

RULES FOR SOIL MANAGEMENT AND EXCESS SOIL QUALITY STANDARDS



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Ontario Ministry of Environment, Conservation and Parks

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This document, “Rules for Soil Management and Excess Soil Quality Standards”, is adopted by reference in O. Reg. 406/19 (On-Site and Excess Soil Management) made under the *Environmental Protection Act*, R.S.O. 1990, c. E.19 (*EPA*).

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INTRODUCTION

This document, titled “Rules for Soil Management and Excess Soil Quality Standards” (this document), is adopted by reference in O. Reg. 406/19 (On-Site and Excess Soil Management) made under the *Environmental Protection Act*, R.S.O. 1990, c. E.19 (*EPA*)(*the regulation*).

There are two distinct parts to this document.

Part I of this document is entitled “Rules for Soil Management” (Soil Rules). Where a provision of *the regulation* requires compliance with the “Soil Rules” that provision is referring to Part I of this document.

Part I of this document, “Soil Rules”, is subject in *the regulation* to a rolling incorporation. The Soil Rules may be updated from time to time without the need to amend *the regulation*.

Part II of this document is entitled “Excess Soil Quality Standards” (Excess Soil Standards). Where a provision of *the regulation* requires compliance with the “Excess Soil Standards”, that provision is referring to Part II of this document.

Part II of this document, the “Excess Soil Standards”, is subject in *the regulation* to a static incorporation. The Excess Soil Standards can only be changed by amending *the regulation* to refer to an updated version of the Excess Soil Standards.

Notice of revisions to this document will be posted on the Environmental Registry of Ontario (ERO).

Beyond this document, additional guidance in relation to the management of *excess soil* may be available on the website of the Ministry of the Environment, Conservation and Parks.

Note: for *excess soil* movements to Record of Site Condition (RSC) properties, please also refer to requirements for *excess soil* being brought to an RSC property in O. Reg. 153/04.

How to read the Soil Rules and Excess Soil Quality Standards:

The Soil Rules and Excess Soil Quality Standards must be read together with the regulation. The Soil Rules and Excess Soil Quality Standards are an extension of the regulation and have the force of law. For example, section 24 of the *regulation* provides that an operator of a site where soil is stored, such as a project area where soil is excavated, must ensure that soil is stored in accordance with the Soil Rules. Soil storage rules for the purposes of section 24 can be found in Section C1 of the Soil Rules.

PART I: RULES FOR SOIL MANAGEMENT

SECTION A: Interpretation, defines key terms. Some of these definitions are reproduced from the Act or regulation indicated, and in the event that any of these definitions are amended in the source Act or regulation, the definition in the source Act or regulation prevails.

SECTION B: Excess Soil Reuse Planning, provides excess soil planning and management requirements as provided for by *the regulation*, including an assessment of past uses, a sampling and analysis plan, a soil characterization report, an excess soil destination assessment report and requirements of a tracking system.

SECTION C: Soil Management Requirements, provides requirements associated with soil management, including those applicable to soil processing and soil storage related to the *project area*, specified types of *Class 1 soil management sites*, *Class 2 soil management sites*, local waste transfer facilities and *reuse sites*, as applicable.

SECTION D: Reuse Rules for Specific Circumstances, provide requirements associated with specific rules for *reuse sites* including rules for specific types of *soil*, types of *reuse sites*, use of the *Beneficial Reuse Assessment Tool (BRAT)* and risk assessments (RA).

PART II: EXCESS SOIL QUALITY STANDARDS

SECTION A: Determining Applicable Generic Excess Soil Quality Standards, provides direction on determining the applicable *generic excess soil quality standards* at a *reuse site*.

APPENDIX 1: Generic Excess Soil Quality Standards

APPENDIX 2: Generic Leachate Screening Levels for Excess Soil Reuse

APPENDIX 3: Ceiling Values for Excess Soil Reuse

PART I: RULES FOR SOIL MANAGEMENT

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SECTION A INTERPRETATION

1. (1) In this document,

“aggregate reuse depot” has the same meaning as in *the regulation*

“area of potential environmental concern” or “APEC” means the area on, in or under a *project area* where one or more contaminants are potentially present, as determined through an *assessment of past uses*, including through, identification of one or more potentially contaminating activities;

“asphalt-impacted excess soil” has the same meaning as in *the regulation* and, for the purposes of the definition in the regulation, the specified parameters are those listed in paragraph 3 of subsection 1(10.1) of Section A of Part II, namely petroleum hydrocarbons F3 and F4, and polycyclic aromatic hydrocarbons;

“assessment of past uses study area” means the area that includes:

1. the *project area*;
2. any other property that is located, wholly or partly, within 250 metres from the nearest point on a boundary of the *project area*; and
3. any property that the *qualified person* determines should be included as a part of the *assessment of past uses study area* that is not located, wholly or partly, within 250 metres from the nearest point on a boundary of the *project area*;

“building” has the same meaning as in the *Building Code Act*, 1992, S.O. 1992, c. 23;

“Beneficial Reuse Assessment Tool” or “BRAT” and has the same meaning as in *the regulation*;

“ceiling values” means values listed in the tables of Ceiling Values, within Part II – Excess Soil Quality Standards, contained in Appendix 3 of this document;

“Class 1 soil management site” has the same meaning as in *the regulation*;

“Class 2 soil management site” has the same meaning as in *the regulation*;

“contaminant of concern” means one or more contaminants found on, in or under a *project area* at a concentration that exceeds the applicable excess soil quality standards for the *project area*;

“contaminant of potential concern” or “COPC” includes a contaminant identified as potentially present on, in or under a *project area* in an assessment of past uses;

“crushed rock” has the same meaning as in *the regulation*.

"depot" has the same meaning as in *the regulation*;

"dry excess soil" has the same meaning as in *the regulation*;

"dry soil" has the same meaning as in *the regulation*;

"engineered aggregate" has the same meaning as in *the regulation*;

"environmentally sensitive area" means any of the following:

1. An area reserved or set apart as a provincial park or conservation reserve under the *Provincial Parks and Conservation Reserves Act, 2006*, S.O. 2006, c. 12.
2. An area of natural and scientific interest (life science or earth science) identified by the Ministry of Natural Resources and Forestry as having provincial significance.
3. A wetland or a coastal wetland identified by the Ministry of Natural Resources and Forestry as having provincial significance, or a wetland or coastal wetland that is not yet evaluated to determine whether it is provincially significant.
4. A significant woodland identified by a municipality in accordance with the Provincial Policy Statement under the *Planning Act*, R.S.O. 1990, c. P.13.
5. An area designated by a municipality in its official plan as environmentally significant, however expressed, including designations of areas as environmentally sensitive, as being of environmental concern and as being ecologically significant.
6. An area designated as an escarpment natural area or an escarpment protection area by the Niagara Escarpment Plan under the *Niagara Escarpment Planning and Development Act*, R.S.O. 1990, c. N.2.
7. An area identified by the Ministry of the Environment, Conservation and Parks as significant habitat of a threatened or endangered species.
8. An area which is habitat of a species that is classified under section 7 of the *Endangered Species Act, 2007*, S.O. 2007, c. 6 as a threatened or endangered species.
9. A property within an area designated as a natural core area or natural linkage area within the area to which the Oak Ridges Moraine Conservation Plan under the *Oak Ridges Moraine Conservation Act, 2001*, S.O. 2001, c. 31 applies.
10. An area set apart as a wilderness area under the *Wilderness Areas Act*, R.S.O. c. W.8;

“excavated engineered aggregate” has the same meaning as in *the regulation*;

“excavation project area” has the same meaning as in *the regulation*;

“excess soil” has the same meaning as in *the regulation*;

“generic excess soil quality standards” means the following standards as described or provided in Part II Excess Soil Quality Standards:

- a) Table 1 “Full Depth Background Site Condition Standards”;
- b) Tables for the “*small volume excess soil quality standards*” and
- c) Tables for the “*volume independent excess soil quality standards*”;

“infrastructure” has the same meaning as in the *regulation*;

“infrastructure project” has the same meaning as in *the regulation*;

“infrastructure undertaking” has the same meaning as in *the regulation*;

“landscaping soil depot” has the same meaning as in *the regulation*;

“leachate screening levels” means values that are listed in the tables of Leachate Screening Levels within Part II – Excess Soil Quality Standards, contained in Appendix 2 of this document;

“liquid excess soil” has the same meaning as in *the regulation*;

“liquid soil” has the same meaning as in *the regulation*;

“local waste transfer facility” has the same meaning as in *the regulation*;

“ministry” means the Ontario Ministry of the Environment, Conservation and Parks;

“O. Reg. 153/04” means Ontario Regulation 153/04 (Records of Site Condition – Part XV.1 of the Act) made under the *EPA*;

“potentially contaminating activity” or “PCA” means, subject to subsection (3), any activity listed in Table 2 to Schedule D of *O. Reg. 153/04*;

“project” has the same meaning as in *the regulation*;

“project area” has the same meaning as in *the regulation*;

“project leader” has the same meaning as in *the regulation*;

“public body” has the same meaning as in *the regulation*;

“qualified person” has the same meaning as in *the regulation*;

“rationale document” means the Rationale Document for Development of Excess Soil Quality Standards as developed by the *ministry*;

“recycled engineered aggregate” has the same meaning as in *the regulation*;

“reuse site” has the same meaning as in *the regulation*;

“the regulation” means the On-Site and Excess Soil Management regulation made under the *EPA*;

“residential development soil depot” has the same meaning as in *the regulation*;

“rock” has the same meaning as in *the regulation*;

“salt-impacted excess soil” has the same meaning as in *the regulation*;

“sampling location” means an area of the property that does not have a radius larger than two metres, as defined in subsection 48 (4) of *O. Reg. 153/04*;

“site-specific instrument” means one of the following instruments:

1. A permit that is issued under a by-law passed under section 142 of the *Municipal Act, 2001* or section 105 of the *City of Toronto Act, 2006*.
2. Provisions of a by-law passed under section 142 of the *Municipal Act, 2001* or section 105 of the *City of Toronto Act, 2006*.
3. A licence or permit issued under the *Aggregate Resources Act*.
4. An approval under the *Planning Act*.
5. A certificate of property use issued under section 168.6 of the *EPA*.
6. Any other *site-specific instrument* under an Act of Ontario or Canada that may regulate the quality or quantity of *soil* that may be deposited for final placement at the *reuse site*.

“small volume excess soil quality standards” are the same as the *Soil, Ground Water and Sediment Standards* for coarse textured soil (Tables 2 to 9) set out in *O. Reg. 153/04*;

“soil” has the same meaning as in *the regulation*;

“Soil, Ground Water and Sediment Standards” has the same meaning as in *O. Reg. 153/04*;

“subsurface soil” has the same meaning as in *O. Reg. 153/04*;

“supervisee” has the same meaning as in *the regulation*;

“surface soil” has the same meaning as in *O. Reg. 153/04*;

“topsoil” has the same meaning as in *the regulation*;

“volume independent excess soil quality standards” means excess soil quality standards included in this document (Table 1 and Table 2.1 to 9.1, inclusive, within Part II – Excess Soil Quality Standards, as included in Appendix 1 of this document) and includes *leachate screening levels* (Appendix 2 of this document);

“water body” has the same meaning as in *O. Reg. 153/04*;

(2) The following types of property uses have the same meaning as in *O. Reg. 153/04*:

1. Agricultural or other use;
2. Commercial use;
3. Community use;
4. Industrial use;
5. Institutional use;
6. Parkland use; and
7. Residential use.

(3) For the purposes of the *regulation* and the Soil Rules, item 30 in Table 2 of Schedule D to *O. Reg. 153/04* (Importation of Fill Material of Unknown Quality) does not include the circumstance where *engineered aggregate* has been used in respect of *infrastructure* at a *project area* and will become *excavated engineered aggregate* that will be reused as *recycled engineered aggregate*.

SECTION B - EXCESS SOIL REUSE PLANNING

Sections 8 to 16 of *the regulation* require a *project leader* for a *project* to comply with specific requirements before removing *excess soil* from a *project area*. These obligations apply to the *projects* and in the circumstances set out in *the regulation*. Generally, the requirements include the following:

1. **Preparation of an assessment of past uses;**
2. **Preparation and implementation of a sampling and analysis plan;**
3. **Preparation of a soil characterization report;**
4. **Preparation of an excess soil destination assessment report; and**
5. **Development and implementation of a tracking system.**

The regulation provides that each of these steps be undertaken in accordance with the Soil Rules. Steps 1-4 must be conducted or supervised by the source site *qualified person*, step 5 can be undertaken or overseen by the source site *project leader*. This section sets out the requirements for each of these steps.

1. ASSESSMENT OF PAST USES

- (1) This section contains the requirement for the preparation of an assessment of past uses for the purposes of subsection 11 (1) of *the regulation*.
 1. Sections 27 and 29 of *O. Reg. 153/04* apply with necessary modifications to the preparation of an assessment of past uses.
- (2) The assessment of past uses must achieve the following general objectives:
 1. To develop a preliminary determination of the likelihood that one or more contaminants have affected *soil* or *rock* in a location where *soil* or *crushed rock* is to be excavated within the *project area*.
 2. To identify any *areas of potential environmental concern (APECs)* within the *project area* and to determine if any location where *soil* or *crushed rock* is to be excavated could have been affected by a *potentially contaminating activity (PCA)*.
 3. To identify the *contaminants of potential concern (COPCs)* to determine the focus of the sampling and analysis plan, if any *areas of potential environmental concern (APECs)* are identified.
- (3) The assessment of past uses must contain the following components:
 1. A records review;

2. Interviews, unless the *qualified person* determines that carrying out the interview component is not necessary, having regard to the general objectives of the assessment of past uses;
 3. Site reconnaissance;
 4. A review and evaluation of the information gathered from the records review, interviews and site reconnaissance including the preparation of a conceptual site model; and
 5. The preparation of an assessment of past uses report.
- (4) Each of the components of the assessment of past uses must achieve the specific objectives and each must comply with the requirements specified in subsections (5)-(9).
- (5) Records review**
1. The specific objective of the records review is to obtain and review records that relate to the *assessment of past uses study area*, including both the current and past uses of the *project area* and the *potentially contaminating activities (PCAs)* at or affecting the *project area*, in order to determine if an *area of potential environmental concern (APEC)* exists within the *project area* where *soil* or *crushed rock* will be excavated.
 2. The records review component must comply, with necessary modifications, with all of the requirements in section 3 of Schedule D to O. Reg. 153/04, unless the *qualified person*, having regard to the specific objective of this component and the general objectives of the assessment of past uses, is of the opinion that it is not necessary to comply with one or more of these requirements.
- (6) Interviews**
1. The specific objectives of the interview component of the assessment of past uses are to:
 - i. obtain information to assist in determining if an *area of potential environmental concern (APEC)* exists within the *project area* where *soil* or *crushed rock* will be excavated; and
 - ii. identify details of *potentially contaminating activities (PCAs)* or potential contaminant pathways that could result in the presence of contaminants in *soil* or *crushed rock* that is to be excavated within the *project area*.
 2. Except in circumstances where the *qualified person* is of the opinion, having regard to the general objectives of the assessment of past uses, that it is not necessary to complete the interviews component, the interviews component must comply, with necessary modifications, with all the requirements in sections 5 to 8 of Schedule D of O. Reg. 153/04.

(7) Site reconnaissance

1. The specific objectives of the site reconnaissance component of the assessment of past uses are to:
 - i. determine if any *areas of potential environmental concern (APECs)* exist within the *project area* where *soil* will be excavated, through observations about current and past uses and *potentially contaminating activities (PCAs)* in the *assessment of past uses study area*.
 - ii. identify details of:
 - a) Potential contaminant pathways that could result in the presence of contaminants in *soil* to be excavated within the *project area*; and
 - b) Every *area of potential environmental concern (APEC)* and the *contaminant of potential concern (COPC)* within the *project area* where *soil* will be excavated.
2. The site reconnaissance component must comply, with necessary modifications, with all of the requirements in sections 10 to 15 of Schedule D of *O. Reg. 153/04*, unless the *qualified person* is of the opinion, having regard to the specific objectives of this component and the general objectives of the assessment of past uses, that it is not necessary to comply with one or more of these requirements.

(8) Review and evaluation of the information gathered from the records review, interviews and site reconnaissance:

1. The review and evaluation component must comply, with necessary modifications, with subsections (1) to (6) of section 16 of Schedule D to *O. Reg. 153/04*. The component must also include the preparation of a conceptual site model.
2. The conceptual site model shall consist of figures and narrative descriptions and assessments as set out below:
 - i. Provide one or more figures of the *assessment of past uses study area* that:
 - a) show any existing *buildings* and structures in the *project area*;
 - b) show roads, including names, within the *assessment of past uses study area*;
 - c) show uses of properties adjacent to the *project area* (where the examination of the *assessment of past uses study area* is necessary);
 - d) identify and locate areas where any *potentially contaminating activity (PCA)* is occurring or has occurred within the *assessment of past uses study area*, and show tanks within such areas; and
 - e) identify and locate any *areas of potential environmental concern (APECs)* within the *project area* that could result in the presence of contaminants in *soil* or *crushed rock* that is to be excavated within the *project area*.

- ii. Provide a description and assessment of:
 - a) any areas where any *potentially contaminating activity (PCA)* on or potentially affecting the *project area* has occurred;
 - b) any contaminants of potential concern (*COPCs*);
 - c) available regional or site-specific geological and hydrogeological information; and
 - d) how any uncertainty or absence of information obtained in each of the components of the assessment of past uses could affect the validity of the model.
- 3. The conceptual site model component mentioned in 2i (e) shall identify every area of the project area where a substance has been applied for the safety of vehicular or pedestrian traffic under conditions of snow or ice or both as an *APEC*. When identifying each of these *APECs*, the conceptual site model must identify whether the contaminants that are potentially present in the *APEC* are solely present because a substance was applied for the safety of vehicular or pedestrian traffic, in which case it shall be labelled a “salt-impacted *APEC*”.

If any part of the *APEC* has one or more contaminants potentially present, including through the identification of one or more *PCAs*, other than those solely present because a substance was applied for the safety of vehicular or pedestrian traffic, it must be labelled and treated like any other *APEC*.

(9) The assessment of past uses report shall include:

- 1. Persons involved in the *project*:
 - i. *project leader(s)*: The name, mailing address, e-mail address, and telephone number of all *project leader(s)* for the *project*; and
 - ii. *qualified person(s)*: The name, mailing address, e-mail address, telephone number, and type of licence(s) held for any *qualified person(s)* who conducted or supervised the assessment of past uses.
- 2. Description of the *project* and *project area*:
 - i. a general description of the *project* and project type; and
 - ii. if the *project* involves a change of property use in the *project area*, describe the change.
- 3. A general description of the *project area* including:
 - i. any municipal address(es) and property identification number(s) applicable to the property or properties comprising the *project area*;
 - ii. a list of the owner(s) of the property or properties comprising the *project area*;

- iii. a map of the *project area* showing the boundaries of the *project area* and of the property or properties comprising the *project area*; structural features including *buildings*, paved surfaces, natural features, and areas of planned excavation, stockpiling, and processing of *soil* that may be removed from the *project area*; geographic coordinates of the approximate centre of the *project area* projected on the UTM grid coordinate system identifying easting, northing and zone based on NAD 83 datum;
 - iv. a list of any legal instruments that apply to *soil* management within the *project area* (e.g., Environmental Compliance Approval, by-law or permit issued under a by-law passed under section 142 of the *Municipal Act, 2001*, or section 105 of the *City of Toronto Act, 2006*); and
 - v. a statement as to whether a record of site condition has been filed to the Environmental Site Registry, or is intended to be submitted for filing under Part XV.1 of the *EPA* for all or part of the *project area*, and whether a risk assessment has been or will be submitted to the Director under Part XV.1 of the *EPA*.
- 4. If the *qualified person* is of the opinion that it was not necessary, in preparing the assessment of past uses, to comply with the applicable requirements of Schedule D to *O. Reg. 153/04*, the *qualified person* or *supervisee* must, in the report:
 - i. identify every applicable requirement of Schedule D to *O. Reg. 153/04* that was not complied with;
 - ii. describe the rationale for the opinion;
 - iii. identify and describe any information gaps in that component as a result of the non-compliance; and
 - iv. describe how the information gaps shall be addressed in the preparation of the sampling and analysis plan to ensure that the general objectives of the excess soil characterization can be satisfied.
- 5. A table, prepared by the *qualified person* or *supervisee*, that sets out:
 - i. every *area of potential environmental concern (APEC)* within the *project area* that could result in the presence of contaminants in the *soil* to be excavated (i.e., the table of *areas of potential environmental concern (APECs)* specified in section 16 (2) (a) of Schedule D of *O. Reg. 153/04*); and
 - ii. current and past uses of the *project area*, to the extent past uses have been investigated as part of the assessment of past uses (i.e. the table of current and past uses specified in section 16 (2) (b) of Schedule D of *O. Reg. 153/04*).
- 6. The conceptual site model that was prepared as part of the review of information gathered from the records review, interviews and site reconnaissance component.

7. The *qualified person's* conclusions, based on a review of the information collected during the assessment of past uses and on the exercise of professional judgment, about the following:
 - i. the existence and location of any *areas of potential environmental concern (APECs)* within the *project area* that could result in the presence of contaminants in *soil* that is to be excavated within the *project area*;
 - ii. the current and past uses of the *project area*;
 - iii. the likelihood that one or more contaminants have affected the *soil* or crushed rock that is to be excavated within the *project area*; and
 - iv. the *contaminants of potential concern (COPCs)* that shall be the focus of the sampling and analysis plan.
8. Provide original signatures of the *qualified person* who conducted or supervised the assessment of past uses.
9. Provide a statement by the *qualified person* confirming the carrying out of the assessment of past uses and the findings and conclusions of the report.

(10) Use of Assessments and Existing Reports

1. A report that has been prepared to determine the likelihood that contaminants affected the *soil* or *crushed rock* within a project area that may become excess soil, including a report that updates a previous report, may be used by a qualified person as an assessment of past uses report for a project if,
 - i. the date the last work was done on all of the records review, interviews and site reconnaissance required for the assessment of past uses that is the subject of the report is no later than 18 months before the filing a notice in the Registry for the project or the commencement of work on the development of a sampling and analysis plan;
 - ii. in the professional opinion of the qualified person, there is no new or materially changed area of potential environmental concern at the project area that has arisen since the date of the last work for the assessment of past uses that is the subject of the report;
 - iii. the assessment of past uses meets the requirements for an assessment of past uses report;
 - iv. the report is a single document; and
 - v. the report is the most recent document that meets these requirements for the project area.

2. If paragraph 1 does not apply to a report or an updated report mentioned in that subsection, the qualified person or supervisee shall, before filing a notice in the Registry for the project or commencing work on the development of a sampling and analysis plan, update the report by conducting or supervising such further components of an assessment of past uses as may be necessary to satisfy the requirements of all the components of an assessment past uses and to achieve both the general and specific objectives of an assessment of past uses.
3. The requirements in paragraphs 1 and 2 in respect of the requirements to be satisfied when relying on an existing report or assessments of the project area do not apply to an assessment undertaken before January 1, 2023, as the assessment is deemed to satisfy the requirements of an assessment of past uses under subsection 11 (3) of the regulation.

NOTE: For the purposes of the sub-section governing the preparation of the assessment report, where a provision of this sub-section requires compliance with a provision of *O. Reg. 153/04* with necessary modifications,

- a reference in *O. Reg. 153/04* to a “phase one environmental site assessment” is deemed to be a reference to an “assessment of past uses”;
- a reference in *O. Reg. 153/04* to a “phase one property” is deemed to be a reference to a “*project area*”;
- a reference in *O. Reg. 153/04* to a “phase one study area” is deemed to be a reference to an “*assessment of past uses study area*”; and
- a reference in *O. Reg. 153/04* to an “enhanced investigation property” is deemed to be a reference to an “enhanced investigation project area”.

2. SAMPLING AND ANALYSIS PLAN

For the purposes of subsection 12 (1) of *the regulation*, where a sampling and analysis plan is required, it shall meet the requirements outlined in this section.

(1) The sampling and analysis plan shall be prepared to achieve the following general objectives:

1. Identify each location where *soil* or *crushed rock* is to be excavated that will be subject to sampling and analysis, including *areas of potential environmental concern (APECs)* identified through the assessment of past uses.
2. Ensure an appropriate level of sampling and analysis is carried out to determine the concentration of contaminants in the excavated *soil* or *crushed rock* to identify:

- i. which *soil* or *crushed rock* may be reused within the *project area*, with or without processing at the *project area*, and which *excess soil* may be deposited at a *Class 1 soil management site* or at a landfill or dump; and
- ii. the potential *reuse sites* at which *excess soil* from the *project area* may be deposited for final placement, having regard to the excess soil quality standards set out in this document.

(2) **Preparing a Sampling and Analysis Plan**

Based on the findings of the assessment of past uses, including the assessment of past uses conceptual site model, an understanding of the areas where excavations are planned within the *project area* and other information known to the *qualified person* or *supervisee*, a sampling and analysis plan shall achieve the following specific objectives:

1. Identify those areas of the *project area* that must be investigated using sampling.
2. Identify all other areas of the *project area* where excavations are planned and that will not be subject to sampling and provide a rationale explaining why such areas of the *project area* are not required to be subject to sampling to make determinations on how the excavated *soil* or *crushed rock* from those areas shall be managed and disposed of.
3. Determine the location, concentration and distribution of contaminants in the *soil* to be excavated within the *project area* by sampling undisturbed *soil* or sediment through the in situ sampling approach described in paragraph 15. Alternatively, if an in situ sampling approach is not practical or feasible in the circumstances of the project and project area, a stockpile sampling approach described in paragraph 16 may be undertaken where samples shall be collected from stockpiles where the *soil* or *crushed rock* is temporarily stored. Tunneling projects may also undertake a modified in situ sampling approach described in paragraph 15.1.
4. Characterize the distribution of contaminants in stockpiles of *soil* or *crushed rock* or stockpiles of stormwater management pond sediment.

(3) **In preparing and implementing the sampling and analysis plan, the qualified person shall ensure that the following requirements are satisfied:**

1. Samples shall be collected using professionally acceptable *soil* collection methods and shall be taken by or under the supervision of the *qualified person*.
2. Precautions shall be taken to minimize the potential for cross-contamination.

3. The number of samples collected and analyzed is sufficient to determine the subsurface stratigraphy at or under the *project area*, as well as the location of contaminants in *soil* or *crushed rock*, on, in or under the *project area*.
4. In cases where the assessment of past uses identified a *contaminant of potential concern (COPC)* for which there is no standard (i.e., the contaminant is not listed, or a cell in a table of *the excess soil quality standards* contains “NV”), if the *qualified person* is of the opinion that a site-specific standard needs to be developed, the *qualified person* shall ensure the samples are analyzed for the *contaminant of potential concern (COPC)* by an accredited laboratory (see also subsection 1 (6) in Section A of PART II of this document for additional rules that apply where the excess soil quality standards are “NV” or not listed).
5. The samples for analyses are representative of the maximum concentration of a contaminant in each *project area* to be investigated based on the following considerations:
 - i. Any evidence of the presence of a contaminant; and
 - ii. The maximum concentrations of a contaminant:
 - a) measured using field screening equipment; and
 - b) any other field screening means which may be necessary to ensure the analysis includes such maximum concentrations.
6. Where there is information regarding the location of potential sources of contaminants within an *area of potential environmental concern (APEC)* that is within the *project area*, sample locations must be identified with the objective of locating the maximum concentration.
7. A rationale for the sampling design used is provided.
8. A sufficient number of samples shall be collected from representative depths and locations to allow the concentrations of any contaminants in the *soil* or *crushed rock* that is to be excavated to be known in order to meet the objectives of the sampling and analysis plan.
9. If two or more samples of *soil* or *crushed rock* are taken from sampling points at the same *sampling location* that are at the same depth, the sample meets an applicable excess soil quality standard if the average of the sampling results meets that standard.
10. The averaging provision set out immediately above does not allow for compositing of samples of *soil* or *crushed rock* that will be analyzed for volatile contaminants, including volatile organic compounds.
11. Field logs are recorded and finalized for all *sampling locations* to document the *soil* conditions within the *project area*.

12. The volume of any free-flowing product encountered at the *project area* and/or removed from the *project area* is monitored, recorded and disposed of appropriately.
13. A sufficient number of *soil* or *crushed rock* samples shall be collected and analyzed to determine the representative pH of soil in the *project area*.
14. At a minimum, subject to paragraph 18, every *soil* or *crushed rock* sample required to be taken, whether through an in situ sampling approach or stockpile sampling approach, must be analyzed for all of the following parameters:
 - i. petroleum hydrocarbons (F1 through F4) including benzene, toluene, ethylbenzene, xylenes;
 - ii. metals and hydride-forming metals (antimony, arsenic, barium, beryllium, boron, cadmium, chromium, cobalt, copper, lead, molybdenum, nickel, selenium, silver, thallium, uranium, vanadium and zinc);
 - iii. sodium adsorption ratio (SAR) and electrical conductivity (EC) if the *soil* is excavated from an area where a substance has been used for the purpose of keeping the area safe for use under conditions of snow or ice, unless the *soil* is to be finally placed at a location referenced in subsection 1 (3) of Section D of PART I of this document; and
 - iv. any *contaminant of potential concern (COPC)* identified during the assessment of past uses

For greater certainty, leachate analysis for certain contaminants must also be completed as outlined in subsection 2 (5) in Section B of PART I of this document.

15. In Situ Sampling

Where an in situ sampling approach will be used for a portion of the project area that is to be excavated and that portion is within an *area of potential environmental concern (APEC)*, the following rules apply:

- i. a minimum of three samples shall be analyzed if less than 600 cubic metres of *soil* or *crushed rock* will be excavated;
- ii. if more than 600 cubic metres of *soil* or *crushed rock* will be excavated, at least one sample shall be analyzed for each 200 cubic metres of *soil* or *crushed rock* for the first 10,000 cubic metres of *soil* or *crushed rock* to be excavated;
- iii. at least one sample shall be analyzed for each additional 450 cubic metres after the first 10,000 cubic metres of *soil* or *crushed rock* to be excavated; and
- iv. at least one sample shall be analyzed for each additional 2,000 cubic metres after the first 40,000 cubic metres of *soil* or *crushed rock* to be excavated.

For greater certainty, at a minimum, the sampling frequencies described in subparagraphs i to iv must be applied to the volume of *soil* or *crushed rock* to be excavated that relates to the horizontal and vertical extent of the *APEC*. The horizontal and vertical extent of the *APEC* must be confirmed through in situ sampling. Sampling frequencies of *soil* or *crushed rock* to be excavated that is outside of the horizontal or vertical limits of the *APEC* are not required to meet the minimums described in subparagraphs i to iv but, instead, will be at a frequency determined appropriate by the qualified person to determine the contaminant levels in the *soil* or *crushed rock* that will be excavated and become *excess soil*.

Where any in situ *rock* samples need to be crushed in order to be analyzed by a laboratory (e.g., rock cores) as outlined subsection 2 (4) in Section B of Part I, samples of the excavated *crushed rock* from a similar location must be taken to compare against the results of the in situ *rock* samples. If there are significant discrepancies between the sampling results of the in-situ *rock* samples and post-excavation *soil* or *crushed rock* samples, additional sampling must be undertaken to confirm the quality of the post-excavation *soil* or *crushed rock*, unless a rationale is provided for why additional sampling was not completed.

15.1 Modified In Situ Sampling Approach for Tunneling Projects

In respect of a linear infrastructure project that involves deep tunneling (e.g., subway or deep sewer main project), where it is not feasible to satisfy the requirements of the in situ sampling approach set out in paragraph 15, the following modified in situ sampling approach may be used which will

involve satisfying those sampling frequency requirements through assessing a combination of in situ and post-excavation samples of tunneled *soil* or *crushed rock* as the tunneling progresses. To use this modified in situ sampling approach the sampling and analysis plan must meet the following requirements:

- i. The qualified person must provide a detailed sampling plan that includes a written rationale for using the modified in situ sampling approach set out in this section and an explanation of how the sampling approach will achieve the objectives that a sampling and analysis plan must achieve mentioned in subsections 2 (1) and (2).
- ii. At a minimum, the frequency of in situ sampling required by paragraph 15 must be satisfied by a combination of the number of in situ pre-excavation samples taken and the number of samples taken from excavated *soil* or *crushed rock* that will be removed from the tunnel as tunneling progresses.
- iii. The sampling and analysis plan must meet the following additional requirements:

- a) With regard to the in-situ sampling that is to be undertaken prior to excavation as described in subparagraph ii, the number of in situ samples and their respective locations must be determined with the objective of ensuring that the in situ sampling will provide a preliminary determination of the location, concentration and distribution of contaminants in the project area generally, throughout the sections of the tunnel that are associated with *PCAs* and *APECs* that have been identified through the assessment of past uses.
- b) With regard to sampling to be undertaken on *soil* or *crushed rock* that is excavated, as described in subparagraph ii, from a section of the tunnel referred to in clause (a), samples shall be taken from the excavated *soil* or *crushed rock* that corresponds to predetermined tunnel locations within that section and in such numbers to confirm the distribution and concentration of contaminants at and between the locations where in situ samples had been taken.
- c) The *soil* or *crushed rock* that is excavated from the predetermined tunnel locations within a section that is to be sampled under clause (b) must not be mixed or comingled with soil and crushed rock from any other section of the tunnel. If the excavated soil and crushed rock that is to be sampled from a section of the tunnel cannot be isolated from other excavated *soil* or *crushed rock* from other sections, the modified in situ sampling approach shall not be used for that section and a stockpile sampling approach shall be used instead.
- d) The sampling results of post-excavation samples taken under clause b) must be compared against in situ sampling results under clause a) that are associated with the same sections of the tunnel, including where any sampling was based on the crushing of in situ rock core samples.
- e) If there are significant discrepancies between the sampling results of the in-situ samples under (a) and post-excavation samples under (b), additional sampling under (b) must be undertaken to confirm the quality of *soil* or *crushed rock* in that section, unless a rationale is provided for why additional sampling was not completed.

