

Key Messages:

- \$212 million liability for contaminated sites in the 2017 financial statements (93% for Boat Harbour and SYSCO)
- Environment collects data on contaminated sites throughout the province
- Environment expenses incurred not easily found in Province's financial statements
- Contaminated sites recorded in accordance with accounting standards
- Costs to remediate contaminated sites can be large: professional services, materials, equipment
- Liability includes uncertainty as assumptions are not fixed – could change
- Assumptions include: extent of contamination, time and cost to clean up
- Cleanup costs change as more information becomes known, like Boat Harbour

Key Observations:

Financial statement effect

- To record a liability:
 - environmental standard exceeded
 - Province accepts responsibility
 - Province plans to remediate
 - Province can estimate costs to clean up
- Liability is described in Notes of the Province's financial statements
- Department that owns contaminated site is responsible for cleanup and recording costs
- Boat Harbour:
 - \$130 million liability in 2017
 - Described in Note 9 to financial statements
 - \$45 million expensed in 2017
 - \$12 million liability in 2013 estimate
 - Liability keeps increasing
 - Final plan in three to four years
 - Estimated costs include cleanup strategy

Significant uncertainty in estimate

- Can take years to collect information required to finalize a cleanup plan
- Assumptions used to calculate estimates
- Boat Harbour: Amount of contamination still being determined
- Impact of uncertainty with Boat Harbour:
 - 2013 – \$12 million
 - 2014 – \$20 million
 - 2015 – \$52 million
 - 2016 – \$88 million
 - 2017 – \$130 million
 - 2018 and beyond – cleanup plan expected to be finalized in three to four years

Process to record contaminated sites

- Sites reported by polluter or found through inspection procedures
- Environment records contaminated sites in a database
- Environment records responsible party in database
- Remediation approach determined – limited or full remediation
- Use limited remediation when danger to health is not imminent – manage with physical barriers, etc.
- Full remediation required when health at risk – water contamination, etc.



1 Accounting for Contaminated Sites

Purpose

- 1.1 The purpose of this chapter is to provide Nova Scotians with information on the financial impact of environmental matters facing the Province, including the costs of remediating contaminated sites. The chapter is not intended to comment on Government's policy decisions relating to contaminated sites or any responsibility that the Province has or has not accepted for environmental cleanup.
- 1.2 This chapter is not the result of an audit and we are not commenting on the completeness or accuracy of the assumptions and related liabilities recorded in the Province's financial statements. We collected some details and background information about specific sites from news sources and the Department of Environment's website. We have not audited the accuracy of that background information, or any environmental programs and services. As we have not conducted an audit, we do not provide conclusions or recommendations related to the chapter content.
- 1.3 Some of the information used in the chapter comes from the Province's financial statements which have been audited by this Office. As part of our audit opinion on those financial statements, we stated that, in all material respects, the Province follows Canadian Public Sector Accounting Standards appropriately. The audit opinion is for the financial statements as a whole. We have not issued a separate opinion on accounting for contaminated sites.
- 1.4 The liability for contaminated sites recorded in the financial statements is an estimate which reflects both current economic conditions and future expectations, and some sites take years to clean up. The estimate can vary significantly depending on the assumptions used by management. By their nature, these estimates have a further degree of uncertainty because the actual extent of remediation activities, methods, and site contamination may differ significantly from the Province's original remediation plans.
- 1.5 This information should be of interest to all Nova Scotians, but may not be all the information Nova Scotians may want to know. Additional information is available in the financial statements (Public Accounts) of the Province of Nova Scotia (see excerpt in Appendix I), and the website of the Nova Scotia Department of Environment that promotes, monitors, and enforces the Nova Scotia Environment Act and its regulations.

