Petroleum Brownfields Program
Response Action Plans
Petroleum Remediation Program – Guidance Document 5-03

This document describes the process of Response Action Plan (RAP) review and approval by the Minnesota Pollution Control Agency’s (MPCA) Petroleum Brownfields Program. Property owners, purchasers, and developers of property where contamination might be encountered must determine the extent of contamination and its potential effects on the future usage of the property, and propose plans to mitigate these effects (called “response actions”). A RAP is a plan for managing petroleum contamination during construction activities at properties under development.

RAPs should be approved by the MPCA prior to beginning construction or development work at the property. The construction or development should also be completed according to the approved MPCA RAP. Failing to (a) obtain RAP approval from the MPCA and/or (b) complete the construction or development accordingly may violate Minnesota's environmental protection laws.

Note: Development response actions and/or other site improvements are not eligible for Petrofund reimbursement.

I. Program Process
   A. Enrollment: In order to obtain RAP approval, an applicant must enroll in the Petroleum Brownfields Program by filling out a Voluntary Brownfields Programs Enrollment Application Form. Other services provided by the Petroleum Brownfields Program are described in Brownfield Program Services.
   B. Consultant: An applicant to the Petroleum Brownfields Program will need to hire an environmental consultant who is qualified to prepare a RAP and oversee the approved response actions.
   C. Site investigation: A complete site investigation and risk evaluation (described in Section II) are required at every site prior to RAP approval.
   D. RAP report: After a site investigation and risk evaluation are completed, a RAP should be submitted to the Petroleum Brownfields Program. The RAP must contain the information described in Section IV below. The response actions proposed in the RAP will depend upon site-specific conditions, including, but not limited to, the levels of contamination, the depth of contamination, and the planned construction at the site. Response actions options are discussed in Section III.
   E. Review: The Petroleum Brownfields staff assigned to the site will generally review the RAP and provide a response (approval, approval with modifications, or rejection of the RAP) within 30 days after receipt. Any grant-related RAP submitted to the MPCA for review less than 30 days in advance of a grant application due date must request approval from a Brownfields supervisor and will not be guaranteed a review and response in time to meet those deadlines.
F. Implementation: The implementation of the response actions may proceed following written approval of the RAP. The MPCA understands that some projects may encounter petroleum contamination that could not have been foreseen. Should the property owner/developer know that temporary work stops are not an option during construction; the property owner/developer could, prior to beginning construction work, enroll in the Petroleum Brownfields Program and submit a request to the MPCA for review and approval of a Construction Contingency Plan. A Construction Contingency Plan describes proposed response actions for unforeseen petroleum contamination. If the applicant moves forward with the response actions prior to MPCA approval, the applicant may not be eligible for certain assurances and may need to conduct additional or more extensive response actions.

II. Site Investigation and Risk Evaluation

Prior to beginning the RAP approval process, a complete site investigation and risk evaluation that adequately defines the extent and magnitude of petroleum contamination and assesses risk from the release must be completed at the site. The Petroleum Brownfields Program utilizes Petroleum Remediation Program guidance documents for conducting site investigations and risk evaluations. See Guidance Document 1-01 Petroleum Remediation Program General Policy and other applicable documents for more information.

The level of additional investigation required at sites undergoing future development will vary depending on the site’s past and current use and may be dependent on any prior investigations that have occurred at the site. Some of the more common scenarios and required levels of investigation are discussed below; however, the applicant may need to discuss with the Petroleum Brownfields staff the level of additional investigation that will be needed.

Scenario 1: A complete site investigation and risk evaluation were conducted several years ago after all tanks and sources were removed from the property. The investigation led to file closure in the Petroleum Remediation Program and the site was subsequently used as a parking lot. In this scenario, the property developer’s consultant would review the MPCA’s closed site file. They would also complete a Phase I Environmental Site Assessment (Phase I) at the property to verify there are not additional or more recent potential sources of contamination.

