in Tracking, Prioritizing and Funding Remediation of Contaminated Sites

4.2.1 No Centralized Inventory of Contaminated Sites

The government does not have a centralized inventory of its contaminated sites. Rather, each ministry tracks its own sites and maintains its own records of actions taken regarding them, such as environmental site assessments or remediation efforts. Without centralized information, it is impossible to track and therefore difficult to prioritize and fund these actions using a government-wide perspective.

Working together, the four ministries (Ministry of the Environment and Climate Change, Ministry of Northern Development and Mines, Ministry of Natural Resources and Forestry, and Ministry of Economic Development, Employment and Infrastructure) planned to develop a centralized database of contaminated sites and populate that database with existing and any additional detailed information on all contaminated sites by March 31, 2015. However, this centralized database has not yet been completed. At the time of our audit, the centralized database had become less ambitious: the four ministries were contemplating creating a more basic central inventory that would house only certain core data for each of the Province's contaminated sites. Detailed records would continue to reside at individual ministries and be maintained by ministry personnel. Such a less-detailed listing of contaminated sites will not be as useful to the government as the more comprehensive centralized inventory originally planned.

We believe that such a database should actually be expanded over time to include more than just those sites for which the government has recognized and quantified a financial obligation. Ideally, the database would serve as the government's complete contaminated sites inventory, eventually including information on both its high-risk and its low-risk sites. Processes should be put in place for adding new sites to the database, allowing for the incorporation of detailed information about a site and its environmental history at any time. We believe that the database should also eventually include sites where environmental site assessments have not yet been performed, as well as sites where uncertainty exists as to whether the Province will or will not be financially liable. Such a database would help ensure that the government:

- has a complete and accurate picture of all contaminated sites for which it is or may become responsible;
- can determine what work has been done to date at a particular site—for example, historical reviews; Phase 1, Phase 2, or supplemental environmental assessments; if a remediation action plan has been developed and approved; and what has been spent thus far on remediation efforts;
- can compare sites across ministries, government agencies and the broader public sector for assessment and ranking purposes using the same risk prioritization model;
- can track progress on remediation efforts;
- can be certain that no site is included more than once, even if multiple ministries share responsibility for it (in the absence of a centralized inventory, two ministries had recognized a $43 million liability for the same site); and
- can provide appropriate public disclosure regarding the execution of its contaminated sites obligations. In this regard, we encourage the government to provide public information on all contaminated sites. We note that the federal government already provides

contaminated site information via an on-line link through which the public can access information on each of its contaminated sites.

A well-designed centralized database could, in fact, provide the government with much more than just accurate information. Ideally, it would enhance the government's planning processes and serve as a government-wide resource allocation tool. The inventory's usefulness would increase over time as it grew to contain relevant and reliable information about all of the Province's contaminated sites, including for each site such details as its location and general conditions; the nature and degree of contamination at the site; whether the site has yet been subject to an environmental assessment; the phase, date and result of any such assessments; whether a remediation plan was in place and if so, when it was approved, what was budgeted for remediation and how much of this budget had been spent to date; remediation completion dates; and other long-term plans and activities with regard to the site. The inventory could thus be of use to the government throughout the entire life cycle of contaminated site management.

RECOMMENDATION 2

To ensure that the government has a complete picture of its existing and potential contaminated sites liability, the stakeholder ministries should ensure that:

- a centralized database inventory of all contaminated sites is developed and implemented; and
- the public has access to information on contaminated sites for which the government has recorded a liability.

MINISTRIES' RESPONSE

As part of the government's initiative to enhance governance over contaminated sites, the Office of the Provincial Controller, in collaboration with stakeholder ministries, has completed a review of existing technologies to track contaminated sites across the province with the intent to establish and implement an enterprise-wide central inventory of all contaminated sites in 2016.

The government is currently disclosing financial information on contaminated sites in accordance with Public Sector Accounting Standards. Analysis will be undertaken to support future government decisions on the extent and nature of public access to information on contaminated sites.

4.2.2 Ontario Public Sector-wide Risk Prioritization Model Not Yet Implemented

Given constraints on both the amount of funding and the amount of ministry staff time available in any given year, prioritizing the use of government funds and other resources is essential. At the time of our audit, the Ministry of the Environment and Climate Change had developed an Ontario Public Service-wide risk prioritization model for contaminated sites, but the model had not yet been approved or implemented. At the time of our audit it was awaiting approval; however, the party responsible for approving the risk prioritization model has yet to be determined. The government plans to roll the approved model out to ministries by March 2016.

Without a system in place for prioritizing and ranking proposed remediation efforts, the government risks funding low-priority projects before more significant ones. Competing priorities make it imperative that the government allocate remediation funding where it will provide the most benefit to the public in terms of protecting human health and the environment.

An effective risk prioritization system must include a process for ensuring that the government has enough information to enable it to appropriately assess its environmental risks across all government programs, ministries, and agencies, and to do so on an annual basis. Only such a government-wide process ensures that available funding is

consistently allocated to the highest-risk sites. As noted earlier, **Appendix 2** provides an example of a contaminated site for each site usage category. The significant differences among these environmental situations illustrate the difficulties in prioritizing projects. Ranking these various environmental situations and determining which ones pose the greatest risks to human health or the environment is challenging. A well-developed risk prioritization model implemented throughout government would be a key step in enabling this challenge to be met effectively.

RECOMMENDATION 3

To ensure that the cleanup of high-priority sites is consistently funded before that of low-priority sites, the stakeholder ministries should finalize the risk prioritization model and ensure that ministries use this model to assess all remediation funding proposals.