16. Stockpile Sampling

The following rules apply to samples collected using a stockpile sampling approach:

- i. A sufficient number of samples shall be collected at different depths within a stockpile to characterize the depth profile and the spatial variation, laterally and vertically, of the *contaminant of potential concern (COPC)* within the stockpile;

- ii. Samples shall not be collected from the surface of the stockpile; rather, techniques and equipment need to allow for collection of samples from the entire stockpile, including the core; and
- iii. Unless section 17 applies (stormwater management pond sediment), the sampling frequencies specified in Table 2 of Schedule E, to *O. Reg. 153/04*, Minimum Stockpile Sampling Frequency shall be followed.

17. Stormwater Management Pond Sediment

Despite paragraphs 14, 15, and 16, and except as otherwise provided in an Environmental Compliance Approval, the following rules apply to sampling of stormwater management pond sediment:

- i. Stormwater management pond sediment sampling shall be undertaken using one of the following methods:
 - a) using an in situ sampling approach by zone as described in subparagraphs v. and vi., or
 - b) removing the sediment from the stormwater management pond, segregating and physically dewatering it, then sampling the stockpiled stormwater management pond sediment as described in subparagraphs v. and vi. or
 - c) removing, physically dewatering, and sampling stockpiled sediment as described in subparagraph vii.
- ii. If wet stormwater management pond sediment (liquid soil) is to be solidified through the addition of stabilizing agents such as natural or synthetic polymers, see subsection 9 in Section C of PART I of this document for additional requirements.
- iii. At a minimum, stormwater management pond sediment samples must be analyzed for the following parameters:
 - a) petroleum hydrocarbons (F1 through F4) including benzene, toluene, ethylbenzene, xylenes;
 - b) metals and hydride-forming metals (antimony, arsenic, barium, beryllium, boron, cadmium, chromium, cobalt, copper, lead, molybdenum, nickel, selenium, silver, thallium, uranium, vanadium and zinc);
 - c) polycyclic aromatic hydrocarbons (PAHs);
 - d) electrical conductivity (EC), sodium adsorption ratio (SAR) and cyanide.
- iv. Leachate analysis for certain contaminants must be completed as outlined in subsection 2 (5) in Section B of PART I of this document.
- v. Where stormwater management pond sediment from a stormwater management pond will be removed, segregated into stockpiles by zone (from within the stormwater management pond, i.e., sediment from zone 1 – inlet, sediment from zone 2 – centre, and sediment from zone 3 – outlet), and dewatered or solidified, or where sediment from a stormwater management pond is sampled in situ by the zones described above, the sampling frequencies are as follows:

- a) a minimum of three samples must be analyzed if less than 600 cubic metres of *soil* will be excavated;
 - b) if more than 600 cubic metres of *soil* will be excavated, at least one sample shall be analyzed for each 200 cubic metres of *soil* for the first 10,000 cubic metres of *soil* to be excavated;
 - c) at least one sample for each additional 450 cubic metres after the first 10,000 cubic metres of *soil* to be excavated, shall be analyzed; and
 - d) at least one sample shall be analyzed for each additional 2,000 cubic metres after the first 40,000 cubic metres of *soil* to be excavated.
 - vi. For further clarity, where samples are collected from sediment that is removed and segregated into stockpiles based on zones or collected in situ by zone, the minimum sampling frequencies set out in subparagraph v are determined based on the total amount of sediment that will be removed from the stormwater management pond and are not determined for each zone based on the amount of sediment from each zone. The total number of samples shall be distributed equally across the three zones, unless the *qualified person* provides a rationale for collecting more samples in one zone compared to another.
 - vii. If the stormwater management pond sediment from the stormwater management pond is removed, dewatered and stockpiled without regard for the different zones within the pond (i.e., all stormwater management pond sediment is mixed together and not segregated), the sampling frequencies set out in Table 2 of Schedule E, to *O. Reg. 153/04, Minimum Stockpile Sampling Frequency* apply.
18. Sampling Frequency for Parameters that are not Contaminants of Potential Concern
- Despite paragraphs 14, 15, 15.1, and 16, if any of the parameters listed in paragraph 14 were not identified as *contaminants of potential concern (COPCs)* associated with an *area of potential environmental concern (APEC)* at a *project area* through the *assessment of past uses*, the sampling frequency may be reduced from the frequencies specified in paragraphs 15, 15.1, and 16, at the discretion of the *qualified person*, in accordance with the following rules:
- i. The parameters that are not *COPCs* and for which the *qualified person* intends to reduce sampling frequency must be identified in the plan and the revised sampling frequency for each of those parameters must be specified in the plan.
 - ii. The revised sampling frequency for each parameter mentioned in subparagraph i must satisfy all of the following requirements:
 - a. It must not be reduced below a minimum of three samples for each parameter in each *APEC*.
 - b. It must be statistically significant for the total volume of *soil* or *crushed rock* to be excavated per *APEC* that will become *excess soil*.

- c. It must ensure that reasonable confirmation can be made that each parameter is not likely to be found in the *APEC*.
 - d. It must ensure that, if a parameter is found in the *APEC*, the sampling frequency would be sufficient for the horizontal and vertical extent of the *APEC* to determine the maximum concentration of that parameter.
- iii. A rationale must be provided by the *qualified person* in the plan explaining the following:
 - a. How the *qualified person* determined that the parameters in subparagraph i are not COPCs.
 - b. How the revised sampling frequency identified in subparagraph i for each parameter will achieve all the requirements listed in subparagraph ii for each parameter.

(4) Requirements for Handling, Storage and Analysis of Samples:

1. Where a sample of *soil* or *crushed rock* is taken, the *qualified person* shall ensure that the requirements of section 47 (Analytical procedures) of *O. Reg. 153/04* are complied with, including but not limited to, the requirements in relation to the handling and storage of the samples, the requirement that the analyses of the samples be carried out by an accredited lab and the requirements to comply with the “Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act and Excess Soil Quality” published by the *ministry* and as it may be amended from time to time.
2. In certain circumstances, the *qualified person* may determine that it is necessary to crush *rock* samples, to enable analysis of samples that are representative of the anticipated *soil* or *crushed rock* after excavation in accordance with the “Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act and Excess Soil Quality”. Where the *qualified person* determines that crushing of excavated *rock* is necessary for its sampling and analysis, the *qualified person* shall communicate with the laboratory on what method or equipment will be used to crush the excavated *rock*, what procedures shall be followed and which procedures the laboratory or the *qualified person* will be responsible for.
3. Where a sample of *soil* or *crushed rock* is to be taken in respect of *excess soil* that will be finally placed on the bed of a surface water body, the *qualified person* shall ensure that the accredited lab is notified of this circumstance and despite paragraph 1, the *qualified person* shall ensure that the laboratory uses an appropriate analytical method given that the *excess soil* will be finally placed on the bed of a surface water body.

(5) Mandatory Leachate Analyses Requirements

If subsection 1 (7) in Section A of Part II requires leachate analysis, then the following soil sampling frequencies must be satisfied:

1. For in situ and modified in situ characterization, the following must be satisfied to determine if the *soil* or *crushed rock* meets the applicable excess soil quality standards:
 - i. A minimum of three samples must be submitted for leachate analysis if less than 600 cubic metres of *soil* or *crushed rock* will be excavated.
 - ii. The samples submitted for leachate analysis shall be collected from the *sampling locations* where 90% (or higher) of the highest contaminant concentrations were found.
 - iii. Leachate analysis should be completed on at least 10% of the samples as described in paragraph 15 and 15.1 of subsection 2 (3) in Section B of PART I of this document, in addition to the three minimum samples, unless the *qualified person* can provide a rationale regarding why leachate analysis is not necessary in order to meet the general and specific objectives of the excess soil characterization.
2. For *soil* or *crushed rock* excavated from an *area of potential environmental concern (APEC)* that is stored in stockpiles, the minimum leachate sample frequency is three samples, plus 10% of the required number of samples detailed in Table 2 of Schedule E, to *O. Reg. 153/04, Minimum Stockpile Sampling Frequency*.
3. For sediment excavated from a stormwater management pond the minimum leachate sample frequency is three samples, plus 10% of the required number of samples detailed in clauses iv or v of paragraph 17 of subsection 2 (3).
4. If a sample is submitted for leachate analysis before January 1, 2022, the leachate extraction shall be completed using either the *ministry's* Synthetic Precipitation Leaching Procedure (E9003 or mSPLP), the Synthetic Precipitation Leaching Procedure (US EPA SW-846 Method 1312), the Toxicity Characterization Leaching Procedure (US EPA SW-846 Method 1311) or another method approved by the Director. If a sample, on or after January 1, 2022, is submitted for analysis, the *ministry's* Synthetic Precipitation Leaching Procedure (E9003 or mSPLP) or another method approved by the Director must be used. The subsequent analysis of the leachate must be completed in accordance with the requirements of section 47 of *O. Reg. 153/04 (Analytical procedures)*, including the requirements in relation to the handling and storage of the samples, the requirement that the analyses of the samples be carried out by an accredited lab and the requirements to comply with the "Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act and Excess Soil Quality".

(6) Heavily Impacted Soil That Cannot Be Reused at a Reuse Site

1. Where a *qualified person* determines based on limited sampling and analysis that *soil* or *crushed rock* within an *area of potential environmental concern (APEC)* contains concentrations of contaminants exceeding the Table 3 *small volume excess soil quality standards* for residential, parkland, and institutional property uses or contains parameters for which there is no applicable *excess soil quality standard*, and deriving site-specific excess soil standards (e.g., via the *BRAT*) is not a viable option for reuse, then the *qualified person* may depart from the sampling and analysis requirements set out in this section of this document if the *qualified person* has determined that the only practical disposal option for the impacted *soil* or *crushed rock* is to transport it to a landfill or dump.

(7) Sampling and Analysis of Salt-Impacted APECs

1. The following rules apply in respect of the sampling of *soil* or *crushed rock* that is to be excavated from a salt-impacted *APEC* identified in an assessment of past uses in accordance with subsection 1 (8) of Section B of Part I, and that will become *salt-impacted excess soil*:
 - i. If the *salt-impacted excess soil* is to be finally placed at a location permitted under subsection 1 (3) of Section D of Part I, despite paragraph 14 of subsection 2 (3) of section B of Part I, the sampling and analysis of the *soil* or *crushed rock* is not required.
 - ii. If sub-paragraph i does not apply, despite paragraph 14 of subsection 2 (3) of Section B of Part I, sampling and analysis may be conducted only for those *COPCs* that are associated with *salt-impacted excess soil* and the minimum frequency sampling requirements for in situ or stockpiling sampling approaches, set out in paragraphs 15, 15.1 and 16 of subsection 2 (3) in Section B of Part I, are not required to be complied with if the sampling and analysis plan includes a rationale that complying with such requirements is not necessary to identify the variability and maximum concentration of the *COPCs* in the *soil* or *crushed rock* that will become *salt-impacted excess soil*.

3. SOIL CHARACTERIZATION REPORT

(1) Soil Characterization Report Including a Review and Evaluation of Information

For the purposes of clause 12 (4) (c) of *the regulation* a soil characterization report shall include, cross-sections, figures, tables and narrative descriptions that illustrate the following, with respect to each area where excavations are planned within the *project area*:

1. Each *area of potential environmental concern (APEC)* within the *project area*, and its dimensions;
2. Each part of the *project area* that was subject to sampling, and the dimensions of each part;
3. Each *area of potential environmental concern (APEC)* within the *project area* where *soil* or *crushed rock* is to be excavated and the dimensions of each *area of potential environmental concern (APEC)*, and for each such *area of potential environmental concern (APEC)*, the related *potentially contaminating activity*;
4. The information required in Report Section 5 in Table 1 to Schedule E to *O. Reg. 153/04* (investigation methods including drilling and excavating test pits, *soil* sampling, sediment sampling, field screening measurements, analytical testing), with necessary modifications, and excluding any requirements related to ground water;
5. Stratigraphy from ground surface to the depth of the deepest planned excavation within the *project area*;
6. Approximate depth to water table, including whether the depths of excavation for each area where *soil* excavation is planned are below the water table;
7. The following information in relation to each area where samples were taken:
 - i. minimum number of samples required, and total number of samples collected;
 - ii. the locations and depths of samples, and a rationale for the selection of *sampling locations*;
 - iii. if an in situ sampling approach was used, in respect of the *areas of potential environmental concern (APECs)* described under paragraph 3, an explanation and rationale of how the delineation of the *APECs* was determined, and for *soil* or *crushed rock* sampled outside of the *APECs*, the sampling frequencies and the rationale for those frequencies both vertically under the *APEC* and horizontally beyond the *APEC*, if the sampling frequencies set out in paragraph 15 of subsection 2 (3) were not followed;

- iv. the parameter groups for analysis, including a rationale for the choice of parameter groups, where additional parameter groups were added;
 - v. the date of sample collection;
 - vi. the date of analysis;
 - vii. contaminants with measurable concentrations;
 - viii. the distribution of each contaminant present;
 - ix. a discussion of any *soil* field screening results along with a discussion and analysis of the laboratory analytical results; and
 - x. if applicable in relation to leachate analysis, a rationale regarding why a sampling frequency of at least 10% of the number of samples was not necessary, the leachate extraction method, rationale for the selection of the method and proof of Director approval for use of an alternate leachate extraction method.
8. One or more tables that,
- i. show soil quality data contained in laboratory certificates of analysis of samples taken at the *project area*;
 - ii. include borehole, test hole or test pit identification number, sample depths, sample identification number, date of sample collection, date of analysis and laboratory certificate of analysis or analytical report reference number; and
 - iii. include a comparison of the data to applicable excess soil quality standards.
9. Laboratory certificates of analysis or analytical reports for all samples analyzed;
10. The information required in the Report Section 6, sub-heading (ix) in Table 1 to Schedule E of *O. Reg. 153/04* (quality assurance and quality control results), with necessary modifications;
11. If, during the sampling and analysis of *soil* or *crushed rock* within an *area of potential environmental concern (APEC)*, the *qualified person* determined that *soil* or *crushed rock* contains high concentrations of contaminants as described in subsection 2 (6) in Section B of PART I of this document and the only practical disposal option is to dispose of the *excess soil* at a landfill or dump, the *qualified person* shall ensure the report includes:
- i. A description of the steps taken to delineate the impacted *soil* that is to be excavated, from other *soil* or *crushed rock* within the *area of potential environmental concern (APEC)* that is to be excavated and that may be reusable; and
 - ii. A description and rationale the extent of sampling and analysis undertaken in substitution to the sampling and analysis requirements set out in this document.

12. Original signatures of the *qualified person* who conducted or supervised the preparation and implementation of the Sampling and Analysis Plan and the preparation of the soil characterization report, and, a statement by the *qualified person* confirming the findings and conclusions of the soil characterization report.
13. A sampling and analysis plan that has been developed to investigate the concentration of contaminants in *soil* or *crushed rock* from a project area that may become *excess soil* (for example, a Phase 2 Environmental Site Assessment, including one prepared for filing a Record of Site Condition),

and the report on the results of the plan's implementation, including any work done to update the original investigation, may be used by a *qualified person* in place of a new sampling and analysis plan and soil characterization report for a *project area* if,
 - i. the date the last work was done to implement the sampling and analysis plan that is the subject of the report is no later than 18 months before filing a notice in the Registry for the project;
 - ii. in the professional opinion of the qualified person, there is no new or materially changed area of potential environmental concern at the project area;
 - iii. the sampling and analysis plan and associated soil characterization report meet the requirements of the regulation and these Soil Rules;
 - iv. the report is a single document; and
 - v. the report is the most recent document that meets the requirements for this project area.
14. If paragraph 13 does not apply to a sampling and analysis plan and its associated report or to an investigation to update the original report mentioned in that subsection, the qualified person or supervisee shall, before filing a notice in the Registry for the project, update the plan and its associated report by conducting or supervising such further work to ensure,
 - i. the plan achieves the general and specific objectives that a sampling and analysis plan must meet,
 - ii. the plan satisfies the requirements of a sampling and analysis plan set out in the Soil Rules and the regulation, and
 - iii. the associated report meets the requirements of a soil characterization report set out in the Soil Rules and the regulation.
15. The requirements in paragraphs 13 and 14 in respect of the requirements to be satisfied when relying on an existing sampling and analysis plan and its associated report do not apply to a sampling and analysis plan undertaken before January 1, 2023, as subsection 12 (6) of the regulation deems the plan and its associated report to comply with the applicable requirements of the regulation.

4. EXCESS SOIL DESTINATION ASSESSMENT REPORT

For the purposes of section 13 of *the regulation*, an excess soil destination assessment report shall include the following information:

- (1) The estimated volume and quality of *soil* to be removed from the *project area* as *excess soil*.
- (2) The types of processing of *soil*, if any, that have been conducted at the *project area*, a *Class 2 soil management site* or a *local waste transfer facility*, in respect of the *soil* that will be *excess soil*.
- (3) The approximate date that *excess soil* will commence leaving the *project area* and the approximate date when all *excess soil* will have been removed from the *project area*.
- (4) For each *reuse site*, *Class 1 soil management site*, *local waste transfer facility*, landfill or dump at which *excess soil* will be deposited, include the following information:
 1. Municipal address (if applicable) or a description of the location;
 2. The estimated quantity of *excess soil* to be deposited at the site;
 3. If the site is a *reuse site*, based on the assessment of past uses (if applicable), sampling and analysis plan (if applicable) and the soil characterization report, the quality of the *excess soil* to be deposited at the site;
 4. If the site is a *reuse site*, based on information collected from and confirmed with the *reuse site* owner or operator, or the *reuse site qualified person* or *supervisee* (if applicable):
 - i. the property use of the *reuse site* and the undertaking for which the *excess soil* is required;
 - ii. any characteristics associated with the *reuse site* or nearby properties that may affect the excess soil quality standards applicable to the *reuse site*; and
 - iii. the *generic excess soil quality standards* or site-specific excess soil quality standards (if applicable) that apply to that site and confirmation that they align with the quality of *excess soil* to be sent to that site;
 5. If the site is or will be governed by a *site-specific instrument*, identify the instrument, the *public body* responsible for issuing the instrument and any other information relevant to the receipt of *excess soil* at that site;

6. If the site is a landfill or dump, confirmation that any *excess soil* to be deposited is not subject to the prohibition under section 22 of the regulation, and the basis for the *excess soil* not being subject to the prohibition (e.g., the *excess soil* does not meet the quality standards set out in subsection 1(11) of Section A of Part II of this document, or the *excess soil* is being used for any ancillary use that supports the operation of the landfill); and
 7. Whether a fill management plan was developed for that site.
- (5) For each *Class 2 soil management site* or *local waste transfer facility* at which *excess soil* will be stored, provide the following information:
1. Municipal address (if applicable) or a description of the location;
 2. Confirmation that the *Class 2 soil management site* is located on a property owned or controlled by a *public body* or by the *project leader* for the *project* in relation to which the *soil* will be excavated;
 3. The estimated quantity and quality of *excess soil* to be stored at the *Class 2 soil management site* or *local waste transfer facility*;
 4. The approximate date that *excess soil* will be deposited at a *Class 2 soil management site* or *local waste transfer facility* and the approximate date when all the *excess soil* from the *project area* will have been removed from the *Class 2 soil management site* or *local waste transfer facility*;
 5. A list of the *reuse site(s)* at which the *excess soil* is, ultimately, intended to be deposited and the date(s) when these *reuse site(s)* will accept the *excess soil*; and
 6. If the site is or will be governed by a *site-specific instrument*, identify the instrument, the *public body* responsible for issuing the instrument and any other information relevant to the receipt of *excess soil* at that site.
- (6) Contingency measures to be implemented in the event that the *excess soil* cannot be deposited at an intended *reuse site*, including instructions to be provided to the operator of a vehicle to ensure that *excess soil* is not deposited at an unplanned site and the location of an alternate site at which *excess soil* may be deposited if not returned to the *project area*, *Class 2 soil management site* or *local waste transfer facility*.

5. TRACKING SYSTEM

- (1) For the purposes of section 16 of *the regulation*, a tracking system must be capable of tracking the following information in respect of each load of *excess soil* that is removed from the *project area*:
 1. The locations of the *project area* where the *soil* was excavated and stockpiled, if applicable, and the quality of the *soil* associated with those locations and stockpiles.
 2. The quality of the load of *excess soil* being removed from the *project area*, unless the *excess soil* is to be sampled at a *Class 2 soil management site* or a *local waste transfer facility*.
 3. The quantity of the load of *excess soil* being removed from the *project area*.
 4. The location of the site at which the *excess soil* is to be deposited as communicated to the driver of the vehicle.
 5. The date and time the *excess soil* left the *project area*.
 6. The person from the *project area* responsible for overseeing the loading of the *excess soil* for transportation.
 7. The name of the corporation, partnership or firm transporting the *excess soil*, the name of the driver of the vehicle and the number plates issued for the vehicle under the *Highway Traffic Act*.
 8. The date and time the *excess soil* was received at the site where the *excess soil* has been deposited.
 9. The contact information of the person who acknowledged receipt of the load of *excess soil* on behalf of the site where the *excess soil* was deposited.
 10. Confirmation that the vehicle that deposited the *excess soil* and the volume of *soil* received at the site where the *excess soil* was deposited is the same as that which left the *project area*.
- (2) If *excess soil* is to be managed temporarily at a *Class 2 soil management site* or a *local waste transfer facility*, all the information described in subsection 5 (1) in Section B of PART I of this document (above) must be tracked in respect of each load of *excess soil* which has been managed at that site and “*project area*” shall be substituted with “*Class 2 soil management site*” or “*local waste transfer facility*”, as applicable.

- (3) The tracking system must be capable of tracking information in respect of the total number of vehicles and total volume of *excess soil* that has left a *project area* for a site at which the excess is to be deposited and confirmation that the total number of vehicles and volume of *excess soil* received at the site is the same as that which left the *project area*.
- (4) The tracking system must be able to produce reports upon request to respond to any inquiries with respect to the information of each load of *excess soil* to be tracked.
- (5) The tracking system must include procedures or other methods to verify the accuracy of the information required to be tracked in respect of each load of *excess soil* that is to be removed from the *project area*.
- (6) The tracking system must include procedures or other methods to prevent any form of fraud or other wrongdoing in the management and transportation of *excess soil*.

6. QUALIFIED PERSON DECLARATION

- (1) If a *qualified person* was required to prepare or oversee the preparation of documents under *the regulation* including documentation related to the assessment of past uses, sampling and analysis plan and/or soil characterization report a declaration by the *qualified person* is required for each report, stating the following:
 - 1. That the *project leader* or operator of the *project area* have provided the *qualified person* or an individual supervised by the *qualified person* with all necessary information and access to the *project area* and authorized the *qualified person* or an individual supervised by the *qualified person* to make any inquiries of the *project leader* and operator's employees and agents, for the purpose of assisting the *qualified person* in preparing or overseeing the preparation of the documents.
 - 2. That the *qualified person* has prepared or overseen the preparation of the documents.
 - 3. That the documents are complete and accurate and meet the requirements of *the regulation* and these Soil Rules to the best of the *qualified person's* knowledge.

SECTION C - SOIL MANAGEMENT REQUIREMENTS

This section includes requirements associated with soil management, as provided for by *the regulation*, including:

1. **Soil Storage Rules;**
2. **Soil Segregation Rules for the Purposes of Sections 5.3, 5.4, and 5.5;**
3. **Additional Rules for Class 2 Soil Management Sites and Local Waste Transfer Facilities;**
4. **Additional Rules for Residential Development Soil Depots;**
5. **Additional Rules for Landscaping Soil Depots;**
6. **Additional Rules for Aggregate Reuse Depots;**
7. **Procedures for Depots;**
8. **Record Keeping Requirements for Depots;**
9. **Requirements for Mixing for the Purpose of Dewatering or Solidifying Liquid Soils; and**
10. **Requirements for Sampling the Additives used for Dewatering or Solidification and for Tunneling Projects**

1. SOIL STORAGE RULES

For the purposes of section 24 of *the regulation*, *soil* and *crushed rock*, including *excess soil*, stored at a *project area*, a *Class2 soil management site*, a *local waste transfer facility*, a *depot*, or at a *reuse site* before it is finally placed, must be stored in accordance with the following:

(1) General

1. *Soil* and *crushed rock*, shall be managed in such a way as to prevent any adverse effects associated with the receiving, processing, storage and movement of the *soil* and *crushed rock* including management of:
 - i. noise;
 - ii. dust;
 - iii. mud tracking;
 - iv. leaching;
 - v. run-off and erosion; and
 - vi. potential outdoor air impact(s), including odour issue(s).
2. Dry *soil* and *crushed rock* that has not been sampled and analyzed, and is required to complete sampling and analysis, must be stored in stockpiles and kept segregated from other *soil* and *crushed rock*.

3. Unless stockpiled for a specific *reuse site*, *Class 1 soil management site*, landfill or dump, where the stockpile meets the requirements for acceptance of the *excess soil* that have been confirmed with the receiving site, *dry soil* and *crushed rock* must be segregated in accordance with the following:
 - i. *Soil* and *crushed rock* that has been sampled and analyzed must be kept segregated from other *soil* and *crushed rock* and segregated based on the table of excess soil quality standards that the *soil* and *crushed rock* meets.
 - ii. If *excess soil* has not been sampled and analyzed, the *excess soil* from different project areas must be segregated unless there is reasonable confidence that the *excess soil* is of similar quality given the property uses and activities associated with the areas from which it was excavated and there is no visual or olfactory evidence of contamination.
 - iii. *Salt-impacted excess soil*, *asphalt-impacted excess soil* and *soil* and *crushed rock* that will become *salt-impacted excess soil* or *asphalt-impacted excess soil* must be segregated from other *soil* and *crushed rock*.
 - iv. Any *excavated engineered aggregate* and any *soil*, *crushed rock* and other material that will become *excavated engineered aggregate* must be segregated from other *soil* and *crushed rock* that is not intended to be used as *recycled engineered aggregate*.
 - v. *Excess soil* that is to be reused as *recycled engineered aggregate* and that has been determined to have elevated concentrations of one or more parameters due to naturally occurring conditions, as per paragraph 1 of subsection 1(4), Section D in Part I of this document, must be kept segregated from *excess soil* that exceeds standards due to any other reason.
4. The *soil* or *crushed rock* must not be stored at a location:
 - i. within 30 metres of a waterbody; and
 - ii. within 10 metres of the property line (boundary), unless any of the following apply:
 - a) 500 m³ or less of *soil* or *crushed rock* will be stored at any one time on the *project area*;
 - b) *Soil* and *crushed rock* stored at the *project area* will be for a period of time of less than 1 week;
 - c) The storage location has a physical barrier (e.g., concrete wall) between the *soil* and *crushed rock* and the property boundary;
or
 - d) The storage is taking place in a public road right-of-way.
5. Despite subparagraph 4.i, sediment that is dredged from a water body or any *soil* that is to be excavated from within 30 metres of a water body may be temporarily stored within 30 metres of that water body if the following criteria are satisfied:

- i. there are no visual or olfactory signs that the *soil* or sediment is affected by contamination;
 - ii. the *soil* or sediment is stored no longer than 1 week from the day it is excavated, except the *soil* or sediment may be stored for the amount of time that is necessary to:
 - a) reuse the *soil* in the *project area* as part of the project; or
 - b) to dewater *liquid soil* before transportation or reuse; and
 - iii. a sediment and erosion control plan has been prepared and is being implemented for the project area for the duration of the time that soil or sediment is temporarily managed, to prevent any impairment to the water body and any other adverse effects resulting from the storage of the sediment or *soil* near the water body (e.g., silt runoff, consideration for floodplains, natural hazards, etc.).
6. *Soil and crushed rock* shall be stored in a manner that prevents any contaminants from leaching into the ground water.

(2) **Liquid Soil**

Liquid soil that is stored at a *project area* or a *local waste transfer facility* shall be managed in accordance with the following:

- 1. All storage and processing locations of liquid soil, processed or dewatered or solidified *soil* and process residues shall be readily accessible for inspection by a provincial officer.
- 2. For project areas, no more than 10,000 cubic metres of liquid soil, and process residues that are liquid may be present at the site at any one time.
- 3. All liquid *soil* and process residues that are liquid shall be stored in a leakproof container on an impermeable surface in a manner sufficient to contain and prevent the material from escaping into the natural environment.

2. SOIL SEGREGATION RULES FOR THE PURPOSES OF SECTIONS 5.3, 5.4, AND 5.5

- (1) For the purposes of clause 5.3(1) (b) and section 24 of the regulation, the *excess soil* from the *excavation project area* described in subsection 5.3 (1) of the *regulation* must be kept segregated from *excess soil* originating from any other *project areas*.
- (2) For the purposes of paragraph 2 subsection 5.4 (1) and section 24 of the regulation, the *excess soil* must be kept segregated from *excess soil* originating from *project areas* that are not related to the *excavation project area* as described in subsection 5.4 (2) of the *regulation*.

- (3) For the purposes of paragraph 2 of subsection 5.5 (1) and section 24 of the *regulation*, the *excess soil* must be kept segregated from *excess soil* originating from other *project areas*, unless all the following criteria are satisfied:
- i. Either the *project leaders* for all the *projects* are the same person or the *reuse site* where the *excess soil* from all the *project areas* will be finally placed is owned or operated by a *public body*.
 - ii. All the *projects* are in respect of the same type of *infrastructure*, as determined in accordance with paragraph 2(5) of Section D, in Part I of this document.

3. ADDITIONAL RULES FOR CLASS 2 SOIL MANAGEMENT SITES AND LOCAL WASTE TRANSFER FACILITIES

For the purposes of paragraph 6 of subsection 21.1 (6) of *the regulation*, the *project leader* or operator of the *Class 2 soil management site* shall ensure that the following requirements are met:

- (1) In addition to the general storage rules in paragraph 4 of subsection 1(1) of this Section, in respect of the *excess soil* stored at the *Class 2 soil management site* that is to be deposited at a known *reuse site* for final placement, the *excess soil* from different *project areas* shall be kept segregated. If the owner or operator of a *reuse site* has consented to the receipt of *excess soil* from more than one *project area*, the *excess soil* from those *project areas* may be stockpiled together as long as stockpiling does not impact the ability of the owner or operator of the *reuse site* to accept and reuse the *excess soil*.

For the purposes of paragraph 5 of subsection 21.1(6) and subsection 21.4(8) of *the regulation*, the *project leader* or operator of the *Class 2 soil management site* or the person who owns or controls a *local waste transfer facility* shall ensure that:

- (2) Records containing the following information shall be maintained and made available to the *ministry* upon request:
1. The municipal address or, if a municipal address is not available, the location of the *project area(s)* from which the *excess soil* originated;
 2. The dates that *excess soil* was received from each *project area* and the total quantity and quality of *excess soil* received;
 3. For each segregated *excess soil* stockpile, the quantity of the *excess soil* in the stockpile, the quality, if known, whether the soil is *salt-impacted excess soil* or *asphalt-impacted excess soil*, and the location of the *project area(s)* from which the *excess soil* originated; and
 4. The *reuse site(s)*, *Class 1 soil management site(s)* and landfill(s) or dump that have agreed to receive the *excess soil* and the date on which those sites will start to receive the *excess soil*.

4. ADDITIONAL RULES FOR RESIDENTIAL DEVELOPMENT SOIL DEPOTS

For the purposes of paragraphs 3, 4, 5 and 8 of subsection 7.1 (3) of *the regulation*, the owner or operator of a *residential development soil depot* shall ensure that the following additional requirements are met:

- (1) *Excess soil* is not deposited at a *residential development soil depot* except for the purpose of meeting a realistic market demand for soil in an undertaking within the same or an adjacent lower tier or single-tier municipality as the depot is located.
- (2) *Excess soil* deposited at a *residential development soil depot* must meet the soil quality standards set out in the *Excess Soil Standards* for a *residential, parkland, or institutional property use* in Table 2.1.
- (3) Despite subsection (2), *salt-impacted excess soil* may be deposited at a residential development soil depot.
- (4) Despite subsection (2), excess soil deposited at a depot may be of a quality that meets the *residential property use* standards in Table 3.1, non-potable, of the *Excess Soil Standards* if:
 - i. The depot is located on a property that is serviced by a municipal drinking water system or the property is approved for development that must be serviced by a municipal drinking water system; and
 - ii. there is a realistic market demand for soil of this quality in the area served by this depot.
- (5) No *excess soil* from a *project area* used for a *commercial, industrial or community property use* shall be deposited at a *residential development soil depot* unless a soil characterization report states that the soil meets the standards described in subsection (2) or (4), whichever is applicable.
- (6) *Excess soil* leaving a *residential development soil depot* will not be deposited for reuse in an undertaking at a property with an agricultural or other property use or for final placement in an Environmentally Sensitive Area.

5. ADDITIONAL RULES FOR LANDSCAPING SOIL DEPOTS

For the purpose of paragraphs 3 and 8 of subsection 7.1 (3) of *the regulation*, the owner or operator of a *landscaping soil depot* shall ensure that the following additional requirements are met:

- (1) *Excess soil* is not deposited at a *landscaping soil depot* except for the purpose of producing soil-related landscaping products.

- (2) *Excess soil* deposited at a *landscaping soil depot* must meet the soil quality standards set out in the *Excess Soil Standards* for a *residential, parkland, or institutional property use* in Table 2.1.
- (3) No *excess soil* from a *project area* used for a *commercial, industrial or community property use* shall be deposited at a *landscaping soil depot* unless a soil characterization report states that the soil meets the standards described in subsection (2).