Scenario 2: A leaking petroleum tank site investigation and risk evaluation occurred several years ago, but the tanks were not removed, or were replaced with new tanks, and the site continued in operation as a gas station. The original investigation led to closure of the leaking petroleum tank site file. In this scenario, the developer’s consultant must, at a minimum, conduct a Phase I and Phase II at the property. If an additional release is discovered during this work, they would need to report it to the State Duty Officer and a new site investigation and risk evaluation would likely be necessary.

Scenario 3: A current leaking petroleum tank site where a complete site investigation and risk evaluation have not yet occurred. In this scenario, a complete investigation and a Phase I would be required. The investigation and review of the appropriate reports could occur under the oversight of the Petroleum Remediation Program, or the site could be enrolled in the Petroleum Brownfields Program for expedited review.

Scenario 4: A site has had petroleum release(s) unrelated to a tank. A Phase I and a site investigation and risk evaluation would be required. The site investigation and risk evaluation must be conducted in accordance with Petroleum Remediation Program guidance documents.
III. Response Actions

Please note that the general guidelines described in this section are provided to assist in preparing a RAP. Because every site presents unique conditions and circumstances, developers/property owners should not proceed with implementing these guidelines at their sites without first receiving RAP approval.

The development of petroleum contaminated properties requires the implementation of certain response actions necessary to protect human health and the environment. Response actions that may be required include excavation of petroleum contaminated soil, the use of vapor barriers with vent systems, and/or other engineering controls. Whether petroleum contaminated soil may be reused onsite, reused offsite, or must be disposed of offsite depends on the type of development planned for your property. Field screening and confirmation sampling, conducted by a trained professional environmental consultant and following MPCA guidelines, are required at all petroleum contaminated sites.

Response action plans should also consider potential vapor intrusion risks associated with property redevelopment and use. If information suggests that a vapor intrusion risk is likely to occur, proactive incorporation of vapor intrusion response actions (e.g., vapor barrier with passive soil venting) to a RAP may be appropriate in lieu of a vapor intrusion investigation. If complete excavation is not possible or feasible, a soil gas investigation should take place to evaluate the need for vapor intrusion response actions. For additional information regarding vapor intrusion evaluations at Brownfield sites, see section 4.1.3 of the Vapor Intrusion Technical Support Document.

A. Residential/recreational site: In most cases, excavation of petroleum contaminated soil (PCS) within property boundaries will be required at residential and recreational developments. Table 1 below lists additional response action requirements if complete excavation is not possible or feasible. A RAP for residential developments will most likely require a plan for off-site soil disposal/treatment.

B. Commercial/industrial site: MPCA staff will generally approve development plans at commercial and industrial sites if contaminated soil remains on site. If contaminated soil is encountered at or greater than 10 parts per million (ppm) as measured with a photoionization detector (PID), but less than 200 ppm (PID), these soils may be managed on site. Table 2 below gives general guidance for on-site PCS reuse options at commercial and industrial sites.

<table>
<thead>
<tr>
<th>Table 1. Response action requirements for property development</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Risk scenario</strong></td>
</tr>
<tr>
<td>Site buildings/structures</td>
</tr>
<tr>
<td>Site buildings/structures</td>
</tr>
<tr>
<td>Utility trench</td>
</tr>
<tr>
<td>Green space</td>
</tr>
</tbody>
</table>

* If impacted groundwater is present on site, vapor barriers and passive vent system response actions will be required.

<table>
<thead>
<tr>
<th>Table 2. On-site soil reuse at commercial and industrial developments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Soil reuse method</strong></td>
</tr>
<tr>
<td>Landscape berms</td>
</tr>
<tr>
<td>Thin spread under newly constructed roadways or parking surfaces</td>
</tr>
</tbody>
</table>
Off-site soil treatment/disposal or reuse

Any PCS removed from the site must be treated, disposed of, or reused in a method approved by the MPCA. Soils greater than 200 ppm (PID) must be disposed of or treated at an MPCA-approved off-site facility. Petroleum contaminated soils transported to an approved landfill must be in compliance with all state and local permits. The applicant must notify MPCA Petroleum Brownfields Program staff when PCSs are initially transported and where the soils will be disposed of. Please include all transportation and handling manifests for such soils within the final implementation report.

