Ministerial Protocol – Remediation, Risk Assessment and Monitoring

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Department of Environment and Local Government

New Nouveau Brunswick

Contents

1.0 Objective

The Remediation, Risk Assessment and Monitoring Protocol describes the next steps following submission of an Environmental Site Assessment (ESA), including the requirements for a Remedial Action Plan (RAP) and/or Monitoring Reports. For designated contaminated sites, these are required as part of the Contaminated Site Management (CSM) process referred to in Section 10(1)(a), (b), (c), (d) and (e)(i) of the Contaminated Sites Regulation (the Regulation).

Based on the ESA, if contamination levels at a site are determined to pose a potential risk to human health or ecological receptors (i.e., exceeds applicable Tier I criteria), a RAP needs to be developed by the Site Professional before remediation and/or risk assessment occurs. The RAP is a plan that identifies site-specific remedial and/or risk assessment methods to be applied to the site, as well as contamination level objectives for the site. The RAP must describe a conceptual remediation plan to reduce the risks of contamination to acceptable levels or further evaluate the existing contamination exposure risk. The RAP should also include a performance monitoring plan, and, if appropriate, requirements for long term site management.

A RAP may lead to either an unconditional or conditional closure (i.e., engineered, or administrative controls). In cases where exposure management controls and long-term site management are recommended for conditional closure, a risk management plan documenting these measures will need to be prepared by the Site Professional and approved by the DELG. More details regarding closure types can be found in the Ministerial Protocol - File Closure (Protocol – 600), which can be found at Contaminated sites program (gnb.ca).

2.0 Site Professional Requirements

The Responsible Party must engage a Site Professional to plan, implement, and oversee an appropriate RAP and monitoring program, as per Section 10(1) of the Regulation (if applicable) and this Protocol. This Protocol is intended for use by Site Professionals, the qualifications, and requirements for which are defined in Section 5.11 of the *Clean Environment Act* and Sections 15 and 16 of the Regulation.

RAPs and Monitoring Reports are required to be stamped and signed by the Site Professional responsible for overseeing the work. An electronic stamp/seal is acceptable. Technicians, other professionals, and technical experts, such as toxicologists, ecologists, and risk assessment specialists, may be part of the team that assesses/remediates the site. However, the Site Professional is responsible for ensuring that other team members are adequately qualified to carry out their portion of the work and they assume responsibility for all environmental work undertaken at the site.

3.0 Remedial Action Plan Requirements

It is the responsibility of the Site Professional to develop and implement the RAP, and if necessary, the monitoring program on behalf of the Responsible Party. Following the ESA, if the applicable environmental criteria have not been achieved, remedial action may be required by the Department of Environment and Local Government (DELG). In many cases the RAP may be included in the ESA Report and prior approval of the RAP by the DELG is not required. In those cases, the Site Professional

may proceed with remedial activities without delay. However, the approval of a RAP by the DELG is required in the following circumstances:

1. Any RAP that includes the introduction (injection/placement) of active chemical/biological agents, other chemical substances or potential contaminants, or thermal treatment; and

2. For complex or unique sites, which may include the decommissioning of industrial facilities, where there may be multiple contaminants of concern, impacts to multiple properties, community level impacts due to facility operations, or sites where conventional remedial activities are not possible. In these types of sites, the DELG will indicate when a RAP is required.

A RAP must include the rationale used to develop remedial and/or site management actions and include a monitoring program (refer to Section 6.0 for monitoring program guidance). As the DELG requires the timely remediation of contaminated sites, a reporting schedule and estimated timeline for completion of the CSM process is considered by the DELG to be a fundamental and essential component of a RAP. Timelines for the management of complex sites are expected to be broader and more flexible than those for typical sites.

The DELG may review the RAP in consultation with the New Brunswick Department of Health or other technical professionals as needed. The DELG will provide a written response to RAP submissions that require approval. Note that despite DELG approval of a RAP, the Site Professional is still responsible for meeting any other site-specific jurisdictional requirements (e.g., watercourse or wetland alternation permits, water discharge approval, etc.)