For the purpose of section 5.1 and paragraph 4 of subsection 7.1(3) of *the regulation*, the owner or operator of the *landscaping soil depot* shall ensure that:

- (4) *Excess soil* used in a product or sold as a product that leaves the depot must meet Table 2.1 excess soil quality standards set out in the *Excess Soil Standards* for *residential, parkland or institutional property uses* and, if mixed with compost, it was mixed in accordance with the rules in subsection 1 (1) of section D of this document.

NOTE: Consistent with all excess soil standards, Table 2.1 considers a number of contaminant exposure pathways, including incidental soil ingestion and dermal contact, but does not consider whether this quality of soil is appropriate to be used for growing and consuming garden produce.

6. ADDITIONAL RULES FOR AGGREGATE REUSE DEPOTS

For the purpose of paragraphs 3, 7 and 8 of subsection 7.1 (3) of *the regulation*, the owner or operator of an *aggregate reuse depot* shall ensure that the following additional requirements are met:

- (1) *Excess soil*, including any *excess soil* in *excavated engineered aggregate*, deposited at an *aggregate reuse depot* must meet the soil quality standards set out in the *Excess Soil Standards* for an industrial, commercial or community property use in Table 3.
- (2) Despite paragraph (1), the requirement to meet the *excess soil quality standard* in that provision does not apply to:
 - i. in respect of *salt-impacted excess soil*, the parameters for which *excess soil* exceeds one or more standards set out in the *Excess Soil Standards* solely because a substance was applied, for the safety of vehicular or pedestrian traffic under conditions of snow or ice or both, to the surface of all or part of a *project area* from which the *excess soil* was excavated.

- ii. in respect of *asphalt-impacted excess soil*, petroleum hydrocarbons F3 and F4 and any polycyclic aromatic hydrocarbons, if it has been confirmed in accordance with paragraph 1 of subsection 1(3), Section D in Part I of this document that those parameters are solely as a result of the discharge of a contaminant from asphalt.
 - iii. in respect of *excess soil* including *excess soil* in *excavated engineered aggregate*, one or more parameters with suspected elevated concentrations that may be attributed to naturally occurring conditions as determined in accordance with paragraph 1 of subsection 1(4), Section D in Part I of this document.
- (3) Any waste materials must be stored in accordance with the soil storage rules in section 1. (1) above, with necessary modifications.
- (4) For the purpose of clause ii. of paragraph 7 under subsection 7.1(3) of the *regulation*, a *qualified person* must be retained by the owner or operator of the *aggregate reuse depot* to ensure that the following requirements are complied with:
- i. The *qualified person* prepares or supervises the preparation of procedures required by paragraph 9 of subsection 7.1 (3) of *the regulation*.
 - ii. The *qualified person* reviews or supervises the review of any reports related to the quality of material proposed to be deposited at a *depot* for the purpose of confirming if it is appropriate for receipt at the *depot*.
 - iii. The *qualified person* conducts or supervises any sampling and analysis that is undertaken by the owner or operator of the *depot*.

7. PROCEDURES FOR DEPOTS

For the purposes of paragraph 9 of subsection 7.1 (3) of the *regulation*, the following written procedures must be prepared and applied at all *depots*, unless otherwise specified:

- (1) Procedures to receive and account for every load of *excess soil* and, in the case of an *aggregate reuse depot*, *excavated engineered aggregate* and other waste, to be deposited at the *depot*, including procedures to track the type and the volume of each type of material and the site from which the material is received.
- (2) Procedures to ensure that all relevant reports and information in respect of the *excess soil* and, in the case of an *aggregate reuse depot*, *excavated engineered aggregate* and other waste, to be deposited at the *depot* are obtained by the owner or operator before the *material* is deposited at the *depot*.

- (3) Procedures to ensure that before the owner or operator of the *depot* permits a load of *excess soil* and, in the case of an *aggregate reuse depot*, *excavated engineered aggregate* and other waste, to be deposited at the *depot*, the load is inspected by the owner or operator of the *depot* or a person acting on the owner or operator's behalf to ensure the load is appropriate for depositing at the *depot* consistent with any reports and information referred to in paragraph 2.
- (4) In the case of an *aggregate reuse depot*, procedures to ensure compliance with subparagraph 7i of subsection 7.1(3) of the regulation.
- (5) Procedures to ensure that the storage and processing of *excess soil* and, in the case of an *aggregate reuse depot*, *excavated engineered aggregate* and other waste, at the depot does not cause an adverse effect and complies with any applicable storage and processing requirements in the Soil Rules.

8. RECORD KEEPING REQUIREMENTS FOR DEPOTS

For the purpose of subparagraph 14i. of subsection 7.1(3) of the *regulation*, the owner or operator of each *depot*, unless otherwise specified, must ensure that any records created for each load of *excess soil* deposited at the *depot* include, at a minimum, the following information:

- (1) The locations of the project area or any other type of site (e.g., a *local waste transfer facility*) where it was transported from.
- (2) The contact information of an individual at the location mentioned in (i) who may be contacted to respond to inquiries regarding the load, including inquiries regarding the soil quality.
- (3) The date and time it was received at the *depot*, and the total quantity of the load received.
- (4) Information on the quality of the *excess soil*, as applicable.
- (5) A confirmation from the owner or operator of the *depot* that incoming loads were inspected as per the procedures established and determined to be appropriate for acceptance at the *depot*.

For the purpose of subparagraph 14ii. of subsection 7.1 (3) of the *regulation*, the owner or operator of each *depot*, unless otherwise specified, must ensure that records created for each load of the *excess soil*, *recycled engineered aggregate* or any other waste being removed from the *depot*, include, at a minimum, the following information:

- (1) The date and time that the *excess soil*, *recycled engineered aggregate*, or any other waste was removed from the *depot*, and the total quantity leaving the *depot* as part of that load.
- (2) The location of the *reuse site(s)*, *Class 1 soil management site(s)* and *landfill(s)* or *dump(s)* at which the *excess soil* will be deposited.

(3) In the case of a *landscaping soil depot*, confirmation that *excess soil* leaving the *depot* met Table 2.1 for *residential, parkland or institutional property* uses.

(4) In the case of an *aggregate reuse depot*, the type of *recycled engineered aggregate* product (e.g., Granular A or B) or other waste.

9. REQUIREMENTS FOR MIXING FOR THE PURPOSE OF DEWATERING OR SOLIDIFYING LIQUID SOILS

For the purposes of subsection 6 (6) of *the regulation*, the following requirements apply to the mixing of a substance or material with liquid soil for the purpose of dewatering or solidifying the liquid soil at a *project area* or a *local waste transfer facility*:

- (1) The mixing is not for the purpose of encapsulating or otherwise reducing exposure to or mobility of contaminant.
- (2) If the processing is being carried out at the *project area*, the *liquid soil* that is being mixed for dewatering or solidification must have been excavated from that *project area*.
- (3) The amount of substance or material mixed with the *liquid soil* is limited to that required to enable transportation to another site or to be reused within the *project area* and does not exceed the amount recommended for this purpose by the product manufacturer or distributor.

10. REQUIREMENTS FOR SAMPLING ADDITIVES USED FOR DEWATERING OR SOLIDIFICATION AND FOR TUNNELING PROJECTS

- (1) If sampling and analysis will be undertaken as described in subparagraph 1iv of subsection 6.1(3) and paragraph 2 of subsection 6.1 (3) of the regulation, the substance or material being added is a natural polymer or synthetic polymer or a foaming agent, and the qualified person is of the opinion that mixing of the substance or material will affect the results of the analysis of the concentration of contaminants in the *soil* or *crushed rock*:
 1. For the purposes of paragraph 2 of subsection 6.1(3) of the regulation, sampling and analysis shall be done before and after the mixing of the substance or material with the *liquid soil* to be dewatered or solidified, or the *soil* or *crushed rock* to be excavated through tunneling.
 2. For the purposes of documenting the results of the sampling and analysis described in subparagraph 1iv of subsection 6.1(3), the highest concentrations of contaminants, whether occurring before or after mixing, shall be documented.

SECTION D - REUSE RULES FOR SPECIFIC CIRCUMSTANCES

This section includes the specific requirements associated with *excess soil* reuse at the *reuse site*, and requirements governing the final placement of that *soil* pursuant to section 3.1, paragraph 6 of subsection 5 (1), subsection 5 (8), paragraph 5 of subsection 5.5 (1), paragraph 2 of subsection 5.5 (2), subparagraph 2i. of subsection 5.7(1) and subparagraph 2i of subsection 5.7(2) of *the regulation*, including:

1. **Rules for Specific Types of Soil;**
2. **Rules for Specific Types of Reuse Sites;**
3. **Beneficial Reuse Assessment Tool (BRAT); and**
4. **Risk Assessment.**

1. RULES FOR SPECIFIC TYPES OF SOIL

(1) Excess Soil Blended with Compost

1. For the purposes of deemed compliance with *excess soil quality standards* as set out in paragraph 4 of subsection 1 (10.1) of Section A in Part II, the compost is regular compost from a leaf and yard waste composting site regulated by O. Reg. 101/94 (Recycling and Composting of Municipal Waste) under the EPA, and compost produced from a composting facility operating under an Environmental Compliance Approval for composting that meets the requirements for Category AA compost in PART II of the “Ontario Compost Quality Standards”, published by the ministry and as may be amended from time to time, and available on a website of the Government of Ontario, and the circumstances are either of the following:
 - a) The excess soil quality standards are met in the mixed state.
 - b) The excess soil quality standards and the applicable compost standards (including the regulated metals and EC/SAR recommended in the Ontario Compost Quality Standards) were both documented to have been met prior to mixing, whether that mixing takes place at the *reuse site* or at another site.
2. Compost rules, standards and guidelines were developed under the assumption that compost would be used as a soil amendment. Compost shall not be used as the principal constituent of a blended soil (e.g., not more than 50% compost by volume).
3. Fertilization regulations under the federal *Fertilizers Act*, R.S.C., 1985, c. F-10 shall be complied with when *excess soil* is blended with compost material and used at a *reuse site*. These regulations outline use restrictions and safety standards for fertilizers and soil amendments (Trade Memorandum T-4-93), which are used by provinces in setting policies. These standards are conservative to account for long term cumulative effects of metals on plant, animal and human health.

(2) Salt-Impacted Excess Soil

1. For the purposes of paragraph 6 of subsection 5 (1), subsection 5 (8), paragraph 5 of subsection 5.5(1), sub-paragraph 2.i. of subsection 5.7 (1), and sub-paragraph 2.i. of subsection 5.7(2) of the *regulation* and deemed compliance with excess soil quality standards as set out in paragraph 1 of subsection 1 (10.1) of Section A in Part II, *salt-impacted excess soil*, including *salt-impacted excess soil* that is part of *recycled engineered aggregate*, shall be placed in accordance with the following:
 - a) *Salt-impacted excess soil* may be placed in any area of the reuse site where it is anticipated a substance will be applied for the safety of vehicular or pedestrian traffic under conditions of snow or ice.
 - b) *Salt-impacted excess soil* may be placed at any *reuse site* used for an industrial or commercial property use.
 - c) In respect of a *reuse site* used for a community, parkland, institutional, or residential use,
 - i. *salt-impacted excess soil* may be placed at a depth of at least 1.5 metres below the soil surface, or
 - ii. if subparagraph i does not apply, it must be finally placed in accordance with a landscape plan described in subsection 5(8) of the *regulation* that meets the requirements set out in paragraph 3.
 - d) In respect of a *reuse site* used for an agricultural or other property use,
 - i. *salt-impacted excess soil* may be finally placed at a depth of at least 1.5 metres below the soil surface, or
 - ii. if subparagraph i does not apply, in areas that will not be vegetated and only to achieve a grade necessary to construct a planned building, including a barn or greenhouse, or install a driveway or parking area.
2. Despite paragraph 1, in all cases, *salt-impacted excess soil* shall not be finally placed at any of the following areas of a *reuse site*:
 - a) within 30 metres of a waterbody;
 - b) within 100 metres of a potable water well or, with respect to an approved lot that may require a potable water well, within 100 metres of the planned water well location or if the location of the well is unknown, the centre of the lot ; or,
 - c) an area that will be used for growing crops or pasturing livestock unless the *salt-impacted excess soil* is placed 1.5 metres or greater below the *soil* surface.
3. A landscape plan for the purposes of subsection 5(8) of the regulation and subclause 1.c)(ii) shall:
 - A. Identify the areas within the *reuse site* in which *salt-impacted excess soil* can be finally placed, which shall include only the following:
 - a) An area that will be unvegetated and that is not an area of the *reuse site* described in paragraph 2.

- b) An area that is not an area described in paragraph 2 and that will be vegetated with vegetation that,
 - i. may tolerate elevated levels of chemicals associated with *salt-impacted excess soil*, or
 - ii. requires less than 1.5 metres of soil that meets applicable excesssoil quality standards to grow successfully.
 - B. Identify, for each area mentioned in subparagraph A.b):
 - a) The types of vegetation that may be planted in that area,
 - b) The acceptable levels of salt-related contaminants that may be tolerated by the vegetation mentioned in subparagraph A.b)i, if applicable, and
 - c) The depth of *soil* that must meet the applicable excess soil quality standards in order for the vegetation mentioned in subparagraph A.b) ii to grow successfully, if applicable.
 - C. Be signed by a person with qualifications as set out in subsection 5(10) of *the regulation*.

(3) **Asphalt-Impacted Excess Soil**

1. For the purposes of paragraph 6 of subsection 5 (1), paragraph 5 of subsection 5.5(1), sub-paragraph 2.i. of subsection 5.7 (1), and sub-paragraph 2.i. of subsection 5.7(2) of the regulation and deemed compliance with *excess soil quality standards* as set out in paragraph 2 of subsection 1 (10.1) of Section A in Part II, before the final placement of the *asphalt-impacted excess soil*, including *asphalt-impacted excess soil* that is part of *recycled engineered aggregate*, it must first be confirmed in accordance with the following that petroleum hydrocarbons F3 and F4 and any polycyclic aromatic hydrocarbons that are detected in the *excess soil* are solely as a result of the discharge of a contaminant from asphalt:
 - a) Based on any past reports and any other information available about past uses and activities respecting the *excavation project area* for the *asphalt-impacted excess soil*,
 - i. it has been determined that the *excavation project area* was not affected by a *potentially contaminating activity* that may have contributed to the concentrations of petroleum hydrocarbons F3 and F4 and polycyclic aromatic hydrocarbons in the excess soil, and
 - ii. a written document has been prepared setting out that determination, the rationale for the determination, and the consideration of any reports and available information.
 - b) There is no visual or olfactory evidence of contamination in the *asphalt-impacted excess soil* that is not directly associated with asphalt, salt, or naturally occurring elevations as described in paragraph 1 of subsection (4).

2. For the purposes of paragraph 6 subsection 5 (1), paragraph 5 of subsection 5.5(1), sub-paragraph 2.i. of subsection 5.7 (1), and sub-paragraph 2.i. of subsection 5.7(2) in the *regulation* and deemed compliance of asphalt-impacted excess soil with *excess soil quality standards* as set out in paragraph 2 of subsection 1 (10.1) of Section A in Part II, the following rules governing final placement of *asphalt-impacted excess soil* that has been confirmed in accordance with paragraph 1, including *asphalt-impacted excess soil* that is part of *recycled engineered aggregate*, must be complied with:
 - a) Subject to clause (c), *asphalt-impacted excess soil* may be finally placed, including as part of *recycled engineered aggregate*, in any area at a *reuse site* that will be covered by asphalt pavement, such as a road and parking lot, and any associated road shoulder that is not covered by asphalt pavement.
 - b) Subject to (c) and in addition to (a), if the *asphalt-impacted excess soil* is sediment from a stormwater management pond, it may be placed anywhere in a road right-of-way adjacent to an asphalt road, including in landscaping and medians within or beside a road.
 - c) The areas included in a) and b) where *asphalt-impacted excess soil* may be finally placed do not include:
 - i. An area associated with an asphalt path that is part of a reuse site used for parkland or agricultural or other use; or
 - ii. An area within a ditch, municipal drain or other area designed to convey water unless the water is conveyed to a municipal sanitary sewer.

(4) Naturally Occurring Elevated Concentrations of a Parameter in Recycled Engineered Aggregate or Excess Soil

1. For the purposes of paragraph 6 of subsection 5 (1), paragraph 5 of subsection 5.5(1), sub-paragraph 2.i. of subsection 5.7 (1), and sub-paragraph 2.i. of subsection 5.7(2) of the *regulation* and deemed compliance with *excess soil quality standards* as set out in paragraph 3 of subsection 1 (10.1) of Section A in Part II, before the final placement of the *excess soil* or *recycled engineered aggregate* where it is suspected that the concentrations of one or more parameters in the *excess soil* or *recycled engineered aggregate* are elevated because of naturally occurring conditions in the area from where the *excavated engineered aggregate* or *excess soil* was removed, it must first be determined that the elevated concentrations may be attributed to naturally occurring conditions in accordance with the following rules:
 - a) A written record is prepared by a *qualified person* that contains the following:

- i. In the opinion of the *qualified person*, based on multiple lines of publicly available evidence, including at least one or more scientific studies, peer reviewed papers, or statistically reliable studies prepared by a public body, the project area where the *excavated engineered aggregate* or *excess soil* was excavated and removed is within an area known to have, in respect of parameters identified in the evidence and specified in the written record, naturally occurring elevated concentrations of those parameters
 - ii. The range of naturally occurring concentrations of those parameters in that area as indicated in the available evidence mentioned in sub-paragraph i,
 - iii. A list of the publicly available evidence the *qualified person* relied on in giving an opinion under sub-paragraph i.
 - b) One of the following must be satisfied:
 - i. Based on past reports and other information available about past uses and activities respecting the *excavation project area* for the *excess soil* or *excavated engineered aggregate*,
 - A. it has been determined that the *excavation project area* was not affected by a *potentially contaminating activity* that may have contributed to the concentrations of the parameters mentioned in sub-subparagraph a) i. in the *excess soil* or *excavated engineered aggregate*, and
 - B. a written document has been prepared setting out that determination, the rationale for the determination, and the consideration of reports and available information.
 - ii. If the *excess soil*, including any *excess soil* in the *excavated engineered aggregate*, is sampled and analyzed, the concentration of the parameters mentioned in sub-subparagraph a) i. in the *excess soil*, including *excess soil* in the *recycled engineered aggregate*, are within the range of naturally occurring concentrations of the parameter occurring in the area known to have naturally occurring elevated concentrations documented in sub-subparagraph b) ii.
 - c) There is no visual or olfactory evidence of contamination in the *excess soil* or excavated engineered aggregate that is not directly associated with asphalt, salt, or naturally occurring exceedances as described above.
2. For the purposes of paragraph 6 of subsection 5 (1), paragraph 5 of subsection 5.5(1), sub-paragraph 2.i. of subsection 5.7 (1), and sub-paragraph 2.i. of subsection 5.7(2) of the *regulation* and deemed compliance with *excess soil quality standards* set out in paragraph 3 of subsection 1 (10.1) of Section A in Part II, the *excess soil* or *recycled engineered aggregate* that has elevated concentrations of parameters that may be attributed to naturally occurring conditions, as determined in accordance with paragraph 1, shall be finally placed at a *reuse site* for an *infrastructure undertaking*.

(5) Acceptable pH Range

If the *excess soil* or *soil* at the *reuse site* has pH levels outside the acceptable pH range, both the following criteria must be met:

1. If the *excess soil* or *soil* at the *reuse site* has pH levels outside the acceptable pH range, from 5.0 to 9.0 for *surface soil* and from 5.0 to 11.0 for *subsurface soil*, the *excess soil* must meet Table 1 of the excess soil quality standards and the results of any required leachate analysis must meet Table 1 of the *leachate screening levels*, as outlined in PART II of this document.
2. If the *excess soil* or *soil* has pH levels outside of the acceptable range, as specified in the paragraph above, before any *excess soil* is deposited at a *reuse site*,

the owner or operator of the *reuse site* must ensure that a *qualified person* completes an assessment of the potential impacts of the placement of this *excess soil* at the *reuse site* and confirms that it will not cause an adverse effect.

2. RULES FOR SPECIFIC TYPES OF REUSE SITES

(1) Environmentally Sensitive Areas

1. *Excess soil* shall only be finally placed within an *environmentally sensitive area* if the *excess soil* meets Table 1 of the excess soil quality standards and the results of any required leachate analysis meets Table 1 of the *leachate screening levels* as outlined in the Appendices in PART II of this document.

(2) Soil for Growing Crops and Pasture

1. *Excess soil* shall only be finally placed for the beneficial purpose of growing crops or pasture if the following criteria are met:
 - a) no *excess soil* will be placed on top of existing *topsoil* unless the *excess soil* is *topsoil*; and
 - b) the *excess soil* meets Table 1 of the excess soil quality standards and the results of any required leachate analysis meets Table 1 of the *leachate screening levels* as outlined in the Appendices in PART II of this document unless the *excess soil* is finally placed at a depth that is below 1.5 metres from the surface.

(3) Local Background Concentrations

1. For the purposes of deemed compliance with excess soil quality standards as set out in paragraph 5 of subsection 1 (10.1) of Section A in Part II, a local background concentration of a parameter detected in excess soil is established in accordance with the following:
 - a) A *qualified person* has demonstrated that the *excess soil* contains a parameter that is naturally occurring at the *reuse site* or, if the *reuse site* is impacted by contamination, at a nearby reference site that represents the natural conditions of the *reuse site*, at a concentration that exceeds the applicable *excess soil quality standards*, and that does not exceed the naturally occurring range of concentrations typically found in *soil* within the area of the *reuse site* based on multiple lines of evidence.
 - b) Documented evidence of the naturally occurring parameter concentrations at the *reuse site* or reference site, and the natural range of the parameter within the area of the *reuse site*, is provided to the *reuse site* owner or operator and retained by the *reuse site* owner and *qualified person*.

(4) Conditions Applying to Use of Stratified Tables at Reuse Sites:

1. If the stratified standards tables (Tables 4, 4.1, 5 or 5.1) are applied to *excess soil* to be deposited for final placement at a *reuse site*, the following requirements must be satisfied:
 - a) Final placement of the *excess soil* must achieve a stratified condition such that *soil* that meets the stratified standards is placed at a depth of 1.5 metres or greater below the *soil* surface and the *surface soil* placed on top meets the applicable full-depth *generic excess soil quality standards*;
 - b) The *reuse site* is not an agricultural or other property use, is not a shallow soil property, and the final placement is not within 30 metres of a *water body*;
 - c) The location of final placement, the property use, and the type of beneficial purpose are such that a stratified condition will be maintained into the foreseeable future; and
 - d) The *reuse site* owner, occupier, or person who has charge, management or control of the *reuse site* must ensure that the stratified condition is established and maintained. This responsibility should be communicated to subsequent property owners.

(5) Rules for Same Types of Infrastructure

1. For the purpose of paragraph 2 of subsection 5.5 (2), an *infrastructure project* and an *infrastructure undertaking* are determined to be of the same type based on the following rules:

- a) Both the *infrastructure project* and *infrastructure undertaking* fall within the same category, with each of the following subparagraphs representing one category:
- i. highways
 - ii. transit lines and railways
 - iii. gas and oil pipelines
 - iv. sewage collection systems, water distribution systems, and stormwater management systems
 - v. drainage works within the meaning of the *Drainage Act*
 - vi. electricity transmission and distribution systems, and telecommunications lines and facilities, including broadcasting towers
- b) In addition to the above, the following are also considered the same type of *infrastructure* as those listed in a)i-vi above respectively:
- i. Any bridges, interchanges, stations and other structures, above and below ground, required for the construction, operation or use of the categories of *infrastructure* listed in subparagraphs a)i-vi.
 - ii. Rights of way required in respect of the categories of *infrastructure* listed in subparagraphs a)i-vi and subparagraph b)i above.
- c) Despite subparagraph a), an infrastructure project and an *infrastructure undertaking* are determined to be the same type if both the *project* and *undertaking* are taking place on, in or under a highway.

3. BENEFICIAL REUSE ASSESSMENT TOOL (BRAT)

The *BRAT* is an Excel-based spreadsheet model developed by the *ministry*. It uses the same models and algorithms used in the development of the *volume independent excess soil quality standards*. The *ministry* has also developed a user guide for the *BRAT* to generate site-specific excess soil quality standards.

The *qualified person* and any *supervisee* shall review and understand all requirements in this document and the guidance before using the *BRAT*. The *ministry* may update the *BRAT* and its user guide from time to time. A copy of the most current version of the *BRAT* will be available on a website of the Government of Ontario.

The *BRAT* allows for the development of site-specific excess soil quality standards for a *reuse site*, by allowing for certain model input parameters to be modified from the default values used to develop the *generic excess soil quality standards*. The *BRAT*

may also be used to support and justify the application of the small volume tables for the final placement of *excess soil* at a *reuse site* in respect of an undertaking that exceeds 350 cubic metres.

The *BRAT* shall be used to develop site-specific excess soil quality standards in accordance with the following requirements:

- (1) The *BRAT* shall only be used by a *qualified person* as determined in accordance with section 5 or section 6 of *O. Reg. 153/04* or a *supervisee*. *In respect of subsections (2), (5) and (6) below*, it is recommended that the *qualified person* have experience in risk assessment or consults with professionals with expertise in risk assessment.
- (2) The *qualified person* and any *supervisee* shall ascertain that the site conditions are appropriate for use of the *BRAT* to develop site-specific excess soil quality standards. To assist the *qualified person* and any *supervisee* in recognizing the types of site conditions that may be important in this respect, some key conditions are listed in Appendix 1 of this document. Some limitations related to the use of the *BRAT* are also listed directly in the *BRAT* user guide. These limitations must be reviewed and understood by the *qualified person* and any *supervisee* in order to confirm the applicability of using the *BRAT* to develop site-specific excess soil quality standards.
- (3) Where a default value or an assumption is modified from those published by the *ministry* in the development of the *generic excess soil quality standards*, an assessment is carried out which satisfies the minimum requirements and meets the objectives set out in Table 4 of Schedule E of *O. Reg. 153/04*. Additional requirements are also presented directly in the *BRAT* user guide.

- (4) The *BRAT* shall not be used in relation to a *project* or beneficial use for which Table 1 of the excess soil quality standards as found in the Appendices in PART II of this document would be required to apply (e.g., *excess soil* placed in an *environmentally sensitive area*, or *excess soil* placed for growing crops).
- (5) For the purpose of subsection 5 (4) of *the regulation*, if the *qualified person* or *supervisee* utilizes any of the six site use characteristics included in the *BRAT* to develop site-specific excess soil quality standards, a *site-specific instrument* must be obtained which authorizes the use of the site use characteristic(s). This provision does not apply if the *BRAT* is being used for the deposit and final placement of *excess soil* in respect of an *infrastructure* undertaking.

The following six site use characteristics are included in the *BRAT*:

- 1. Shallow soil cap barrier;
- 2. Fill/hard cap barrier;
- 3. *Building* with storage garage (intermittent ventilation: 3.9 L/sec/m², under the Ontario Building Code);
- 4. *Building* prohibition;
- 5. *Building* with no first storey residential, parkland or institutional use; and,
- 6. *Building* with minimum first storey ceiling height requirement.

The design and specifications for the site use characteristics included in the *BRAT* are defined and listed in Appendix 9 of the user guide, entitled “*A Guide to Using the Approved Model When Submitting a Modified Generic Risk Assessment*”.

- (6) For the purpose of subsection 5 (4) of *the regulation*, the *BRAT* can be used to generate site-specific excess soil quality standards with and without application of a maximum threshold based on a multiplier of the applicable *generic excess soil quality standards*. If the *qualified person* or *supervisee* uses the *BRAT* to generate excess soil quality standards that exceed the maximum threshold, a *site-specific instrument* must be obtained and specifically allow for exceedance of the maximum threshold.
- (7) When the *BRAT* is used to develop site-specific excess soil quality standards, it will also generate site-specific *leachate screening levels* which must be applied the same way as for the *volume independent excess soil quality standards*.
- (8) When the *BRAT* is used to develop site-specific excess soil quality standards, it will also generate site-specific *ceiling values* for use if the statistical method for meeting excess soil quality standards is used.

4. RISK ASSESSMENT

- (1) In addition to the *BRAT*, a risk assessment can also be used to develop site-specific excess soil quality standards for a *reuse site*. Utilizing a risk assessment approach, the development of site-specific excess soil quality standards for a *reuse site* will only be permitted when the deposit of *excess soil* at a *reuse site* is to be governed by a *site-specific instrument*. This is required to ensure that a *public body* has oversight over the conduct of the risk assessment.
- (2) As part of its process for issuing the *site-specific instrument*, the responsible *public body* will review or engage in a peer review of the risk assessment as part of its process when assessing the *reuse site*. Any administrative controls and/or management measures to be implemented at the *reuse site* must be incorporated into any *site-specific instrument* that the *public body* issues to govern the deposit of *excess soil* at the *reuse site*.
- (3) When risk assessment is used to develop site-specific excess quality soil standards for a *reuse site*, the *public body* responsible for issuing the *site-specific instrument* shall consider the following:
 1. The risk assessment be prepared by a *qualified person* or by a *supervisee* as referred to in section 6 of *O. Reg. 153/04 (qualified person, risk assessment)*.
 2. The risk assessment should include the following:
 - i. identification of the *generic excess soil quality standards* for the *reuse site*, including identifying the applicable table of *generic excess soil quality standards* and the current property use at the *reuse site*;
 - ii. a list of all of the contaminants of concern that must include any contaminants present in *excess soil* to be placed at the *reuse site* that are at concentrations that are greater than the applicable *generic excess quality soil standards*;
 - iii. an assessment of human health risk and of ecological risk associated with each *contaminant of concern*;
 - iv. consideration of the leaching pathway and whether there is a need to develop site-specific *leachate screening levels* and, if this is the case, then it is recommended that site-specific *leachate screening levels* be developed using the *ministry* approved method which is detailed in the *rationale document*;
 - v. based on the outcome of the assessment of human health risk and of ecological risk, a site-specific excess soil quality standard must be specified in the risk assessment for each *contaminant of concern*; and
 - vi. any administrative controls or management measures that are utilized in the development of the site-specific excess soil quality standards.
- (4) The most current version of the *rationale document* must be used in relation to these assessments and will be available on a website of the Government of Ontario.

PART II: EXCESS SOIL QUALITY STANDARDS

OCTOBER 10 2025

SECTION A - DETERMINING APPLICABLE GENERIC EXCESS SOIL QUALITY STANDARDS

Tables of *generic excess soil quality standards* are included in this document or are provided in Tables 2 to 9 of the *Soil, Ground Water and Sediment Standards* made under Part XV.1 of the *EPA*, for the purpose of determining the applicable excess soil quality standards that apply to a *reuse site* for the purpose of *the regulation*. Under *the regulation*, in order for *excess soil* not to be designated a waste when deposited at a *reuse site*, one of the conditions that must be satisfied is that the *excess soil* must meet the applicable excess soil quality standards.

To determine which table of excess soil quality standards apply to the deposit of *excess soil* at a *reuse site* in a particular case, requires the consideration of several factors that are described in this section. It is advisable to have a *qualified person* involved in the selection of the applicable excess soil quality standards as there are many interrelated parameters and factors that must be considered when evaluating the use of the *generic excess soil quality standards* at a given *reuse site*.

These factors include the type of property use for the *reuse site* (e.g., residential), the volume of *excess soil* that will be finally placed at the *reuse site* in respect of the undertaking (e.g., the amount of *soil* required for final grading for a planned

development), the *reuse site* characteristics (e.g., is it a shallow soil site), if the site is within thirty metres of a *water body*, and whether the *reuse site* is in an area serviced by a municipal drinking water system then there may be the option of applying non-potable standards if particular requirements are met.

Table 1 provides the “Full Depth Background Site Condition Standards” and contains the same standards as provided in Table 1 of the *Soil, Ground Water and Sediment Standards* made under Part XV.1 of the *EPA* and referred to in *O. Reg. 153/04* as the full depth background site condition standards (“*Soil, Ground Water and Sediment Standards*”) but has been modified by noting when leachate analysis is required and if the standard is based on the analytical reporting limit or not.

Tables 2 to 9.1 provide excess soil quality standards in respect of two different volume classes of *excess soil* that may be deposited at a *reuse site* for final placement. In relation to each volume class, eight tables are provided for different location placement conditions, including: full-depth placement, stratified placement, potability of ground water, shallow overburden thickness and proximity to a nearby *water body*.

The tables of standards for small volumes of *excess soil* may be used for *excess soil* volumes up to 350 cubic metres. The tables of standards for small volumes of *excess soil* are the coarse textured soil standards in Tables 2 to 9 of the *Soil, Ground Water*

and Sediment Standards made under Part XV.1 of the *EPA*. These tables are not reproduced in this document.

The tables for *volume independent excess soil quality standards* must be used where Tables 2 to 9 (the small volume tables) cannot be used, given the total volume of excess soil that will be finally placed at a *reuse site*. For ease of reference, these tables have been presented in the same order with the same placement site conditions as the tables for *small volume excess soil quality standards*.

The following provides a summary of the *generic excess soil quality standards* tables available for use under *the regulation*:

Table Description	Small Volume (up to 350 m³)¹	Volume Independent
Full Depth, Background	Table 1	Table 1
Full Depth, Potable	Table 2	Table 2.1
Full Depth, Non-Potable	Table 3	Table 3.1
Stratified, Potable	Table 4	Table 4.1
Stratified, Non-Potable	Table 5	Table 5.1
Full Depth, Shallow Soil, Potable	Table 6	Table 6.1
Full Depth, Shallow Soil, Non-Potable	Table 7	Table 7.1
Full Depth, Within 30 m of a Water Body, Potable	Table 8	Table 8.1
Full Depth, Within 30 m of a Water body, Non-Potable	Table 9	Table 9.1

¹Tables 2 -9 are coarse textured values of the *Soil, Ground Water and Sediment Standards*, these tables are not reproduced in this document and can be found in *O. Reg. 153/04*.