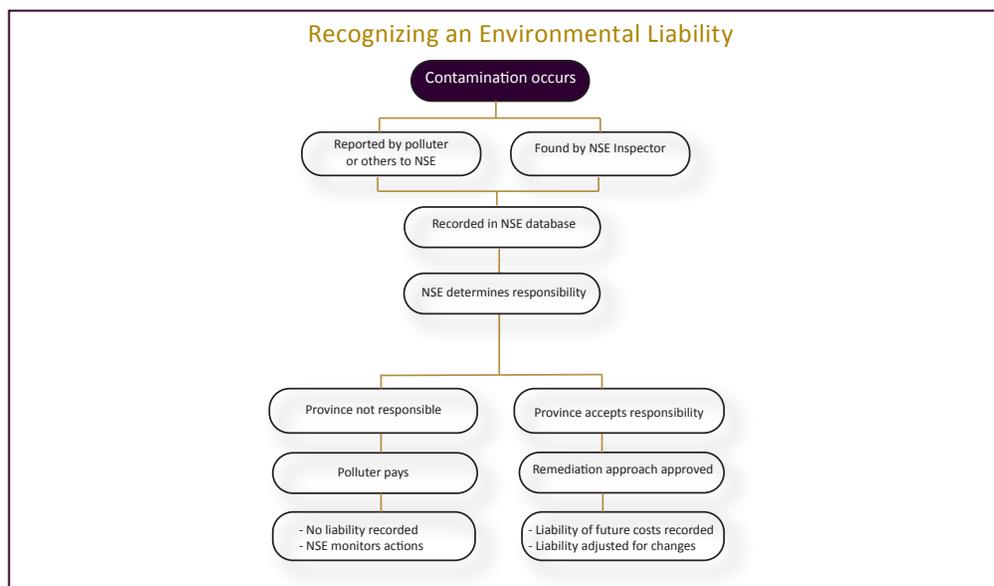


Environmental Matters in Nova Scotia

- 1.6 Environmental standards are needed to protect the environment and reduce risks to human health, and are required to be complied with as they are legally enforceable. Environmental standards specify the maximum amounts of potentially hazardous materials allowed to be in soil, air, and water, as set out in regulations, agreements, etc.
- 1.7 Environmental contamination can occur from spills, accidents, or industrial processes; and are a result of any chemical, organic, radioactive material, or live organism being released into the air, soil, water, or sediment. Contaminated sites are defined in the Environment Act as a site with contaminants that exceed an environmental standard, and may negatively affect human health.
- 1.8 In Nova Scotia, the polluter-pay principle is described in the Environment Act. The person or organization who owns the site on which the contamination is found, or who is responsible for causing the contamination, is responsible for the costs to remediate the site. Every Nova Scotian and every company operating in this province has a responsibility to know about, understand, and meet their responsibilities under the Environment Act.

Key Steps in Determining Responsibility

- 1.9 Environment inspectors have powers under the Environment Act that allow them to assess and determine responsibility for cleanup, including sites owned by the Province. These inspectors also have the power to enforce the Act.
- 1.10 The following chart illustrates the steps followed when determining whether the Province incurs an expense and recognizes a liability relating to an environmental contamination.





- 1.11 The Nova Scotia Department of Environment maintains a database of contaminated sites, indicating the responsible party; incidents; and complaints. The information recorded in this database is not disclosed publicly.

