



**Federal Contaminated Sites
Action Plan (FCSAP)**

New Canadian guidance for addressing and managing federal aquatic contaminated sites in working harbours

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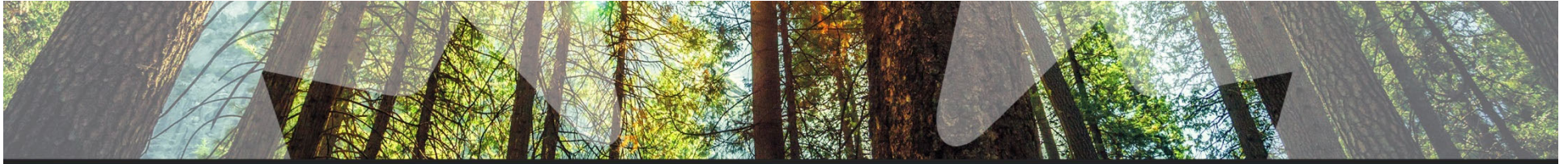
Background

Federal Contaminated Sites Action Plan (FCSAP) – addresses legacy contamination on land owned or leased by the federal government, or on land where the federal government has accepted responsibility for the contamination.

FCSAP program objectives:

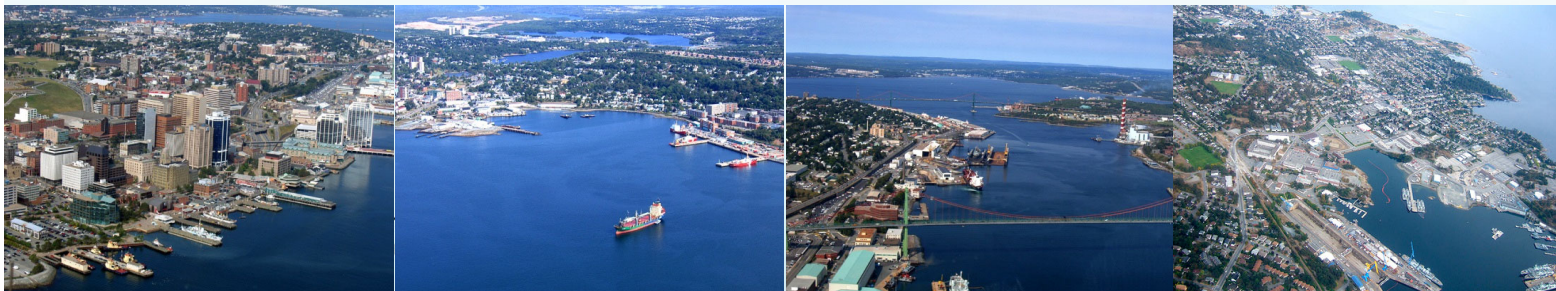
- To reduce environmental and human health risks;
- To reduce associated federal financial liabilities.





Challenges presented by working harbours

- Receive discharges from upstream sources, surrounding land uses, and in-water uses
- Contaminated media are generally highly mobile and can be transported long distances
- Multiple owners and stakeholders
- Ongoing use for recreational, commercial, residential, and/or industrial purposes and activities



Small water lots in working harbours

- Water lot often represents a very small portion of the harbour
- May be limited capacity to alter risk with remedial actions
- must consider recontamination
- Requirement for due diligence to address significant on-site sources of contamination and manage potential risks to site users





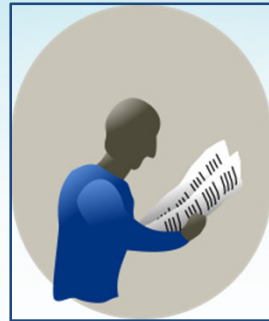
Objectives of guidance

- High level document that establishes **general principles** for the contaminated sites management of Canadian working harbours under FCSAP
- Goals of guidance are to
 - Establish a practical framework for decision-making that takes into account ongoing uses and potential inputs to working harbour sites
 - Facilitate consistency across federal departments and regions for managing working harbour sites