MINISTRIES' RESPONSE

The focus of the government in 2014/15 was to effectively implement PSAB 3260, including a reasonable estimate of the contaminated site liability as at March 31, 2015 for Public Accounts purposes. At the time of the audit, the government's efforts to adopt a consolidated risk-based prioritization tool were also well underway. Ministries worked with a consultant to develop a risk-based prioritization tool that will allow for both the prioritization of sites for remediation, as well as the prioritization of sites that require further study, on a government-wide basis. Approval of the tool and adoption by the ministries is expected in the current fiscal period. Effective implementation of the tool in conjunction with the oversight function will help to mitigate the risk of the government proceeding with remediation on low priority sites before higher priority sites.

4.2.3 Need for a Government-wide Funding and Resources Allocation Strategy

The government currently has no overall funding strategy or resources allocated specifically for the management of its contaminated sites. Without dedicated funding and sufficient dedicated resources, high-risk contaminated sites could be improperly classified as low risk, or inappropriate remediation strategies could be selected for particular sites. Remediation strategies selected because of resource constraints may keep current costs low but prove much more costly later. Failure to properly address this issue risks shifting the costs associated with contaminated site remediation to the next generation of Ontarians, negatively impacting the Province's ability to preserve a healthy and sustainable environment for future years.

Ministries did not receive any specific or additional funding or other resources to assist in the implementation of PS 3260, *Liability for Contaminated Sites*. To ensure that their sites were adequately assessed, they were therefore required to use existing program funding and resources to the contaminated sites initiative. Due to funding constraints, sites classified as low risk were not fully assessed, because neither Phase 1 nor Phase 2 environmental assessments were conducted on them. While additional funding may be required in the future to more thoroughly review some of these sites and conduct environmental assessments where conditions warrant, based on our work we were satisfied that the classification of these sites as low risk was reasonable, and accordingly no liability needed to be recorded for them.

In recording its contaminated sites liability, the government is in essence publicly committing to and disclosing the future economic resources it expects to give up for the purpose of remediating these sites. Part of the assessment of each ministry's funding needs should therefore relate to these remediation efforts. Annual funding should be approved within the context of a longer-term plan for cleaning up the contaminated sites for which the Province has recorded a liability. The

government should use its risk prioritization model in deciding on its annual funding and resource allocation priorities. A good process would ensure that allocation decisions are continually reviewed and revised as needed to reflect the latest available information, and plans adjusted accordingly to ensure resources are dedicated to the highest-risk sites.

RECOMMENDATION 4

To ensure that ministries have sufficient resources available to remediate their high-risk sites in a prudent manner, the stakeholder ministries should:

- co-ordinate the development of a long-term plan for remediating the Province's contaminated sites. The plan should incorporate both an annual and a long-term funding strategy; and
- periodically report to the Treasury Board, on a consolidated basis, their progress in remediating sites under their annual and long-term plans.

MINISTRIES' RESPONSE

The enterprise-wide inventory of contaminated sites, including all new liabilities reported under the new standard, and prioritization thereof, will enhance risk prioritization and resource allocation decisions to inform the funding strategy for the remediation of contaminated sites. Ministries will be asked to provide rolling updates to their long-term remediation plans, including their cash flow forecasts related to remediation work planned each year, and to report on progress.

Periodic reporting to the Treasury Board/Management Board of Cabinet would improve transparency on the progress and outcomes ministries have achieved in remediating contaminated sites. This approach aligns with the government's commitment to outcome-related measures which assess the effectiveness and efficiency of government programs and activities. Reporting considerations will be addressed as part of the design and implementation of a central oversight function.

4.3 Improvements Needed to Liability Estimation Process

4.3.1 Need for Consistent Estimates

The government needs to improve the guidance it provides ministries to help them estimate their contaminated sites liability. Without clear direction, ministries have been developing and applying different approaches to assessing and evaluating their particular contaminated sites. The Provincial Controller's Office has the lead responsibility for implementing the new accounting standard, and we noted that it did provide some implementation guidance to ministries in the form of presentations, templates and technical documents. Although this has been helpful, additional guidance would help ensure that the types of errors we found in our audit do not reoccur.

We identified errors totalling $95 million in the government's initial liability estimates for contaminated sites. Although the ministries responsible for the affected sites corrected all of these errors before their liabilities were included in the Province's consolidated financial statements, these errors could have been avoided if ministries had had guidance on a number of technical implementation issues. When these issues arose, time and resource constraints often meant guidance was provided late or, in some instances, no guidance was provided from the Provincial Controller's office.

Ministries could benefit from additional direction from the Provincial Controller's Office in the following specific areas:

- *Clarifying the nature of direct costs that should be included in the liability estimate.* Direct costs are for such things as environmental site assessments and land use studies.

- *Providing examples of when it would be appropriate to use present value accounting techniques to discount the expected future cash flows related to a contaminated site.* Guidance should cover how calculations should be made in such circumstances, how to determine appropriate discount or inflation rates, and how to determine the appropriate time period to use in the discounting process.
- *Calculating and accounting for certain remediation costs,* such as the costs of ongoing monitoring and site maintenance that are an integral part of a remediation strategy, particularly if such costs are expected to form part of a perpetual government obligation.
- *Defining assets in productive use.* We suggest that the guidance refer to the Public Sector Accounting Board's Statement of Principle on Retirement Obligations. This document defines a tangible capital asset (such as a dam or a provincial highway) as being in productive use "when held for use in the production or supply of goods and services, for rental to others, [or] for administrative purposes." The Provincial Controller's Office should also provide guidance regarding when a liability for contamination should be recorded on assets that are still in productive use.
- *Estimating a liability when no specific environmental assessment work has done on the site.* This type of guidance should help ministries that may need to base a liability estimation for a particular site on past experience with comparable sites.

RECOMMENDATION 5

To ensure that the government's ongoing contaminated sites liability estimate is reasonably and consistently calculated, the Office of the Provincial Controller Division should provide formal guidance to ministries on how to account for and measure these liabilities.

MINISTRIES' RESPONSE

Important insights were gained through Ontario's experience implementing PSAB's new accounting standard. Significant challenges encountered in implementing the standard included interpretative issues related to the standard, completeness of contaminated site inventories and estimates of remediation costs. Through effective collaboration and communication, a reasonable estimate of liabilities for contaminated sites was achieved.

