

VIMS Operations and Maintenance Plan Checklist
NCDEQ Brownfields Redevelopment Section
March 2025

The Brownfields Redevelopment Section (BRS) has generated this checklist to outline the minimum requirements and recommended format of an Operation & Maintenance Plan (O&M Plan) for a vapor intrusion mitigation system.

General

- Title Page - Includes the title of the report, the BF Project Name & Number, property address, the date & revision number of the report.
- Contact Page - Contact information for the Developer/Property Owner, Engineer of Record, Brownfields Project Manager/Staff, and others as needed. Note that updated contact information shall be included in annual inspection notifications.
- Site History/Background – brief summary of site history, including contaminants of concern
- Construction Details – General summary of the of building(s) being mitigated, etc.

VIMS Summary

- Mitigation System – Provide a thorough description of the mitigation system installed including:
 - Passive or active
 - Location of VIMS components such as risers, turbine/fan location(s), etc.
- Details of approved VIMPs, VIMP Modifications, installation report(s), occupancy approval(s), and other relevant reports. Include report and approval dates. This can be a summary table.
- Reference Appendix with As-Built Drawings

Monitoring & Inspections

- Pressure Monitoring: If an active system, describe pressure monitoring procedures/frequency (additional details provided in Appendix A)
- Inspections: Provide a summary of proposed VIMS inspections including:
 - Frequency
 - Components to be inspected.
 - Requirements for demonstrating a suitably trained inspector. Note: DEQ recognizes that appropriately trained staff not under the direct supervision/employment of a Professional Engineer can complete the VIMS inspections.
 - Notifications to DEQ and Professional Engineer of record in the event that issues are identified.
 - Schedule for submittal to DEQ
 - Reference an appendix that includes a template checklist
- Monitoring: If an analytical scope for sub-slab and/or indoor air sampling is detailed in the VIMP or another document, briefly summarize the monitoring scope and reference the report in which it is included. If this type of monitoring is not provided elsewhere, it can be included in the O&M Plan. Content for sampling requirements can be found in the NC DEQ Division of Waste Management *Minimum Mitigation and Sampling Requirements for Reuse* (May 2024).

Note that no disturbance or alteration of the slab within the existing building footprint(s) or sub-grade VIMS components may occur unless in accordance with a DEQ-approved EMP. This shall

apply unless in the case of emergency circumstances for repair of underground infrastructure, in which case DEQ shall be provided written notice no later than the next business day and any related assessment and remedial measures required by DEQ shall be taken.

Figures

- Site Location Map.
- Site Plan with VIMS components (Building locations, screens, trenching, sub-slab monitoring points, valve boxes, fan locations, etc.).
- Indoor Air and/or Sub-Slab Sample Location Map

Appendices

- VIMS As-Built drawings - (suction point/trench cross sections, sub-slab monitoring points, vertical and overhead risers, blower equipment layout within roof mounted enclosures, etc.) Note: As-Built Drawings must be PE Sealed.
- Representative Photographic Log – Photos of completed system components should be included (fans, risers, telemetry, flow & vacuum gauges, sub-slab monitoring points, panels/vaults, components included in the VIMS inspection checklist, etc.).
- VIMS Inspection Checklist. The Inspection Checklist should include:
 - General Information – Brownfields Property Name and Number, Site Address, Inspector Name and Company, Date, Building Number (if applicable), etc.
 - Up to date contact information for the Developer/Property Owner, Engineer of Record, Brownfields Project Manager/Staff, and others as needed.
 - Building Condition – Condition of foundation and/or concrete slab, condition and location of any pour-back areas, condition of sub-slab monitoring points, any tenant up-fit work that involved concrete slab cuts since previous visit, etc.
 - VIMS Condition – Indicate if the VIMS(s) are operating, condition of any alarms or telemetry systems and if testing was performed, condition of exposed risers, riser labeling, protective screens, condensate collection if relevant, valve positions and changes made, etc. Include room on form for field notes where any changes or issues with the VIMS can be recorded (fans restarted or turned off, valves adjusted, any measurement changes following system adjustments etc.).
 - System Measurements - include a location for recording relevant system measurements (monitoring point vacuum influence, VIMS gauge and/or manometer readings, etc.)

Appendix A

Active System Depressurization Pressure Monitoring Requirements

Does not apply to Townhomes, which follow the *Brownfields Minimum Requirement for Townhome Developments (May 2020)*. Minimum pressure thresholds for active mitigation systems are outlined in the *Vapor Intrusion Mitigation System Design Submittal Requirements (May 2024)*. Pressure monitoring should include at a minimum the following:

- Year 1: Pressure readings collected monthly, submitted quarterly to DEQ
- Years 2-3: Pressure readings collected quarterly, submitted annually to DEQ
- Years 4+: Pressure readings collected semi-annually, submitted annually to DEQ, **provided that:**
 - Minimum of two years quarterly pressure monitoring demonstrates seasonably consistent and sufficient sub-slab vacuum
 - Functional Alarms for VIMS vacuum risers are present
 - Post-occupancy sampling in accordance with the DEQ DWM VI Matrix and/or VIMP demonstrating sub-slab/indoor air sampling that does not present a risk to site occupants
 - Approved O&M Plan in place
 - Inspections are being conducted as outlined in the O&M Plan