Accounting for Environmental Liabilities

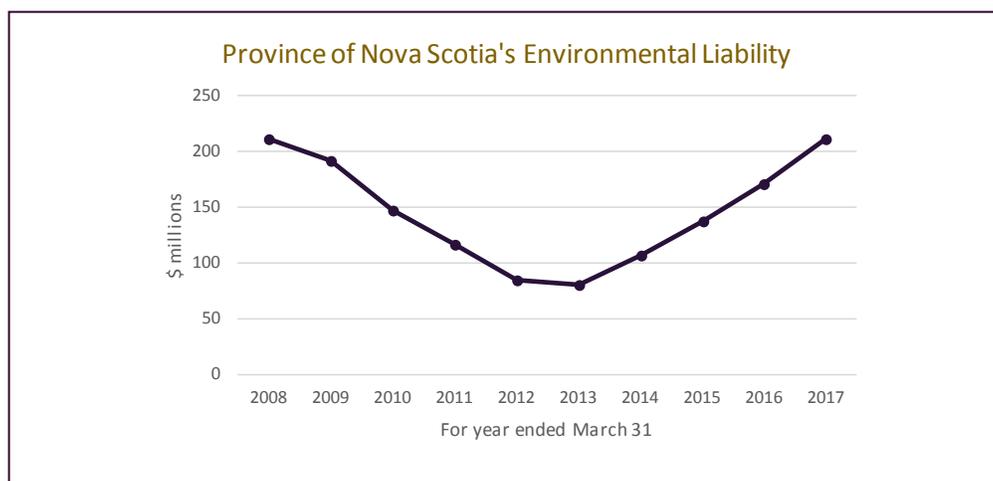
- 1.12 In accordance with Canadian Public Sector Accounting Standards, the Province recognizes a liability and records an expense for contaminated sites in its financial statements when:
- an existing environmental standard is exceeded,
 - the Province is responsible or accepts responsibility to clean up the site,
 - the Province plans to incur costs to remediate the site, using its own resources, and
 - the remediation costs can be reasonably estimated.
- 1.13 The cleanup expense is recorded in the department which owns the contaminated site. There are some situations in which the Province has accepted responsibility for a site owned by others. This might happen when a person or organization has abandoned responsibility for cleaning up the contamination or there is an immediate health risk.
- 1.14 The Government uses experts to help estimate a liability for remediation to bring the contaminated site back to the condition it was in prior to the contamination, or to the minimum environmental standard. Remediation refers to processes undertaken to remove, clean up, or prevent further harm to humans and the environment. Remediation costs could include payroll, equipment, materials, legal, engineering, maintenance, and monitoring costs that are an integral part of the remediation strategy.
- 1.15 A reader can find information on the Province's environmental liabilities and its expenses in the Public Accounts. The Province's accounting policy is detailed in Note 1 and more specific information is provided in Note 9. See Appendix I for relevant excerpts from the 2017 Public Accounts.
- 1.16 For example, the estimate of the obligation to clean up Boat Harbour was \$130 million at March 31, 2017, an increase of \$42 million from the previous year. This amount is included in the Accounts Payable and Accrued Liability amount on the Consolidated Statement of Financial Position, and in Note 9.
- 1.17 However, the \$45 million amount expensed during 2016-17 is not disclosed as clearly in the Province's financial statements. This \$45 million of expense directly affects the Province's surplus or deficit and is included in:



- the Transportation and Infrastructure Renewal line on the Consolidated Statement of Operations and Accumulated Deficits, and
- the Infrastructure and Public Work's Operating Goods and Services line on the schedule of segment reporting.

1.18 This \$3 million more in expenses than the associated increase in the liability indicates the Province incurred and paid \$3 million for remediation costs during 2016-17, and did not need to increase the liability.

1.19 As at March 31, 2017, the Province recognized \$212 million in liabilities to clean up contaminated sites. This is relatively the same amount as the liability recorded as at March 31, 2008; however, the composition of the liability has changed significantly since that time. Sydney Steel Corporation accounted for 94% of the 2008 liability while Boat Harbour accounts for more than 60% of the 2017 liability.



➔ Environmental issues can be costly

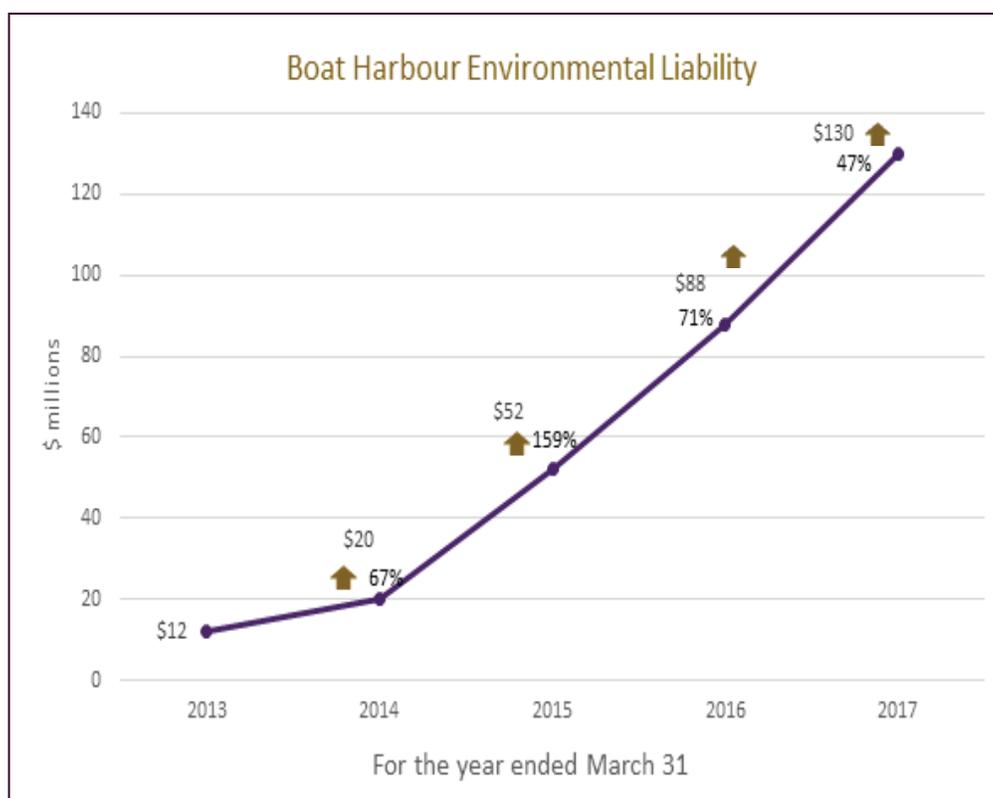
1.20 The liability for the cleanup at Boat Harbour and the current amount booked for Sydney Steel Corporation and the Tar Ponds site of \$68 million, accounts for 93% of the Province's overall liability for contaminated sites at March 31, 2017.