Within each table, standards for contaminants are presented in relation to property use of the *reuse site*. Property use categories and definitions are the same as in *O. Reg. 153/04*.

Reg. 153/04. The list of property use categories is provided in Section A of Part I of this document.

In relation to Table 1 of the excess soil quality standards found in Appendix 1 of this document and those in Table 1 of the *Soil, Ground Water and Sediment Standards*, the latter document prevails in the event of a discrepancy in the value provided for the standard.

Leachate analysis is a mandatory component, in specific circumstances, of meeting the *volume independent excess soil quality standards* and Table 1 of the excess soil quality standards for volumes greater than 350 cubic metres. Leachate analysis is required for contaminants for which soil to ground water component values are not derived (e.g., metals and hydride-forming metals), and for contaminants with analytical limitations. Rules governing the determination of whether leachate analysis is required, and how to complete leachate analysis are provided in this document along with tables of *leachate screening levels*.

Additional rules that apply in special circumstances shall be considered when determining which excess soil quality standards are applicable to a particular type of *soil* or *reuse site*.

1. RULES ASSOCIATED WITH THE USE OF EXCESS SOIL QUALITY STANDARDS

(1) In PART II of this document,

1. A reference to a table of excess soil quality standards means the tables in Appendix 1 of this document and the Site Condition Standards set out in *O. Reg. 153/04*.
2. Volume independent tables means Tables 1, 2.1, 3.1, 4.1, 5.1, 6.1, 7.1, 8.1, and 9.1.
3. Small volume tables means Tables 2, 3, 4, 5, 6, 7, 8, and 9.
4. Potable tables means Tables 2, 4, 6, 8, 2.1, 4.1, 6.1, and 8.1.
5. Non-potable tables means Tables 3, 5, 7, 9, 3.1, 5.1, 7.1, and 9.1.
6. Near a *water body* tables means Tables 8, 9, 8.1, and 9.1.
7. Shallow soil tables means Tables 6, 7, 6.1, and 7.1.
8. Stratified standards tables means Tables 4, 5, 4.1 and 5.1.

(2) Where a sample of *soil* or sediment is taken, section 47 (Analytical procedures) of *O. Reg. 153/04* applies with necessary modification, including but not limited to, the requirements in relation to the handling and storage of the samples, the

requirement that the analyses of the samples to be carried out by an accredited lab and the requirements to comply with the “Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act and Excess Soil Quality”.

(3) The quality of the *excess soil* that is intended to be finally placed at a *reuse site* must meet the excess soil quality standards referred to in paragraph 1 of

subsection 5 (1) of *the regulation*, as determined in accordance with the following:

1. Table 1 of the excess soil quality standards may be applied in relation to any *reuse site* and any volume of *soil*.

2. The small volume tables shall only be used where the total amount of *excess soil* to be finally placed at a *reuse site* in respect of an undertaking is less than or equal to 350 cubic metres. Where the total amount to be finally placed at the *reuse site* exceeds the 350 cubic metres, the volume independent tables must be used, unless site-specific standards have been developed using the *BRAT* to justify use of the small volume tables over 350 cubic metres.
3. The owner or operator of a *reuse site* or *qualified person* associated with a *reuse site* must evaluate the potential cumulative impact of *soil* of various qualities. For example, when selecting the tables for *small volume excess soil quality standards*, existing *reuse site* conditions must be evaluated, including whether existing *soil* at the *reuse site* is impacted or is suspected of being impacted. The sum of the volume of existing impacted *soil* and the *excess soil* being brought to the *reuse site* or planned to be brought to the *reuse site* must be considered in determining if the volume of *soil* to which the standards are being applied will be greater than 350 cubic metres.
4. Conditions can exist at a site for which the assumptions used to develop the excess soil quality standards are not valid. Some of these conditions are presented in Appendix 1 of this document. These conditions must be considered when determining whether the overall site conditions are appropriate for use of the excess soil quality standards. It is advisable to have a *qualified person* involved in considering these conditions.
5. The owner or operator of a *reuse site* or a *qualified person* associated with a *reuse site* must determine that the pH of the *excess soil* and *soil* at the *reuse site* is within the applicable pH range for use of the excess soil quality standards.
6. Potable tables must be used unless the requirements set out section 35 of *O. Reg. 153/04* for use of non-potable tables are met (modified as necessary to apply to a *reuse site* rather than to the submission of a record of site condition for filing). Non-potable standards can only be used where the *reuse site* and the properties within 250 metres of the *reuse site* are serviced by a municipal drinking water system. Further, in such cases, non-potable standards can only be used if the responsible municipality provides its concurrence for the use of such standards in accordance with section 35 of *O. Reg. 153/04*.
7. If the final placement of the *excess soil* is to be within 30 metres of a waterbody, depending on the ground water conditions (potable versus non-potable) Tables 8 or 8.1, Tables 9 or 9.1 must be used.

8. Shallow soil tables must be used if:
 - i. the *reuse site* is at a property that has more than 1/3 of its area covered by 2 metres or less in depth beneath the *soil* surface, excluding any non-soil surface treatment such as asphalt, concrete or aggregate; or
 - ii. the *contaminant of potential concern (COPC)* are volatile compounds (as described in the *rationale document*) and there is or would be a separation distance of less than 0.8 metres between the bottom of the gravel crush of an existing or future *building* associated with the beneficial purpose and the top of the capillary fringe, or if the depth to the water table is less than 3 metres from the surface of the *soil*.
 9. If the rules require both the use of shallow soil tables and the tables used where *excess soil* is to be finally placed within 30 metres of a *water body*, then the numerically lower standard for each chemical applies when comparing the two tables.
 10. The excess soil quality standard selected within a table is the standard that relates to the property use of the *reuse site* as determined using the rules in subsection 5 of Section A of PART II of this document (below).
 11. The excess soil quality standard includes the applicable *leachate screening level*, if any, determined using the rules in subsection 7 of Section A of PART II of this document (below).
 12. The standard complies with the rules for specific circumstances in Section D of PART I of this document.
- (4) Stratified standards tables shall only be used if the requirements set out in subsection 2 (4) of section D in Part I are satisfied.
 - (5) The following rules apply to the determination of the property use when selecting the applicable excess soil quality standards within a table:
 1. Property use categories to be used are the same as those applicable to *O. Reg. 153/04* and have the same definition as those in *O. Reg. 153/04*. The categories from most sensitive to least are:
 - i. agricultural and other uses;
 - ii. residential, parkland and institutional uses; and
 - iii. community, commercial and industrial uses.
 2. The applicable property use is the one that will apply to the *reuse site* at the time the undertaking for which the *soil* is being used is completed.

3. If more than one property use applies to the *reuse site*, then the standards applicable to the more sensitive property use apply.
- (6) The following rules apply in cases where the *generic excess soil quality standards* are “NA”, “NV” or not listed:
1. If a cell in a table in the excess soil quality standards contains “NA” or “NV” in respect of a contaminant found in *soil* in relation to a type of property use, no applicable excess soil quality standard is prescribed for that contaminant.
 2. In cases where a cell in a table in the excess soil quality standards contains “NV”, if the contaminant is detected in the *soil* and is associated with a *potentially contaminating activity*, and if the *qualified person* is of the opinion that a risk assessment is necessary to develop an excess soil quality standard for that contaminant, a risk assessment shall be completed in accordance with rules for site-specific excess soil quality standards.
 3. In cases where a contaminant is detected in *soil* and the contaminant is not listed in a table in the excess soil quality standards and is associated with a *potentially contaminating activity*, if the *qualified person* is of the opinion that a risk assessment is necessary to develop an excess soil quality standard for that contaminant, a risk assessment shall be completed in accordance with the rules for site-specific excess soil quality standards.
- (7) The following rules apply governing whether leachate analysis is required in determining if an excess soil quality standard has been met:
1. If Table 1 or the tables for *small volume excess soil quality standards* are being applied in relation to a volume of *excess soil* equal to or less than 350 cubic metres, then leachate analysis is not required, and no *leachate screening levels* apply.
 2. Leachate analysis is required, if:
 - i. a chemical is identified as a *contaminant of potential concern (COPC)*;
 - ii. the chemical has a superscript “a” following the excess soil quality standard in the applicable *generic excess soil quality standards* table; and,
 - iii. the analysis of the chemical is not being conducted solely for the reason that it is being required by the mandatory sampling and analysis requirements set out in subparagraphs i and ii within paragraph 14 of subsection 2 (3) of section B of Part I of this document.
 3. Despite paragraph 2, leachate analysis is not required if the soil analysis result is less than the Table 1 standard and the Table 1 standard is based on background and not based on the analytical reporting limit (as denoted by the superscript RL in Table 1 below).

4. Despite paragraph 2, leachate analysis is required for samples from stormwater management ponds, for any metal or hydride-forming metal that has a superscript “a” following the excess soil quality standard in the applicable excess soil quality standards table.
5. If leachate analysis is required, the applicable *leachate screening level* table is the table titled “*leachate screening levels*” and with the same table number as the applicable excess soil quality standards. For example, if Table 3.1 of excess soil quality standard is being used, the corresponding *leachate screening level* table is Table 3.1 of *leachate screening levels*.
6. Despite the requirement to comply with section 47 of *O. Reg 153/04*, leachate can be analyzed and reported only for the parameters within a parameter group that require leachate analysis.

(8) Meeting Excess Soil Quality Standards:

1. An excess soil quality standard is met if the standard is met, using either the single-point compliance method or the statistical method;
2. Leachate analysis is completed when, if required, the result of the leachate analysis is compared directly to the *leachate screening levels* and the result is less than or equal to the *leachate screening level*; and
3. There is no evidence of the presence of a contaminant in the *soil* as a result of visual or olfactory observations.

(9) Single-Point Compliance Method: If the following requirements are satisfied, the applicable excess soil quality standard is met.

1. The applicable excess soil quality standard is met at each sampling point from which a sample is taken for soil analysis;
2. If two or more in situ samples of *soil* are taken from sampling points at the same *sampling location*, as defined in subsection 48 (4) of *O. Reg. 153/04*, that are at the same depth, the excess soil quality standard is deemed to be met if the average of these sampling results are less than or equal to the applicable excess soil quality standard; and
3. The averaging provision set out immediately above does not allow for compositing of samples of *soil* that will be analyzed for volatile contaminants, including volatile organic compounds.

(10) Statistical Method: In addition to the method described in subsection (9), the applicable excess soil quality standard may also be met using the following statistical method, where all of the following requirements must be satisfied:

1. The 90th percentile of the data set (90% of the samples) must be less than or equal to the applicable excess soil quality standard.
2. The upper 95% confidence limit of the mean concentration of the samples must be less than or equal to the applicable excess soil quality standard.
3. No single sample within the data set exceeds the corresponding *ceiling value* for that contaminant. *Ceiling values* are specified below:
 - i. For an excess soil quality standard provided in Appendix 1 of this document, the *ceiling value* is provided in the correspondingly numbered table of *ceiling values* provided in Appendix 3 of this document.
4. This statistical method can only be relied upon in determining if an excess soil quality standard is met when a minimum of twenty (20) discrete soil samples have been collected for soil analysis. The samples must come from *soil* within an *area of potential environmental concern (APEC)* or *soil* that has similar soil characteristics and that is interpreted to be impacted by a similar process.
5. The statistical compliance approach cannot be used in respect of pH levels in *excess soil* being analyzed as required by subsection 1 (4) of Section D of PART I of this document.
6. An individual who undertakes an assessment of *soil* results utilizing the statistical compliance approach must be familiar with statistical methods and/or consult with someone having this expertise.

(10.1) Deemed compliance with excess soil quality standards

Excess soil quality standards are deemed to be met in the following circumstances:

1. In respect of *salt-impacted excess soil*, excess soil quality standards are deemed to be met for those chemicals in soil resulting solely from the use of a substance for the safety of vehicular or pedestrian traffic applied under conditions of snow or ice or both (e.g., sodium adsorption ratio and electrical conductivity), if the *salt-impacted excess soil* is placed in accordance with subsection 1(2) of Section D in Part I.

2. In respect of *asphalt-impacted excess soil*, the *excess soil quality standards* are deemed to be met for petroleum hydrocarbons F3 and F4, and any polycyclic aromatic hydrocarbons that are detected in the *soil* or *crushed rock* solely as a result of the discharge of a contaminant from asphalt as confirmed in accordance with paragraph 1, subsection 1(3) of Section D, and if the *asphalt-impacted excess soil* is finally placed in accordance with paragraph 2, subsection 1(3) of Section D in Part I.
3. In respect of *excess soil* and *recycled engineered aggregate*, the *excess soil quality standards* are deemed to be met for those parameters detected in the *soil* or *crushed rock* within the *recycled engineered aggregate* for which the concentration of that parameter exceeds the applicable *excess soil quality standard* and where the exceedance may be attributed to naturally occurring conditions in the area where the *excavated engineered aggregate* or *excess soil* was removed, as determined in accordance with paragraph 1, subsection 1(4) of Section D in Part I, and if the final placement of the *excess soil* or *recycled engineered aggregate* is in accordance with the rules in paragraph 2, subsection 1(4) of Section D in Part I.
4. In respect of regular compost and compost produced from a composting facility described in paragraph 1 of subsection 1(1) of Section D in Part I, excess soil quality standards for all chemicals are deemed to be met in relation to the compost if either of the circumstances set out in that paragraph are satisfied.
5. In respect of local background concentrations, an excess soil quality standard is deemed to be met if the local background concentration of the excess soil is established in accordance with subsection 2(3) of Section D in Part I.

(11) Depositing excess soil at a landfill or dump

1. For the purposes of subsection 22 (1) of *the regulation*, *excess soil* that may not be deposited at a landfill or dump is *excess soil* that meets Table 2.1 of excess soil quality standards for residential, parkland or institutional uses or is of better quality.

APPENDIX 1. GENERIC EXCESS SOIL QUALITY STANDARDS

The *generic excess soil quality standards* have been developed and organized in relation to a number of predefined categories, including property use, ground water potability, overburden thickness, distance to the nearest *water body* and soil placement volume. This Appendix provides a series of look-up tables (i.e., Table 1 and Tables 2.1 to 9.1) that can be used for determining appropriate excess soil quality standards by matching the volume of *excess soil* being brought to a *reuse site* and conditions of the *reuse site* with the appropriate table of excess soil quality standards. Note that the tables of *small volume excess soil quality standards* are the coarse textured soil standards in Tables 2 to 9 of the *Soil, Ground Water and Sediment Standards*. These tables are not reproduced in this Appendix and can be found in *O. Reg. 153/04*.

How to Read These Tables

The tables of standards below set out prescribed excess soil quality standards for contaminants by listing contaminants in the column of rows that has the heading row entitled “Contaminant”. The tables also set out prescribed excess soil quality standards for these contaminants by indicating in the appropriate locations the maximum concentrations of the contaminants in *excess soil* which is expressed in a number that is to be read as µg/g dry weight.

The standard applicable for a type of property use can be found in the row named for the contaminant and in the column that has the heading row that indicates the type of property use of the property at which *excess soil* is reused.

A contaminant that is listed and for which the abbreviation “NV” appears in the cell, instead of a numerical standard, is a contaminant for which an excess soil quality standard is not prescribed. The abbreviation “NV” means “no value”.

A contaminant that is listed and for which the abbreviation “NA” appears in the cell, instead of a numerical standard, is a contaminant for which an excess soil quality standard is not prescribed because no standard is required. The abbreviation “NA” means “not applicable”.

In respect of Tables 2.1 to 9.1, a contaminant that is listed and for which there is a superscript “a” following the excess soil quality standard is a contaminant for which a corresponding *leachate screening level* is also presented in Appendix 2 of this

document. If the contaminant is identified as a *contaminant of potential concern (COPC)* in *excess soil*, leachate analysis is required (refer to subsection 1(7) in Section A of PART II of this document and Appendix 2 of this document for additional details).

In Table 1, a contaminant that is listed and for which there is a superscript “RL” following the excess soil quality standard is a contaminant for which the Table 1 value is set at an analytical reporting limit (refer to notes below for additional details). In addition, a contaminant that is listed and for which there is a superscript “a” following the excess soil quality standard is a contaminant for which a corresponding *leachate screening level* is also presented in Appendix 2 of this document. If the contaminant is identified as a *contaminant of potential concern (COPC)* in *excess soil*, leachate analysis is required (refer to Subsection 1(7) in Section A of PART II of this document and Appendix 2 of this document for additional details).

Notes on Table 1

The soil standards in Table 1 are intended to represent background conditions derived from the Ontario Typical Range (OTR) values for the land uses indicated. These values are considered representative of upper limits of typical province-wide background concentrations in *soil* that is not contaminated by point sources. However, an OTR value may be numerically lower (or not available) than what a laboratory can reliably measure with confidence (as established in *O. Reg. 153/04*) and referred to as the “reporting limit” (RL). In such instances, the Table 1 soil standard is set at the RL instead of being derived from the OTR.

Notes on Tables 2 to 9 and 2.1 to 9.1

The following table provides a screening matrix of key site conditions and how they influence table selection.

Site Condition	Table 2/2.1	Table 3/3.1	Table 4/4.1	Table 5/5.1	Table 6/6.1	Table 7/7.1	Table 8/8.1	Table 9/9.1
Property is an Environmentally Sensitive Area.	x	x	x	x	x	x	x	x
Ground water use condition is potable.	✓	x	✓	x	✓	x	✓	x
Land Use is Agricultural or Other.	✓	x	x	x	✓	x	✓	x
Overburden thickness is unknown or is less than 2 m.	x	x	x	x	✓	✓	x	x
Depth to ground water is unknown, is less than 3 m below ground surface or the capillary fringe is <0.8 m from the base of the gravel crush of any existing/ future building foundation*.	x	x	x	x	✓	✓	x	x

Site Condition \ Table	Table 2/2.1	Table 3/3.1	Table 4/4.1	Table 5/5.1	Table 6/6.1	Table 7/7.1	Table 8/8.1	Table 9/9.1
Nearest water body is unknown or less than 30 m from property.	x	x	x	x	x	x	✓	✓
Excess soil may be placed at any depth.	✓	✓	x**	x**	✓	✓	✓	✓
Stratified site conditions must be maintained to ensure that surface soil and subsurface soil meets the applicable stratified condition standards.	x	x	✓	x	x	x	x	x

Notes: X This table may not be appropriate.

✓ This table may be acceptable, refer to Section “Additional Notes” below for the additional considerations.

* This site condition is applied only to volatile compounds.

** Standards for *subsurface soil* in Table 4/4.1 and Table 5/5.1 must be applied only for *excess soil* placed at 1.5 metres below the *soil* surface or deeper.

Additional Notes

1. For all tables, the methyl naphthalene soil standard is applicable to both 1-methyl naphthalene and 2-methyl naphthalene, with the provision that if both are detected the sum of the two concentrations cannot exceed the standard.
2. There are two boron parameters in the tables, one for a hot water extract (HWS) that is designed for protection of plants and soil invertebrates, and one for total boron (mixed strong acid digest). The HWS boron can be used by itself for *surface soils*, as plants are the most sensitive receptor for boron. For *subsurface soils* the total boron standard can be used by itself, since plant protection for *soils* below the root zone is not a significant concern.
3. Conditions can exist at a *reuse site* for which the assumptions used to develop the *generic excess soil quality standards* may not be valid. The owner or operator of a *reuse site* are ultimately responsible for ensuring that the conditions are appropriate for use of the *generic excess soil quality standards*. It may be necessary for the owner or operator of a *reuse site* to consider the retention of a *qualified person* to conduct this assessment. To assist the owner or operator of a *reuse site* and/or their *qualified person* in recognizing the types of conditions that may be important in this respect the following examples are given:

- i. The development of Tables 2 to 9 relies on the assumption of a finite volume of impacted *soil* with specific dimensions (13 metres by 13 metres by 2 metres or approximately 350 cubic metres). As such, if the total impacted zone (once *excess soil* is placed at the *reuse site*) has a volume or dimensions that are greater than what are assumed, the exposure pathways that employ source depletion or ground water transport [e.g., soil to indoor air (S-IA), soil to ground water (S-GW1, S-GW2, S-GW3), soil to odour (S-Odour)] may not be appropriately protected.
- ii. If an exposure pathway not considered in the development of the *generic excess soil quality standards* is present at the *reuse site*, then the use of the excess soil quality standards may not be protective of that exposure pathway.
- iii. *Excess soil* and *soil* at the *reuse site*, if highly permeable, can potentially provide a direct preferential pathway for vapours to migrate quickly into a *building*. Under such circumstances, the *soil* properties used in determining some generic component values (e.g., S-IA and S-GW2) may be non-conservative.
- iv. If *buildings* at the *reuse site* have characteristics that vary significantly from the generic assumptions (e.g., earthen floors, deteriorating basements, crawlspaces, etc.), this could result in a reduction in vapour attenuation between the subsurface and the *building*. Under such circumstances, the S-IA and S-GW2 component values may be non-conservative and inappropriate for use at the *reuse site*.
- v. The development of *generic excess soil quality standards* assumes that preferential pathways for vapour migration are not present. Preferential pathways may be caused by shallow fractured bedrock, gas under pressure, and/or utility conduits that provide a direct connection to the enclosed space of the *building*. If preferential pathways are present at the *reuse site*, the S-IA and S-GW2 component values may not be protective.
- vi. If the average fraction of organic carbon (foc) of *soil* above the water table is less than 0.002 g/g, a greater fraction of a contaminant may be in the water and gas phases than assumed in the development of *generic excess soil quality standards*. This may lead to increased contaminant mobility.
- vii. If there is a continuous source of the contamination, the component values which assume a depleting source (e.g., S-IA, S-GW1, S-GW2, and S-Odour) may be underestimated in the development of *small volume excess soil quality standards*, which may be non-conservative.

- viii. Highly acidic or alkaline *soil* can cause contaminants to behave differently from the manner assumed in the generic model. This could result in *generic excess soil quality standards* being inappropriate for use when pH levels of *excess soil* or *soil* at the *reuse site* are outside the acceptable pH range (from 5.0 and 9.0 for *surface soil* and from 5.0 to 11.0 for *subsurface soil*). Subsection 1 (4) of Section D of PART I of this document outlines specific rules that apply to *excess soil* and *soil* at the *reuse site* that has pH levels outside the acceptable range.
- ix. If there is a surface *water body* that could be affected as a result of contaminant migration via ground water discharging to surface water, and the surface water has total hardness less than 70mg/L (as CaCO₃) and/or has pH less than 6.7, the aquatic protection values for some metals and pentachlorophenol may be non-conservative. In such cases, the owner or operator of the *reuse site* and/or their *qualified person* may need to consider whether a site-specific estimate of hardness and pH resulting from mixing of ground water and surface water is needed to estimate an appropriate aquatic protection value for this site.

The presence of any of the conditions listed above does not necessarily indicate that the use of *generic excess soil quality standards* is not valid for a given *reuse site*. There are many interrelated parameters and factors that were used in the development of

the *generic excess soil quality standards*, and in many cases one factor, such as any of those above, can be outweighed by differences in other factors in a manner that, overall, there is sufficient natural protection provided by the site. In addition, it must also be considered that the component that drives the standard may not be affected by the particular limiting condition described above (e.g. a terrestrial ecological driver, but there are high permeable zones in the vadose zone). The *reuse site* owner or operator, their *qualified person* should carefully consider these types of factors in assessing the appropriateness of the use of the *generic excess soil quality standards*.

For contaminants for which *generic excess soil quality standards* are not derived, if they are present in *excess soil* and known to have the potential to adversely impact human health or the environment, the *reuse site* owner or operator must retain a *qualified person* to develop site-specific excess soil quality standards for those contaminants using a separate risk assessment, as outlined in section 4 of Section D of PART I of this document.

TABLE 1: Full Depth Background Site Condition Standards[#]

(Unit in µg/g)

Contaminant	Agricultural or Other Property Use	Residential/Parkland/ Institutional/ Industrial/ Commercial/ Community Property Use
Acenaphthene	0.05 _{RL}	0.072
Acenaphthylene	0.093	0.093
Acetone	0.5 _{RL}	0.5 _{RL}
Aldrin	0.05 _{RL}	0.05 _{RL}
Anthracene	0.05 _{RL}	0.16
Antimony	1 _{a, RL}	1.3
Arsenic	11	18
Barium	210	220
Benzene	0.02 _{RL}	0.02 _{RL}
Benz[a]anthracene	0.095	0.36
Benzo[a]pyrene	0.05 _{RL}	0.3
Benzo[b]fluoranthene	0.3	0.47
Benzo[ghi]perylene	0.2	0.68
Benzo[k]fluoranthene	0.05 _{RL}	0.48
Beryllium	2.5	2.5
Biphenyl 1,1'-	0.05 _{RL}	0.05 _{RL}
Bis(2-chloroethyl)ether	0.5 _{a, RL}	0.5 _{a, RL}
Bis(2-chloroisopropyl)ether	0.5 _{a, RL}	0.5 _{a, RL}
Bis(2-ethylhexyl)phthalate	5 _{RL}	5 _{RL}
Boron (Hot Water Soluble)*	NA	NA
Boron (total)	36	36
Bromodichloromethane	0.05 _{RL}	0.05 _{RL}
Bromoform	0.05 _{RL}	0.05 _{RL}
Bromomethane	0.05 _{a, RL}	0.05 _{a, RL}
Cadmium	1 _{a, RL}	1.2
Carbon Tetrachloride	0.05 _{a, RL}	0.05 _{a, RL}
Chlordane	0.05 _{RL}	0.05 _{RL}
Chloroaniline p-	0.5 _{a, RL}	0.5 _{a, RL}
Chlorobenzene	0.05 _{RL}	0.05 _{RL}
Chloroform	0.05 _{a, RL}	0.05 _{a, RL}
Chlorophenol, 2-	0.1 _{RL}	0.1 _{RL}
Chromium Total	67	70
Chromium VI	0.66	0.66

Contaminant	Agricultural or Other Property Use	Residential/Parkland/ Institutional/ Industrial/ Commercial/ Community Property Use
Chrysene	0.18	2.8
Cobalt	19	21
Copper	62	92
Cyanide (CN-)	0.051	0.051
Dibenz[a h]anthracene	0.1 _{RL}	0.1 _{RL}
Dibromochloromethane	0.05 _{RL}	0.05 _{RL}
Dichlorobenzene, 1,2-	0.05 _{a, RL}	0.05 _{a, RL}
Dichlorobenzene, 1,3-	0.05 _{RL}	0.05 _{RL}
Dichlorobenzene, 1,4-	0.05 _{a, RL}	0.05 _{a, RL}
Dichlorobenzidine, 3,3'-	1 _{a, RL}	1 _{a, RL}
Dichlorodifluoromethane	0.05 _{RL}	0.05 _{RL}
DDD	0.05 _{RL}	0.05 _{RL}
DDE	0.05 _{RL}	0.05 _{RL}
DDT	0.078	1.4
Dichloroethane, 1,1-	0.05 _{a, RL}	0.05 _{a, RL}
Dichloroethane, 1,2-	0.05 _{a, RL}	0.05 _{a, RL}
Dichloroethylene, 1,1-	0.05 _{a, RL}	0.05 _{a, RL}
Dichloroethylene, 1,2-cis-	0.05 _{a, RL}	0.05 _{a, RL}
Dichloroethylene, 1,2-trans-	0.05 _{a, RL}	0.05 _{a, RL}
Dichlorophenol, 2,4-	0.1 _{RL}	0.1 _{RL}
Dichloropropane, 1,2-	0.05 _{a, RL}	0.05 _{a, RL}
Dichloropropene, 1,3-	0.05 _{a, RL}	0.05 _{a, RL}
Dieldrin	0.05 _{a, RL}	0.05 _{a, RL}
Diethyl Phthalate	0.5 _{a, RL}	0.5 _{a, RL}
Dimethylphthalate	0.5 _{a, RL}	0.5 _{a, RL}
Dimethylphenol, 2,4-	0.2 _{RL}	0.2 _{RL}
Dinitrophenol, 2,4-	2 _{a, RL}	2 _{a, RL}
Dinitrotoluene, 2,4 & 2,6-	0.5 _{a, RL}	0.5 _{a, RL}
Dioxane, 1,4	0.2 _{a, RL}	0.2 _{a, RL}
Dioxin/Furan (TEQ)	0.000007	0.000007 _{RL}
Endosulfan	0.04 _{RL}	0.04 _{RL}
Endrin	0.04 _{a, RL}	0.04 _{a, RL}
Ethylbenzene	0.05 _{RL}	0.05 _{RL}
Ethylene dibromide	0.05 _{a, RL}	0.05 _{a, RL}
Fluoranthene	0.24	0.56

Contaminant	Agricultural or Other Property Use	Residential/Parkland/ Institutional/ Industrial/ Commercial/ Community Property Use
Fluorene	0.05 _{RL}	0.12
Heptachlor	0.05 _{a, RL}	0.05 _{a, RL}
Heptachlor Epoxide	0.05 _{a, RL}	0.05 _{a, RL}
Hexachlorobenzene	0.01 _{RL}	0.01 _{RL}
Hexachlorobutadiene	0.01 _{RL}	0.01 _{RL}
Hexachlorocyclohexane Gamma-	0.01 _{RL}	0.01 _{RL}
Hexachloroethane	0.01 _{RL}	0.01 _{RL}
Hexane (n)	0.05 _{RL}	0.05 _{RL}
Indeno[1 2 3-cd]pyrene	0.11	0.23
Lead	45	120
Mercury	0.16	0.27
Methoxychlor	0.05 _{RL}	0.05 _{RL}
Methyl Ethyl Ketone	0.5 _{RL}	0.5 _{RL}
Methyl Isobutyl Ketone	0.5 _{RL}	0.5 _{RL}
Methyl Mercury **	NV	NV
Methyl tert-Butyl Ether (MTBE)	0.05 _{RL}	0.05 _{RL}
Methylene Chloride	0.05 _{RL}	0.05 _{RL}
Methlynaphthalene, 2-(1-) ***	0.05 _{RL}	0.59
Molybdenum	2 _{a, RL}	2 _{a, RL}
Naphthalene	0.05 _{RL}	0.09
Nickel	37	82
Pentachlorophenol	0.1 _{RL}	0.1 _{RL}
Petroleum Hydrocarbons F1****	17	25
Petroleum Hydrocarbons F2	10 _{RL}	10 _{RL}
Petroleum Hydrocarbons F3	240	240
Petroleum Hydrocarbons F4	120	120
Phenanthrene	0.19	0.69
Phenol	0.5 _{RL}	0.5 _{RL}
Polychlorinated Biphenyls	0.3 _{RL}	0.3 _{RL}
Pyrene	0.19	1
Selenium	1.2	1.5
Silver	0.5 _{a, RL}	0.5 _{a, RL}
Styrene	0.05 _{RL}	0.05 _{RL}
Tetrachloroethane, 1,1,1,2-	0.05 _{a, RL}	0.05 _{a, RL}
Tetrachloroethane, 1,1,2,2-	0.05 _{a, RL}	0.05 _{a, RL}

Contaminant	Agricultural or Other Property Use	Residential/Parkland/ Institutional/ Industrial/ Commercial/ Community Property Use
Tetrachloroethylene	0.05 _{a, RL}	0.05 _{a, RL}
Thallium	1 _{a, RL}	1 _{a, RL}
Toluene	0.2 _{RL}	0.2 _{RL}
Trichlorobenzene, 1,2,4-	0.05 _{RL}	0.05 _{RL}
Trichloroethane, 1,1,1-	0.05 _{RL}	0.05 _{RL}
Trichloroethane, 1,1,2-	0.05 _{a, RL}	0.05 _{a, RL}
Trichloroethylene	0.05 _{a, RL}	0.05 _{a, RL}
Trichlorofluoromethane	0.05 _{RL}	0.25
Trichlorophenol, 2,4,5-	0.1 _{RL}	0.1 _{RL}
Trichlorophenol, 2,4,6-	0.1 _{a, RL}	0.1 _{a, RL}
Uranium	1.9	2.5
Vanadium	86	86
Vinyl Chloride	0.02 _{RL}	0.02 _{RL}
Xylene Mixture	0.05 _{RL}	0.05 _{RL}
Zinc	290	290
Electrical Conductivity (mS/cm)	0.47	0.57
Sodium Adsorption Ratio	1	2.4

Notes:

#: Standards in this table are the same as those in Table 1 of *Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act*, dated April 15, 2011. Those standards may be updated from time to time.

NV: No Value; RL: Table 1 value set at Reporting Limits; ^a: Leachate analysis is required only for contaminants that are identified as contaminants of potential concern in *excesssoil* (as specified in subsection 1 (7) in Section A of PART II of this document).

*: The boron standards are for hot water soluble extract for all *surface soils*. For *subsurface soils* the standards are for total boron (mixed strong acid digest), since plant protection for *soils* below the root zone is not a significant concern.

**: Analysis for methyl mercury only applies when mercury (total) standard is exceeded.

***: The methyl naphthalene standards are applicable to both 1-methyl naphthalene and 2-methyl naphthalene, with the provision that if both are detected the sum of the two must not exceed the standard.

****: F1 fraction does not include benzene, toluene, ethylbenzene and xylene (BTEX); however, the proponent has the choice as to whether or not to subtract BTEX from the analytical result.