Guidance development approach

Literature review



- Case studies
- Existing guidance

Consultation



- Working group
- Focussed interviews



Peer review of draft guidance



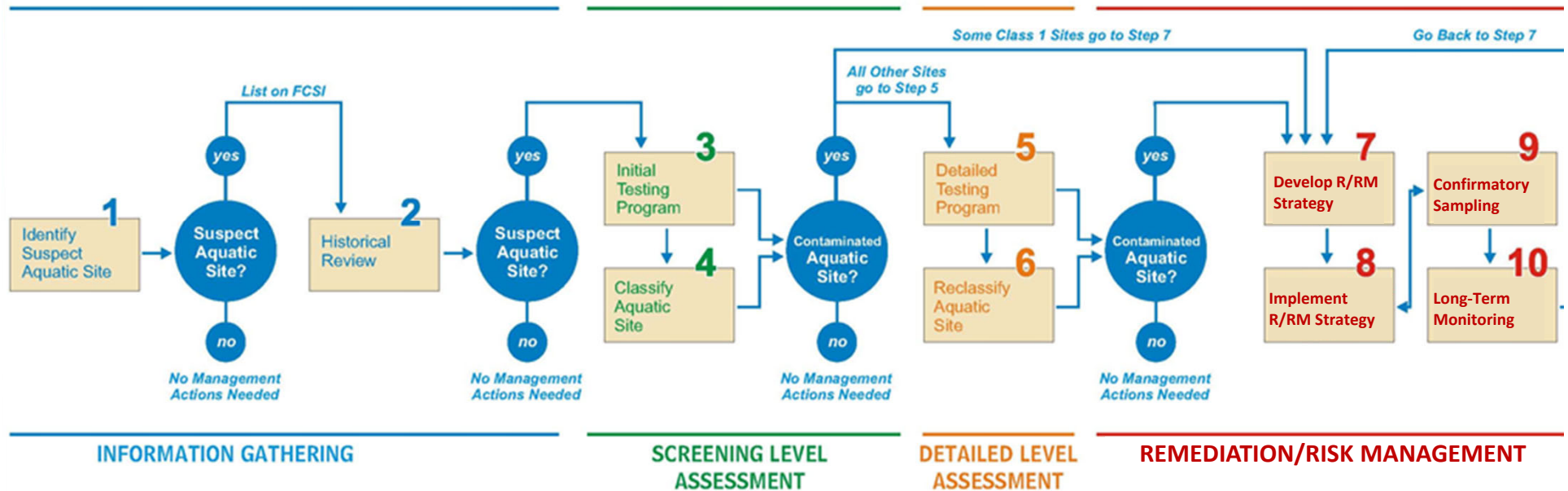
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Framework



Guidance is meant to supplement the existing Canadian federal aquatic contaminated sites 10-step process with additional direction for decision-making at each step



Step 2: Historical review

- Comprehensive identification of harbour uses and potential active and historical sources of contamination
 - Including in-water sources, land-based point sources, and watershed non-point sources
 - Location of storm sewer outlets and discharges, as well as combined sewer overflows
- Existing harbour infrastructure and presence of debris
- Biophysical conditions
- Stakeholder identification





Step 3: Initial testing program

- Guidance advises that the less conservative tier of federal sediment quality guidelines (probable effect level) may be used as the initial screening criteria for working harbour sites
- Highly bioaccumulative chemicals are considered separately during screening if they are present over a large area of the site