Soil with a release of contaminants at concentrations less than the MPCA’s most conservative risk-based values is considered unregulated fill and may be reused off site at other development or road construction projects. These soils must be free from solid waste, debris, asbestos-containing material, visual staining, and chemical odor; organic vapors less than 10 parts per million as measured by a photoionization detector; must have less than 100 mg/kg diesel range organics and less than 100 mg/kg gasoline range organics; and must have no contaminants exceeding the MPCA’s Residential Soil Reference Values (SRVs) and Tier 1 Soil Leaching Values. For further information on off-site reuse, please see Best Management Practices for the Off-Site Reuse of Excess Fill from Development Sites. If off-site reuse is conducted in accordance with this guidance, no approval from MPCA staff is required because the contaminant concentrations are not of regulatory concern to the MPCA.

IV. Response Action Plan

The RAP describes in detail the actions the developer intends to take to address and mitigate the effects of petroleum contamination at or from the property.

**RAP contents:** Detailed below are the necessary components of a RAP. A RAP that does not include these elements will cause delays in review time by the Petroleum Brownfields Program staff. For assistance in determining whether a Phase I, Phase II, and/or site investigation are necessary, refer back to Section II or discuss with Petroleum Brownfields staff.

A. **Introduction**, including:
   - MPCA site identification number
   - Property name and address
   - A brief description of the proposed development

B. **Summary of Phase I**, including:
   - Brief description of the current and historical use of the property
   - Brief description of the recognized environmental conditions (i.e., sources of contamination or potential contamination)
   - Brief description of the surrounding properties and surrounding areas of recognized environmental conditions
   - Site location map
   - Site map showing: property boundaries, structures and features, and areas of recognized environmental conditions

C. **Summary of Phase II**, if completed, including:
   - Discussion of the scope and results of the investigation
   - Site map showing: property boundaries, structures and features, areas of recognized environmental conditions and sampling/boring locations
   - Isoconcentration map(s)
   - Table containing boring analytical results and sample depths
D. **Summary of Site Investigation and Risk Evaluation, if completed, including:**

- Discussion of the scope and results of the investigation or excavation
- Site map showing: property boundaries, structures and features, areas of recognized environmental conditions, excavation limits and sampling/boring locations
- Isoconcentration map(s)
- Table with soil boring analytical results and sample depths

E. **Proposed Response Actions, including:**

- Map showing proposed structures/improvements, current source areas, and proposed excavation areas (including: foundations, utilities, landscaping, vapor barriers and venting systems).
- Grading plan (map) showing proposed location and placement of contaminated soil to be reused on site (commercial/industrial sites only).
- Detailed written proposal for reusing, treating, and/or disposing of any excavated contaminated soil. This proposal should include: plans for field and laboratory sampling, plans for segregating soil based on levels of contamination, on site reuse options and plans (commercial/industrial sites only), estimated volumes, and treatment/disposal facilities and locations.
- Detailed written proposal for installing any vapor barriers, vent systems, or other engineered controls. This proposal should include: detailed description of the system and how it will serve to protect human health, location, and any other details necessary to present the proposal.
- A monitoring plan describing:
  - Type(s) and method(s) of monitoring that will take place during the response actions. Description of screening/sampling methods and equipment, including sampling locations, sampling frequency, and analytical parameters.
  - Confirmation sampling: estimated number and locations, and description of methods and procedures.
  - Follow-up monitoring: detailed description of the operation and maintenance of the monitoring system; description of the monitoring methods, procedures, and equipment; description of the monitoring locations; and analytical parameters.