TABLE 2.1: Full Depth Excess Soil Quality Standards in a Potable Ground Water Condition

Volume Independent

(Unit in µg/g)

Contaminant	Agricultural or Other Property Use	Residential/ Parkland/ Institutional Property Use	Industrial/ Commercial/ Community Property Use
Acenaphthene	2.5	2.5	2.5
Acenaphthylene	0.093	0.093	0.093
Acetone	0.5	0.5	0.5
Aldrin	0.05	0.05	0.088
Anthracene	0.058	0.16	0.16
Antimony	7.5 _a	7.5 _a	40 _a
Arsenic	11	18	18
Barium	390 _a	390 _a	670 _a
Benzene	0.02	0.02	0.02
Benz[a]anthracene	0.5	0.5	0.92
Benzo[a]pyrene	0.31	0.31	0.31
Benzo[b]fluoranthene	3.2	3.2	3.2
Benzo[ghi]perylene	6.6	6.6	13
Benzo[k]fluoranthene	3.1	3.1	3.1
Beryllium	4 _a	4 _a	8 _a
Biphenyl 1,1'-	0.05	0.05	0.05
Bis(2-chloroethyl)ether	0.5 _a	0.5 _a	0.5 _a
Bis(2-chloroisopropyl)ether	0.5 _a	0.5 _a	0.5 _a
Bis(2-ethylhexyl)phthalate	5	5	9.9
Boron (Hot Water Soluble)*	1.5	1.5	2
Boron (total)	120 _a	120 _a	120 _a
Bromodichloromethane	0.05	0.05	0.05
Bromoform	0.05	0.05	0.05
Bromomethane	0.05 _a	0.05 _a	0.05 _a
Cadmium	1 _a	1.2	1.9 _a
Carbon Tetrachloride	0.05 _a	0.05 _a	0.05 _a
Chlordane	0.05	0.05	0.05
Chloroaniline p-	0.5 _a	0.5 _a	0.5 _a
Chlorobenzene	0.083	0.083	0.083
Chloroform	0.05	0.05	0.05
Chlorophenol, 2-	0.1	0.1	0.1
Chromium Total	160 _a	160 _a	160 _a

Contaminant	Agricultural or Other Property Use	Residential/ Parkland/ Institutional Property Use	Industrial/ Commercial/ Community Property Use
Chromium VI	8	8	8
Chrysene	7	7	9.4
Cobalt	22 _a	22 _a	80 _a
Copper	140 _a	140 _a	230 _a
Cyanide (CN-)	0.051	0.051	0.051
Dibenz[a h]anthracene	0.57	0.57	0.7
Dibromochloromethane	0.05	0.05	0.05
Dichlorobenzene, 1,2-	3.4 _a	3.4 _a	6.8 _a
Dichlorobenzene, 1,3-	0.26	0.26	0.26
Dichlorobenzene, 1,4-	0.05 _a	0.05 _a	0.05 _a
Dichlorobenzidine, 3,3'-	1 _a	1 _a	1 _a
Dichlorodifluoromethane	1.5	1.5	1.5
DDD	3.3	3.3	4.6
DDE	0.26	0.26	0.52
DDT	0.078	1.4	1.4
Dichloroethane, 1,1-	0.05	0.05	0.05
Dichloroethane, 1,2-	0.05 _a	0.05 _a	0.05 _a
Dichloroethylene, 1,1-	0.05 _a	0.05 _a	0.05 _a
Dichloroethylene, 1,2-cis-	0.05 _a	0.05 _a	0.05 _a
Dichloroethylene, 1,2-trans-	0.05 _a	0.05 _a	0.05 _a
Dichlorophenol, 2,4-	0.1	0.1	0.1
Dichloropropane, 1,2-	0.05 _a	0.05 _a	0.05 _a
Dichloropropene, 1,3-	0.05	0.05	0.05
Dieldrin	0.05 _a	0.05 _a	0.088 _a
Diethyl Phthalate	0.5 _a	0.5 _a	0.5 _a
Dimethylphthalate	0.5 _a	0.5 _a	0.5 _a
Dimethylphenol, 2,4-	0.43	0.43	0.43
Dinitrophenol, 2,4-	2 _a	2 _a	2 _a
Dinitrotoluene, 2,4 & 2,6-	0.5 _a	0.5 _a	0.5 _a
Dioxane, 1,4	0.2 _a	0.2 _a	0.2 _a
Dioxin/Furan (TEQ)	0.000013	0.000013	0.000022
Endosulfan	0.04	0.04	0.04
Endrin	0.04 _a	0.04 _a	0.04 _a
Ethylbenzene	0.05	0.05	0.05
Ethylene dibromide	0.05 _a	0.05 _a	0.05 _a

Contaminant	Agricultural or Other Property Use	Residential/ Parkland/ Institutional Property Use	Industrial/ Commercial/ Community Property Use
Fluoranthene	0.69	0.69	2.8
Fluorene	6.8	6.8	6.8
Heptachlor	0.072	0.072	0.072
Heptachlor Epoxide	0.05 _a	0.05 _a	0.05 _a
Hexachlorobenzene	0.034	0.034	0.034
Hexachlorobutadiene	0.01	0.01	0.01
Hexachlorocyclohexane Gamma-	0.01	0.01	0.01
Hexachloroethane	0.01	0.01	0.01
Hexane (n)	2.5	2.5	2.5
Indeno[1 2 3-cd]pyrene	0.38	0.38	0.76
Lead	45	120	120
Mercury	0.24	0.27	0.27
Methoxychlor	0.13	0.13	0.19
Methyl Ethyl Ketone	0.5	0.5	0.5
Methyl Isobutyl Ketone	0.5	0.5	0.5
Methyl Mercury **	0.00097	0.00097	0.00097
Methyl tert-Butyl Ether (MTBE)	0.05	0.05	0.05
Methylene Chloride	0.05	0.05	0.05
Methylnaphthalene, 2-(1-) ***	0.096	0.59	0.59
Molybdenum	6.9 _a	6.9 _a	40 _a
Naphthalene	0.2	0.2	0.2
Nickel	100 _a	100 _a	270 _a
Pentachlorophenol	0.1	0.1	0.34
Petroleum Hydrocarbons F1****	17	25	25
Petroleum Hydrocarbons F2	10	10	26
Petroleum Hydrocarbons F3	240	240	240
Petroleum Hydrocarbons F4	2800	2800	3300
Phenanthrene	6.2	6.2	12
Phenol	2.4	2.4	2.4
Polychlorinated Biphenyls	0.35	0.35	0.78
Pyrene	28	28	28
Selenium	2.4 _a	2.4 _a	5.5 _a
Silver	20 _a	20 _a	40 _a
Styrene	0.05	0.05	0.05
Tetrachloroethane, 1,1,1,2-	0.05	0.05	0.05

Contaminant	Agricultural or Other Property Use	Residential/ Parkland/ Institutional Property Use	Industrial/ Commercial/ Community Property Use
Tetrachloroethane, 1,1,2,2-	0.05 ^a	0.05 ^a	0.05 ^a
Tetrachloroethylene	0.05 ^a	0.05 ^a	0.05 ^a
Thallium	1 ^a	1 ^a	3.3 ^a
Toluene	0.2	0.2	0.2
Trichlorobenzene, 1,2,4-	0.17	0.17	0.51
Trichloroethane, 1,1,1-	0.11	0.11	0.12
Trichloroethane, 1,1,2-	0.05	0.05	0.05
Trichloroethylene	0.05 ^a	0.05 ^a	0.05 ^a
Trichlorofluoromethane	0.17	0.25	0.25
Trichlorophenol, 2,4,5-	0.11	0.11	0.11
Trichlorophenol, 2,4,6-	4.4 ^a	4.4 ^a	10 ^a
Uranium	23 ^a	23 ^a	33 ^a
Vanadium	86	86	86
Vinyl Chloride	0.02	0.02	0.02
Xylene Mixture	0.091	0.091	0.091
Zinc	340 ^a	340 ^a	340 ^a
Electrical Conductivity (mS/cm)	0.7	0.7	1.4
Sodium Adsorption Ratio	5	5	12

Notes:

^a: Leachate analysis is required only for contaminants that are identified as contaminants of potential concern in *excess soil* (as specified in subsection 1 (7) in Section A of PART II of this document).

*: The boron standards are for hot water soluble extract for all *surface soils*. For *subsurface soils* the standards are for total boron (mixed strong acid digest), since plant protection for *soils* below the root zone is not a significant concern.

** : Analysis for methyl mercury only applies when mercury (total) standard is exceeded.

***: The methyl naphthalene standards are applicable to both 1-methyl naphthalene and 2- methyl naphthalene, with the provision that if both are detected the sum of the two must not exceed the standard.

****: F1 fraction does not include benzene, toluene, ethylbenzene and xylene (BTEX); however, the proponent has the choice as to whether or not to subtract BTEX from the analytical result.

TABLE 3.1: Full Depth Excess Soil Quality Standards in a Non-Potable Ground Water Condition

Volume Independent

(Unit in µg/g)

Contaminant	Residential/ Parkland/ Institutional Property Use	Industrial/ Commercial/ Community Property Use
Acenaphthene	14	15
Acenaphthylene	0.093	0.093
Acetone	1.8	1.8
Aldrin	0.05	0.088
Anthracene	0.16	0.16
Antimony	7.5	40
Arsenic	18	18
Barium	390 _a	670 _a
Benzene	0.02	0.034
Benz[a]anthracene	0.5	1
Benzo[a]pyrene	0.57	0.7
Benzo[b]fluoranthene	5.7	7
Benzo[ghi]perylene	6.6	13
Benzo[k]fluoranthene	5.7	7
Beryllium	4 _a	8 _a
Biphenyl 1,1'-	0.3	21
Bis(2-chloroethyl)ether	0.5	0.5
Bis(2-chloroisopropyl)ether	0.5	11
Bis(2-ethylhexyl)phthalate	5	28
Boron (Hot Water Soluble)*	1.5	2
Boron (total)	120	120
Bromodichloromethane	5.8	5.8
Bromoform	2.5	2.5
Bromomethane	0.05 _a	0.05 _a
Cadmium	1.2	1.9 _a
Carbon Tetrachloride	0.05 _a	0.05 _a
Chlordane	0.05	0.05
Chloroaniline p-	0.5	0.5
Chlorobenzene	0.28	0.28
Chloroform	0.08	0.26
Chlorophenol, 2-	1.6	2.3
Chromium Total	160 _a	160 _a

Contaminant	Residential/ Parkland/ Institutional Property Use	Industrial/ Commercial/ Community Property Use
Chromium VI	8	8
Chrysene	7	14
Cobalt	22 ^a	80 ^a
Copper	140 ^a	230 ^a
Cyanide (CN-)	0.051	0.051
Dibenz[a h]anthracene	0.57	0.7
Dibromochloromethane	5.5	5.5
Dichlorobenzene, 1,2-	3.4	6.8
Dichlorobenzene, 1,3-	4.8	6.8
Dichlorobenzene, 1,4-	0.05	0.05
Dichlorobenzidine, 3,3'-	1	1
Dichlorodifluoromethane	1.8	1.8
DDD	3.3	4.6
DDE	0.26	0.52
DDT	1.4	1.4
Dichloroethane, 1,1-	0.14	0.57
Dichloroethane, 1,2-	0.05	0.05
Dichloroethylene, 1,1-	0.05 ^a	0.05 ^a
Dichloroethylene, 1,2-cis-	0.05	0.05
Dichloroethylene, 1,2-trans-	0.05 ^a	0.05 ^a
Dichlorophenol, 2,4-	1.7	3.4
Dichloropropane, 1,2-	0.05	0.05
Dichloropropene, 1,3-	0.05	0.05
Dieldrin	0.05 ^a	0.088 ^a
Diethyl Phthalate	0.5 ^a	0.5 ^a
Dimethylphthalate	0.5 ^a	0.5 ^a
Dimethylphenol, 2,4-	45	45
Dinitrophenol, 2,4-	6.7	6.7
Dinitrotoluene, 2,4 & 2,6-	0.92	1.2
Dioxane, 1,4	1.8	1.8
Dioxin/Furan (TEQ)	0.000013	0.000099
Endosulfan	0.04	0.04
Endrin	0.04 ^a	0.04 ^a
Ethylbenzene	1.9	1.9
Ethylene dibromide	0.05 ^a	0.05 ^a

Contaminant	Residential/ Parkland/ Institutional Property Use	Industrial/ Commercial/ Community Property Use
Fluoranthene	0.69	70
Fluorene	6.8	6.8
Heptachlor	0.072	0.072
Heptachlor Epoxide	0.05 _a	0.05 _a
Hexachlorobenzene	0.52	0.66
Hexachlorobutadiene	0.01	0.01
Hexachlorocyclohexane Gamma-	0.01	0.01
Hexachloroethane	0.01	0.13
Hexane (n)	2.5	2.5
Indeno[1 2 3-cd]pyrene	0.38	0.76
Lead	120	120
Mercury	0.27	0.27
Methoxychlor	0.13	0.19
Methyl Ethyl Ketone	14	26
Methyl Isobutyl Ketone	0.89	17
Methyl Mercury **	0.00097	0.00097
Methyl tert-Butyl Ether (MTBE)	0.05	0.05
Methylene Chloride	0.06	0.2
Methlynaphthalene, 2-(1-) ***	0.92	8.7
Molybdenum	6.9	40 _a
Naphthalene	0.59	1.8
Nickel	100 _a	270 _a
Pentachlorophenol	0.1	0.34
Petroleum Hydrocarbons F1****	25	25
Petroleum Hydrocarbons F2	10	26
Petroleum Hydrocarbons F3	300	1700
Petroleum Hydrocarbons F4	2800	3300
Phenanthrene	6.2	12
Phenol	5.3	5.3
Polychlorinated Biphenyls	0.35	0.78
Pyrene	70	70
Selenium	2.4 _a	5.5 _a
Silver	20 _a	40 _a
Styrene	0.5	6.8
Tetrachloroethane, 1,1,1,2-	0.05	0.05

Contaminant	Residential/ Parkland/ Institutional Property Use	Industrial/ Commercial/ Community Property Use
Tetrachloroethane, 1,1,2,2-	0.05	0.05
Tetrachloroethylene	0.05 ^a	0.05 ^a
Thallium	1	3.3 ^a
Toluene	0.99	7.8
Trichlorobenzene, 1,2,4-	0.17	1.3
Trichloroethane, 1,1,1-	0.11	0.4
Trichloroethane, 1,1,2-	0.05	0.05
Trichloroethylene	0.05 ^a	0.05 ^a
Trichlorofluoromethane	0.46	0.46
Trichlorophenol, 2,4,5-	3.1	3.1
Trichlorophenol, 2,4,6-	0.43	0.43
Uranium	23 ^a	33 ^a
Vanadium	86	86
Vinyl Chloride	0.02	0.02
Xylene Mixture	0.9	3
Zinc	340 ^a	340 ^a
Electrical Conductivity (mS/cm)	0.7	1.4
Sodium Adsorption Ratio	5	12

Notes:

^a: Leachate analysis is required only for contaminants that are identified as contaminants of potential concern in *excess soil* (as specified in subsection 1 (7) in Section A of PART II of this document).

*: The boron standards are for hot water soluble extract for all *surface soils*. For *subsurface soils* the standards are for total boron (mixed strong acid digest), since plant protection for *soils* below the root zone is not a significant concern.

** : Analysis for methyl mercury only applies when mercury (total) standard is exceeded.

***: The methyl naphthalene standards are applicable to both 1-methyl naphthalene and 2- methyl naphthalene, with the provision that if both are detected the sum of the two must not exceed the standard.

****: F1 fraction does not include benzene, toluene, ethylbenzene and xylene (BTEX); however, the proponent has the choice as to whether or not to subtract BTEX from the analytical result.

TABLE 4.1: Stratified Excess Soil Quality Standards in a Potable Ground Water Condition

Volume Independent

(Unit in µg/g)

Contaminant	Residential/Parkland/ Institutional Property Use		Industrial/Commercial/ Community Property Use	
	Surface	Subsurface	Surface	Subsurface
Acenaphthene	2.5	2.5	2.5	2.5
Acenaphthylene	0.093	0.093	0.093	0.093
Acetone	0.5	0.5	0.5	0.5
Aldrin	0.05	0.37	0.088	0.37
Anthracene	0.16	0.16	0.16	0.16
Antimony	7.5 _a	63 _a	40 _a	63 _a
Arsenic	18	18	18	39 _a
Barium	390 _a	7700 _a	670 _a	7700 _a
Benzene	0.02	0.02	0.02	0.02
Benz[a]anthracene	0.5	0.92	0.92	0.92
Benzo[a]pyrene	0.31	0.31	0.31	0.31
Benzo[b]fluoranthene	3.2	3.2	3.2	3.2
Benzo[ghi]perylene	6.6	70	13	110
Benzo[k]fluoranthene	3.1	3.1	3.1	3.1
Beryllium	4 _a	60 _a	8 _a	60 _a
Biphenyl 1,1'-	0.05	0.05	0.05	0.05
Bis(2-chloroethyl)ether	0.5 _a	0.5 _a	0.5 _a	0.5 _a
Bis(2-chloroisopropyl)ether	0.5 _a	0.5 _a	0.5 _a	0.5 _a
Bis(2-ethylhexyl)phthalate	5	9.9	9.9	9.9
Boron (Hot Water Soluble)*	1.5	NA	2	NA
Boron (total)	NA	5000 _a	NA	5000 _a
Bromodichloromethane	0.05	0.05	0.05	0.05
Bromoform	0.05	0.05	0.05	0.05
Bromomethane	0.05 _a	0.05 _a	0.05 _a	0.05 _a
Cadmium	1.2	7.9 _a	1.9 _a	7.9 _a
Carbon Tetrachloride	0.05 _a	0.05 _a	0.05 _a	0.05 _a
Chlordane	0.05	0.8	0.05	3.4
Chloroaniline p-	0.5 _a	0.5 _a	0.5 _a	0.5 _a
Chlorobenzene	0.083	0.083	0.083	0.083
Chloroform	0.05	0.05	0.05	0.05

Contaminant	Residential/Parkland/ Institutional Property Use		Industrial/Commercial/ Community Property Use	
	Surface	Subsurface	Surface	Subsurface
Chlorophenol, 2-	0.1	0.1	0.1	0.1
Chromium Total	160 _a	11000 _a	160 _a	11000 _a
Chromium VI	8	40	8	40
Chrysene	7	9.4	9.4	9.4
Cobalt	22 _a	250 _a	80 _a	2500 _a
Copper	140 _a	1900 _a	230 _a	1900 _a
Cyanide (CN-)	0.051	0.051	0.051	0.051
Dibenz[a h]anthracene	0.57	0.7	0.7	1
Dibromochloromethane	0.05	0.05	0.05	0.05
Dichlorobenzene, 1,2-	3.4 _a	4.9 _a	6.8 _a	14 _a
Dichlorobenzene, 1,3-	0.26	0.26	0.26	0.26
Dichlorobenzene, 1,4-	0.05 _a	0.05 _a	0.05 _a	0.05 _a
Dichlorobenzidine, 3,3'-	1 _a	1 _a	1 _a	1 _a
Dichlorodifluoromethane	1.5	1.5	1.5	1.5
DDD	3.3	4.6	4.6	15
DDE	0.26	3.2	0.52	15
DDT	1.4	3.2	1.4	22
Dichloroethane, 1,1-	0.05	0.05	0.05	0.05
Dichloroethane, 1,2-	0.05 _a	0.05 _a	0.05 _a	0.05 _a
Dichloroethylene, 1,1-	0.05 _a	0.05 _a	0.05 _a	0.05 _a
Dichloroethylene, 1,2-cis-	0.05 _a	0.05 _a	0.05 _a	0.05 _a
Dichloroethylene, 1,2-trans-	0.05 _a	0.05 _a	0.05 _a	0.05 _a
Dichlorophenol, 2,4-	0.1	0.1	0.1	0.1
Dichloropropane, 1,2-	0.05 _a	0.05 _a	0.05 _a	0.05 _a
Dichloropropene, 1,3-	0.05	0.05	0.05	0.05
Dieldrin	0.05 _a	7.9 _a	0.088 _a	12 _a
Diethyl Phthalate	0.5 _a	0.5 _a	0.5 _a	0.5 _a
Dimethylphthalate	0.5 _a	0.5 _a	0.5 _a	0.5 _a
Dimethylphenol, 2,4-	0.43	0.43	0.43	0.43
Dinitrophenol, 2,4-	2 _a	2 _a	2 _a	2 _a
Dinitrotoluene, 2,4 & 2,6-	0.5 _a	0.5 _a	0.5 _a	0.5 _a
Dioxane, 1,4	0.2 _a	0.2 _a	0.2 _a	0.2 _a
Dioxin/Furan (TEQ)	0.000013	0.000022	0.000022	0.000022

Contaminant	Residential/Parkland/ Institutional Property Use		Industrial/Commercial/ Community Property Use	
	Surface	Subsurface	Surface	Subsurface
Endosulfan	0.04	0.04	0.04	0.04
Endrin	0.04 _a	7.8 _a	0.04 _a	7.8 _a
Ethylbenzene	0.05	0.05	0.05	0.05
Ethylene dibromide	0.05 _a	0.05 _a	0.05 _a	0.05 _a
Fluoranthene	0.69	2.8	2.8	2.8
Fluorene	6.8	6.8	6.8	6.8
Heptachlor	0.072	0.072	0.072	0.072
Heptachlor Epoxide	0.05 _a	0.05 _a	0.05 _a	0.05 _a
Hexachlorobenzene	0.034	0.034	0.034	0.034
Hexachlorobutadiene	0.01	0.01	0.01	0.01
Hexachlorocyclohexane Gamma-	0.01	0.01	0.01	0.01
Hexachloroethane	0.01	0.01	0.01	0.01
Hexane (n)	2.5	2.5	2.5	2.5
Indeno[1 2 3-cd]pyrene	0.38	7	0.76	11
Lead	120	1000 _a	120	1000 _a
Mercury	0.27	0.27	0.27	1.9
Methoxychlor	0.13	0.19	0.19	0.19
Methyl Ethyl Ketone	0.5	0.5	0.5	0.5
Methyl Isobutyl Ketone	0.5	0.5	0.5	0.5
Methyl Mercury **	0.00097	0.00097	0.00097	0.00097
Methyl tert-Butyl Ether (MTBE)	0.05	0.05	0.05	0.05
Methylene Chloride	0.05	0.05	0.05	0.05
Methlynaphthalene, 2-(1-) ***	0.59	0.59	0.59	0.59
Molybdenum	6.9 _a	1200 _a	40 _a	1200 _a
Naphthalene	0.2	0.2	0.2	0.2
Nickel	100 _a	510 _a	270 _a	510 _a
Pentachlorophenol	0.1	0.34	0.34	0.34
Petroleum Hydrocarbons F1****	25	25	25	25
Petroleum Hydrocarbons F2	10	10	26	26
Petroleum Hydrocarbons F3	240	240	240	240
Petroleum Hydrocarbons F4	2800	6900	3300	6900
Phenanthrene	6.2	23	12	23

Contaminant	Residential/Parkland/ Institutional Property Use		Industrial/Commercial/ Community Property Use	
	Surface	Subsurface	Surface	Subsurface
Phenol	2.4	2.4	2.4	2.4
Polychlorinated Biphenyls	0.35	2.7	0.78	4.1
Pyrene	28	28	28	28
Selenium	2.4 ^a	1200 ^a	5.5 ^a	1200 ^a
Silver	20 ^a	490 ^a	40 ^a	490 ^a
Styrene	0.05	0.05	0.05	0.05
Tetrachloroethane, 1,1,1,2-	0.05	0.05	0.05	0.05
Tetrachloroethane, 1,1,2,2-	0.05 ^a	0.05 ^a	0.05 ^a	0.05 ^a
Tetrachloroethylene	0.05 ^a	0.05 ^a	0.05 ^a	0.05 ^a
Thallium	1 ^a	3.3 ^a	3.3 ^a	33 ^a
Toluene	0.2	0.2	0.2	0.2
Trichlorobenzene, 1,2,4-	0.17	0.17	0.51	0.51
Trichloroethane, 1,1,1-	0.11	0.11	0.12	0.12
Trichloroethane, 1,1,2-	0.05	0.05	0.05	0.05
Trichloroethylene	0.05 ^a	0.05 ^a	0.05 ^a	0.05 ^a
Trichlorofluoromethane	0.25	0.25	0.25	0.25
Trichlorophenol, 2,4,5-	0.11	0.11	0.11	0.11
Trichlorophenol, 2,4,6-	4.4 ^a	24 ^a	10 ^a	24 ^a
Uranium	23 ^a	300 ^a	33 ^a	300 ^a
Vanadium	86	160 ^a	86	160 ^a
Vinyl Chloride	0.02	0.02	0.02	0.02
Xylene Mixture	0.091	0.091	0.091	0.091
Zinc	340 ^a	15000 ^a	340 ^a	15000 ^a
Electrical Conductivity (mS/cm)	0.7	0.7	1.4	1.4
Sodium Adsorption Ratio	5	5	12	12

Notes:

NA: Not Applicable; ^a: Leachate analysis is required only for contaminants that are identified as contaminants of potential concern in *excess soil* (as specified in subsection 1 (7) in Section A of PART II of this document).

*: The boron standards are for hot water soluble extract for all *surface soils*. For *subsurface soils* the standards are for total boron (mixed strong acid digest), since plant protection for *soils* below the root zone is not a significant concern.

**: Analysis for methyl mercury only applies when mercury (total) standard is exceeded.

***: The methyl naphthalene standards are applicable to both 1-methyl naphthalene and 2-methyl naphthalene, with the provision that if both are detected the sum of the two must not exceed the standard.

****: F1 fraction does not include benzene, toluene, ethylbenzene and xylene (BTEX); however, the proponent has the choice as to whether or not to subtract BTEX from the analytical result.

TABLE 5.1: Stratified Excess Soil Quality Standards in a Non-Potable Ground Water Condition

Volume Independent

(Unit in µg/g)

Contaminant	Residential/Parkland/ Institutional Property Use		Industrial/Commercial/ Community Property Use	
	Surface	Subsurface	Surface	Subsurface
Acenaphthene	14	14	15	64
Acenaphthylene	0.093	0.093	0.093	0.093
Acetone	1.8	1.8	1.8	1.8
Aldrin	0.05	4.7	0.088	6.3
Anthracene	0.16	0.16	0.16	0.16
Antimony	7.5	63	40	63
Arsenic	18	18	18	39 _a
Barium	390 _a	7700 _a	670 _a	7700 _a
Benzene	0.02	0.02	0.034	0.077
Benz[a]anthracene	0.5	7	1	260
Benzo[a]pyrene	0.57	0.7	0.7	17
Benzo[b]fluoranthene	5.7	7	7	260
Benzo[ghi]perylene	6.6	70	13	2600
Benzo[k]fluoranthene	5.7	7	7	260
Beryllium	4 _a	60 _a	8 _a	60 _a
Biphenyl 1,1'-	0.3	11	21	21
Bis(2-chloroethyl)ether	0.5	0.5	0.5	11
Bis(2-chloroisopropyl)ether	0.5	11	11	11
Bis(2-ethylhexyl)phthalate	5	7100	28	7100
Boron (Hot Water Soluble)*	1.5	NA	2	NA
Boron (total)	NA	5000 _a	NA	5000 _a
Bromodichloromethane	5.8	5.8	5.8	5.8
Bromoform	2.5	2.5	2.5	2.5
Bromomethane	0.05 _a	0.05 _a	0.05 _a	0.05 _a
Cadmium	1.2	7.9 _a	1.9 _a	7.9 _a
Carbon Tetrachloride	0.05 _a	0.05 _a	0.05 _a	0.05 _a
Chlordane	0.05	0.8	0.05	3.4
Chloroaniline p-	0.5	0.5	0.5	0.5
Chlorobenzene	0.28	0.28	0.28	0.28
Chloroform	0.08	0.08	0.26	0.26
Chlorophenol, 2-	1.6	2.3	2.3	2.3
Chromium Total	160 _a	11000 _a	160 _a	11000 _a

Contaminant	Residential/Parkland/ Institutional Property Use		Industrial/Commercial/ Community Property Use	
	Surface	Subsurface	Surface	Subsurface
Chromium VI	8	40	8	40
Chrysene	7	70	14	2600
Cobalt	22 _a	250 _a	80 _a	2500 _a
Copper	140 _a	1900 _a	230 _a	1900 _a
Cyanide (CN-)	0.051	0.051	0.051	0.051
Dibenz[a h]anthracene	0.57	0.7	0.7	26
Dibromochloromethane	5.5	5.5	5.5	5.5
Dichlorobenzene, 1,2-	3.4	4.9	6.8	6.9
Dichlorobenzene, 1,3-	4.8	6.8	6.8	6.8
Dichlorobenzene, 1,4-	0.05	0.05	0.05	0.05
Dichlorobenzidine, 3,3'-	1	1	1	7.5
Dichlorodifluoromethane	1.8	1.8	1.8	1.8
DDD	3.3	4.6	4.6	110
DDE	0.26	3.2	0.52	110
DDT	1.4	3.2	1.4	110
Dichloroethane, 1,1-	0.14	0.14	0.57	0.57
Dichloroethane, 1,2-	0.05	0.05	0.05	0.05
Dichloroethylene, 1,1-	0.05 _a	0.05 _a	0.05 _a	0.05 _a
Dichloroethylene, 1,2-cis-	0.05	0.05	0.05	0.05
Dichloroethylene, 1,2-trans-	0.05 _a	0.05 _a	0.05 _a	0.05 _a
Dichlorophenol, 2,4-	1.7	5.3	3.4	5.3
Dichloropropane, 1,2-	0.05	0.05	0.05	0.05
Dichloropropene, 1,3-	0.05	0.05	0.05	0.05
Dieldrin	0.05 _a	7.9 _a	0.088 _a	12 _a
Diethyl Phthalate	0.5 _a	0.5 _a	0.5 _a	0.5 _a
Dimethylphthalate	0.5 _a	0.5 _a	0.5 _a	0.5 _a
Dimethylphenol, 2,4-	45	45	45	45
Dinitrophenol, 2,4-	6.7	6.7	6.7	6.7
Dinitrotoluene, 2,4 & 2,6-	0.92	1.2	1.2	1.7
Dioxane, 1,4	1.8	92	1.8	92
Dioxin/Furan (TEQ)	0.000013	0.00051	0.000099	0.0044
Endosulfan	0.04	0.04	0.04	0.04
Endrin	0.04 _a	7.8 _a	0.04 _a	7.8 _a
Ethylbenzene	1.9	1.9	1.9	1.9
Ethylene dibromide	0.05 _a	0.05 _a	0.05 _a	0.05 _a

Contaminant	Residential/Parkland/ Institutional Property Use		Industrial/Commercial/ Community Property Use	
	Surface	Subsurface	Surface	Subsurface
Fluoranthene	0.69	70	70	1100
Fluorene	6.8	6.8	6.8	6.8
Heptachlor	0.072	0.072	0.072	0.072
Heptachlor Epoxide	0.05 _a	0.05 _a	0.05 _a	0.05 _a
Hexachlorobenzene	0.52	0.66	0.66	1.6
Hexachlorobutadiene	0.01	0.01	0.01	0.01
Hexachlorocyclohexane Gamma-	0.01	0.01	0.01	0.01
Hexachloroethane	0.01	0.01	0.13	0.22
Hexane (n)	2.5	2.5	2.5	2.5
Indeno[1 2 3-cd]pyrene	0.38	7	0.76	260
Lead	120	1000 _a	120	1000 _a
Mercury	0.27	0.27	0.27	1.9
Methoxychlor	0.13	0.19	0.19	0.19
Methyl Ethyl Ketone	14	16	26	26
Methyl Isobutyl Ketone	0.89	6.6	17	17
Methyl Mercury **	0.00097	0.00097	0.00097	0.00097
Methyl tert-Butyl Ether (MTBE)	0.05	0.05	0.05	0.05
Methylene Chloride	0.06	0.06	0.2	0.2
Methlynaphthalene, 2-(1-) ***	0.92	8.7	8.7	8.7
Molybdenum	6.9	1200 _a	40 _a	1200 _a
Naphthalene	0.59	0.59	1.8	23
Nickel	100 _a	510 _a	270 _a	510 _a
Pentachlorophenol	0.1	0.34	0.34	0.34
Petroleum Hydrocarbons F1****	25	25	25	25
Petroleum Hydrocarbons F2	10	10	26	26
Petroleum Hydrocarbons F3	300	5800	1700	5800
Petroleum Hydrocarbons F4	2800	6900	3300	6900
Phenanthrene	6.2	23	12	23
Phenol	5.3	5.3	5.3	5.3
Polychlorinated Biphenyls	0.35	2.7	0.78	4.1
Pyrene	70	70	70	70
Selenium	2.4 _a	1200 _a	5.5 _a	1200 _a
Silver	20 _a	490 _a	40 _a	490 _a
Styrene	0.5	1.6	6.8	6.8

Contaminant	Residential/Parkland/ Institutional Property Use		Industrial/Commercial/ Community Property Use	
	Surface	Subsurface	Surface	Subsurface
Tetrachloroethane, 1,1,1,2-	0.05	0.05	0.05	0.05
Tetrachloroethane, 1,1,2,2-	0.05	0.05	0.05	0.05
Tetrachloroethylene	0.05 _a	0.05 _a	0.05 _a	0.05 _a
Thallium	1	3.3 _a	3.3 _a	33 _a
Toluene	0.99	6.2	7.8	7.8
Trichlorobenzene, 1,2,4-	0.17	0.17	1.3	1.3
Trichloroethane, 1,1,1-	0.11	0.11	0.4	0.4
Trichloroethane, 1,1,2-	0.05	0.05	0.05	0.05
Trichloroethylene	0.05 _a	0.05 _a	0.05 _a	0.05 _a
Trichlorofluoromethane	0.46	0.46	0.46	0.46
Trichlorophenol, 2,4,5-	3.1	3.1	3.1	3.1
Trichlorophenol, 2,4,6-	0.43	0.43	0.43	0.43
Uranium	23 _a	300 _a	33 _a	300 _a
Vanadium	86	160 _a	86	160 _a
Vinyl Chloride	0.02	0.02	0.02	0.02
Xylene Mixture	0.9	0.9	3	3
Zinc	340 _a	15000 _a	340 _a	15000 _a
Electrical Conductivity (mS/cm)	0.7	0.7	1.4	1.4
Sodium Adsorption Ratio	5	5	12	12

Notes:

NA: Not Applicable; ^a: Leachate analysis is required only for contaminants that are identified as contaminants of potential concern in *excess soil* (as specified in subsection 1 (7) in Section A of PART II of this document).