1.21 In 1967, the Province took over the Sydney Steel plant after changing technologies and world market patterns resulted in the end of the steel industry in Nova Scotia. The Province discontinued operations of the Corporation in 2001 after several unsuccessful attempts in the 1990s to sell the plant. In 2000, it recognized a \$318 million liability to demolish the plant, clean up the contaminated property, and plan for its future development.



Costs to remediate environmental liabilities often uncertain

- 1.22 Known remediation costs are considered when determining the amount of the Province's liability for contaminated sites, but many remediation costs are not known. Each year, the Province evaluates its liability and considers:
- new environmental sites to include,
 - extent of contamination,
 - new cleanup technologies, and
 - whether changes in assumptions are needed (i.e., length of time for cleanup, inflation rate, labour costs, and contingency amount for unexpected costs).
- 1.23 These considerations require significant professional judgement and result in estimates that have a degree of uncertainty. A good example is Nova Scotia's current significant environmental issue – Boat Harbour.
- 1.24 In the 1960s, to induce Scott Paper (now Northern Pulp) to set up operations for a pulp and paper mill in Nova Scotia, the Government offered Scott Paper free disposal of liquid waste. A pipeline was constructed between the mill facility and a waste water treatment plant in Boat Harbour. Waste flows through the pipeline to settling ponds where it sits for roughly one day before moving to a larger stabilization basin where it sits for five days before being released into Boat Harbour. This waste has resulted in contamination of water and ground in the harbour and some of the surrounding area which is adjacent to the Pictou Landing First Nation Community. An agreement in principle was reached between the Province and Pictou Landing First Nation in June 2014 to close the waste water treatment plant and remediate Boat Harbour. The waste water treatment plant is expected to close in 2020 and remediation will bring the area back to its natural state.
- 1.25 The following chart shows the Boat Harbour liability since 2013. The liability of \$12 million in 2013 has increased over 900% to \$130 million in 2017. Changes to the liability are typical for cleanup projects like Boat Harbour. Information about the extent of the contamination and the options for cleanup processes continue to be collected. The comprehensive remediation plan is expected to be finalized in three to four years. Even though the costs can now be reasonably estimated, there is no guarantee that these will be the actual costs because they are based on the best information available at the time and the full extent of the remediation work may not be known.



Environmental Issues in Nova Scotia

1.26 The Province has also recorded \$14 million for contaminated sites for which it has accepted responsibility and plans to remediate. These sites are located throughout Nova Scotia and some are listed below.