For complex or unique sites, and/or those sites that are evaluated at a Tier III level of assessment, a peer review of a RAP by another independent Site Professional or technical expert may be undertaken. The DELG may require the Responsible Party to conduct a peer review or the DELG may choose to carry out a peer review. The Responsible Party may also elect to undertake a peer review of their site. Peer review comments are to be included in submissions to the DELG.

Once a RAP has been approved, the Responsible Party or the Site Professional must notify the DELG of any deviations from the approved plan. In situations where predictions included in the RAP fail to be achieved, the Responsible Party will be required to revise the RAP.

4.0 Risk Assessment

At certain sites, the initial ESA may not be adequate to fully characterize the site and the extent of the contaminant impacts in all applicable media (i.e., soil, water, air, sediment) and additional work may need to be completed. A supplementary ESA Report or other type of report, such as a risk assessment or hydrogeological assessment would then be required to be submitted to the DELG.

The simplest form of risk assessment consists of using applicable Tier II Pathway Specific Standards (PSS) after eliminating inactive exposure pathways. Should the applicable Tier I and Tier II screening criteria be exceeded or deemed to not be applicable, the Site Professional and Responsible Party may choose to develop Site Specific Target Level (SSTL) criteria. When managing petroleum hydrocarbons or chlorinated volatile organic compounds (CVOC) contaminated sites, the current Atlantic Risk Based Corrective Action (RBCA) model established by the Atlantic Partnership in RBCA Implementation (PIRI)

Committee is to be used to develop the criteria. Use of the Atlantic RBCA model for contaminants other than petroleum hydrocarbons and CVOCs has not been validated by Atlantic PIRI at this time. Non-petroleum impacted sites are to be evaluated by means of an appropriate risk assessment approach established by the Canadian Council of Ministers of the Environment (CCME) or other jurisdictions, according to the general Atlantic RBCA hierarchy of impacted sites guidelines. Use of a risk assessment approach outside of Atlantic RBCA for non-petroleum/CVOC contaminants is considered a Tier III assessment.

Similarly, if ecological Tier I and II criteria at the site are exceeded, ecologically impacted sites are to be evaluated by means of an appropriate ecological risk assessment approach established by the CCME or other technical approaches acceptable to the DELG. This would involve comparison of site data to ecologically based screening or site-specific criteria. Use of a risk assessment approach for ecological receptors is considered a Tier III risk assessment.

5.0 Impacted Material Management

Impacted and/or contaminated material (soil, groundwater, surface water, and sediment) removed from a contaminated site must be managed in a manner approved by the DELG. The Site Professional may propose to manage impacted/contaminated material on-site in a manner determined to not pose an unacceptable risk to human health or ecological receptors. For example, depending on the land use of the property, the material may be incorporated in the landscape under a cover to create berms or other features on the property. In most cases, this would result in a conditional site closure. Any impacted material that can't be managed on-site, must be disposed of at an approved facility or in a manner acceptable to the DELG. Weight slips or similar records from the disposal facility must be kept and provided with the Closure Report.

Impacted or contaminated water (ground or surface) which is treated on-site must have concentrations below the laboratory detection limit prior to being discharged to the environment. The Site Professional must develop a monitoring schedule, acceptable to the DELG, to confirm that the water being discharged is unimpacted. Prior to discharging impacted/contaminated water (treated or not) to a municipal domestic sewer system or storm water system, all applicable bylaws must be followed, and approval must be obtained from the Municipality (if applicable).

Any material removed from a site that is identified as hazardous waste by the federal *Cross-border Movement of Hazardous Waste and Hazardous Recyclable Material Regulation*, and/or is included in Class 1 and/or Class 7 of the federal *Transportation of Dangerous Goods Regulations* must be transported by an approved carrier and disposed of at an approved facility, unless the DELG has issued a written exemption.

6.0 Monitoring Program Guidance

The purpose of a monitoring program is to evaluate the performance of the corrective actions established in the RAP and/or to evaluate conditions related to potential site closure. The Site Professional will interpret the monitoring results to determine if contaminant plumes are stable to shrinking and that the applicable criteria have been achieved. A monitoring program should consider the following:

1. The remedial criteria/objectives or site management objectives.
2. The monitoring objectives
3. The parameters to be monitored and measured.
4. The frequency at which the monitoring will occur.
5. How the results will be interpreted/analyzed.
6. How it will be determined that the remedial criteria/objectives or site management objectives have been achieved.