*: The boron standards are for hot water soluble extract for all *surface soils*. For *subsurface soils* the standards are for total boron (mixed strong acid digest), since plant protection for *soils* below the root zone is not a significant concern.

**: Analysis for methyl mercury only applies when mercury (total) standard is exceeded.

***: The methyl naphthalene standards are applicable to both 1-methyl naphthalene and 2-methyl naphthalene, with the provision that if both are detected the sum of the two must not exceed the standard.

****: F1 fraction does not include benzene, toluene, ethylbenzene and xylene (BTEX); however, the proponent has the choice as to whether or not to subtract BTEX from the analytical result.

TABLE 6.1: Full Depth Excess Soil Quality Standards for Shallow Soils in a Potable Ground Water Condition

Volume Independent

(Unit in µg/g)

Contaminant	Agricultural or Other Property Use	Residential/ Parkland/ Institutional Property Use	Industrial/ Commercial/ Community Property Use
Acenaphthene	1.9	1.9	1.9
Acenaphthylene	0.093	0.093	0.093
Acetone	0.5	0.5	0.5
Aldrin	0.05	0.05	0.088
Anthracene	0.05	0.16	0.16
Antimony	7.5 _a	7.5 _a	40 _a
Arsenic	11	18	18
Barium	390 _a	390 _a	670 _a
Benzene	0.02	0.02	0.02
Benz[a]anthracene	0.5	0.5	0.83
Benzo[a]pyrene	0.31	0.31	0.31
Benzo[b]fluoranthene	3.2	3.2	3.2
Benzo[ghi]perylene	1.1	1.1	1.1
Benzo[k]fluoranthene	2.2	2.2	2.2
Beryllium	4 _a	4 _a	8 _a
Biphenyl 1,1'-	0.05	0.05	0.05
Bis(2-chloroethyl)ether	0.5 _a	0.5 _a	0.5 _a
Bis(2-chloroisopropyl)ether	0.5 _a	0.5 _a	0.5 _a
Bis(2-ethylhexyl)phthalate	5	5	9.9
Boron (Hot Water Soluble)*	1.5	1.5	2
Boron (total)	120 _a	120 _a	120 _a
Bromodichloromethane	0.05	0.05	0.05
Bromoform	0.05	0.05	0.05
Bromomethane	0.05 _a	0.05 _a	0.05 _a
Cadmium	1 _a	1.2	1.9 _a
Carbon Tetrachloride	0.05 _a	0.05 _a	0.05 _a
Chlordane	0.05	0.05	0.05
Chloroaniline p-	0.5 _a	0.5 _a	0.5 _a
Chlorobenzene	0.083	0.083	0.083
Chloroform	0.05 _a	0.05 _a	0.05 _a
Chlorophenol, 2-	0.1	0.1	0.1
Chromium Total	160 _a	160 _a	160 _a

Contaminant	Agricultural or Other Property Use	Residential/ Parkland/ Institutional Property Use	Industrial/ Commercial/ Community Property Use
Chromium VI	8	8	8
Chrysene	0.33	2.8	2.8
Cobalt	22 _a	22 _a	80 _a
Copper	140 _a	140 _a	230 _a
Cyanide (CN-)	0.051	0.051	0.051
Dibenz[a h]anthracene	0.57	0.57	0.7
Dibromochloromethane	0.05	0.05	0.05
Dichlorobenzene, 1,2-	3.4 _a	3.4 _a	6.8 _a
Dichlorobenzene, 1,3-	0.26	0.26	0.26
Dichlorobenzene, 1,4-	0.05 _a	0.05 _a	0.05 _a
Dichlorobenzidine, 3,3'-	1 _a	1 _a	1 _a
Dichlorodifluoromethane	1.5	1.5	1.5
DDD	0.55	0.55	0.55
DDE	0.26	0.26	0.52
DDT	0.078	1.4	1.4
Dichloroethane, 1,1-	0.05 _a	0.05 _a	0.05 _a
Dichloroethane, 1,2-	0.05 _a	0.05 _a	0.05 _a
Dichloroethylene, 1,1-	0.05 _a	0.05 _a	0.05 _a
Dichloroethylene, 1,2-cis-	0.05 _a	0.05 _a	0.05 _a
Dichloroethylene, 1,2-trans-	0.05 _a	0.05 _a	0.05 _a
Dichlorophenol, 2,4-	0.1	0.1	0.1
Dichloropropane, 1,2-	0.05 _a	0.05 _a	0.05 _a
Dichloropropene, 1,3-	0.05 _a	0.05 _a	0.05 _a
Dieldrin	0.05 _a	0.05 _a	0.088 _a
Diethyl Phthalate	0.5 _a	0.5 _a	0.5 _a
Dimethylphthalate	0.5 _a	0.5 _a	0.5 _a
Dimethylphenol, 2,4-	0.43	0.43	0.43
Dinitrophenol, 2,4-	2 _a	2 _a	2 _a
Dinitrotoluene, 2,4 & 2,6-	0.5 _a	0.5 _a	0.5 _a
Dioxane, 1,4	0.2 _a	0.2 _a	0.2 _a
Dioxin/Furan (TEQ)	0.000013	0.000013	0.000022
Endosulfan	0.04	0.04	0.04
Endrin	0.04 _a	0.04 _a	0.04 _a
Ethylbenzene	0.05	0.05	0.05
Ethylene dibromide	0.05 _a	0.05 _a	0.05 _a

Contaminant	Agricultural or Other Property Use	Residential/ Parkland/ Institutional Property Use	Industrial/ Commercial/ Community Property Use
Fluoranthene	0.69	0.69	2.8
Fluorene	6.6	6.6	6.6
Heptachlor	0.05 _a	0.05 _a	0.05 _a
Heptachlor Epoxide	0.05 _a	0.05 _a	0.05 _a
Hexachlorobenzene	0.034	0.034	0.034
Hexachlorobutadiene	0.01	0.01	0.01
Hexachlorocyclohexane Gamma-	0.01	0.01	0.01
Hexachloroethane	0.01	0.01	0.01
Hexane (n)	0.05	0.05	0.05
Indeno[1 2 3-cd]pyrene	0.38	0.38	0.76
Lead	45	120	120
Mercury	0.16	0.27	0.27
Methoxychlor	0.05	0.05	0.05
Methyl Ethyl Ketone	0.5	0.5	0.5
Methyl Isobutyl Ketone	0.5	0.5	0.5
Methyl Mercury **	0.00097	0.00097	0.00097
Methyl tert-Butyl Ether (MTBE)	0.05	0.05	0.05
Methylene Chloride	0.05	0.05	0.05
Methylnaphthalene, 2-(1-) ***	0.096	0.59	0.59
Molybdenum	6.9 _a	6.9 _a	40 _a
Naphthalene	0.081	0.09	0.09
Nickel	100 _a	100 _a	270 _a
Pentachlorophenol	0.1	0.1	0.34
Petroleum Hydrocarbons F1****	17	25	25
Petroleum Hydrocarbons F2	10	10	10
Petroleum Hydrocarbons F3	240	240	240
Petroleum Hydrocarbons F4	2800	2800	3300
Phenanthrene	6.2	6.2	12
Phenol	2.4	2.4	2.4
Polychlorinated Biphenyls	0.3	0.3	0.3
Pyrene	0.79	1	1
Selenium	2.4 _a	2.4 _a	5.5 _a
Silver	20 _a	20 _a	40 _a
Styrene	0.05	0.05	0.05
Tetrachloroethane, 1,1,1,2-	0.05 _a	0.05 _a	0.05 _a

Contaminant	Agricultural or Other Property Use	Residential/ Parkland/ Institutional Property Use	Industrial/ Commercial/ Community Property Use
Tetrachloroethane, 1,1,2,2-	0.05 _a	0.05 _a	0.05 _a
Tetrachloroethylene	0.05 _a	0.05 _a	0.05 _a
Thallium	1 _a	1 _a	3.3 _a
Toluene	0.2	0.2	0.2
Trichlorobenzene, 1,2,4-	0.05	0.05	0.05
Trichloroethane, 1,1,1-	0.05	0.05	0.05
Trichloroethane, 1,1,2-	0.05 _a	0.05 _a	0.05 _a
Trichloroethylene	0.05 _a	0.05 _a	0.05 _a
Trichlorofluoromethane	0.17	0.25	0.25
Trichlorophenol, 2,4,5-	0.11	0.11	0.11
Trichlorophenol, 2,4,6-	4.4 _a	4.4 _a	10 _a
Uranium	23 _a	23 _a	33 _a
Vanadium	86	86	86
Vinyl Chloride	0.02	0.02	0.02
Xylene Mixture	0.091	0.091	0.091
Zinc	340 _a	340 _a	340 _a
Electrical Conductivity (mS/cm)	0.7	0.7	1.4
Sodium Adsorption Ratio	5	5	12

Notes:

^a: Leachate analysis is required only for contaminants that are identified as contaminants of potential concern in *excess soil* (as specified in subsection 1 (7) in Section A of PART II of this document).

*: The boron standards are for hot water soluble extract for all *surface soils*. For *subsurface soils* the standards are for total boron (mixed strong acid digest), since plant protection for *soils* below the root zone is not a significant concern.

** : Analysis for methyl mercury only applies when mercury (total) standard is exceeded.

***: The methyl naphthalene standards are applicable to both 1-methyl naphthalene and 2- methyl naphthalene, with the provision that if both are detected the sum of the two must not exceed the standard.

****: F1 fraction does not include benzene, toluene, ethylbenzene and xylene (BTEX); however, the proponent has the choice as to whether or not to subtract BTEX from the analytical result.

TABLE 7.1: Full Depth Excess Soil Quality Standards for Shallow Soils in a Non-Potable Ground Water Condition

Volume Independent

(Unit in µg/g)

Contaminant	Residential/Parkland/ Institutional Property Use	Industrial/Commercial/ Community Property Use
Acenaphthene	1.9	1.9
Acenaphthylene	0.093	0.093
Acetone	1.8	1.8
Aldrin	0.05	0.088
Anthracene	0.16	0.16
Antimony	7.5	40
Arsenic	18	18
Barium	390 _a	670 _a
Benzene	0.02	0.02
Benz[a]anthracene	0.5	0.83
Benzo[a]pyrene	0.57	0.7
Benzo[b]fluoranthene	5.7	6.8
Benzo[ghi]perylene	1.1	1.1
Benzo[k]fluoranthene	2.2	2.2
Beryllium	4 _a	8 _a
Biphenyl 1,1'-	0.3	21
Bis(2-chloroethyl)ether	0.5	0.5
Bis(2-chloroisopropyl)ether	0.5	11
Bis(2-ethylhexyl)phthalate	5	9.9
Boron (Hot Water Soluble)*	1.5	2
Boron (total)	120	120
Bromodichloromethane	5.8	5.8
Bromoform	2.5	2.5
Bromomethane	0.05 _a	0.05 _a
Cadmium	1.2	1.9 _a
Carbon Tetrachloride	0.05 _a	0.05 _a
Chlordane	0.05	0.05
Chloroaniline p-	0.5	0.5
Chlorobenzene	0.28	0.28
Chloroform	0.05 _a	0.05 _a
Chlorophenol, 2-	1.6	2.3
Chromium Total	160 _a	160 _a
Chromium VI	8	8

Contaminant	Residential/Parkland/ Institutional Property Use	Industrial/Commercial/ Community Property Use
Chrysene	2.8	2.8
Cobalt	22 _a	80 _a
Copper	140 _a	230 _a
Cyanide (CN-)	0.051	0.051
Dibenz[a h]anthracene	0.57	0.7
Dibromochloromethane	5.5	5.5
Dichlorobenzene, 1,2-	0.69	0.69
Dichlorobenzene, 1,3-	4.8	6.8
Dichlorobenzene, 1,4-	0.05	0.05
Dichlorobenzidine, 3,3'-	1	1
Dichlorodifluoromethane	1.8	1.8
DDD	0.55	0.55
DDE	0.26	0.52
DDT	1.4	1.4
Dichloroethane, 1,1-	0.14 _a	2.3 _a
Dichloroethane, 1,2-	0.05 _a	0.05 _a
Dichloroethylene, 1,1-	0.05 _a	0.05 _a
Dichloroethylene, 1,2-cis-	0.05	0.05
Dichloroethylene, 1,2-trans-	0.05 _a	0.05 _a
Dichlorophenol, 2,4-	1.7	3.4
Dichloropropane, 1,2-	0.05 _a	0.05 _a
Dichloropropene, 1,3-	0.05 _a	0.05 _a
Dieldrin	0.05 _a	0.088 _a
Diethyl Phthalate	0.5 _a	0.5 _a
Dimethylphthalate	0.5 _a	0.5 _a
Dimethylphenol, 2,4-	45	45
Dinitrophenol, 2,4-	6.7	6.7
Dinitrotoluene, 2,4 & 2,6-	0.92	1.2
Dioxane, 1,4	1.8	1.8
Dioxin/Furan (TEQ)	0.000013	0.000029
Endosulfan	0.04	0.04
Endrin	0.04 _a	0.04 _a
Ethylbenzene	0.6	0.6
Ethylene dibromide	0.05 _a	0.05 _a
Fluoranthene	0.69	10
Fluorene	6.6	6.6

Contaminant	Residential/Parkland/ Institutional Property Use	Industrial/Commercial/ Community Property Use
Heptachlor	0.05 _a	0.05 _a
Heptachlor Epoxide	0.05 _a	0.05 _a
Hexachlorobenzene	0.52	0.66
Hexachlorobutadiene	0.01	0.01
Hexachlorocyclohexane Gamma-	0.01	0.01
Hexachloroethane	0.01	0.01
Hexane (n)	0.05	0.05
Indeno[1 2 3-cd]pyrene	0.38	0.76
Lead	120	120
Mercury	0.27	0.27
Methoxychlor	0.05	0.05
Methyl Ethyl Ketone	2.3	2.3
Methyl Isobutyl Ketone	0.89	0.93
Methyl Mercury **	0.00097	0.00097
Methyl tert-Butyl Ether (MTBE)	0.05	0.05
Methylene Chloride	0.05	0.05
Methlynaphthalene, 2-(1-) ***	0.92	8.7
Molybdenum	6.9	40 _a
Naphthalene	0.09	0.09
Nickel	100 _a	270 _a
Pentachlorophenol	0.1	0.34
Petroleum Hydrocarbons F1****	25	25
Petroleum Hydrocarbons F2	10	10
Petroleum Hydrocarbons F3	300	1700
Petroleum Hydrocarbons F4	2800	3300
Phenanthrene	6.2	12
Phenol	5.3	5.3
Polychlorinated Biphenyls	0.3	0.3
Pyrene	1	1
Selenium	2.4 _a	5.5 _a
Silver	20 _a	40 _a
Styrene	0.23	0.23
Tetrachloroethane, 1,1,1,2-	0.05 _a	0.05 _a
Tetrachloroethane, 1,1,2,2-	0.05 _a	0.05 _a
Tetrachloroethylene	0.05 _a	0.05 _a
Thallium	1	3.3 _a

Contaminant	Residential/Parkland/ Institutional Property Use	Industrial/Commercial/ Community Property Use
Toluene	0.88	0.88
Trichlorobenzene, 1,2,4-	0.05	0.05
Trichloroethane, 1,1,1-	0.05	0.05
Trichloroethane, 1,1,2-	0.05 _a	0.05 _a
Trichloroethylene	0.05 _a	0.05 _a
Trichlorofluoromethane	0.46	0.46
Trichlorophenol, 2,4,5-	3.1	3.1
Trichlorophenol, 2,4,6-	0.43	0.43
Uranium	23 _a	33 _a
Vanadium	86	86
Vinyl Chloride	0.02	0.02
Xylene Mixture	0.12	0.12
Zinc	340 _a	340 _a
Electrical Conductivity (mS/cm)	0.7	1.4
Sodium Adsorption Ratio	5	12

Notes:

^a: Leachate analysis is required only for contaminants that are identified as contaminants of potential concern in *excess soil* (as specified in subsection 1 (7) in Section A of PART II of this document).

*: The boron standards are for hot water soluble extract for all *surface soils*. For *subsurface soils* the standards are for total boron (mixed strong acid digest), since plant protection for *soils* below the root zone is not a significant concern.

**^a: Analysis for methyl mercury only applies when mercury (total) standard is exceeded.

***: The methyl naphthalene standards are applicable to both 1-methyl naphthalene and 2- methyl naphthalene, with the provision that if both are detected the sum of the two must not exceed the standard.

****: F1 fraction does not include benzene, toluene, ethylbenzene and xylene (BTEX); however, the proponent has the choice as to whether or not to subtract BTEX from the analytical result.

TABLE 8.1: Full Depth Excess Soil Quality Standards for Use within 30 metres of a Water Body in a Potable Ground Water Condition

Volume Independent

(Unit in µg/g)

Contaminant	Agricultural or Other Property Use	Residential/ Parkland/ Institutional Property Use	Industrial/ Commercial/ Community Property Use
Acenaphthene	0.05	0.072	0.072
Acenaphthylene	0.093	0.093	0.093
Acetone	0.5	0.5	0.5
Aldrin	0.05	0.05	0.05
Anthracene	0.05	0.16	0.16
Antimony	1 _a	1.3	1.3
Arsenic	11	18	18
Barium	210	220	220
Benzene	0.02	0.02	0.02
Benz[a]anthracene	0.32	0.36	0.36
Benzo[a]pyrene	0.31	0.31	0.31
Benzo[b]fluoranthene	0.3	0.47	0.47
Benzo[ghi]perylene	0.2	0.68	0.68
Benzo[k]fluoranthene	0.24	0.48	0.48
Beryllium	2.5	2.5	2.5
Biphenyl 1,1'-	0.05	0.05	0.05
Bis(2-chloroethyl)ether	0.5 _a	0.5 _a	0.5 _a
Bis(2-chloroisopropyl)ether	0.5 _a	0.5 _a	0.5 _a
Bis(2-ethylhexyl)phthalate	5	5	5
Boron (Hot Water Soluble)*	1.5	1.5	1.5
Boron (total)	36	36	36
Bromodichloromethane	0.05	0.05	0.05
Bromoform	0.05	0.05	0.05
Bromomethane	0.05 _a	0.05 _a	0.05 _a
Cadmium	1 _a	1.2	1.2
Carbon Tetrachloride	0.05 _a	0.05 _a	0.05 _a
Chlordane	0.05	0.05	0.05
Chloroaniline p-	0.5 _a	0.5 _a	0.5 _a
Chlorobenzene	0.05	0.05	0.05
Chloroform	0.05	0.05	0.05
Chlorophenol, 2-	0.1	0.1	0.1
Chromium Total	67	70	70

Contaminant	Agricultural or Other Property Use	Residential/ Parkland/ Institutional Property Use	Industrial/ Commercial/ Community Property Use
Chromium VI	0.66	0.66	0.66
Chrysene	0.33	2.8	2.8
Cobalt	22 _a	22 _a	40 _a
Copper	62	92	92
Cyanide (CN-)	0.051	0.051	0.051
Dibenz[a h]anthracene	0.1	0.1	0.1
Dibromochloromethane	0.05	0.05	0.05
Dichlorobenzene, 1,2-	0.05 _a	0.05 _a	0.05 _a
Dichlorobenzene, 1,3-	0.05	0.05	0.05
Dichlorobenzene, 1,4-	0.05 _a	0.05 _a	0.05 _a
Dichlorobenzidine, 3,3'-	1 _a	1 _a	1 _a
Dichlorodifluoromethane	0.05	0.05	0.05
DDD	0.05	0.05	0.05
DDE	0.05	0.05	0.05
DDT	0.078	1.4	1.4
Dichloroethane, 1,1-	0.05	0.05	0.05
Dichloroethane, 1,2-	0.05 _a	0.05 _a	0.05 _a
Dichloroethylene, 1,1-	0.05 _a	0.05 _a	0.05 _a
Dichloroethylene, 1,2-cis-	0.05 _a	0.05 _a	0.05 _a
Dichloroethylene, 1,2-trans-	0.05 _a	0.05 _a	0.05 _a
Dichlorophenol, 2,4-	0.1	0.1	0.1
Dichloropropane, 1,2-	0.05 _a	0.05 _a	0.05 _a
Dichloropropene, 1,3-	0.05	0.05	0.05
Dieldrin	0.05 _a	0.05 _a	0.05 _a
Diethyl Phthalate	0.5 _a	0.5 _a	0.5 _a
Dimethylphthalate	0.5 _a	0.5 _a	0.5 _a
Dimethylphenol, 2,4-	0.2	0.2	0.2
Dinitrophenol, 2,4-	2 _a	2 _a	2 _a
Dinitrotoluene, 2,4 & 2,6-	0.5 _a	0.5 _a	0.5 _a
Dioxane, 1,4	0.2 _a	0.2 _a	0.2 _a
Dioxin/Furan (TEQ)	0.000007	0.000007	0.000007
Endosulfan	0.04	0.04	0.04
Endrin	0.04 _a	0.04 _a	0.04 _a
Ethylbenzene	0.05	0.05	0.05
Ethylene dibromide	0.05 _a	0.05 _a	0.05 _a

Contaminant	Agricultural or Other Property Use	Residential/ Parkland/ Institutional Property Use	Industrial/ Commercial/ Community Property Use
Fluoranthene	0.69	0.69	0.69
Fluorene	0.19	0.19	0.19
Heptachlor	0.05 _a	0.05 _a	0.05 _a
Heptachlor Epoxide	0.05 _a	0.05 _a	0.05 _a
Hexachlorobenzene	0.02	0.02	0.02
Hexachlorobutadiene	0.01	0.01	0.01
Hexachlorocyclohexane Gamma-	0.01	0.01	0.01
Hexachloroethane	0.01	0.01	0.01
Hexane (n)	0.05	0.05	0.05
Indeno[1 2 3-cd]pyrene	0.2	0.23	0.23
Lead	45	120	120
Mercury	0.2	0.27	0.27
Methoxychlor	0.05	0.05	0.05
Methyl Ethyl Ketone	0.5	0.5	0.5
Methyl Isobutyl Ketone	0.5	0.5	0.5
Methyl Mercury **	NV	NV	NV
Methyl tert-Butyl Ether (MTBE)	0.05	0.05	0.05
Methylene Chloride	0.05	0.05	0.05
Methlynaphthalene, 2-(1-) ***	0.05	0.59	0.59
Molybdenum	2 _a	2 _a	2 _a
Naphthalene	0.05	0.09	0.09
Nickel	37	82	82
Pentachlorophenol	0.1	0.1	0.1
Petroleum Hydrocarbons F1****	17	25	25
Petroleum Hydrocarbons F2	10	10	10
Petroleum Hydrocarbons F3	240	240	240
Petroleum Hydrocarbons F4	120	120	120
Phenanthrene	0.56	0.69	0.69
Phenol	0.5	0.5	0.5
Polychlorinated Biphenyls	0.3	0.3	0.3
Pyrene	0.49	1	1
Selenium	1.2	1.5	1.5
Silver	0.5 _a	0.5 _a	0.5 _a
Styrene	0.05	0.05	0.05
Tetrachloroethane, 1,1,1,2-	0.05	0.05	0.05

Contaminant	Agricultural or Other Property Use	Residential/ Parkland/ Institutional Property Use	Industrial/ Commercial/ Community Property Use
Tetrachloroethane, 1,1,2,2-	0.05 ^a	0.05 ^a	0.05 ^a
Tetrachloroethylene	0.05 ^a	0.05 ^a	0.05 ^a
Thallium	1 ^a	1 ^a	1 ^a
Toluene	0.2	0.2	0.2
Trichlorobenzene, 1,2,4-	0.05	0.05	0.05
Trichloroethane, 1,1,1-	0.05	0.05	0.05
Trichloroethane, 1,1,2-	0.05	0.05	0.05
Trichloroethylene	0.05 ^a	0.05 ^a	0.05 ^a
Trichlorofluoromethane	0.05	0.25	0.25
Trichlorophenol, 2,4,5-	0.1	0.1	0.1
Trichlorophenol, 2,4,6-	0.1 ^a	0.1 ^a	0.1 ^a
Uranium	1.9	2.5	2.5
Vanadium	86	86	86
Vinyl Chloride	0.02	0.02	0.02
Xylene Mixture	0.05	0.05	0.05
Zinc	290	290	290
Electrical Conductivity (mS/cm)	0.7	0.7	0.7
Sodium Adsorption Ratio	5	5	5

Notes:

NV: No Value; ^a: Leachate analysis is required only for contaminants that are identified as contaminants of potential concern in *excess soil* (as specified in subsection 1 (7) in Section A of PART II of this document).

*: The boron standards are for hot water soluble extract for all *surface soils*. For *subsurface soils* the standards are for total boron (mixed strong acid digest), since plant protection for *soils* below the root zone is not a significant concern.

**: Analysis for methyl mercury only applies when mercury (total) standard is exceeded.

***: The methyl naphthalene standards are applicable to both 1-methyl naphthalene and 2- methyl naphthalene, with the provision that if both are detected the sum of the two must not exceed the standard.

****: F1 fraction does not include benzene, toluene, ethylbenzene and xylene (BTEX); however, the proponent has the choice as to whether or not to subtract BTEX from the analytical result.

TABLE 9.1: Full Depth Excess Soil Quality Standards for Use within 30 metres of a Water Body in a Non-Potable Ground Water Condition

Volume Independent

(Unit in µg/g)

Contaminant	Residential/Parkland/ Institutional/ Property Use	Industrial/Commercial/ Community Property Use
Acenaphthene	0.072	0.072
Acenaphthylene	0.093	0.093
Acetone	0.5	0.5
Aldrin	0.05	0.05
Anthracene	0.16	0.16
Antimony	1.3	1.3
Arsenic	18	18
Barium	220	220
Benzene	0.02	0.02
Benz[a]anthracene	0.36	0.36
Benzo[a]pyrene	0.37	0.37
Benzo[b]fluoranthene	0.47	0.47
Benzo[ghi]perylene	0.68	0.68
Benzo[k]fluoranthene	0.48	0.48
Beryllium	2.5	2.5
Biphenyl 1,1'-	0.05	0.05
Bis(2-chloroethyl)ether	0.5	0.5
Bis(2-chloroisopropyl)ether	0.5	0.5
Bis(2-ethylhexyl)phthalate	5	5
Boron (Hot Water Soluble)*	1.5	1.5
Boron (total)	36	36
Bromodichloromethane	0.05	0.05
Bromoform	0.05	0.05
Bromomethane	0.05 _a	0.05 _a
Cadmium	1.2	1.2
Carbon Tetrachloride	0.05 _a	0.05 _a
Chlordane	0.05	0.05
Chloroaniline p-	0.5	0.5
Chlorobenzene	0.05	0.05
Chloroform	0.05	0.05
Chlorophenol, 2-	0.1	0.1
Chromium Total	70	70
Chromium VI	0.66	0.66

Contaminant	Residential/Parkland/ Institutional/ Property Use	Industrial/Commercial/ Community Property Use
Chrysene	2.8	2.8
Cobalt	22 ^a	40 ^a
Copper	92	92
Cyanide (CN-)	0.051	0.051
Dibenz[a h]anthracene	0.1	0.1
Dibromochloromethane	0.05	0.05
Dichlorobenzene, 1,2-	0.05	0.05
Dichlorobenzene, 1,3-	0.05	0.05
Dichlorobenzene, 1,4-	0.05	0.05
Dichlorobenzidine, 3,3'-	1	1
Dichlorodifluoromethane	0.05	0.05
DDD	0.05	0.05
DDE	0.05	0.05
DDT	1.4	1.4
Dichloroethane, 1,1-	0.05	0.05
Dichloroethane, 1,2-	0.05	0.05
Dichloroethylene, 1,1-	0.05 ^a	0.05 ^a
Dichloroethylene, 1,2-cis-	0.05	0.05
Dichloroethylene, 1,2-trans-	0.05 ^a	0.05 ^a
Dichlorophenol, 2,4-	0.1	0.1
Dichloropropane, 1,2-	0.05	0.05
Dichloropropene, 1,3-	0.05	0.05
Dieldrin	0.05 ^a	0.05 ^a
Diethyl Phthalate	0.5 ^a	0.5 ^a
Dimethylphthalate	0.5 ^a	0.5 ^a
Dimethylphenol, 2,4-	0.2	0.2
Dinitrophenol, 2,4-	2	2
Dinitrotoluene, 2,4 & 2,6-	0.5	0.5
Dioxane, 1,4	0.2	0.2
Dioxin/Furan (TEQ)	0.000007	0.000007
Endosulfan	0.04	0.04
Endrin	0.04 ^a	0.04 ^a
Ethylbenzene	0.05	0.05
Ethylene dibromide	0.05 ^a	0.05 ^a
Fluoranthene	0.69	0.69
Fluorene	0.19	0.19

Contaminant	Residential/Parkland/ Institutional/ Property Use	Industrial/Commercial/ Community Property Use
Heptachlor	0.05 _a	0.05 _a
Heptachlor Epoxide	0.05 _a	0.05 _a
Hexachlorobenzene	0.02	0.02
Hexachlorobutadiene	0.01	0.01
Hexachlorocyclohexane Gamma-	0.01	0.01
Hexachloroethane	0.01	0.01
Hexane (n)	0.05	0.05
Indeno[1 2 3-cd]pyrene	0.23	0.23
Lead	120	120
Mercury	0.27	0.27
Methoxychlor	0.05	0.05
Methyl Ethyl Ketone	0.5	0.5
Methyl Isobutyl Ketone	0.5	0.5
Methyl Mercury **	NV	NV
Methyl tert-Butyl Ether (MTBE)	0.05	0.05
Methylene Chloride	0.05	0.05
Methlynaphthalene, 2-(1-) ***	0.59	0.59
Molybdenum	2	2
Naphthalene	0.09	0.09
Nickel	82	82
Pentachlorophenol	0.1	0.1
Petroleum Hydrocarbons F1****	25	25
Petroleum Hydrocarbons F2	10	10
Petroleum Hydrocarbons F3	240	240
Petroleum Hydrocarbons F4	120	120
Phenanthrene	0.69	0.69
Phenol	0.5	0.5
Polychlorinated Biphenyls	0.3	0.3
Pyrene	1	1
Selenium	1.5	1.5
Silver	0.5 _a	0.5 _a
Styrene	0.05	0.05
Tetrachloroethane, 1,1,1,2-	0.05	0.05
Tetrachloroethane, 1,1,2,2-	0.05	0.05
Tetrachloroethylene	0.05 _a	0.05 _a
Thallium	1	1

Contaminant	Residential/Parkland/ Institutional/ Property Use	Industrial/Commercial/ Community Property Use
Toluene	0.2	0.2
Trichlorobenzene, 1,2,4-	0.05	0.05
Trichloroethane, 1,1,1-	0.05	0.05
Trichloroethane, 1,1,2-	0.05	0.05
Trichloroethylene	0.05 ^a	0.05 ^a
Trichlorofluoromethane	0.25	0.25
Trichlorophenol, 2,4,5-	0.1	0.1
Trichlorophenol, 2,4,6-	0.1	0.1
Uranium	2.5	2.5
Vanadium	86	86
Vinyl Chloride	0.02	0.02
Xylene Mixture	0.05	0.05
Zinc	290	290
Electrical Conductivity (mS/cm)	0.7	0.7
Sodium Adsorption Ratio	5	5

Notes:

NV: No Value; ^a: Leachate analysis is required only for contaminants that are identified as contaminants of potential concern in *excess soil* (as specified in subsection 1 (7) in Section A of PART II of this document).

*: The boron standards are for hot water soluble extract for all *surface soils*. For *subsurface soils* the standards are for total boron (mixed strong acid digest), since plant protection for *soils* below the root zone is not a significant concern.

**: Analysis for methyl mercury only applies when mercury (total) standard is exceeded.

***: The methyl naphthalene standards are applicable to both 1-methyl naphthalene and 2- methyl naphthalene, with the provision that if both are detected the sum of the two must not exceed the standard.

****: F1 fraction does not include benzene, toluene, ethylbenzene and xylene (BTEX); however, the proponent has the choice as to whether or not to subtract BTEX from the analytical result.

APPENDIX 2. GENERIC LEACHATE SCREENING LEVELS FOR EXCESS SOIL REUSE

The *ministry* incorporated leachate analysis as a mandatory component, in certain situations, to confirm acceptable soil quality for the following conditions:

- when soil to ground water component values (S-GW1, S-GW2, or S-GW3) are not derived within the development of excess soil quality standards; and
- when a soil standard for a contaminant is identified as having analytical limitations (as explained in the *rationale document*).

This Appendix provides *leachate screening levels* organized in a series of look-up tables that correspond to the tables of *generic excess soil quality standards*, including Table 1 and Tables 2.1 to 9.1.

Leachate analysis is not required when Tables 2 to 9 are used for small volumes of *excess soil* and therefore *leachate screening levels* are not provided for these tables.