Building on this challenging but successful experience, the Office of the Provincial Controller Division will undertake to work with ministries in 2015/16 and with both the Internal Audit Division and the Office of the Auditor General to enhance accounting guidance to ministries for reporting on contaminated sites under the new standard.

4.3.2 Inadequate Documentation Supporting Liability Estimates

We found that the ministries' documentation to support their contaminated sites liability estimates was often incomplete. Inadequate documentation raises the risk of errors in, for example, reporting the number of government contaminated sites or recording the liability associated with a site. Poorly documented files could also lead to permanent loss of critical information when staff with detailed knowledge of site conditions retire or otherwise leave the government.

The process used to estimate each ministry's contaminated sites liability included identifying potentially contaminated sites, using a risk-based approach to assess which sites were highest risk, conducting environmental site assessments or having assessments conducted on the highest-risk sites, identifying remediation options and choosing the most appropriate remediation strategies, and quantifying expected remediation costs. We found

each of these processes was poorly documented to varying degrees among ministries.

To compensate for this inadequate documentation, additional audit work was necessary to ensure that we obtained the sufficient and appropriate audit evidence needed to support our opinion on the government's liability estimates. We conducted detailed testing on a number of contaminated site files and engaged an environmental expert. We reviewed ministry assumptions and remediation plans and assessed their reasonableness. We also documented and tested ministry processes and discussed numerous valuation and assessment issues with ministry staff as the audit progressed. As a result, despite the shortcomings initially observed, we were able to conclude that ministry liability estimates were reasonable and sufficiently accurate to support the total contaminated site liability reported in the Province's consolidated financial statements.

The following subsections provide examples of improvements that we think ministries should incorporate into their documentation practices. An example is provided for each major stage of the process of assessing and evaluating contaminated sites.

Site Identification Processes Inadequately Documented

Each ministry developed its own process for identifying contaminated sites. Although we concluded that each approach had been effective, some ministries inadequately documented their processes. Specifically, some ministries had not documented the methods they used or had not fully documented the work they performed in identifying the contaminated sites for which they were responsible. The ministries also did not consistently document such items as the site history, the timeline of activity on it, any known impacts on adjacent properties, its location and geology, its similarity to other sites, or the results of any environmental assessments or investigative reports.

Risk-based Approaches Inadequately Documented

Some ministries applied a risk-based approach to identifying their highest-risk contaminated sites. These sites are the ones ministries intend to prioritize in developing their remediation plans. We found the various ministry approaches used to identify their high-risk sites to be poorly documented. Documentation improvements are needed both to support the process used and to provide evidence that the process was consistently applied.

One ministry had 2,055 properties in its portfolio, and had identified 82 of these sites as potentially contaminated. The risk-based approach that the ministry had used in identifying these 82 sites was not documented. Based on our audit work and our discussions with the ministry, we were able to conclude that the risk-based approach had been appropriate. However, documented support to show how the ministry had identified its list of potentially contaminated sites was not available.

Decisions to classify a site as low risk were rarely documented, nor were the criteria or process used to make this low-risk determination. Documentation of this decision and the process used is important because once a low-risk determination is made, given government funding constraints, for the most part, no further assessment work is done on these sites. Ministries also have no formal plans to periodically review sites that have been classified as low risk to ensure that the low-risk classification remains valid.

Methods for classifying sites as high risk varied among the ministries. There was no overall review of the ministries' risk-based approaches by a central unit or ministry group to ensure that classifications were arrived at consistently across the government.

Remediation Strategies Inadequately Documented

We noted that one ministry had in several cases chosen not to follow the recommendations of consultants it had hired to help assess its contaminated sites. While we acknowledge that the final choice

of remediation strategy does and should rest with the ministry, we would expect such decisions to be documented, particularly when inconsistent with recommendations made by individuals hired specifically for their expertise in this area. The ministry either altered the consultants' suggested remediation plans or chose remediation strategies that the consultants had reviewed but rejected. For example, a consultant assessed several remediation options for a particular site and recommended an "excavation and disposal" option over other available and assessed options, such as "monitored natural attenuation" (that is, allowing natural processes to reduce the contamination, and monitoring the progress of this reduction over time). The ministry chose to implement the "monitored natural attenuation" alternative without documenting its rationale.

We discussed this issue with ministry management and were informed that the ministry had been shifting away from traditional dig-and-dump methods of addressing site contamination. Such methods were falling out of favour because at times this approach may simply move contamination from one location to another. Monitoring and controlling contamination on-site, with the goal of managing its reduction over time, is increasingly seen as the most cost-effective and viable remediation strategy for many sites. We engaged our own environmental expert to review the ministry's strategy. Based on this review and our own work, we concluded that the ministry's strategy was reasonable. However, the ministry's rationale for choosing this strategy should have been documented, as should any rationale used to support government remediation decisions.

Valuation Approach Inconsistently Applied

One ministry updated some of its previous liability estimates for its contaminated sites by applying an inflation adjustment of 8% per year to its original estimates. We were informed that the 8% rate was based on the three-year average increase (using the 2008, 2009 and 2010 calendar years) in prices for steel and concrete, which are the main component of this ministry's remediation projects. Although the original source documentation supporting these price increases was not maintained by the ministry and was not available, we obtained corroborating evidence supporting this rate and concluded that the ministry's use of the 8% rate was reasonable. However, the ministry applied this 8% annual inflation adjustment to only some of its sites, and did not document its justification for applying this rate only to some sites and not to others. Accordingly, we recommended that the ministry apply its chosen methodology consistently.

The ministry accepted our recommendation, and an additional $18 million ($24 million for the inflation adjustment, offset by $6 million in other error adjustments) was recorded after applying the inflation adjustment factor to the ministry's remaining sites. Better documentation by the ministry of its decision-making processes might have prevented this error.