Monitoring Reports must be submitted according to the schedule outlined in the RAP, unless the DELG has requested an alternate schedule. For sites that require longer term monitoring, a monitoring report should, at a minimum, be submitted on an annual basis during years in which monitoring has occurred. Refer to Section 8.2 of this Protocol for the information/statements that are required to be included in a monitoring report.

7.0 Site Access Issues

There are occasions where the Responsible Party or the Site Professional is prevented from accessing the source property or a potentially impacted or known third-party property. The Site Professional must make all reasonable efforts to gain access to the source or third-party property in order to complete the required assessment. If the Site Professional is unable to obtain permission to access a property, they should submit the Access Denial Form (CSM-FRM-400) to the DELG at remediation@gnb.ca. CSM-FRM 400 can be found at Contaminated sites program (gnb.ca). The DELG may request additional information from the Site Professional and will determine what actions to take with respect to the access denial.

8.0 Reporting Requirements

A remedial action plan (RAP) may be submitted with the ESA, in which case the applicable requirements of this Protocol must also be included in the ESA Report. For certain sites, it is also possible to submit one report that includes the ESA, RAP, remediation, monitoring, and site closure. This is only possible for sites where DELG approval of the RAP is not required. In these cases, the Site Professional would submit a combined ESA/Closure Report and the Record of Site Condition to the DELG for approval. The Site Professional would need to ensure that they have addressed all the appropriate requirements of this Protocol, along with Protocol-400 (ESA) and Protocol-600 (File Closure), within the one report. For designated sites, the ESA/Closure Report submission must also meet the 365-day deadline for ESA Report submissions, as per Section 9 of the Regulation. Protocols 400 and 600 can be found at Contaminated sites program (gnb.ca).

All Contaminated Site Management submissions (i.e., RAP or Monitoring Report) must be submitted electronically to the DELG at remediation@gnb.ca. For report submissions that are too large to be submitted by e-mail (file size limit approximately 35 MB) the DELG FTP site (https://ftps.gnb.ca/) can be used to submit the documents. The Site Professional should contact the DELG at remediation@gnb.ca for additional information in order to access the FTP site. The Site Professional must send a follow-up e-mail to the DELG notifying them that a report has been submitted to the FTP site. A hard copy of the report does not need to be submitted but may be requested by the DELG in certain instances.

All reports submitted must be accompanied by a Report Submission Form (CSM-FRM-200). CSM-FRM-200 can be found at Contaminated sites program (gnb.ca). Reports will not be reviewed if the Report Submission Form is not included or is incomplete.

All reports must also be stamped and signed by the Site Professional (electronic stamp/seal is acceptable) and must have a site plan, which must include the information listed in Section 8.3 of this Protocol.

8.1 RAP REPORTING REQUIREMENTS

The RAP must meet the requirements specified in the most recent version of the Atlantic RBCA User Guidance and this Protocol. The following is a list of information and statements that must be included in the RAP and/or executive summary.

1. Source property information: Address and Parcel Identification Number (PID).
2. Responsible Party, property owner, and insurance company (if applicable): names and contact information, including mailing address, e-mail address, and phone number.
3. Third party impacted properties: Name, address, PID(s), and contact info (phone number/e-mail) of every third-party property.
4. Property classification of the source and adjacent properties (land use classification, groundwater usage, and soil type).
5. Indicate if the source or any third-party properties are located within a municipal wellfield or watershed protected area (designated or undesignated).
6. Presence and type (e.g., drilled well, dug well) of potable wells on the source and third party impacted properties. Available well information (e.g., well tag ID number, well depth, casing length, well log, etc.) should be included in the report.
7. Presence and type of buildings (including foundations) on the source and third party impacted properties.
8. The type, amount and date of the contaminant release, if known.
9. A brief summary of any emergency actions that were carried out on the site (if applicable).
10. The results of the site assessment (sampling results) that have been completed up to this point. This should include soil sampling results and groundwater results from monitoring wells if they have been installed, but may also include soil vapour, sub-slab vapour, or indoor air quality results.
11. The criteria that will be applied to the site at closure, such as Tier I/II/III and EQSs, PSSs, etc. The report must justify why the criteria chosen are acceptable for the site.
12. A brief summary of the RAP in the Executive Summary. The report itself should include the full RAP, along with a monitoring and reporting schedule and timelines for completion. If the RAP includes introduction of active chemical or biological agents, or release of potential contaminants to the environment, the DELG must review and approve the RAP prior to implementation.
13. The RAP must provide how all the impacted/contaminated material remove from the site will be disposed of, as to meet the requirements of the DELG.
14. The Executive Summary and report must include a statement confirming that the site assessment met the minimum site assessment requirements as outlined in the most recent version of the Atlantic RBCA Guidance (Best Management Practices for Environmental Assessment of Impacted Sites and Site Assessment and Tier I/II Checklist).