How to Read These Tables

The tables of *leachate screening levels* set out prescribed contaminants by listing contaminants in the column of rows that has the heading row entitled “Contaminant”. The tables set out prescribed *leachate screening levels* for these contaminants by indicating in the appropriate locations the maximum concentrations of the contaminant in leachate which is expressed in a number that is to be read as µg/L.

The *leachate screening level* that is applicable for a type of property can be found in the row named for the contaminant and in the column that has the heading row that indicates the type of property use of the property at which *excess soil* is reused.

A contaminant that is listed and for which the symbol “-” appears in the cell, instead of a numerical value, is a contaminant for which leachate analysis is not required for that table, because neither of the aforementioned conditions which would require leachate analysis are present.

A contaminant that is listed and for which the abbreviation “NA” appears in the cell, instead of a numerical value, is a contaminant for which a standard is not prescribed because no standard is required. The abbreviation “NA” means “not applicable”.

Notes for Tables 1 and 2.1 to 9.1

Leachate screening levels presented in this Appendix are associated with their corresponding excess soil quality standards provided in Appendix 1 of this document. For example, if Table 2.1 for residential property use presented in Appendix 1 of this document is selected as the appropriate table of excess soil quality standards, the *leachate screening levels* of Table 2.1 for residential property use presented in this Appendix must be used.

Any site conditions that may lead to the inappropriateness of the use of the *generic excess soil quality standards* at a given property may also result in *leachate screening levels* not being appropriate for use.

For a contaminant in *excess soil* that originates from an *area of potential environmental concern (APEC)* and that is identified as a *contaminant of potential concern (COPC)*, if there is a numerical *leachate screening level* shown in the table being used, leachate analysis is required. In such cases, *leachate screening levels* shall be met in order for excess soil quality standards to be met (refer to subsection 1(7) in Section A of PART II of this document for additional leachate rules).

TABLE 1: Leachate Screening Levels for Excess Soil Reuse

(Unit in µg/L)

Contaminant	Agricultural or Others Property Use	Residential/Parkland/ Institutional/ Industrial/ Commercial/Community Property Use
Acenaphthene	-	-
Acenaphthylene	-	-
Acetone	-	-
Aldrin	-	-
Anthracene	-	-
Antimony	6	-
Arsenic	-	-
Barium	-	-
Benzene	-	-
Benz[a]anthracene	-	-
Benzo[a]pyrene	-	-
Benzo[b]fluoranthene	-	-
Benzo[ghi]perylene	-	-
Benzo[k]fluoranthene	-	-
Beryllium	-	-
Biphenyl 1,1'-	-	-
Bis(2-chloroethyl)ether	5	5
Bis(2-chloroisopropyl)ether	4	4
Bis(2-ethylhexyl)phthalate	-	-
Boron (Hot Water Soluble)	-	-
Boron (total)	-	-
Bromodichloromethane	-	-
Bromoform	-	-
Bromomethane	0.5	0.5
Cadmium	0.5	-
Carbon Tetrachloride	0.2	0.2
Chlordane	-	-
Chloroaniline p-	10	10
Chlorobenzene	-	-
Chloroform	1	1
Chlorophenol, 2-	-	-
Chromium Total	-	-
Chromium VI	-	-

Contaminant	Agricultural or Others Property Use	Residential/Parkland/ Institutional/ Industrial/ Commercial/Community Property Use
Chrysene	-	-
Cobalt	-	-
Copper	-	-
Cyanide (CN-)	-	-
Dibenz[a h]anthracene	-	-
Dibromochloromethane	-	-
Dichlorobenzene, 1,2-	0.55	0.55
Dichlorobenzene, 1,3-	-	-
Dichlorobenzene, 1,4-	0.5	0.5
Dichlorobenzidine, 3,3'-	0.5	0.5
Dichlorodifluoromethane	-	-
DDD	-	-
DDE	-	-
DDT	-	-
Dichloroethane, 1,1-	0.5	0.5
Dichloroethane, 1,2-	0.5	0.5
Dichloroethylene, 1,1-	0.5	0.5
Dichloroethylene, 1,2-cis-	0.5	0.5
Dichloroethylene, 1,2-trans-	0.5	0.5
Dichlorophenol, 2,4-	-	-
Dichloropropane, 1,2-	0.5	0.5
Dichloropropene, 1,3-	0.5	0.5
Dieldrin	0.095	0.095
Diethyl Phthalate	2	2
Dimethylphthalate	2	2
Dimethylphenol, 2,4-	-	-
Dinitrophenol, 2,4-	10	10
Dinitrotoluene, 2,4 & 2,6-	5	5
Dioxane, 1,4	2	2
Dioxin/Furan (TEQ)	-	-
Endosulfan	-	-
Endrin	0.061	0.061
Ethylbenzene	-	-
Ethylene dibromide	0.2	0.2
Fluoranthene	-	-

Contaminant	Agricultural or Others Property Use	Residential/Parkland/ Institutional/ Industrial/ Commercial/Community Property Use
Fluorene	-	-
Heptachlor	0.01	0.01
Heptachlor Epoxide	0.01	0.01
Hexachlorobenzene	-	-
Hexachlorobutadiene	-	-
Hexachlorocyclohexane Gamma-	-	-
Hexachloroethane	-	-
Hexane (n)	-	-
Indeno[1 2 3-cd]pyrene	-	-
Lead	-	-
Mercury	-	-
Methoxychlor	-	-
Methyl Ethyl Ketone	-	-
Methyl Isobutyl Ketone	-	-
Methyl Mercury	-	-
Methyl tert-Butyl Ether (MTBE)	-	-
Methylene Chloride	-	-
Methlynaphthalene, 2-(1-)	-	-
Molybdenum	23	23
Naphthalene	-	-
Nickel	-	-
Pentachlorophenol	-	-
Petroleum Hydrocarbons F1	-	-
Petroleum Hydrocarbons F2	-	-
Petroleum Hydrocarbons F3	-	-
Petroleum Hydrocarbons F4	-	-
Phenanthrene	-	-
Phenol	-	-
Polychlorinated Biphenyls	-	-
Pyrene	-	-
Selenium	-	-
Silver	0.3	0.3
Styrene	-	-
Tetrachloroethane, 1,1,1,2-	0.5	0.5
Tetrachloroethane, 1,1,2,2-	0.5	0.5

Contaminant	Agricultural or Others Property Use	Residential/Parkland/ Institutional/ Industrial/ Commercial/Community Property Use
Tetrachloroethylene	0.5	0.5
Thallium	2	2
Toluene	-	-
Trichlorobenzene, 1,2,4-	-	-
Trichloroethane, 1,1,1-	-	-
Trichloroethane, 1,1,2-	0.5	0.5
Trichloroethylene	0.5	0.5
Trichlorofluoromethane	-	-
Trichlorophenol, 2,4,5-	-	-
Trichlorophenol, 2,4,6-	0.75	0.75
Uranium	-	-
Vanadium	-	-
Vinyl Chloride	-	-
Xylene Mixture	-	-
Zinc	-	-
Electrical Conductivity (mS/cm)	NA	NA
Sodium Adsorption Ratio	NA	NA

Notes: NA: Not Applicable; -: No leachate analysis required.

TABLE 2.1: Leachate Screening Levels for Full Depth Excess Soil in a Potable Ground Water Condition

Volume Independent

(Unit in µg/L)

Contaminant	Agricultural or Other Property Use	Residential/ Parkland/ Institutional Property Use	Industrial/ Commercial/ Community Property Use
Acenaphthene		-	-
Acenaphthylene	-	-	-
Acetone	-	-	-
Aldrin	-	-	-
Anthracene	-	-	-
Antimony	6	6	6
Arsenic	-	-	-
Barium	1000	1000	1000
Benzene	-	-	-
Benz[a]anthracene	-	-	-
Benzo[a]pyrene	-	-	-
Benzo[b]fluoranthene	-	-	-
Benzo[ghi]perylene	-	-	-
Benzo[k]fluoranthene	-	-	-
Beryllium	4	4	4
Biphenyl 1,1'-	-	-	-
Bis(2-chloroethyl)ether	5	5	5
Bis(2-chloroisopropyl)ether	4	4	4
Bis(2-ethylhexyl)phthalate	-	-	-
Boron (Hot Water Soluble)	-	-	-
Boron (total)	5000	5000	5000
Bromodichloromethane	-	-	-
Bromoform	-	-	-
Bromomethane	0.5	0.5	0.5
Cadmium	0.5	-	0.5
Carbon Tetrachloride	0.2	0.2	0.2
Chlordane	-	-	-
Chloroaniline p-	10	10	10
Chlorobenzene	-	-	-
Chloroform	-	-	-
Chlorophenol, 2-	-	-	-
Chromium Total	50	50	50

Contaminant	Agricultural or Other Property Use	Residential/ Parkland/ Institutional Property Use	Industrial/ Commercial/ Community Property Use
Chromium VI	-	-	-
Chrysene	-	-	-
Cobalt	3.8	3.8	3.8
Copper	14	14	14
Cyanide (CN-)	-	-	-
Dibenz[a h]anthracene	-	-	-
Dibromochloromethane	-	-	-
Dichlorobenzene, 1,2-	0.55	0.55	0.55
Dichlorobenzene, 1,3-	-	-	-
Dichlorobenzene, 1,4-	0.5	0.5	0.5
Dichlorobenzidine, 3,3'-	0.5	0.5	0.5
Dichlorodifluoromethane	-	-	-
DDD	-	-	-
DDE	-	-	-
DDT	-	-	-
Dichloroethane, 1,1-	-	-	-
Dichloroethane, 1,2-	0.5	0.5	0.5
Dichloroethylene, 1,1-	0.5	0.5	0.5
Dichloroethylene, 1,2-cis-	0.5	0.5	0.5
Dichloroethylene, 1,2-trans-	0.5	0.5	0.5
Dichlorophenol, 2,4-	-	-	-
Dichloropropane, 1,2-	0.5	0.5	0.5
Dichloropropene, 1,3-	-	-	-
Dieldrin	0.097	0.097	0.097
Diethyl Phthalate	2	2	2
Dimethylphthalate	2	2	2
Dimethylphenol, 2,4-	-	-	-
Dinitrophenol, 2,4-	10	10	10
Dinitrotoluene, 2,4 & 2,6-	5	5	5
Dioxane, 1,4	2	2	2
Dioxin/Furan (TEQ)	-	-	-
Endosulfan	-	-	-
Endrin	0.062	0.062	0.062
Ethylbenzene	-	-	-
Ethylene dibromide	0.2	0.2	0.2

Contaminant	Agricultural or Other Property Use	Residential/ Parkland/ Institutional Property Use	Industrial/ Commercial/ Community Property Use
Fluoranthene	-	-	-
Fluorene	-	-	-
Heptachlor	-	-	-
Heptachlor Epoxide	0.01	0.01	0.01
Hexachlorobenzene	-	-	-
Hexachlorobutadiene	-	-	-
Hexachlorocyclohexane Gamma-	-	-	-
Hexachloroethane	-	-	-
Hexane (n)	-	-	-
Indeno[1 2 3-cd]pyrene	-	-	-
Lead	-	-	-
Mercury	-	-	-
Methoxychlor	-	-	-
Methyl Ethyl Ketone	-	-	-
Methyl Isobutyl Ketone	-	-	-
Methyl Mercury	-	-	-
Methyl tert-Butyl Ether (MTBE)	-	-	-
Methylene Chloride	-	-	-
Methylnaphthalene, 2-(1-)	-	-	-
Molybdenum	23	23	23
Naphthalene	-	-	-
Nickel	78	78	78
Pentachlorophenol	-	-	-
Petroleum Hydrocarbons F1	-	-	-
Petroleum Hydrocarbons F2	-	-	-
Petroleum Hydrocarbons F3	-	-	-
Petroleum Hydrocarbons F4	-	-	-
Phenanthrene	-	-	-
Phenol	-	-	-
Polychlorinated Biphenyls	-	-	-
Pyrene	-	-	-
Selenium	10	10	10
Silver	0.3	0.3	0.3
Styrene	-	-	-
Tetrachloroethane, 1,1,1,2-	-	-	-

Contaminant	Agricultural or Other Property Use	Residential/ Parkland/ Institutional Property Use	Industrial/ Commercial/ Community Property Use
Tetrachloroethane, 1,1,2,2-	0.5	0.5	0.5
Tetrachloroethylene	0.5	0.5	0.5
Thallium	2	2	2
Toluene	-	-	-
Trichlorobenzene, 1,2,4-	-	-	-
Trichloroethane, 1,1,1-	-	-	-
Trichloroethane, 1,1,2-	-	-	-
Trichloroethylene	0.5	0.5	0.5
Trichlorofluoromethane	-	-	-
Trichlorophenol, 2,4,5-	-	-	-
Trichlorophenol, 2,4,6-	0.75	0.75	0.75
Uranium	20	20	20
Vanadium	-	-	-
Vinyl Chloride	-	-	-
Xylene Mixture	-	-	-
Zinc	180	180	180
Electrical Conductivity (mS/cm)	NA	NA	NA
Sodium Adsorption Ratio	NA	NA	NA

Notes: NA: Not Applicable; -: No leachate analysis required.

TABLE 3.1: Leachate Screening Levels for Full Depth Excess Soil in a Non-Potable Ground Water Condition

Volume Independent

(Unit in µg/L)

Contaminant	Residential/Parkland/ Institutional Property Use	Industrial/Commercial/ Community Property Use
Acenaphthene	-	-
Acenaphthylene	-	-
Acetone	-	-
Aldrin	-	-
Anthracene	-	-
Antimony	-	-
Arsenic	-	-
Barium	4600	4600
Benzene	-	-
Benz[a]anthracene	-	-
Benzo[a]pyrene	-	-
Benzo[b]fluoranthene	-	-
Benzo[ghi]perylene	-	-
Benzo[k]fluoranthene	-	-
Beryllium	11	11
Biphenyl 1,1'-	-	-
Bis(2-chloroethyl)ether	-	-
Bis(2-chloroisopropyl)ether	-	-
Bis(2-ethylhexyl)phthalate	-	-
Boron (Hot Water Soluble)	-	-
Boron (total)	-	-
Bromodichloromethane	-	-
Bromoform	-	-
Bromomethane	0.5	0.5
Cadmium	-	0.5
Carbon Tetrachloride	0.2	0.2
Chlordane	-	-
Chloroaniline p-	-	-
Chlorobenzene	-	-
Chloroform	-	-
Chlorophenol, 2-	-	-
Chromium Total	130	130
Chromium VI	-	-

Contaminant	Residential/Parkland/ Institutional Property Use	Industrial/Commercial/ Community Property Use
Chrysene	-	-
Cobalt	10	10
Copper	14	14
Cyanide (CN-)	-	-
Dibenz[a h]anthracene	-	-
Dibromochloromethane	-	-
Dichlorobenzene, 1,2-	-	-
Dichlorobenzene, 1,3-	-	-
Dichlorobenzene, 1,4-	-	-
Dichlorobenzidine, 3,3'-	-	-
Dichlorodifluoromethane	-	-
DDD	-	-
DDE	-	-
DDT	-	-
Dichloroethane, 1,1-	-	-
Dichloroethane, 1,2-	-	-
Dichloroethylene, 1,1-	0.5	0.5
Dichloroethylene, 1,2-cis-	-	-
Dichloroethylene, 1,2-trans-	0.5	0.5
Dichlorophenol, 2,4-	-	-
Dichloropropane, 1,2-	-	-
Dichloropropene, 1,3-	-	-
Dieldrin	0.097	0.097
Diethyl Phthalate	2	2
Dimethylphthalate	2	2
Dimethylphenol, 2,4-	-	-
Dinitrophenol, 2,4-	-	-
Dinitrotoluene, 2,4 & 2,6-	-	-
Dioxane, 1,4	-	-
Dioxin/Furan (TEQ)	-	-
Endosulfan	-	-
Endrin	0.062	0.062
Ethylbenzene	-	-
Ethylene dibromide	0.2	0.2
Fluoranthene	-	-
Fluorene	-	-

Contaminant	Residential/Parkland/ Institutional Property Use	Industrial/Commercial/ Community Property Use
Heptachlor	-	-
Heptachlor Epoxide	0.01	0.01
Hexachlorobenzene	-	-
Hexachlorobutadiene	-	-
Hexachlorocyclohexane Gamma-	-	-
Hexachloroethane	-	-
Hexane (n)	-	-
Indeno[1 2 3-cd]pyrene	-	-
Lead	-	-
Mercury	-	-
Methoxychlor	-	-
Methyl Ethyl Ketone	-	-
Methyl Isobutyl Ketone	-	-
Methyl Mercury	-	-
Methyl tert-Butyl Ether (MTBE)	-	-
Methylene Chloride	-	-
Methylnaphthalene, 2-(1-)	-	-
Molybdenum	-	1500
Naphthalene	-	-
Nickel	78	78
Pentachlorophenol	-	-
Petroleum Hydrocarbons F1	-	-
Petroleum Hydrocarbons F2	-	-
Petroleum Hydrocarbons F3	-	-
Petroleum Hydrocarbons F4	-	-
Phenanthrene	-	-
Phenol	-	-
Polychlorinated Biphenyls	-	-
Pyrene	-	-
Selenium	10	10
Silver	0.3	0.3
Styrene	-	-
Tetrachloroethane, 1,1,1,2-	-	-
Tetrachloroethane, 1,1,2,2-	-	-
Tetrachloroethylene	0.5	0.5
Thallium	-	80

Contaminant	Residential/Parkland/ Institutional Property Use	Industrial/Commercial/ Community Property Use
Toluene	-	-
Trichlorobenzene, 1,2,4-	-	-
Trichloroethane, 1,1,1-	-	-
Trichloroethane, 1,1,2-	-	-
Trichloroethylene	0.5	0.5
Trichlorofluoromethane	-	-
Trichlorophenol, 2,4,5-	-	-
Trichlorophenol, 2,4,6-	-	-
Uranium	66	66
Vanadium	-	-
Vinyl Chloride	-	-
Xylene Mixture	-	-
Zinc	180	180
Electrical Conductivity (mS/cm)	NA	NA
Sodium Adsorption Ratio	NA	NA

Notes: NA: Not Applicable; -: No leachate analysis required.

TABLE 4.1: Leachate Screening Levels for Stratified Excess Soil in a Potable Ground Water Condition

Volume Independent

(Unit in µg/L)

Contaminant	Residential/Parkland/ Institutional Property Use		Industrial/Commercial/ Community Property Use	
	Surface	Subsurface	Surface	Subsurface
Acenaphthene	-	-	-	-
Acenaphthylene	-	-	-	-
Acetone	-	-	-	-
Aldrin	-	-	-	-
Anthracene	-	-	-	-
Antimony	6	6	6	6
Arsenic	-	-	-	13
Barium	1000	1000	1000	1000
Benzene	-	-	-	-
Benz[a]anthracene	-	-	-	-
Benzo[a]pyrene	-	-	-	-
Benzo[b]fluoranthene	-	-	-	-
Benzo[ghi]perylene	-	-	-	-
Benzo[k]fluoranthene	-	-	-	-
Beryllium	4	4	4	4
Biphenyl 1,1'-	-	-	-	-
Bis(2-chloroethyl)ether	5	5	5	5
Bis(2-chloroisopropyl)ether	4	4	4	4
Bis(2-ethylhexyl)phthalate	-	-	-	-
Boron (Hot Water Soluble)	-	-	-	-
Boron (total)	-	5000	-	5000
Bromodichloromethane	-	-	-	-
Bromoform	-	-	-	-
Bromomethane	0.5	0.5	0.5	0.5
Cadmium	-	0.5	0.5	0.5
Carbon Tetrachloride	0.2	0.2	0.2	0.2
Chlordane	-	-	-	-
Chloroaniline p-	10	10	10	10
Chlorobenzene	-	-	-	-
Chloroform	-	-	-	-
Chlorophenol, 2-	-	-	-	-
Chromium Total	50	50	50	50

Contaminant	Residential/Parkland/ Institutional Property Use		Industrial/Commercial/ Community Property Use	
	Surface	Subsurface	Surface	Subsurface
Chromium VI	-	-	-	-
Chrysene	-	-	-	-
Cobalt	3.8	3.8	3.8	3.8
Copper	14	14	14	14
Cyanide (CN-)	-	-	-	-
Dibenz[a h]anthracene	-	-	-	-
Dibromochloromethane	-	-	-	-
Dichlorobenzene, 1,2-	0.55	0.55	0.55	0.55
Dichlorobenzene, 1,3-	-	-	-	-
Dichlorobenzene, 1,4-	0.5	0.5	0.5	0.5
Dichlorobenzidine, 3,3'-	0.5	0.5	0.5	0.5
Dichlorodifluoromethane	-	-	-	-
DDD	-	-	-	-
DDE	-	-	-	-
DDT	-	-	-	-
Dichloroethane, 1,1-	-	-	-	-
Dichloroethane, 1,2-	0.5	0.5	0.5	0.5
Dichloroethylene, 1,1-	0.5	0.5	0.5	0.5
Dichloroethylene, 1,2-cis-	0.5	0.5	0.5	0.5
Dichloroethylene, 1,2-trans-	0.5	0.5	0.5	0.5
Dichlorophenol, 2,4-	-	-	-	-
Dichloropropane, 1,2-	0.5	0.5	0.5	0.5
Dichloropropene, 1,3-	-	-	-	-
Dieldrin	0.097	0.097	0.097	0.097
Diethyl Phthalate	2	2	2	2
Dimethylphthalate	2	2	2	2
Dimethylphenol, 2,4-	-	-	-	-
Dinitrophenol, 2,4-	10	10	10	10
Dinitrotoluene, 2,4 & 2,6-	5	5	5	5
Dioxane, 1,4	2	2	2	2
Dioxin/Furan (TEQ)	-	-	-	-
Endosulfan	-	-	-	-
Endrin	0.062	0.062	0.062	0.062
Ethylbenzene	-	-	-	-
Ethylene dibromide	0.2	0.2	0.2	0.2

Contaminant	Residential/Parkland/ Institutional Property Use		Industrial/Commercial/ Community Property Use	
	Surface	Subsurface	Surface	Subsurface
Fluoranthene	-	-	-	-
Fluorene	-	-	-	-
Heptachlor	-	-	-	-
Heptachlor Epoxide	0.01	0.01	0.01	0.01
Hexachlorobenzene	-	-	-	-
Hexachlorobutadiene	-	-	-	-
Hexachlorocyclohexane Gamma-	-	-	-	-
Hexachloroethane	-	-	-	-
Hexane (n)	-	-	-	-
Indeno[1 2 3-cd]pyrene	-	-	-	-
Lead	-	4	-	4
Mercury	-	-	-	-
Methoxychlor	-	-	-	-
Methyl Ethyl Ketone	-	-	-	-
Methyl Isobutyl Ketone	-	-	-	-
Methyl Mercury	-	-	-	-
Methyl tert-Butyl Ether (MTBE)	-	-	-	-
Methylene Chloride	-	-	-	-
Methlynaphthalene, 2-(1-)	-	-	-	-
Molybdenum	23	23	23	23
Naphthalene	-	-	-	-
Nickel	78	78	78	78
Pentachlorophenol	-	-	-	-
Petroleum Hydrocarbons F1	-	-	-	-
Petroleum Hydrocarbons F2	-	-	-	-
Petroleum Hydrocarbons F3	-	-	-	-
Petroleum Hydrocarbons F4	-	-	-	-
Phenanthrene	-	-	-	-
Phenol	-	-	-	-
Polychlorinated Biphenyls	-	-	-	-
Pyrene	-	-	-	-
Selenium	10	10	10	10
Silver	0.3	0.3	0.3	0.3
Styrene	-	-	-	-
Tetrachloroethane, 1,1,1,2-	-	-	-	-

Contaminant	Residential/Parkland/ Institutional Property Use		Industrial/Commercial/ Community Property Use	
	Surface	Subsurface	Surface	Subsurface
Tetrachloroethane, 1,1,2,2-	0.5	0.5	0.5	0.5
Tetrachloroethylene	0.5	0.5	0.5	0.5
Thallium	2	2	2	2
Toluene	-	-	-	-
Trichlorobenzene, 1,2,4-	-	-	-	-
Trichloroethane, 1,1,1-	-	-	-	-
Trichloroethane, 1,1,2-	-	-	-	-
Trichloroethylene	0.5	0.5	0.5	0.5
Trichlorofluoromethane	-	-	-	-
Trichlorophenol, 2,4,5-	-	-	-	-
Trichlorophenol, 2,4,6-	0.75	0.75	0.75	0.75
Uranium	20	20	20	20
Vanadium	-	6.2	-	6.2
Vinyl Chloride	-	-	-	-
Xylene Mixture	-	-	-	-
Zinc	180	180	180	180
Electrical Conductivity (mS/cm)	NA	NA	NA	NA
Sodium Adsorption Ratio	NA	NA	NA	NA

Notes: NA: Not Applicable; -: No leachate analysis required.

TABLE 5.1: Leachate Screening Levels for Stratified Excess Soil in a Non-Potable Ground Water Condition

Volume Independent

(Unit in µg/L)

Contaminant	Residential/Parkland/ Institutional Property Use		Industrial/Commercial/ Community Property Use	
	Surface	Subsurface	Surface	Subsurface
Acenaphthene	-	-	-	-
Acenaphthylene	-	-	-	-
Acetone	-	-	-	-
Aldrin	-	-	-	-
Anthracene	-	-	-	-
Antimony	-	-	-	-
Arsenic	-	-	-	300
Barium	4600	4600	4600	4600
Benzene	-	-	-	-
Benz[a]anthracene	-	-	-	-
Benzo[a]pyrene	-	-	-	-
Benzo[b]fluoranthene	-	-	-	-
Benzo[ghi]perylene	-	-	-	-
Benzo[k]fluoranthene	-	-	-	-
Beryllium	11	11	11	11
Biphenyl 1,1'-	-	-	-	-
Bis(2-chloroethyl)ether	-	-	-	-
Bis(2-chloroisopropyl)ether	-	-	-	-
Bis(2-ethylhexyl)phthalate	-	-	-	-
Boron (Hot Water Soluble)	-	-	-	-
Boron (total)	-	7100	-	7100
Bromodichloromethane	-	-	-	-
Bromoform	-	-	-	-
Bromomethane	0.5	0.5	0.5	0.5
Cadmium	-	0.5	0.5	0.5
Carbon Tetrachloride	0.2	0.2	0.2	0.2
Chlordane	-	-	-	-
Chloroaniline p-	-	-	-	-
Chlorobenzene	-	-	-	-
Chloroform	-	-	-	-
Chlorophenol, 2-	-	-	-	-
Chromium Total	130	130	130	130

Contaminant	Residential/Parkland/ Institutional Property Use		Industrial/Commercial/ Community Property Use	
	Surface	Subsurface	Surface	Subsurface
Chromium VI	-	-	-	-
Chrysene	-	-	-	-
Cobalt	10	10	10	10
Copper	14	14	14	14
Cyanide (CN-)	-	-	-	-
Dibenz[a h]anthracene	-	-	-	-
Dibromochloromethane	-	-	-	-
Dichlorobenzene, 1,2-	-	-	-	-
Dichlorobenzene, 1,3-	-	-	-	-
Dichlorobenzene, 1,4-	-	-	-	-
Dichlorobenzidine, 3,3'-	-	-	-	-
Dichlorodifluoromethane	-	-	-	-
DDD	-	-	-	-
DDE	-	-	-	-
DDT	-	-	-	-
Dichloroethane, 1,1-	-	-	-	-
Dichloroethane, 1,2-	-	-	-	-
Dichloroethylene, 1,1-	0.5	0.5	0.5	0.5
Dichloroethylene, 1,2-cis-	-	-	-	-
Dichloroethylene, 1,2-trans-	0.5	0.5	0.5	0.5
Dichlorophenol, 2,4-	-	-	-	-
Dichloropropane, 1,2-	-	-	-	-
Dichloropropene, 1,3-	-	-	-	-
Dieldrin	0.097	0.097	0.097	0.097
Diethyl Phthalate	2	2	2	2
Dimethylphthalate	2	2	2	2
Dimethylphenol, 2,4-	-	-	-	-
Dinitrophenol, 2,4-	-	-	-	-
Dinitrotoluene, 2,4 & 2,6-	-	-	-	-
Dioxane, 1,4	-	-	-	-
Dioxin/Furan (TEQ)	-	-	-	-
Endosulfan	-	-	-	-
Endrin	0.062	0.062	0.062	0.062
Ethylbenzene	-	-	-	-
Ethylene dibromide	0.2	0.2	0.2	0.2

Contaminant	Residential/Parkland/ Institutional Property Use		Industrial/Commercial/ Community Property Use	
	Surface	Subsurface	Surface	Subsurface
Fluoranthene	-	-	-	-
Fluorene	-	-	-	-
Heptachlor	-	-	-	-
Heptachlor Epoxide	0.01	0.01	0.01	0.01
Hexachlorobenzene	-	-	-	-
Hexachlorobutadiene	-	-	-	-
Hexachlorocyclohexane Gamma-	-	-	-	-
Hexachloroethane	-	-	-	-
Hexane (n)	-	-	-	-
Indeno[1 2 3-cd]pyrene	-	-	-	-
Lead	-	4	-	4
Mercury	-	-	-	-
Methoxychlor	-	-	-	-
Methyl Ethyl Ketone	-	-	-	-
Methyl Isobutyl Ketone	-	-	-	-
Methyl Mercury	-	-	-	-
Methyl tert-Butyl Ether (MTBE)	-	-	-	-
Methylene Chloride	-	-	-	-
Methlynaphthalene, 2-(1-)	-	-	-	-
Molybdenum	-	1500	1500	1500
Naphthalene	-	-	-	-
Nickel	78	78	78	78
Pentachlorophenol	-	-	-	-
Petroleum Hydrocarbons F1	-	-	-	-
Petroleum Hydrocarbons F2	-	-	-	-
Petroleum Hydrocarbons F3	-	-	-	-
Petroleum Hydrocarbons F4	-	-	-	-
Phenanthrene	-	-	-	-
Phenol	-	-	-	-
Polychlorinated Biphenyls	-	-	-	-
Pyrene	-	-	-	-
Selenium	10	10	10	10
Silver	0.3	0.3	0.3	0.3
Styrene	-	-	-	-
Tetrachloroethane, 1,1,1,2-	-	-	-	-

Contaminant	Residential/Parkland/ Institutional Property Use		Industrial/Commercial/ Community Property Use	
	Surface	Subsurface	Surface	Subsurface
Tetrachloroethane, 1,1,2,2-	-	-	-	-
Tetrachloroethylene	0.5	0.5	0.5	0.5
Thallium	-	80	80	80
Toluene	-	-	-	-
Trichlorobenzene, 1,2,4-	-	-	-	-
Trichloroethane, 1,1,1-	-	-	-	-
Trichloroethane, 1,1,2-	-	-	-	-
Trichloroethylene	0.5	0.5	0.5	0.5
Trichlorofluoromethane	-	-	-	-
Trichlorophenol, 2,4,5-	-	-	-	-
Trichlorophenol, 2,4,6-	-	-	-	-
Uranium	66	66	66	66
Vanadium	-	40	-	40
Vinyl Chloride	-	-	-	-
Xylene Mixture	-	-	-	-
Zinc	180	180	180	180
Electrical Conductivity (mS/cm)	NA	NA	NA	NA
Sodium Adsorption Ratio	NA	NA	NA	NA

Notes: NA: Not Applicable; -: No leachate analysis required.