RECOMMENDATION 6

To ensure that future decisions and cost estimates for remediating contaminated sites are based on the best information available, and to prevent errors and inconsistencies, the stakeholder ministries should:

- improve the supporting documentation they maintain regarding contaminated site liability estimates. Documentation should include explanations of how the contaminated site was identified, what risk-based approaches were used to identify high-risk sites, what remediation strategies were selected, how they were chosen, and what assumptions were used in determining and estimating liabilities; and
- periodically review sites that have been classified as low risk to ensure that this classification remains valid.

MINISTRIES' RESPONSE

Lessons learned through implementation of the new accounting standard will benefit ministries through enhanced documentation on risk assessments and cost estimates. Ministries will continue to refine and improve upon the quality of their documentation in future years. The centralized oversight body, once established, will provide ministries with further direction in this regard consistent with the Auditor General's recommendations.

Ministries will regularly review information related to contaminated sites, which will serve as input to both risk management over contaminated sites and to the Public Accounts process.

4.3.3 Process Needed for Updating Liability Estimates

The government currently has no policies or processes requiring ministries to monitor their contaminated sites and incorporate newly available information into their site assessments and liability valuations. Without such a monitoring process, the valuations reflected in the government's contaminated sites liability could fall out of date, and no longer accurately reflect the government's best estimate of its obligations related to a particular site.

During our audit work, we noted that a number of the estimates for contaminated sites' liability were based on environmental site assessments done many years ago. One had been prepared 21 years previously, in 1994. Although that environmental site assessment's impact on the overall contaminated sites liability estimate was not material, and we determined that the liability estimate for the site was appropriately updated to reflect current costs, it highlights the need for all environmental site assessments to be reviewed periodically to ensure that they continue to reflect site events, changes in the site's condition, current remediation costs or newly available remediation technologies.

The government should review its estimated contaminated sites liability annually. However, this does not mean that environmental site assessments for all of its contaminated sites need to be updated every year. A formal reassessment would typically be called for only when a significant change has occurred in technology, legislation, inflation or contamination information related to a particular site. Ministries' annual review work should accordingly focus on whether updated environmental site assessments are required for particular sites based on new information, and whether such new information indicates that the government's liability needs revision. We will need to assess these reviews on an annual basis as part of our audit of the Province's consolidated financial statements.

Based on the audit work we performed, we concluded that the government's estimated contaminated sites liability as of March 31, 2015 was reasonable. Ministries had been able, for the most part, to estimate their individual liabilities based on site information that was already available to them as program custodians. However, adjustments to previous valuations were made in several cases, with one ministry increasing earlier liability estimates by means of an inflation adjustment, and another ministry developing a standard unit cost model that it then applied to its liability estimates from previous years.

Moving forward, the government will need to ensure that monitoring processes are in place to identify and incorporate relevant new information when updating and re-estimating its contaminated sites liability. Specifically, ministries will need to make ongoing adjustments to their liability estimates to reflect significant technology changes; new remediation strategies; and changes in economic assumptions, such as inflation rates or the length of time estimated to remediate the site; actual expenditures; legislative standards; and other unforeseen events.

RECOMMENDATION 7

To ensure that the contaminated sites liability estimates reflect newly available relevant information:

- the stakeholder ministries should implement a process for annually reviewing all of their liability estimates. This process should include a review of remediation costs incurred to date and an assessment of those costs in relation to the recorded liability to determine if the liability estimate needs to be updated; and
- once established, the central unit or ministry group should provide the ministries with guidance for carrying out this annual exercise, and carefully monitor ministry liability submissions to ensure that adjustments are made, where required, before their inclusion in the Province's consolidated financial statements.

MINISTRIES' RESPONSE

The government's initiatives to enhance prioritization, risk management and reporting for contaminated sites will include a requirement for ministries to regularly update site information, both to identify additional risks and changes impacting management decisions related to contaminated sites and to ensure complete and reasonable liability estimates are reported in the Province's Public Accounts.

As part of these efforts, consideration will be given by the centralized oversight body and the ministries to the appropriate triggers and/or timelines to initiate more in-depth site assessments or liability estimates such as changes in technology, site conditions, or changes in environmental standards.

5.0 Other Matter

5.1 Financial Security

The Province's liability for contaminated sites includes liabilities for a number of contaminated mines and private waste facilities (e.g., landfill sites) because operators failed to meet their obligations and have insufficient financial resources to remediate the contamination on their sites. In these cases, the site has reverted to the care and control of the Province.

Mining companies and private waste facility site operators are legally responsible for remediating their sites. The Ministry of Northern Development and Mines and the Ministry of the Environment and Climate Change each maintain a fund requiring that those companies and operators provide the Province with financial security, such as a deposit of funds or a letter of credit. This financial security provides assurance to the government that these operators can cover the costs necessary to remediate their sites to established environmental standards when the mine or private waste facility closes. With regard to mines, mine operators are required under the *Mining Act* to return their sites to the standard defined in their approved closure plan, regardless of the amount of financial security they have provided to the Ministry of Northern Development and Mines.

The Ministry of Northern Development and Mines and the Ministry of the Environment and Climate Change held $22 million and $31 million in cash financial security, respectively, and $1.6 billion and $408 million in non-cash financial security, respectively, as of March 31, 2015. The cash financial security amounts are held on deposit with the government and are recorded as liabilities in the Province's consolidated financial statements in the Ministry of Northern Development and Mines' Mine Reclamation Fund and the Ministry of the Environment and Climate Change's Financial Assurance Trust Fund, respectively.

This financial security program is important; without it, taxpayers might ultimately have to bear the cost of remediating these sites. A poorly run program could also result in taxpayers having to fund any mine or private waste facility closing costs that are additional to the security amounts provided to the government.