15. The Executive Summary and report must include a statement confirming the presence or absence of free product on the site in soils or in groundwater.
16. The Executive Summary and report must include a statement that the soil and groundwater contamination was delineated to the applicable Atlantic RBCA Tier I EQS criteria for human health, both on- and off-site (and third-party impacted properties), if applicable. If not completed at this point, please explain why and how delineation will be obtained. Note that in certain cases more stringent criteria, such as ecological or aesthetic criteria, may govern delineation.
17. The Site Professional's conclusions and recommendation as to the next steps for the site. This may include recommending further site assessment, remediation, monitoring, or moving to site closure.

8.2 MONITORING REPORTING REQUIREMENTS

The monitoring report must meet the requirements specified in the most recent version of the Atlantic RBCA User Guidance and this Protocol. The following is a list of information and statements that must be included in a monitoring report and/or in the executive summary.

1. Source property information: street address and PID
2. Responsible Party, property owner, and insurance company (if applicable): names and contact information, including mailing address, e-mail address, and phone number.
3. Third party impacted properties: Name, address, PID(s), and contact info (phone number/e-mail) of every third-party property
4. Property classification of the source and adjacent properties (land use classification, groundwater usage, and soil type).
5. A description of the monitoring schedule (e.g., locations, sampling frequency and parameters).
6. A summary of the monitoring results. The report should include the results and any long-term trending of results (e.g., results over time, graphing, statistics). It should also contain a comparison of the monitoring results to milestones established in the RAP, if applicable.
7. The results of the risk assessment - the criteria that will be applied to the site, such as Tier I/II/III and EQSs, PSSs, etc. The report must justify why the criteria chosen are acceptable for the site.
8. The Site Professional's proposed additional measures to be implemented should the RAP milestones not be achieved, and a schedule for their implementation.

8.3 SITE PLAN REQUIREMENTS

All reports must have a site plan attached. For sites with a high density of sampling points, the information may be presented on multiple site plans. The following information shall be included on the site plan; however, for sites where some requirements may not be applicable, a note on the site plan should be made to that effect.

1. Site plan to scale with north arrow;
2. Locations of ecological receptors, which may be impacted;
3. PID numbers on source and 3rd party affected properties;
4. Property lines;
5. Building footprints;
6. Location of potable wells or springs;

7. Preferential pathways (ditches, tile drain, sewers, septic systems, underground lines);
8. Sources, such as tanks, lines, etc., including those that were removed;
9. Excavated areas;
10. Paved areas;
11. Soil and groundwater sample locations;
12. Locations of monitoring wells and test pits;
13. Contaminant concentrations in soil, groundwater, vapour, surface water, and sediment (as applicable) for each monitoring point with exceedances of the criteria (EQS's, PSS's, SSTL's, or other applicable guidelines) highlighted;
14. Confirmed groundwater flow direction and gradient; and
15. Surface slope.

9.0 Report Deadlines

Although, there are no specific deadlines for the development and submission of the reports (RAP, Monitoring, Risk Assessment) discussed in this Protocol, the Site Professional and Responsible Party should keep in mind that, as per Section 10(2) of the Regulation, a Closure Report and Record of Site Condition must be submitted within two years of the site being designated, unless an extension is requested and approved by the DELG. For more information regarding the two-year deadline, please refer to Ministerial Protocol - File Closure (Protocol - 600).