This document accompanies the Excel spreadsheet ***Contamination screening checklist for stormwater infiltration.xlsx*** and provides guidance for answering the questions in that spreadsheet. The spreadsheet is designed to help determine if stormwater infiltration is feasible and appropriate at a site based on likely or known presence of soil and/or groundwater contamination. This determination is designed to address the [Construction Stormwater (CSW) permit prohibition for infiltrating stormwater in areas where high levels of contaminants will be mobilized](http://stormwater.pca.state.mn.us/index.php/III._STORMWATER_DISCHARGE_DESIGN_REQUIREMENTS#III.D._PERMANENT_STORMWATER_MANAGEMENT_SYSTEM), but the guidance may be applied to any site.

This checklist and accompanying guidance do not consider local standards, rules, or methodologies that may be applicable. Note there may be other site constraints that prevent or limit the ability to infiltrate stormwater (e.g. [shallow depth to bedrock](http://stormwater.pca.state.mn.us/index.php/Shallow_soils_and_shallow_depth_to_bedrock), [soils with low infiltration rates](http://stormwater.pca.state.mn.us/index.php/Soils_with_low_infiltration_capacity), [presence of karst](http://stormwater.pca.state.mn.us/index.php/Karst), [shallow depth to water](http://stormwater.pca.state.mn.us/index.php/Shallow_groundwater)).

The purpose of the checklist and this guidance is to provide a relatively simple method for assessing the potential for stormwater infiltration at a site. A conservative approach is utilized in which infiltration may be determined inappropriate even though actual contamination has not been verified at a site. This approach requires an assessment of the site but does not require rigorous analysis such as sampling.

**NOTE**

* Points in the checklist where it is appropriate to not infiltrate are indicated with the following statement: **It is therefore appropriate not to infiltrate per the Construction Stormwater permit.**
* Points in the checklist where it is appropriate to infiltrate are indicated with the following statement: **Infiltration is appropriate at the site.**
* Determining that it is appropriate not to infiltrate does not mean infiltration cannot occur at a site. If infiltration is pursued at a site determined to be potentially contaminated, it is highly recommended that a Phase 1 or Phase 2 site investigation be conducted. Failure to verify contamination at a site and subsequent mobilization of contamination as a result of [stormwater infiltration is a permit violation](http://stormwater.pca.state.mn.us/index.php/III._STORMWATER_DISCHARGE_DESIGN_REQUIREMENTS#III.D._PERMANENT_STORMWATER_MANAGEMENT_SYSTEM) and may result in liability issues.

**Step I: Determine if the site has known contaminated soil or groundwater**

This step includes Box 1 from the checklist.

* Box 1 – Does the site have known soil or groundwater contamination? If the answer is yes, STOP. **It is appropriate not to infiltrate per the Construction Stormwater permit.** If No, proceed to Box 2.

If a site has contaminated soil or groundwater, there is sufficient information to suggest that contaminants may be mobilized by infiltration. **It is therefore appropriate not to infiltrate per the Construction Stormwater permit.**

Infiltration may be feasible at the site but it is highly recommended that further site investigation be conducted prior to infiltration. If infiltration is pursued at a site with contaminated soil or groundwater, use the checklist for contaminated sites.

Sites with known contamination include Voluntary Investigation and Cleanup (VIC) sites, Brownfield sites, Superfund sites, leak sites or other sites where contamination is known to exist. Tank sites, solid waste sites, and hazardous waste sites do not necessarily have contamination and additional information should be sought to determine if these sites have contaminated soil or groundwater. Available tools include USEPA’s [EnviroMapper](http://www.epa.gov/emefdata/em4ef.home) or the MPCA’s [What’s in My Neighborhood](https://www.pca.state.mn.us/data/whats-my-neighborhood) (recommended). What’s in My Neighborhood includes contact information for individual sites.