Our Mines and Minerals audit (see **Section 3.11** of this year's *Annual Report*) noted weaknesses in the financial security program for mine operators. The key weakness identified was inadequate financial security being obtained for future mine remediation costs. Because of this weakness, the province may have a significant contingent liability for shortfalls in financial security available to the government related to Ontario mining operations closures. The amount of this contingent liability cannot be estimated. A liability has not been recorded in the Province's consolidated financial statements for these possible shortfalls because mine operators are legally responsible for their sites. A liability does not need to be recorded until operators default on their closure plan obligations, or it is clear they will default, and a shortfall in the financial security provided is identified. The likelihood of these future events occurring cannot be determined at this time.

The Mines and Minerals audit report contains recommendations for strengthening controls over financial security for mines. We encourage the government to implement those recommendations to minimize its risk of being left responsible for environmental liabilities associated with the reclamation of mining sites.

Appendix 1—Nature and Source of Contamination by Site Usage

Source of data: 2013/14 Public Accounts of Canada, modified by the Office of the Auditor General of Ontario

Site Usage Category	Nature of Contamination	Source(s) of Contamination
Former Mineral Extraction	Heavy metals, petroleum hydrocarbons, etc.	Mining activities; activities associated with mine operations, such as fuel storage, fuel handling, waste deposits, etc. Many sites have multiple contamination sources.
Office/Commercial/ Industrial	Metals, petroleum hydrocarbons, polyaromatic hydrocarbons, BTEX, etc.	Activities associated with the operations of an office, commercial or industrial facility. Contamination can arise from fuel storage/handling, waste deposits, metal-based paint, etc. Many sites have multiple contamination sources.
Miscellaneous	Metals, petroleum hydrocarbons, polyaromatic hydrocarbons, other organic contaminants, etc.	Many possible contamination sources, such as pesticides, herbicides, fertilizers or PCBs.
Landfills/Waste	Metals, petroleum hydrocarbons, polyaromatic hydrocarbons, BTEX, other organic contaminants, etc.	Contamination associated with the operations of the landfill/ waste site, or leaching from materials deposited in it.
Air and Land Transportation	Metals, petroleum hydrocarbons, polyaromatic hydrocarbons, BTEX, other organic contaminants, etc.	Activities associated with the operations of airports, railways, fuel stations, roads, etc. Contamination arises from fuel storage/handling, waste deposits, etc. Sites often have multiple contamination sources.
Fuel Storage	Petroleum hydrocarbons, polyaromatic hydrocarbons, BTEX, etc.	Activities associated with fuel storage and handling, such as maintaining aboveground storage tanks, underground storage tanks, fuel-handling areas, pipelines, fuel stations, etc.
Parks and Protected Areas	Metals, petroleum hydrocarbons, polyaromatic hydrocarbons, PCBs, other organic contaminants, etc.	Activities related to the operations and maintenance of parks and protected areas. Contamination arises from fuel storage/handling, waste deposits, metal-based paint, etc. Sites often have multiple contamination sources.

Appendix 2—Examples of Contaminated Sites

Prepared by the Office of the Auditor General of Ontario

Site Usage Category	Example of Contaminated Site from This Category
Former Mineral Extraction	A former gold mine that operated for nearly a century (from 1867 to 1961). Its mining and smelting operations produced arsenical pesticides, cobalt, silver, nickel and stellite. The operation, combined with the lack of stringent environmental regulations during the time the mine operated, resulted in significant contamination of the 202-hectare site. An arsenic treatment plant has been located at the site to filter the area's contaminated groundwater before discharging it into a nearby river.
Office/Commercial/ Industrial	A manufacturing and processing facility that involved the use of Trichloroethylene (TCE) as a metal degreaser. A volatile organic compound and a known human carcinogen, the TCE contaminated both indoor air at the site and the surrounding groundwater. A groundwater extraction system is now used to treat the groundwater prior to it being discharged into the storm sewer, and there are ongoing operational and monitoring activities associated with this system.
Miscellaneous	A reef, identified as one of 43 "Areas of Concern" in the Great Lakes Water Quality Agreement between Canada and the United States, contains sediments that include coal tar containing very high concentrations of polycyclic aromatic hydrocarbons (PAHs). Many organisms, including humans, are exposed to this coal tar. An engineered containment facility is to be built to receive and isolate the contaminated sediments. The contaminated sediments from the reef will be dredged and safely housed in this facility.
Landfills/Waste	A hazardous waste facility operated in an industrial park in the late 1970s. Poor waste management practices resulted in oil and PCB contamination of the area's fractured bedrock and its groundwater. The local water supply was threatened, and the MOECC funded a pipeline to provide the town's residents with safe drinking water. The contamination is being contained through the use of an existing pump and treatment system. The groundwater is continuously monitored to confirm the PCB contamination is adequately confined and controlled.
Air and Land Transportation	Buried asphalt exceeding environmental standards for heavy oils and metals was found in sand and gravel fills near a highway. Additional asphalt and concrete dumping was identified at ground level. The remediation strategy is to excavate and dispose of the fills in a waste disposal site capable of accepting and handling contaminated material.
Fuel Storage	An underground fuel-oil tank was discovered to have been leaking, with the contamination discharging into a nearby river. The fuel-oil seep is lethal to fish and invertebrates and is of significant risk to fathead minnows. A barrier wall and groundwater collection system are to be installed to prevent the contamination from flowing into the river.
Parks and Protected Areas	Underground septic tanks are leaking into a lake, with a potential risk of contamination from PHCs, BTEX and polyaromatic hydrocarbons.

Appendix 3—Glossary of Terms

Prepared by the Office of the Auditor General of Ontario

Abandoned mine—Any private or Crown-owned mine that was no longer in operation when certain provisions of the *Mining Act* were enacted in 1991.

BTEX—Acronym that stands for benzene, toluene, ethylbenzene and xylenes. These compounds are some of the volatile organic compounds (VOCs) found in petroleum derivatives such as petrol (gasoline).