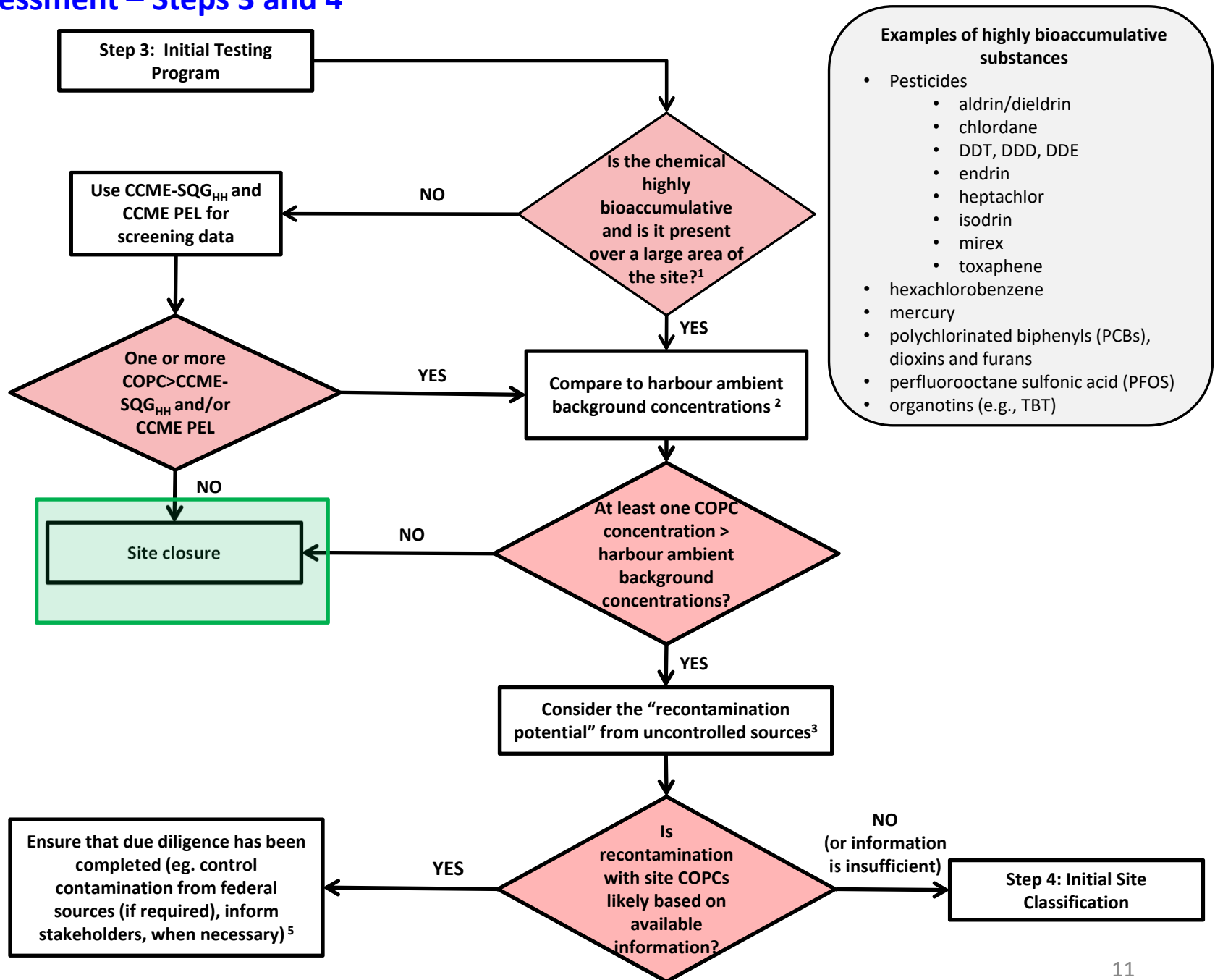


Step 3: Initial testing program

- Defining harbour ambient background conditions (i.e., concentrations in the environment that reflect regional anthropogenic (not site-related) sources of contaminants) is particularly important for assessing working harbour sites
 - Comparison of initial site investigation results to “least-disturbed” reference areas, not pristine background
- Assessing potential recontamination is valuable to identify constraints for management

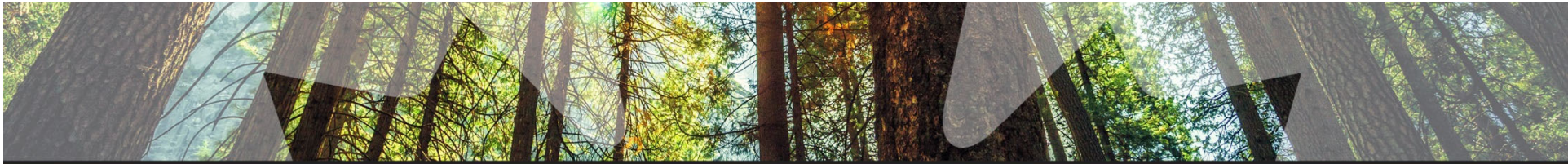


Initial assessment – Steps 3 and 4

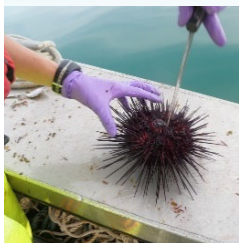
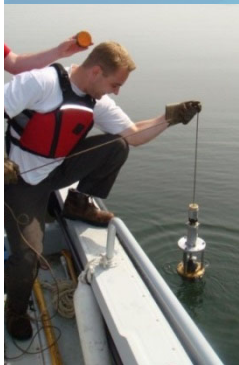