F. **Construction Contingency Plan** *(Note: significant changes to the RAP not covered by the Construction Contingency Plan require prior approval by the MPCA):*

- Response actions that will be followed if monitoring limits are exceeded or unexpected conditions, wastes, or contaminated media are encountered.
- A list of MPCA, county, and city staff that will be contacted in the event the contingency plans need to be carried out, or there is unexpected public interest or concern about site activities.

G. **Appendices**

- Copy of entire Phase I Report
- Copy of entire Phase II Report, if completed
- Copy of site investigation and risk evaluation
- Copy of excavation report, if completed
V. RAP Implementation Report

Following the completion of response actions at the site, a RAP Implementation Report must be prepared and submitted to the Petroleum Brownfields staff. If the development has not been completed within six months of the RAP approval date, a status report updating the Petroleum Brownfields staff is required. In most cases where properties require long-term monitoring, the site will be referred to the Petroleum Remediation Program for continued management. Upon MPCA approval of the RAP Implementation Report, a RAP completion letter will be issued.

RAP Implementation Report contents: Detailed below are the necessary components of a RAP Implementation Report.

A. Introduction, including:
   - MPCA site identification number
   - Property name and address
   - Brief summary of the scope and goals of the response actions
   - Brief summary of any systems (vapor barrier, vent system, etc.) installed

B. Discussion, including:
   - Detailed description of, and rationale for, any modifications to the approved response actions made during implementation of the RAP
   - Locations and levels of contamination remaining

C. Conclusions/recommendations, including:
   - Statement about whether the RAP tasks were completed
   - Brief summary of soil disposal/treatment and location(s) or soil reuse activities
   - Recommendation (in accordance with Petroleum Remediation Program policy) to either close the MPCA site file or conduct additional monitoring or remediation
   - Recommendations for permanently sealing monitoring and water wells
   - Recommendations for post-remedial monitoring

D. Figures, including:
   - Map documenting source area(s) and the extent of excavation(s)
   - Map indicating the area of influence of vent systems
   - Map showing all confirmation data indicating the sampling locations and detected parameters with concentrations
   - Map indicating location(s) of on-site reuse areas

Tables:
   - Soil screening data including: location, depth, background level, concentration
   - Soil confirmation data including: location, depth, parameter, concentration
   - Groundwater analytical data (if applicable) including: location, depth, parameter, concentration
   - Surface water analytical data (if applicable) including: location, parameter, concentration
   - Air monitoring data (if applicable) including: location, background level, concentration

Appendices:
   - Manifests for soil disposal
   - Soil boring logs
   - Well logs and construction forms
   - Minnesota Department of Health well logs and abandonment forms
   - Analytical reports
VI. Definitions

**Petroleum Remediation Program:** The MPCA program that oversees investigations and cleanups at petroleum tank release sites.

**Phase I:** A review of the history of a site's ownership, physical features, and potential sources of contamination, as well the past and present operations conducted at the property. Also, the report summarizing the findings of the review.

**Phase II:** On-site investigation conducted to determine if potential contaminant sources are causing an actual release of contaminants to soil, surface water, and/or groundwater. Also, the report summarizing the findings of the investigation. Note: A Phase II investigation may not adequately define the extent and magnitude of contamination or include a risk assessment.

**Response Actions:** Actions taken during property development to address and mitigate the impacts of petroleum contaminated soil, groundwater, and surface water on human health.

**Site Investigation and Risk Evaluation:** This document may consist of a limited site investigation or remedial investigation conducted in accordance with the Petroleum Remediation Program’s Guidance Document 1-01 [Petroleum Remediation Program General Policy](#) and other applicable guidance documents.

**Thin Spread:** For purposes of this document, this is the spreading of contaminated soil on the ground at a maximum thickness of two inches.

**Vapor Barrier:** A material with a high resistance to vapor movement used to control or prevent the migration of vapors through walls and floors into buildings.

**Vent System:** A continuous open passageway to the outside atmosphere for the purpose of removing vapors and soil gas from beneath the slab of a structure.