Contaminant—Any solid, liquid, gas, odour, heat, sound, vibration, radiation or combination thereof resulting directly or indirectly from human activities that causes or may cause an adverse effect on human health or safety or the environment.

Contaminated site—A site that has contaminants occurring at concentrations:

a) above background (normally occurring) levels and pose or are likely to pose an immediate or long-term hazard to human health or the environment, or

b) above levels specified in policies and regulations.

Contamination—The introduction into soil, air or water of a chemical, organic or radioactive material or live organism that will have an undesirable or harmful effect on public health and safety or the environment.

Contingent liability note disclosure—A note added to financial statements to disclose any uncertain liability that exists at the date of the financial statements when:

a) a future event confirming the liability is likely to occur,
   - but the amount of the liability cannot be reasonably estimated; or
   - an amount has been recorded, but the entity is exposed to a liability that is greater than the amount recorded in the financial statements; or

b) it cannot be determined whether such a future confirming event will occur.

Discount rate—The interest rate used in computing present value.

Environmental Protection Act—The main Ontario statute regarding pollution control. Contains a number of general provisions that can be used to protect the environment against contamination.

Environmental site assessment—A systematic due diligence process that includes studies, services and investigations to plan, manage and direct the actions required to assess, decommission, and/or clean up a contaminated site.

Environmental standard—Any guideline, objective, criteria or other kind of limits placed on the amount of contamination that can be present.

Financial assurance—A form of security that the government requires from the owners and/or operators of private waste facilities (e.g., landfill sites) or mines to cover the projected costs associated with returning the site to an agreed-upon condition and subsequently monitoring the site. The security may be in the form of cash, an irrevocable line of credit or a performance bond.

Forfeited site—When a corporation dissolves, any land that it still holds and has not disposed of is forfeited to the province. Types of forfeited property range from one-square-foot condominium property reserves to roads, apartment buildings, land and contaminated sites. A forfeited site is not necessarily contaminated, but if it is, the government must assume responsibility for the site's remediation, since the corporation that originally owned it has been dissolved.

Fractured bedrock—Separation in a geologic formation, such as a joint or a fault that divides rock into two or more pieces.

Heavy metal—A metal of relatively high density or of high relative atomic weight.

Inflation—A sustained increase in the general level of prices for goods and services. Measured as an annual percentage increase, the inflation rate can be based on items such as historical trends in the Consumer Price Index or fluctuations in commodity prices that affect construction costs.

Material—An amount above which financial information becomes relevant to a user's decision-making needs. In the context of this report, materiality is relative to the size and particular circumstances of the Ontario government.

Mitigate—In the context of this report, to manage health and environmental concerns associated with contaminants or pollutants by activities aimed at moderating a quality or condition in force or intensity or alleviating their effects. Such activities might include, for example, monitoring a contaminated site, posting warnings, restricting access to the site, changing land use patterns at or around the site, or collecting and treating contaminated water.

Monitoring—Observing changes in a site over time—for example, by periodically measuring contaminant levels.

Organic contaminant—A carbon-based chemical, such as a solvent or a pesticide, that can get into the water through runoff from cropland.

Pathway—A route or means by which a receptor can be exposed to or affected by a contaminant.

PCBs—Commonly known as chlorobiphenyls, PCBs are synthesized industrial chemicals used in a number of commercial operations since their introduction in 1929.

Petroleum hydrocarbons—The primary constituents in oil, gasoline, diesel, and a variety of solvents and penetrating oils.

Physical hazard—A condition or situation that can cause physical harm or intense stress to the human body. Physical hazards can involve both natural and human-made elements—for example, open pits or buildings susceptible to collapse, respectively.

Pollutant linkage—The linked combination of a source (that is, a contaminant or a source of a contaminant), a receptor, and a pathway, all present together.

Polyaromatic hydrocarbons—Also known as polycyclic aromatic hydrocarbons, these are a group of over 100 different chemicals that are formed during the incomplete burning of coal, oil and gas, garbage, or other organic substances like tobacco or charbroiled meat.

Present value—The amount that a future sum of money or stream of cash flows is worth today, given a specified rate of return or discount rate. For example, if a person invests $1,000 in a one-year GIC with a 5% rate of return, at the end of 12 months, the $1,000 will have grown to $1,050. In accounting terms, $1,000 is the present value of $1,050, given that rate of return.

Receptor—A person or an asset that could be adversely affected by a contaminant. Receptors can include communities, ecological systems, properties, or bodies of water.

Remediation—Improving a contaminated site to prevent, minimize or mitigate damage to human health or the environment. Involves developing and applying a planned approach that removes, destroys, contains or otherwise reduces the availability of contaminants to receptors of concern.

Remediation strategy—The specific approach chosen for remediation of a particular contaminated site. Such strategies can include (but are not limited to) the following:

a) a full-scale "dig and dump"—contamination is dug out and dumped elsewhere;
b) risk management measures (RMMs)—selecting and implementing a risk-control strategy, followed by ongoing monitoring and evaluating the effectiveness of that strategy. RMMs may include direct remedial actions or other strategies that reduce the probability, intensity, frequency or duration of the exposure to contamination. Other strategies may include institutional controls (such as zoning designation or land use restrictions) and the use of landfill caps to form a barrier between the contaminated media and the surface to limit the migration of site contents.
c) any combination of the above.

Risk-based approach—An approach to categorizing contaminated sites based on a detailed evaluation of hazard and exposure potential at each site.

Stellite—A high-strength cobalt-chronium-tungsten alloy.

Tangible capital asset—A non-financial asset that has physical substance, such as a building, dam or highway.

Volatile Organic Compounds (VOCs)—VOCs are organic chemical compounds whose composition makes it possible for them to evaporate under normal indoor atmospheric conditions.

Appendix 4—Location of Contaminated Sites in Ontario

Source: Data provided by the ministries and government agencies with contaminated sites.