Examples of highly bioaccumulative substances

- Pesticides
 - aldrin/dieldrin
 - chlordane
 - DDT, DDD, DDE
 - endrin
 - heptachlor
 - isodrin
 - mirex
 - toxaphene
- hexachlorobenzene
- mercury
- polychlorinated biphenyls (PCBs), dioxins and furans
- perfluorooctane sulfonic acid (PFOS)
- organotins (e.g., TBT)



Step 5: Detailed testing program



- Site characterization as needed to confirm site classification
- Assessment of biological effects – human health and ecological risk assessment
- Guidance addresses:
 - Prioritizing sites for detailed testing
 - Source characterization
 - Stakeholder engagement
 - Level of effort considerations





Step 7: Develop remediation/risk management (R/RM) strategy

- How to address on-going sources and historic contamination from adjacent land and water lots?
- How to establish realistic R/RM goals given that activities are ongoing? (i.e. how clean should the site be following remediation?)
- How to evaluate the potential effectiveness of the selected R/RM approach given ongoing uses and sediment mobility?
- When can the status “closed” (no further action required) be assigned to a working harbour on the FCSAP inventory?

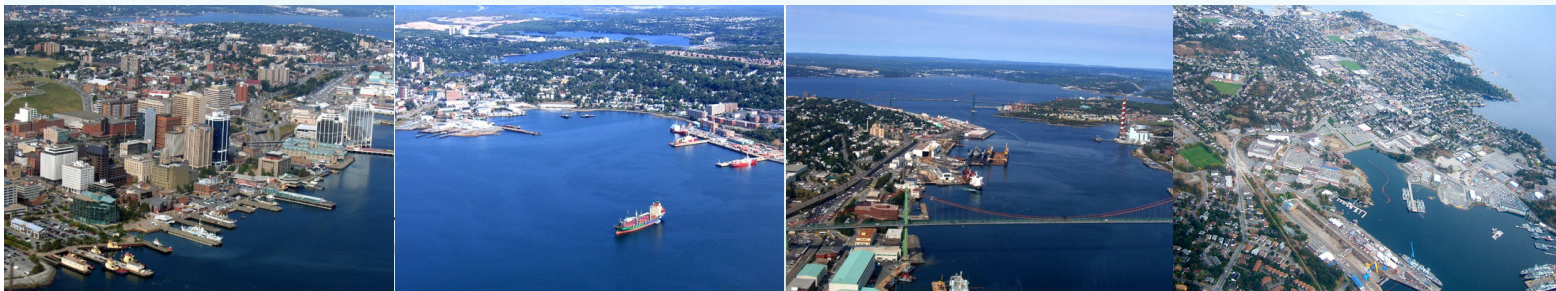




Step 7: Develop remediation/risk management strategy

Source control

- Guidance recommends an approach to characterizing and addressing sources of contamination
 - E.g., reviewing and addressing federal on-site sources as early as possible
 - Stakeholder engagement to address offsite sources if possible and coordinate R/RM efforts
 - Hot spot removal or containment where warranted





Step 7: Develop remediation/risk management strategy

Evaluating recontamination potential

- Objectives are to confirm effective source control and quantify ongoing diffuse inputs to the site
- Approach:
 - Incorporate results from harbour ambient background sampling program and biophysical assessment
 - Short-term monitoring to characterize current inputs
 - Modelling to assess future recontamination potential