**Step II: Assess the site and proposed location of the BMP**

This step involves a historical and visual assessment of the site and the specific location on the site for the infiltration Best Management Practice (BMP). The assessment utilizes relatively simple tools for evaluating potential or likely contamination at a site without having to conduct sampling or other rigorous investigation.

* Box 2 - Does the site have a history of soil or groundwater contamination? If yes, proceed to Box 3. If No proceed to Box 4.
* Box 3 – If the answer to Box 2 is yes, has the contaminated soil or groundwater been remediated to acceptable levels? If yes, proceed to Box 4. If No, STOP. **It is appropriate not to infiltrate per the Construction Stormwater permit.**

Boxes 2 and 3 are designed to determine if a site was contaminated in the past but has been remediated to acceptable levels. If the site has been contaminated (Yes to Box 2) and it cannot be verified that the contamination has been remediated (No to Box 3), there is sufficient information to suggest that contaminants may be present at the site and will be mobilized by infiltration. **It is therefore appropriate not to infiltrate per the Construction Stormwater permit.**

Infiltration may be feasible at the site but it is highly recommended that further site investigation be conducted prior to infiltration. If infiltration is pursued at a site with contaminated soil or groundwater, use the checklist for contaminated sites.

The section called ***Guidance for conducting a screening assessment*** provides information and resources for conducting a site assessment. The assessment can, in most cases, be conducted without hiring a professional consultant or without conducting a Phase 1 investigation.

Defining an “acceptable level” of remediation may be difficult. The following represent acceptable levels of remediation.

* Soils that meet residential Soil Reference Values. See Soil-human pathway documents on [MPCA’s Risk-based site evaluation guidance web page](https://www.pca.state.mn.us/waste/risk-based-site-evaluation-guidance).
* Groundwater concentrations that meet Health Risk Levels (HRLs), Health-Based Values (HBVs), and Maximum Contaminant Levels (MCLs). See Groundwater pathway documents on [MPCA’s Risk-based site evaluation guidance web page](https://www.pca.state.mn.us/waste/risk-based-site-evaluation-guidance).
* Soils that meet soil-to-groundwater leaching pathway concentrations. See Soil to groundwater leaching pathway documents on [MPCA’s Risk-based site evaluation guidance web page](https://www.pca.state.mn.us/waste/risk-based-site-evaluation-guidance).

It may be possible to answer Box 2 [without conducting a Phase 1 Site Assessment](http://stormwater.pca.state.mn.us/index.php/Minnesota_Stormwater_Manual_test_page_1" \l "Is_a_Phase_1_Environmental_Site_Assessment_needed.3F). If an initial screening of the site history does not answer the question, it may be advisable to [hire a professional consultant](http://stormwater.pca.state.mn.us/index.php/Minnesota_Stormwater_Manual_test_page_1#Retaining_a_professional_consultant) and conduct a [Phase 1 site Assessment](http://stormwater.pca.state.mn.us/index.php/Minnesota_Stormwater_Manual_test_page_1#Phase_1_Environmental_Site_Assessment).

* Box 4 - For Boxes 5 through 13, check each box in which the item occurs on the site with the proposed BMP?
  + Box 5 – Underground storage tank vent(s) or fill port(s)
  + Box 6 – Monitoring well(s)
  + Box 7 – Soil pile(s) covered with plastic sheeting or tarp(s)
  + Box 8 – Staining of soil(s) and/or dead vegetation
  + Box 9 – Unusual odor(s)
  + Box 10 – Mismanaged drum(s) or chemical container(s)
  + Box 11 – Excavation(s) that is/are not backfilled with clean material
  + Box 12 – Presence of debris that may indicate presence of structure(s) or activity(ies) that could result in contamination
  + Box 13 – Site is a confirmed stormwater hotspot
* Box 14 - Are there any potential sources identified (checked) in Boxes 5 through 13? If Yes, proceed to Box 15; if no proceed to Box 16.
* Box 15 - For all potential sources identified (checked) in Boxes 5 through 13, can adequate separation be achieved? If yes, proceed to Box 16. If no, STOP. **It is appropriate not to infiltrate per the Construction Stormwater permit.**

Boxes 5 through 13 are based on visual observations at the site. [Each of these](http://stormwater.pca.state.mn.us/index.php/Minnesota_Stormwater_Manual_test_page_1#Is_a_Phase_1_Environmental_Site_Assessment_needed.3F) may indicate the presence of contaminated soil or groundwater. If any of these items is present at a site, they need to be further assessed.