Appendix 5—10 Contaminated Sites with the Largest Estimated Liability

Prepared by the Office of the Auditor General of Ontario based on information from ministries and government agencies with contaminated sites.

Property Name: Steep Rock Mine site

Responsible for Remediation: Ministry of Natural Resources and Forestry

Location: Atikokan

Area:[1] 5,260 hectares

Contamination Category: Former Mineral Extraction

Contaminants:[2] Metals, arsenic, sulphate

Status: Under assessment. The site is being actively monitored and assessed for environmental contamination, and unstable materials and structures found on site are being secured. Studies of the state of the soil, vegetation and water are also being conducted to mitigate public health, safety and environmental concerns.

Property Name: Deloro site

Responsible for Remediation: Ministry of the Environment and Climate Change

Location: Municipality of Marmora and Lake, Hastings County

Area:[1] 202 hectares

Contamination Category: Former Mineral Extraction

Contaminants:[2] Arsenic, cobalt, copper, nickel, low-level radioactive waste and other materials

Status: Under remediation. The ongoing remediation has contained over 95% of the hazardous material in the former industrial and mine area of the site. More work is being done to contain the contaminated sediment in the Young's Creek area of the site.

Property Name: Kam Kotia

Responsible for Remediation: Ministry of Northern Development and Mines

Location: Robb Township

Area:[1] 500 hectares

Contamination Category: Former Mineral Extraction

Contaminants:[2] Acid-generating tailings, arsenic, copper, zinc, iron, manganese, aluminum

Status: Under remediation. The tailings on site have been collected and contained within a new tailings management facility with ongoing treatment of the contamination. Public access to the site is restricted.

Property Name: Ontario Place

Responsible for Remediation: Ontario Place Corporation

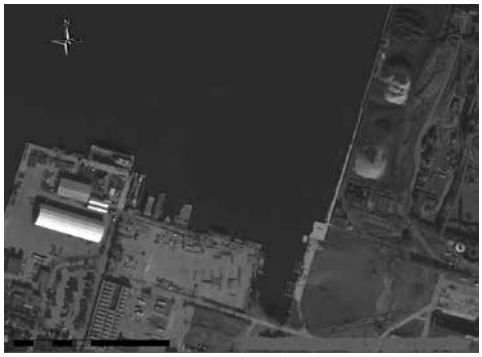
Location: Toronto

Area:[1] 38 hectares

Contamination Category: Miscellaneous

Contaminants:[2] Metals, polycyclic aromatic hydrocarbons (PAHs)

Status: Remediation scheduled. The soil contamination is a result of the imported fill that was used to build the original site. Technical studies have shown that the low levels of these contaminants are only a risk if disturbed (e.g., through construction activities). As construction proceeds, the site and soil are being monitored regularly to mitigate risk to staff and the public.



Property Name: Randle Reef

Responsible for Remediation: Ministry of the Environment and Climate Change (shared responsibility with multiple partners)

Location: South shore of Hamilton Harbour (vicinity of Piers 14, 15 and 16), Great Lakes

Area:[1] 2,150 hectares

Contamination Category: Miscellaneous

Contaminants:[2] Polycyclic aromatic hydrocarbons (PAH)

Status: Remediation scheduled. The contaminated sediments exist offshore under several metres of water. Marine vessel navigation is restricted in the area to minimize sediment disturbance, and public access from shore is also restricted. The Ministry's sport fish consumption guide advises anglers on safe consumption amounts for each species within Hamilton Harbour to further mitigate any risk to the public.

Property Name: Smithville PCB site

Responsible for Remediation: Ministry of the Environment and Climate Change

Location: Smithville

Area:[1] 5.7 hectares

Contamination Category: Landfills/Waste

Contaminants:[2] Polychlorinated biphenyls (PCBs)

Status: Under remediation. Contamination is contained within a bedrock aquifer which is no longer used for municipal water supply. There are monitoring wells between the contaminated zone and the domestic wells outside the contaminated zone to minimize risk to the public.

Property Name: Crosswise Lake Tailings

Responsible for Remediation: Ministry of Northern Development and Mines

Location: Coleman

Area:[1] 73.8 hectares

Contamination Category: Former Mineral Extraction

Contaminants:[2] Arsenic, copper, lead, aluminum, iron

Status: Under assessment. Public Health Notices have been posted at the site, and the Ministry of the Environment and Climate Change has published the soil sampling results to inform and help protect residents.

Property Name: Former Northstar Property & The Bishop Street Community

Responsible for Remediation: Ministry of the Environment and Climate Change

Location: Cambridge

Area:[1] 70 hectares

Contamination Category: Office/Commercial/Industrial

Contaminants:[2] Trichloroethylene (TCE), hexavalent chromium

Status: Under assessment. The Ministry continues to oversee the operation, monitoring and maintenance of environmental systems to ensure the continued protection of human health and the natural environment.

Property Name: Regent Park Redevelopment Project – Phase 3

Responsible for Remediation: Ministry of Municipal Affairs and Housing

Location: Toronto

Area:[1] 8.4 hectares

Contamination Category: Office/Commercial/Industrial

Contaminants:[2] Polycyclic aromatic hydrocarbons (PAHs), metals, polychlorinated biphenyls (PCBs), volatile organic compounds (VOCs)

Status: Under remediation. The potential contamination is due to the land uses that were in place prior to the development of Regent Park in the 1950s. Soil testing indicates that contaminants are below ground, and will not pose health and safety risks to residents of these communities unless disturbed through construction activities. All buildings in Regent Park are to be demolished as part of the redevelopment, and all residents are relocated prior to redevelopment and remediation activities to prevent exposure to contaminants.