Site	Year	Nature	Responsible Party
Highway Bases	Various	Oil, grease, and salt contamination at 30 bases	Province
Land next to Sutherland Harris Memorial Hospital	2009	Oil spill contamination	Province
Deluxe Dry Cleaners	2006	Contaminated soil	Province assumed
Chignecto-Central Regional School Board	Unknown	Oil spill contamination	Province
Arrow-Kurdistan – on protected land	1970's	Oily waste material from two oil spills	Province
DSME Trenton	2016	Hydrocarbons under building infrastructure	Province assumed
Truro Hospital	Unknown	Potential for contamination from building materials	Province



For certain contaminated sites the Province accepts responsibility, but no accounting liability recorded

- 1.27 In certain situations, the application of laws and accounting standards can result in the Province not recording a liability, or incurring cleanup costs, even though some level of contamination may exist. For example, the Province has not recorded a liability for over 60 abandoned gold mines throughout the province. Mining historically affects the surrounding environment and contamination can be expected. Even though environmental assessments may not have been completed to determine how much contamination exists, information on each site has been collected and assessed by members of the departments of Environment, Natural Resources, and Health. Examples of the results of some of these assessments follow.
- Site assessed and has no specific threat at this time - not expected to have remediation costs incurred in the near future.
 - Site deemed riskier due to proximity to people - may require additional testing and costs to be incurred for signage, physical barriers, and other risk management methods as necessary.
- 1.28 In the Remediation Levels Protocol, pursuant to the Contaminated Sites Regulations, risk management is accepted as an alternative to complete remediation when health is not compromised. This limited remediation means that actions have been taken to inform the public, as well as restrict access to the sites. No future cleanup costs are expected, so no liability is recorded.
- 1.29 The Province continues to monitor and assess abandoned gold mine sites throughout the province. When it is determined that standards have been exceeded, or risk management is no longer an appropriate option, it is expected that costs will be added to the liability.
- 1.30 Further information on abandoned mines can be found through the Nova Scotia Department of Natural Resources' website.



Highlights from 2017 Public Accounts Related to Contaminated Sites

Accounting policy: Liabilities

Liabilities for Contaminated Sites are recognized when an existing environmental standard is exceeded, the Province is directly responsible or accepts responsibility, the Province expects to remediate and give up future economic benefits, and a reasonable estimate of the amounts can be made. The liability is measured based on the best estimate of the expenditures required to complete the remediation, net of any expected recoveries. Contaminated sites are a result of any chemical, organic, radioactive material or live organism being introduced directly or via the air into soil, water, or sediment that exceeds an environmental standard.

Note 9 Contaminated Sites

Various provincially owned properties throughout the province are considered environmental or contaminated sites. Studies are ongoing to assess the nature and extent of damage to develop remediation plans. Provisions for these costs are recorded when it is determined a liability exists and a reasonable estimate of the remediation costs can be made. As at March 31, 2017, a total liability for contaminated sites of \$212.2 million (2016 – \$171.7 million) has been recorded in Accounts Payable and Accrued Liabilities.

Engineering and environmental studies generated estimates for the cost of remediation of the Sydney Steel Corporation (SYSCO) and adjacent sites as well as the Sydney Tar Ponds/Coke Ovens site. As a result, the Province recorded liabilities totaling \$318.5 million in 2000 for environmental site clean-up. At March 31, 2017, \$68.1 million (2016 – \$70.8 million) remains unspent. This provision will continue to be utilized for future decommissioning, demolition, and remediation of SYSCO's and adjacent sites, including the long-term maintenance and monitoring of the Sydney Tar Ponds/Coke Ovens site. Based on currently available information, the provision, in aggregate, appears sufficient to cover the future estimated costs to remediate these sites.

Other remediation liabilities amounting to \$144.2 million (2016 – \$100.9 million) have also been recognized, and include \$130.2 million (2016 – \$88.5 million) for the remediation of Boat Harbour in Pictou County. The Province's estimate for the removal of effluent is based on environmental studies, engineering reports, and extrapolation techniques similar to those that have been used at other contaminated sites with which the Province was involved. At this stage in the process, the Province continues to test and refine its current remediation strategy, and as a result there is still significant measurement uncertainty related to this estimate. A comprehensive remediation plan is expected to be finalized within the next three to four years.

The Province has identified various other sites where contamination is known or expected to exceed an environmental standard, and those which may contain certain levels of contamination but the extent is unknown. No liability for remediation of these sites has been recognized in these consolidated financial statements as there is either no basis for a reasonable estimate or the Province does not expect to give up any future economic benefits. In some cases, a risk-based remediation plan is being pursued to address any known safety hazards. Studies are ongoing to assess the nature and extent of damage and to develop remediation plans, if necessary. The Province may record a liability in the future if contamination at any of these sites is determined to exceed an environmental standard and a reasonable estimate of the related remediation costs can be made.