To answer the question in Box 15, rather than conduct sampling to determine if contamination exists, it is simplest to assume contamination exists and determine if adequate separation between the BMP and contamination can be achieved. This can be done by avoiding constructing the BMP in the area where potential contamination exists, calculating the extent of a groundwater mound that develops beneath the infiltration BMP, and determining if that mound will intersect contaminants in soil or groundwater and mobilize them. An easy-to-use mounding calculator, developed by the United States Geologic Survey, can be utilized. Guidance on using this calculator at sites with potential or known contamination is found here. Additional information on this mounding calculator is found [at this link](http://stormwater.pca.state.mn.us/index.php/Stormwater_infiltration_and_groundwater_mounding), including links to the [calculator](http://pubs.usgs.gov/sir/2010/5102/) and [example calculations](http://stormwater.pca.state.mn.us/index.php/Stormwater_infiltration_and_groundwater_mounding#Example_mound_calculations).

If one or more of these items is present on a site and adequate separation cannot be established between the potential contaminant source and the proposed BMP, there is sufficient information to suggest that contaminants may be mobilized by infiltration. **It is therefore appropriate not to infiltrate per the Construction Stormwater permit.**

Infiltration may be feasible at the site but it is highly recommended that further site investigation be conducted prior to infiltration. If infiltration is pursued at a site with contaminated soil or groundwater, use the checklist for contaminated sites.

**Step III: Assessing adjacent properties**

If the answer to Box 14 was no or the answer to Box 15 was yes, the next step is to assess adjacent properties. The primary concern on adjacent properties is contaminated groundwater or contaminated soil that is very close to the water table and would be intersected by a mound beneath the BMP.

* Box 16 - For Boxes 17 through 26, check each box in which the item occurs within 500 feet of the proposed BMP?
  + Box 17 - Known groundwater or soil contamination on adjacent property
  + Box 18 – Underground storage tank vent(s) or fill port(s)
  + Box 19 – Monitoring well(s)
  + Box 20 – Soil pile(s) covered with plastic sheeting or tarp(s)
  + Box 21 – Staining of soil(s) and/or dead vegetation
  + Box 22 – Unusual odor(s)
  + Box 23 – Mismanaged drum(s) or chemical container(s)
  + Box 24 – Excavation(s) that are not backfilled with clean material
  + Box 25 – Presence of debris that may indicate presence of structure(s) or activity(ies) that could result in contamination
  + Box 26 – Site is a confirmed stormwater hotspot
* Box 27 - Are there any potential sources identified (checked) in Boxes 17 through 26? If No, **infiltration is appropriate at the site**. If Yes, proceed to Box 28.
* Box 28 - For all potential sources identified (checked) in Boxes 17 through 26, can adequate separation be achieved? If yes, **infiltration is appropriate at the site** . If no, proceed to Box 29.
* Box 29 – If the answer to Box 28 was no, STOP. **It is appropriate not to infiltrate per the Construction Stormwater permit.**

The mounding calculation(s) used in Step II can be utilized to determine if adequate separation exists between the contaminated groundwater and the proposed BMP. If known groundwater contamination exists within 500 feet of the proposed BMP and adequate separation cannot be established between the potential contaminant source and the proposed BMP, there is sufficient information to suggest that contaminants may be mobilized by infiltration. **It is therefore appropriate not to infiltrate per the Construction Stormwater permit.** Infiltration may be feasible at the site but it is highly recommended that further site investigation be conducted prior to infiltration. If infiltration is pursued at a site with contaminated soil or groundwater, use the checklist for contaminated sites.