Property Name: Regent Park Redevelopment Project – Phase 4 and 5

Responsible for Remediation: Ministry of Municipal Affairs and Housing

Location: Toronto

Area:[1] 6.4 hectares

Contamination Category: Office/Commercial/Industrial

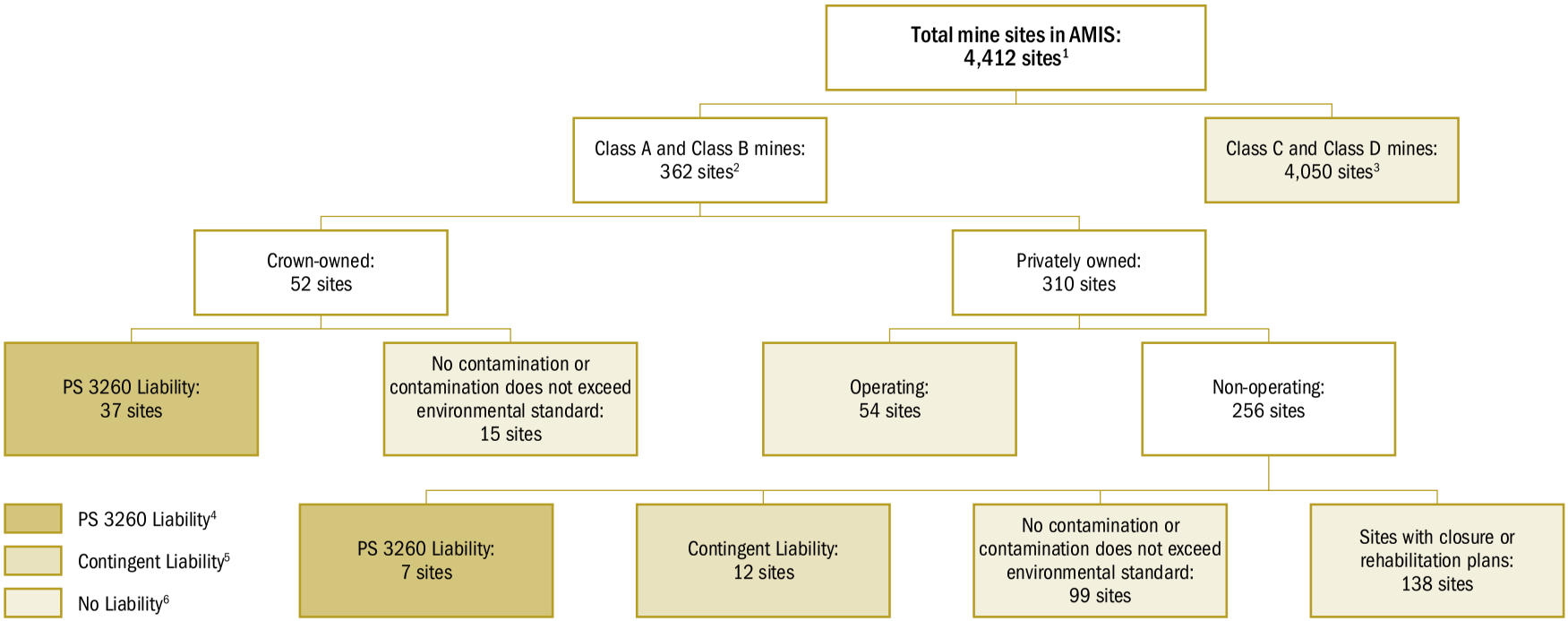
Contaminants:[2] Potential for polycyclic aromatic hydrocarbons (PAHs), metals, polychlorinated biphenyls (PCBs), volatile organic compounds (VOCs)

Status: Remediation scheduled. The potential contamination is due to the land uses that were in place prior to the development of Regent Park in the 1950s. Soil testing indicates that contaminants are below ground, and will not pose health and safety risks to residents of these communities unless disturbed through construction activities. All buildings in Regent Park are to be demolished as part of the redevelopment, and all residents are relocated prior to redevelopment and remediation activities to prevent exposure to contaminants.

1. Area refers to the total area of the site and not the contaminated portion of the site.
2. Contaminant information gathered from the Environmental Site Assessments.

Appendix 6—Liability Status of Mines in the Abandoned Mines Information System (AMIS)

Prepared by the Office of the Auditor General of Ontario



1. AMIS includes all mines not in operation when certain amendments to the *Mining Act* came into force in 1991 and any mine that has ceased operations—even temporarily—since 1991. Even though the system name implies that all of these mines are abandoned, many of these mines are still owned by and are the responsibility of private-sector operators, and some mines have even started operating again. Others have been truly abandoned, with ownership and responsibility for them having reverted back to the Crown. Physical hazards may be present at all mines.
2. Class A mines have been subject to intensive mineral processing, typically with mine tailings in excess of 1 million tonnes. Class B mines have also been subject to mineral processing, but on a smaller scale, with mine tailings typically less than 1 million tonnes. Since tailings are present at the site, only Class A and B mines have potential for contamination that may meet the criteria for liability inclusion under PS 3260.
3. Class C and D mines are smaller than Class A and B mines and have no tailings at the site. Class C sites may have some hazardous surface openings, waste rock piles or dilapidated structures at the site. Class D sites typically have surface features only, such as trenches, test pits or stripping.
4. Thirty-seven of the 52 Crown-owned Class A and B mines in AMIS are recorded under PS 3260, *Liability for Contaminated Sites*. In addition, seven privately owned mines are recorded under PS 3260, *Liability for Contaminated Sites* because the owners are in financial difficulty, and the government believes that it will probably have to accept responsibility for these sites and remediate them.
5. Twelve sites have been disclosed as a government contingent liability because there is a risk that the government may become responsible for them, but the likelihood of this occurring is not determinable.
6. Sites that do not have contamination or sites whose contamination does not exceed environmental standards are not recorded as a liability under PS 3260. In this group are 15 of the Crown-owned Class A and B mines, the 54 privately owned operating sites, 99 non-operating private sites, 138 sites with a closure plan with financial security or a rehabilitation plan in place (not a liability to the province unless the owner defaults on the closure plan and the province's financial security is insufficient) and the 4,050 Class C and D mines.