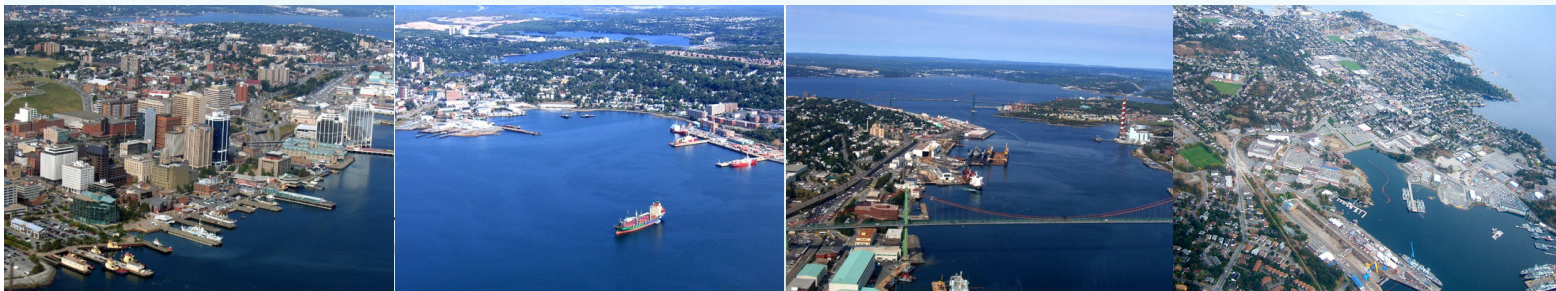


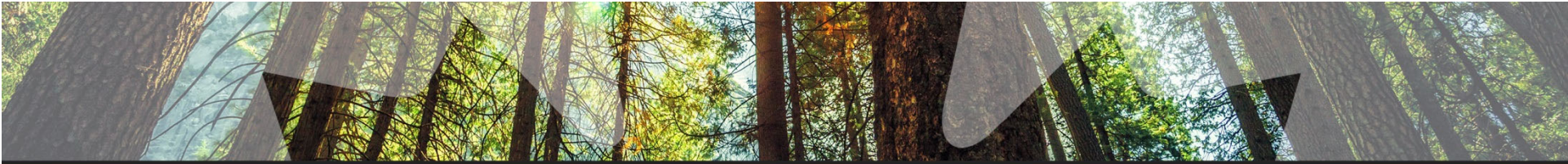


Step 7: Develop remediation/risk management strategy

Developing feasible R/RM objectives

- Guidance establishes a set of guiding principles and a recommended approach to deriving R/RM objectives that are protective yet realistic and achievable given ongoing inputs to the harbour
 - a well-designed harbour ambient background sampling program
 - a recontamination evaluation once source control has been achieved to the maximum extent possible to define lower limits for R/RM objectives

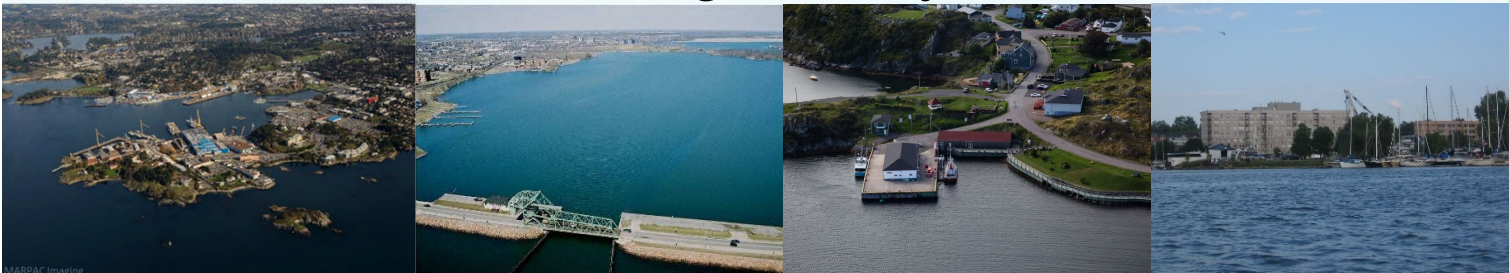




Step 9: Confirmatory sampling Step 10: Long-term monitoring

Closing a working harbour site

- Working harbour sites are subject to the same site closure process as other FCSAP sites. A set of circumstances under which working harbour sites may be closed is provided in the guidance.
- Periodic re-evaluation of risk management assumptions and monitoring (O&M) will probably be required for working harbour sites as long as they are active.





Summary

Guidance for managing federal aquatic contaminated sites in Canadian working harbours is now finalized:

**FCSAP (2018): Federal Contaminated Sites Action Plan
Guidance for Assessing and Managing Aquatic
Contaminated Sites in Working Harbours, Version 6.1, 57
pgs.**

Addresses need for due diligence while recognizing constraints on management actions due to ongoing uses





Questions?

To receive a copy of the guidance, please e-mail:
ec.pascf-fcsap.ec@canada.ca

Or consult the web portal:
<https://www.canada.ca/en/environment-climate-change/services/federal-contaminated-sites.html>
(guidance available in coming months)