TABLE 6.1: Leachate Screening Levels for Full Depth Excess Soil in Shallow Soils in a Potable Ground Water Condition

Volume Independent

(Unit in µg/L)

Contaminant	Agricultural or Other Property Use	Residential/ Parkland/ Institutional Property Use	Industrial/ Commercial/ Community Property Use
Acenaphthene	-	-	-
Acenaphthylene	-	-	-
Acetone	-	-	-
Aldrin	-	-	-
Anthracene	-	-	-
Antimony	6	6	6
Arsenic	-	-	-
Barium	1000	1000	1000
Benzene	-	-	-
Benz[a]anthracene	-	-	-
Benzo[a]pyrene	-	-	-
Benzo[b]fluoranthene	-	-	-
Benzo[ghi]perylene	-	-	-
Benzo[k]fluoranthene	-	-	-
Beryllium	4	4	4
Biphenyl 1,1'-	-	-	-
Bis(2-chloroethyl)ether	5	5	5
Bis(2-chloroisopropyl)ether	4	4	4
Bis(2-ethylhexyl)phthalate	-	-	-
Boron (Hot Water Soluble)	-	-	-
Boron (total)	5000	5000	5000
Bromodichloromethane	-	-	-
Bromoform	-	-	-
Bromomethane	0.5	0.5	0.5
Cadmium	0.5	-	0.5
Carbon Tetrachloride	0.2	0.2	0.2
Chlordane	-	-	-
Chloroaniline p-	10	10	10
Chlorobenzene	-	-	-
Chloroform	1	1	1
Chlorophenol, 2-	-	-	-
Chromium Total	50	50	50

Contaminant	Agricultural or Other Property Use	Residential/ Parkland/ Institutional Property Use	Industrial/ Commercial/ Community Property Use
Chromium VI	-	-	-
Chrysene	-	-	-
Cobalt	3.8	3.8	3.8
Copper	14	14	14
Cyanide (CN-)	-	-	-
Dibenz[a h]anthracene	-	-	-
Dibromochloromethane	-	-	-
Dichlorobenzene, 1,2-	0.55	0.55	0.55
Dichlorobenzene, 1,3-	-	-	-
Dichlorobenzene, 1,4-	0.5	0.5	0.5
Dichlorobenzidine, 3,3'-	0.5	0.5	0.5
Dichlorodifluoromethane	-	-	-
DDD	-	-	-
DDE	-	-	-
DDT	-	-	-
Dichloroethane, 1,1-	0.5	0.5	0.5
Dichloroethane, 1,2-	0.5	0.5	0.5
Dichloroethylene, 1,1-	0.5	0.5	0.5
Dichloroethylene, 1,2-cis-	0.5	0.5	0.5
Dichloroethylene, 1,2-trans-	0.5	0.5	0.5
Dichlorophenol, 2,4-	-	-	-
Dichloropropane, 1,2-	0.5	0.5	0.5
Dichloropropene, 1,3-	0.5	0.5	0.5
Dieldrin	0.095	0.095	0.095
Diethyl Phthalate	2	2	2
Dimethylphthalate	2	2	2
Dimethylphenol, 2,4-	-	-	-
Dinitrophenol, 2,4-	10	10	10
Dinitrotoluene, 2,4 & 2,6-	5	5	5
Dioxane, 1,4	2	2	2
Dioxin/Furan (TEQ)	-	-	-
Endosulfan	-	-	-
Endrin	0.061	0.061	0.061
Ethylbenzene	-	-	-
Ethylene dibromide	0.2	0.2	0.2

Contaminant	Agricultural or Other Property Use	Residential/ Parkland/ Institutional Property Use	Industrial/ Commercial/ Community Property Use
Fluoranthene	-	-	-
Fluorene	-	-	-
Heptachlor	0.01	0.01	0.01
Heptachlor Epoxide	0.01	0.01	0.01
Hexachlorobenzene	-	-	-
Hexachlorobutadiene	-	-	-
Hexachlorocyclohexane Gamma-	-	-	-
Hexachloroethane	-	-	-
Hexane (n)	-	-	-
Indeno[1 2 3-cd]pyrene	-	-	-
Lead	-	-	-
Mercury	-	-	-
Methoxychlor	-	-	-
Methyl Ethyl Ketone	-	-	-
Methyl Isobutyl Ketone	-	-	-
Methyl Mercury	-	-	-
Methyl tert-Butyl Ether (MTBE)	-	-	-
Methylene Chloride	-	-	-
Methylnaphthalene, 2-(1-)	-	-	-
Molybdenum	23	23	23
Naphthalene	-	-	-
Nickel	78	78	78
Pentachlorophenol	-	-	-
Petroleum Hydrocarbons F1	-	-	-
Petroleum Hydrocarbons F2	-	-	-
Petroleum Hydrocarbons F3	-	-	-
Petroleum Hydrocarbons F4	-	-	-
Phenanthrene	-	-	-
Phenol	-	-	-
Polychlorinated Biphenyls	-	-	-
Pyrene	-	-	-
Selenium	10	10	10
Silver	0.3	0.3	0.3
Styrene	-	-	-
Tetrachloroethane, 1,1,1,2-	0.5	0.5	0.5

Contaminant	Agricultural or Other Property Use	Residential/ Parkland/ Institutional Property Use	Industrial/ Commercial/ Community Property Use
Tetrachloroethane, 1,1,2,2-	0.5	0.5	0.5
Tetrachloroethylene	0.5	0.5	0.5
Thallium	2	2	2
Toluene	-	-	-
Trichlorobenzene, 1,2,4-	-	-	-
Trichloroethane, 1,1,1-	-	-	-
Trichloroethane, 1,1,2-	0.5	0.5	0.5
Trichloroethylene	0.5	0.5	0.5
Trichlorofluoromethane	-	-	-
Trichlorophenol, 2,4,5-	-	-	-
Trichlorophenol, 2,4,6-	0.75	0.75	0.75
Uranium	20	20	20
Vanadium	-	-	-
Vinyl Chloride	-	-	-
Xylene Mixture	-	-	-
Zinc	180	180	180
Electrical Conductivity (mS/cm)	NA	NA	NA
Sodium Adsorption Ratio	NA	NA	NA

Notes: NA: Not Applicable; -: No leachate analysis required.

TABLE 7.1: Leachate Screening Levels for Full Depth Excess Soil in Shallow Soils in a Non-Potable Ground Water Condition

Volume Independent

(Unit in µg/L)

Contaminant	Residential/Parkland/ Institutional Property Use	Industrial/Commercial/ Community Property Use
Acenaphthene	-	-
Acenaphthylene	-	-
Acetone	-	-
Aldrin	-	-
Anthracene	-	-
Antimony	-	-
Arsenic	-	-
Barium	4600	4600
Benzene	-	-
Benz[a]anthracene	-	-
Benzo[a]pyrene	-	-
Benzo[b]fluoranthene	-	-
Benzo[ghi]perylene	-	-
Benzo[k]fluoranthene	-	-
Beryllium	11	11
Biphenyl 1,1'-	-	-
Bis(2-chloroethyl)ether	-	-
Bis(2-chloroisopropyl)ether	-	-
Bis(2-ethylhexyl)phthalate	-	-
Boron (Hot Water Soluble)	-	-
Boron (total)	-	-
Bromodichloromethane	-	-
Bromoform	-	-
Bromomethane	0.5	0.5
Cadmium	-	0.5
Carbon Tetrachloride	0.2	0.2
Chlordane	-	-
Chloroaniline p-	-	-
Chlorobenzene	-	-
Chloroform	1	1
Chlorophenol, 2-	-	-
Chromium Total	130	130
Chromium VI	-	-

Contaminant	Residential/Parkland/ Institutional Property Use	Industrial/Commercial/ Community Property Use
Chrysene	-	-
Cobalt	10	10
Copper	14	14
Cyanide (CN-)	-	-
Dibenz[a h]anthracene	-	-
Dibromochloromethane	-	-
Dichlorobenzene, 1,2-	-	-
Dichlorobenzene, 1,3-	-	-
Dichlorobenzene, 1,4-	-	-
Dichlorobenzidine, 3,3'-	-	-
Dichlorodifluoromethane	-	-
DDD	-	-
DDE	-	-
DDT	-	-
Dichloroethane, 1,1-	0.97	0.97
Dichloroethane, 1,2-	0.5	0.5
Dichloroethylene, 1,1-	0.5	0.5
Dichloroethylene, 1,2-cis-	-	-
Dichloroethylene, 1,2-trans-	0.5	0.5
Dichlorophenol, 2,4-	-	-
Dichloropropane, 1,2-	0.5	0.5
Dichloropropene, 1,3-	0.5	0.5
Dieldrin	0.095	0.095
Diethyl Phthalate	2	2
Dimethylphthalate	2	2
Dimethylphenol, 2,4-	-	-
Dinitrophenol, 2,4-	-	-
Dinitrotoluene, 2,4 & 2,6-	-	-
Dioxane, 1,4	-	-
Dioxin/Furan (TEQ)	-	-
Endosulfan	-	-
Endrin	0.061	0.061
Ethylbenzene	-	-
Ethylene dibromide	0.2	0.2
Fluoranthene	-	-
Fluorene	-	-

Contaminant	Residential/Parkland/ Institutional Property Use	Industrial/Commercial/ Community Property Use
Heptachlor	0.01	0.01
Heptachlor Epoxide	0.01	0.01
Hexachlorobenzene	-	-
Hexachlorobutadiene	-	-
Hexachlorocyclohexane Gamma-	-	-
Hexachloroethane	-	-
Hexane (n)	-	-
Indeno[1 2 3-cd]pyrene	-	-
Lead	-	-
Mercury	-	-
Methoxychlor	-	-
Methyl Ethyl Ketone	-	-
Methyl Isobutyl Ketone	-	-
Methyl Mercury	-	-
Methyl tert-Butyl Ether (MTBE)	-	-
Methylene Chloride	-	-
Methylnaphthalene, 2-(1-)	-	-
Molybdenum	-	1500
Naphthalene	-	-
Nickel	78	78
Pentachlorophenol	-	-
Petroleum Hydrocarbons F1	-	-
Petroleum Hydrocarbons F2	-	-
Petroleum Hydrocarbons F3	-	-
Petroleum Hydrocarbons F4	-	-
Phenanthrene	-	-
Phenol	-	-
Polychlorinated Biphenyls	-	-
Pyrene	-	-
Selenium	10	10
Silver	0.3	0.3
Styrene	-	-
Tetrachloroethane, 1,1,1,2-	0.5	0.5
Tetrachloroethane, 1,1,2,2-	0.5	0.5
Tetrachloroethylene	0.5	0.5
Thallium	-	80

Contaminant	Residential/Parkland/ Institutional Property Use	Industrial/Commercial/ Community Property Use
Toluene	-	-
Trichlorobenzene, 1,2,4-	-	-
Trichloroethane, 1,1,1-	-	-
Trichloroethane, 1,1,2-	0.5	0.5
Trichloroethylene	0.5	0.5
Trichlorofluoromethane	-	-
Trichlorophenol, 2,4,5-	-	-
Trichlorophenol, 2,4,6-	-	-
Uranium	66	66
Vanadium	-	-
Vinyl Chloride	-	-
Xylene Mixture	-	-
Zinc	180	180
Electrical Conductivity (mS/cm)	NA	NA
Sodium Adsorption Ratio	NA	NA

Notes: NA: Not Applicable; -: No leachate analysis required.

TABLE 8.1: Leachate Screening Levels for Full Depth Excess Soil for Use within 30 metres of a Water Body in a Potable Ground Water Condition

Volume Independent

(Unit in µg/L)

Contaminant	Agricultural or Other Property Use	Residential/ Parkland/ Institutional Property Use	Industrial/ Commercial/ Community Property Use
Acenaphthene	-	-	-
Acenaphthylene	-	-	-
Acetone	-	-	-
Aldrin	-	-	-
Anthracene	-	-	-
Antimony	6	-	-
Arsenic	-	-	-
Barium	-	-	-
Benzene	-	-	-
Benz[a]anthracene	-	-	-
Benzo[a]pyrene	-	-	-
Benzo[b]fluoranthene	-	-	-
Benzo[ghi]perylene	-	-	-
Benzo[k]fluoranthene	-	-	-
Beryllium	-	-	-
Biphenyl 1,1'-	-	-	-
Bis(2-chloroethyl)ether	5	5	5
Bis(2-chloroisopropyl)ether	4	4	4
Bis(2-ethylhexyl)phthalate	-	-	-
Boron (Hot Water Soluble)	-	-	-
Boron (total)	-	-	-
Bromodichloromethane	-	-	-
Bromoform	-	-	-
Bromomethane	0.5	0.5	0.5
Cadmium	0.5	-	-
Carbon Tetrachloride	0.2	0.2	0.2
Chlordane	-	-	-
Chloroaniline p-	10	10	10
Chlorobenzene	-	-	-
Chloroform	-	-	-
Chlorophenol, 2-	-	-	-
Chromium Total	-	-	-

Contaminant	Agricultural or Other Property Use	Residential/ Parkland/ Institutional Property Use	Industrial/ Commercial/ Community Property Use
Chromium VI	-	-	-
Chrysene	-	-	-
Cobalt	3.8	3.8	3.8
Copper	-	-	-
Cyanide (CN-)	-	-	-
Dibenz[a h]anthracene	-	-	-
Dibromochloromethane	-	-	-
Dichlorobenzene, 1,2-	0.55	0.55	0.55
Dichlorobenzene, 1,3-	-	-	-
Dichlorobenzene, 1,4-	0.5	0.5	0.5
Dichlorobenzidine, 3,3'-	0.5	0.5	0.5
Dichlorodifluoromethane	-	-	-
DDD	-	-	-
DDE	-	-	-
DDT	-	-	-
Dichloroethane, 1,1-	-	-	-
Dichloroethane, 1,2-	0.5	0.5	0.5
Dichloroethylene, 1,1-	0.5	0.5	0.5
Dichloroethylene, 1,2-cis-	0.5	0.5	0.5
Dichloroethylene, 1,2-trans-	0.5	0.5	0.5
Dichlorophenol, 2,4-	-	-	-
Dichloropropane, 1,2-	0.5	0.5	0.5
Dichloropropene, 1,3-	-	-	-
Dieldrin	0.095	0.095	0.095
Diethyl Phthalate	2	2	2
Dimethylphthalate	2	2	2
Dimethylphenol, 2,4-	-	-	-
Dinitrophenol, 2,4-	10	10	10
Dinitrotoluene, 2,4 & 2,6-	5	5	5
Dioxane, 1,4	2	2	2
Dioxin/Furan (TEQ)	-	-	-
Endosulfan	-	-	-
Endrin	0.061	0.061	0.061
Ethylbenzene	-	-	-
Ethylene dibromide	0.2	0.2	0.2

Contaminant	Agricultural or Other Property Use	Residential/ Parkland/ Institutional Property Use	Industrial/ Commercial/ Community Property Use
Fluoranthene	-	-	-
Fluorene	-	-	-
Heptachlor	0.01	0.01	0.01
Heptachlor Epoxide	0.01	0.01	0.01
Hexachlorobenzene	-	-	-
Hexachlorobutadiene	-	-	-
Hexachlorocyclohexane Gamma-	-	-	-
Hexachloroethane	-	-	-
Hexane (n)	-	-	-
Indeno[1 2 3-cd]pyrene	-	-	-
Lead	-	-	-
Mercury	-	-	-
Methoxychlor	-	-	-
Methyl Ethyl Ketone	-	-	-
Methyl Isobutyl Ketone	-	-	-
Methyl Mercury	-	-	-
Methyl tert-Butyl Ether (MTBE)	-	-	-
Methylene Chloride	-	-	-
Methylnaphthalene, 2-(1-)	-	-	-
Molybdenum	23	23	23
Naphthalene	-	-	-
Nickel	-	-	-
Pentachlorophenol	-	-	-
Petroleum Hydrocarbons F1	-	-	-
Petroleum Hydrocarbons F2	-	-	-
Petroleum Hydrocarbons F3	-	-	-
Petroleum Hydrocarbons F4	-	-	-
Phenanthrene	-	-	-
Phenol	-	-	-
Polychlorinated Biphenyls	-	-	-
Pyrene	-	-	-
Selenium	-	-	-
Silver	0.3	0.3	0.3
Styrene	-	-	-
Tetrachloroethane, 1,1,1,2-	-	-	-

Contaminant	Agricultural or Other Property Use	Residential/ Parkland/ Institutional Property Use	Industrial/ Commercial/ Community Property Use
Tetrachloroethane, 1,1,2,2-	0.5	0.5	0.5
Tetrachloroethylene	0.5	0.5	0.5
Thallium	2	2	2
Toluene	-	-	-
Trichlorobenzene, 1,2,4-	-	-	-
Trichloroethane, 1,1,1-	-	-	-
Trichloroethane, 1,1,2-	-	-	-
Trichloroethylene	0.5	0.5	0.5
Trichlorofluoromethane	-	-	-
Trichlorophenol, 2,4,5-	-	-	-
Trichlorophenol, 2,4,6-	0.75	0.75	0.75
Uranium	-	-	-
Vanadium	-	-	-
Vinyl Chloride	-	-	-
Xylene Mixture	-	-	-
Zinc	-	-	-
Electrical Conductivity (mS/cm)	NA	NA	NA
Sodium Adsorption Ratio	NA	NA	NA

Notes: NA: Not Applicable; -: No leachate analysis required.

TABLE 9.1: Leachate Screening Levels for Full Depth Excess Soil for Use within 30 metres of a Water Body in a Non-Potable Ground Water Condition

Volume Independent

(Unit in µg/L)

Contaminant	Residential/Parkland/ Institutional/ Property Use	Industrial/Commercial/ Community Property Use
Acenaphthene	-	-
Acenaphthylene	-	-
Acetone	-	-
Aldrin	-	-
Anthracene	-	-
Antimony	-	-
Arsenic	-	-
Barium	-	-
Benzene	-	-
Benz[a]anthracene	-	-
Benzo[a]pyrene	-	-
Benzo[b]fluoranthene	-	-
Benzo[ghi]perylene	-	-
Benzo[k]fluoranthene	-	-
Beryllium	-	-
Biphenyl 1,1'-	-	-
Bis(2-chloroethyl)ether	-	-
Bis(2-chloroisopropyl)ether	-	-
Bis(2-ethylhexyl)phthalate	-	-
Boron (Hot Water Soluble)	-	-
Boron (total)	-	-
Bromodichloromethane	-	-
Bromoform	-	-
Bromomethane	0.5	0.5
Cadmium	-	-
Carbon Tetrachloride	0.2	0.2
Chlordane	-	-
Chloroaniline p-	-	-
Chlorobenzene	-	-
Chloroform	-	-
Chlorophenol, 2-	-	-
Chromium Total	-	-
Chromium VI	-	-

Contaminant	Residential/Parkland/ Institutional/ Property Use	Industrial/Commercial/ Community Property Use
Chrysene	-	-
Cobalt	10	10
Copper	-	-
Cyanide (CN-)	-	-
Dibenz[a h]anthracene	-	-
Dibromochloromethane	-	-
Dichlorobenzene, 1,2-	-	-
Dichlorobenzene, 1,3-	-	-
Dichlorobenzene, 1,4-	-	-
Dichlorobenzidine, 3,3'-	-	-
Dichlorodifluoromethane	-	-
DDD	-	-
DDE	-	-
DDT	-	-
Dichloroethane, 1,1-	-	-
Dichloroethane, 1,2-	-	-
Dichloroethylene, 1,1-	0.5	0.5
Dichloroethylene, 1,2-cis-	-	-
Dichloroethylene, 1,2-trans-	0.5	0.5
Dichlorophenol, 2,4-	-	-
Dichloropropane, 1,2-	-	-
Dichloropropene, 1,3-	-	-
Dieldrin	0.095	0.095
Diethyl Phthalate	2	2
Dimethylphthalate	2	2
Dimethylphenol, 2,4-	-	-
Dinitrophenol, 2,4-	-	-
Dinitrotoluene, 2,4 & 2,6-	-	-
Dioxane, 1,4	-	-
Dioxin/Furan (TEQ)	-	-
Endosulfan	-	-
Endrin	0.061	0.061
Ethylbenzene	-	-
Ethylene dibromide	0.2	0.2
Fluoranthene	-	-
Fluorene	-	-

Contaminant	Residential/Parkland/ Institutional/ Property Use	Industrial/Commercial/ Community Property Use
Heptachlor	0.01	0.01
Heptachlor Epoxide	0.01	0.01
Hexachlorobenzene	-	-
Hexachlorobutadiene	-	-
Hexachlorocyclohexane Gamma-	-	-
Hexachloroethane	-	-
Hexane (n)	-	-
Indeno[1 2 3-cd]pyrene	-	-
Lead	-	-
Mercury	-	-
Methoxychlor	-	-
Methyl Ethyl Ketone	-	-
Methyl Isobutyl Ketone	-	-
Methyl Mercury	-	-
Methyl tert-Butyl Ether (MTBE)	-	-
Methylene Chloride	-	-
Methylnaphthalene, 2-(1-)	-	-
Molybdenum	-	-
Naphthalene	-	-
Nickel	-	-
Pentachlorophenol	-	-
Petroleum Hydrocarbons F1	-	-
Petroleum Hydrocarbons F2	-	-
Petroleum Hydrocarbons F3	-	-
Petroleum Hydrocarbons F4	-	-
Phenanthrene	-	-
Phenol	-	-
Polychlorinated Biphenyls	-	-
Pyrene	-	-
Selenium	-	-
Silver	0.3	0.3
Styrene	-	-
Tetrachloroethane, 1,1,1,2-	-	-
Tetrachloroethane, 1,1,2,2-	-	-
Tetrachloroethylene	0.5	0.5
Thallium	-	-

Contaminant	Residential/Parkland/ Institutional/ Property Use	Industrial/Commercial/ Community Property Use
Toluene	-	-
Trichlorobenzene, 1,2,4-	-	-
Trichloroethane, 1,1,1-	-	-
Trichloroethane, 1,1,2-	-	-
Trichloroethylene	0.5	0.5
Trichlorofluoromethane	-	-
Trichlorophenol, 2,4,5-	-	-
Trichlorophenol, 2,4,6-	-	-
Uranium	-	-
Vanadium	-	-
Vinyl Chloride	-	-
Xylene Mixture	-	-
Zinc	-	-
Electrical Conductivity (mS/cm)	NA	NA
Sodium Adsorption Ratio	NA	NA

Notes: NA: Not Applicable; -: No leachate analysis required

APPENDIX 3. CEILING VALUES FOR EXCESS SOIL REUSE

This Appendix provides *ceiling values* that are developed as part of the statistical compliance method for meeting *generic excess soil quality standards*. These *ceiling values* are organized in a series of look-up tables that correspond to the tables of excess soil quality standards, including Table 1, Tables 2 to 9, and Tables 2.1 to 9.1.

How to Read These Tables

The tables set out prescribed contaminants by listing contaminants in the column of rows that has the heading row entitled “Contaminant”. The tables set out prescribed *ceiling values* for these contaminants by indicating in the appropriate locations the maximum concentrations of the contaminants in *excess soil* which is expressed in a number that is to be read as µg/g dry weight.

The *ceiling value* that is applicable for a type of property can be found in the row named for the contaminant and in the column that has the heading row that indicates the type of property use of the property at which *excess soil* is reused.

A contaminant that is listed and for which the abbreviation “NV” appears in the cell, instead of a numerical value, is a contaminant for which a *ceiling value* is not prescribed. The abbreviation “NV” means “no value”.

A contaminant that is listed and for which the abbreviation “NA” appears in the cell, instead of a numerical value, is a contaminant for which a *ceiling value* is not prescribed because no standard is required. The abbreviation “NA” means “not applicable”.

Notes for Tables 1, 2 to 9 and 2.1 to 9.1

Ceiling values presented in this Appendix are associated with their corresponding excess soil quality standards. For example, if Table 2.1 for residential property use presented in Appendix 1 of this document is selected as the appropriate table of excess soil quality standards, the *ceiling values* of Table 2.1 for residential property use presented in this Appendix must be used.

Any site conditions that may lead to the inappropriateness of the use of the *generic excess soil quality standards* at a given property may also result in *ceiling values* not being appropriate for use.

TABLE 1: Ceiling Values for Excess Soil Reuse

(Unit in µg/g)

Contaminant	Agricultural or Other Property Use	Residential/Parkland/ Institutional/Industrial/ Commercial/Community Property Use
Acenaphthene	0.05	0.14
Acenaphthylene	0.17	0.17
Acetone	0.5	0.5
Aldrin	0.05	0.05
Anthracene	0.05	0.32
Antimony	1	2.6
Arsenic	11	18
Barium	430	430
Benzene	0.02	0.02
Benz[a]anthracene	0.19	0.72
Benzo[a]pyrene	0.05	0.6
Benzo[b]fluoranthene	0.59	0.94
Benzo[ghi]perylene	0.4	1.4
Benzo[k]fluoranthene	0.05	0.97
Beryllium	5	5
Biphenyl 1,1'-	0.05	0.05
Bis(2-chloroethyl)ether	0.5	0.5
Bis(2-chloroisopropyl)ether	0.5	0.5
Bis(2-ethylhexyl)phthalate	5	5
Boron (Hot Water Soluble)*	NA	NA
Boron (total)	72	72
Bromodichloromethane	0.05	0.05
Bromoform	0.05	0.05
Bromomethane	0.05	0.05
Cadmium	1	1.4
Carbon Tetrachloride	0.05	0.05
Chlordane	0.05	0.05
Chloroaniline p-	0.5	0.5
Chlorobenzene	0.05	0.05
Chloroform	0.05	0.05
Chlorophenol, 2-	0.1	0.1
Chromium Total	130	140
Chromium VI	1.3	1.3

Contaminant	Agricultural or Other Property Use	Residential/Parkland/ Institutional/Industrial/ Commercial/Community Property Use
Chrysene	0.36	3.3
Cobalt	22	22
Copper	120	180
Cyanide (CN-)	0.051	0.051
Dibenz[a h]anthracene	0.1	0.1
Dibromochloromethane	0.05	0.05
Dichlorobenzene, 1,2-	0.05	0.05
Dichlorobenzene, 1,3-	0.05	0.05
Dichlorobenzene, 1,4-	0.05	0.05
Dichlorobenzidine, 3,3'-	1	1
Dichlorodifluoromethane	0.05	0.05
DDD	0.05	0.05
DDE	0.05	0.05
DDT	0.078	1.4
Dichloroethane, 1,1-	0.05	0.05
Dichloroethane, 1,2-	0.05	0.05
Dichloroethylene, 1,1-	0.05	0.05
Dichloroethylene, 1,2-cis-	0.05	0.05
Dichloroethylene, 1,2-trans-	0.05	0.05
Dichlorophenol, 2,4-	0.1	0.1
Dichloropropane, 1,2-	0.05	0.05
Dichloropropene, 1,3-	0.05	0.05
Dieldrin	0.05	0.05
Diethyl Phthalate	0.5	0.5
Dimethylphthalate	0.5	0.5
Dimethylphenol, 2,4-	0.2	0.2
Dinitrophenol, 2,4-	2	2
Dinitrotoluene, 2,4 & 2,6-	0.5	0.5
Dioxane, 1,4	0.2	0.2
Dioxin/Furan (TEQ)	0.000013	0.000007
Endosulfan	0.04	0.04
Endrin	0.04	0.04
Ethylbenzene	0.05	0.05
Ethylene dibromide	0.05	0.05
Fluoranthene	0.49	1.1

Contaminant	Agricultural or Other Property Use	Residential/Parkland/ Institutional/Industrial/ Commercial/Community Property Use
Fluorene	0.05	0.23
Heptachlor	0.05	0.05
Heptachlor Epoxide	0.05	0.05
Hexachlorobenzene	0.01	0.01
Hexachlorobutadiene	0.01	0.01
Hexachlorocyclohexane Gamma-	0.01	0.01
Hexachloroethane	0.01	0.01
Hexane (n)	0.05	0.05
Indeno[1 2 3-cd]pyrene	0.21	0.46
Lead	90	120
Mercury	0.16	0.27
Methoxychlor	0.05	0.05
Methyl Ethyl Ketone	0.5	0.5
Methyl Isobutyl Ketone	0.5	0.5
Methyl Mercury **	NV	NV
Methyl tert-Butyl Ether (MTBE)	0.05	0.05
Methylene Chloride	0.05	0.05
Methlynaphthalene, 2-(1-) ***	0.05	0.59
Molybdenum	2	2
Naphthalene	0.05	0.18
Nickel	74	160
Pentachlorophenol	0.1	0.1
Petroleum Hydrocarbons F1****	17	25
Petroleum Hydrocarbons F2	10	10
Petroleum Hydrocarbons F3	480	480
Petroleum Hydrocarbons F4	240	240
Phenanthrene	0.37	1.4
Phenol	0.5	0.5
Polychlorinated Biphenyls	0.3	0.3
Pyrene	0.38	2.1
Selenium	2.4	3.1
Silver	0.5	0.5
Styrene	0.05	0.05
Tetrachloroethane, 1,1,1,2-	0.05	0.05
Tetrachloroethane, 1,1,2,2-	0.05	0.05

Contaminant	Agricultural or Other Property Use	Residential/Parkland/ Institutional/Industrial/ Commercial/Community Property Use
Tetrachloroethylene	0.05	0.05
Thallium	1	1
Toluene	0.2	0.2
Trichlorobenzene, 1,2,4-	0.05	0.05
Trichloroethane, 1,1,1-	0.05	0.05
Trichloroethane, 1,1,2-	0.05	0.05
Trichloroethylene	0.05	0.05
Trichlorofluoromethane	0.05	0.51
Trichlorophenol, 2,4,5-	0.1	0.1
Trichlorophenol, 2,4,6-	0.1	0.1
Uranium	3.8	5
Vanadium	86	86
Vinyl Chloride	0.02	0.02
Xylene Mixture	0.05	0.05
Zinc	590	590
Electrical Conductivity (mS/cm)	0.94	1.1
Sodium Adsorption Ratio	2	4.7

Notes:

NA: Not Applicable; NV: No Value

*: The boron *ceiling values* are for hot water soluble extract for all *surface soils*. For *subsurface soils* the *ceiling values* are for total boron (mixed strong acid digest), since plant protection for *soils* below the root zone is not a significant concern.

**: Analysis for methyl mercury only applies when mercury (total) excess soil quality standard is exceeded.

***: The methyl naphthalene *ceiling values* are applicable to both 1-methyl naphthalene and 2- methyl naphthalene, with the provision that if both are detected the sum of the two must not exceed the *ceiling value*.

****: F1 fraction does not include benzene, toluene, ethylbenzene and xylene (BTEX); however, the proponent has the choice as to whether or not to subtract BTEX from the analytical result.

TABLE 2: Ceiling Values for Full Depth Excess Soil in a Potable Ground Water Condition

Small Volume

(Unit in µg/g)

Contaminant	Agricultural or Other Property Use	Residential/ Parkland/ Institutional Property Use	Industrial/ Commercial/ Community Property Use
Acenaphthene	16	16	42
Acenaphthylene	0.3	0.3	0.3
Acetone	32	32	32
Aldrin	0.05	0.05	0.088
Anthracene	1.3	1.3	1.3
Antimony	7.5	7.5	63
Arsenic	11	18	18
Barium	790	790	1300
Benzene	0.42	0.42	0.63
Benz[a]anthracene	1	1	1.9
Benzo[a]pyrene	0.16	0.6	0.6
Benzo[b]fluoranthene	1.6	1.6	1.9
Benzo[ghi]perylene	13	13	19
Benzo[k]fluoranthene	1.6	1.6	1.9
Beryllium	8	8	16
Biphenyl 1,1'-	0.31	0.31	52
Bis(2-chloroethyl)ether	0.5	0.5	0.5
Bis(2-chloroisopropyl)ether	0.67	0.67	11
Bis(2-ethylhexyl)phthalate	8	8	55
Boron (Hot Water Soluble)*	3	3	4
Boron (total)	230	230	230
Bromodichloromethane	3	3	3
Bromoform	0.53	0.53	1.2
Bromomethane	0.1	0.1	0.1
Cadmium	1.4	1.4	3.8
Carbon Tetrachloride	0.066	0.066	0.36
Chlordane	0.05	0.05	0.05
Chloroaniline p-	1	1	1
Chlorobenzene	3.7	3.7	4.8
Chloroform	0.1	0.1	0.95
Chlorophenol, 2-	3.1	3.1	6.2
Chromium Total	320	320	320

Contaminant	Agricultural or Other Property Use	Residential/ Parkland/ Institutional Property Use	Industrial/ Commercial/ Community Property Use
Chromium VI	16	16	16
Chrysene	14	14	19
Cobalt	22	22	160
Copper	200	200	450
Cyanide (CN-)	0.1	0.1	0.1
Dibenz[a h]anthracene	0.2	0.2	0.2
Dibromochloromethane	3.3	3.3	3.3
Dichlorobenzene, 1,2-	1.2	1.2	1.2
Dichlorobenzene, 1,3-	9.6	9.6	19
Dichlorobenzene, 1,4-	0.17	0.17	0.4
Dichlorobenzidine, 3,3'-	2	2	2
Dichlorodifluoromethane	32	32	32
DDD	6.6	6.6	9.2
DDE	0.26	0.26	0.52
DDT	0.078	1.4	1.4
Dichloroethane, 1,1-	0.94	0.94	0.94
Dichloroethane, 1,2-	0.1	0.1	0.1
Dichloroethylene, 1,1-	0.051	0.051	0.13
Dichloroethylene, 1,2-cis-	1.9	1.9	1.9
Dichloroethylene, 1,2-trans-	0.17	0.17	1.3
Dichlorophenol, 2,4-	0.19	0.19	0.19
Dichloropropane, 1,2-	0.05	0.05	0.28
Dichloropropene, 1,3-	0.1	0.1	0.12
Dieldrin	0.05	0.05	0.088
Diethyl Phthalate	0.64	0.64	0.64
Dimethylphthalate	0.5	0.5	0.5
Dimethylphenol, 2,4-	76	76	76
Dinitrophenol, 2,4-	4.1	4.1	4.1
Dinitrotoluene, 2,4 & 2,6-	1	1	1
Dioxane, 1,4	0.4	3.6	3.6
Dioxin/Furan (TEQ)	0.000013	0.000013	0.000099
Endosulfan	0.04	0.04	0.3
Endrin	0.04	0.04	0.04
Ethylbenzene	1.1	1.1	1.1
Ethylene dibromide	0.079	0.079	0.079

Contaminant	Agricultural or Other Property Use	Residential/ Parkland/ Institutional Property Use	Industrial/ Commercial/ Community Property Use
Fluoranthene	1.4	1.4	19
Fluorene	120	120	120
Heptachlor	0.2	0.2	0.38
Heptachlor Epoxide	0.05	0.05	0.05
Hexachlorobenzene	1	1	1.3
Hexachlorobutadiene	0.024	0.024	0.062
Hexachlorocyclohexane Gamma-	0.056	0.056	0.056
Hexachloroethane	0.18	0.18	0.42
Hexane (n)	5.7	5.7	91
Indeno[1 2 3-cd]pyrene	0.76	0.76	1.5
Lead	90	120	250
Mercury	0.25	0.27	3.9
Methoxychlor	0.26	0.26	1.6
Methyl Ethyl Ketone	26	26	140
Methyl Isobutyl Ketone	1.7	1.7	31
Methyl Mercury **	0.0084	0.0084	0.0084
Methyl tert-Butyl Ether (MTBE)	1.5	1.5	1.6
Methylene Chloride	0.2	0.2	3.1
Methylnaphthalene, 2-(1-) ***	0.99	0.99	30
Molybdenum	14	14	80
Naphthalene	1.2	1.2	17
Nickel	180	180	540
Pentachlorophenol	0.1	0.1	2.9
Petroleum Hydrocarbons F1****	110	110	110
Petroleum Hydrocarbons F2	200	200	460
Petroleum Hydrocarbons F3	600	600	3400
Petroleum Hydrocarbons F4	5600	5600	6600
Phenanthrene	12	12	25
Phenol	19	19	19
Polychlorinated Biphenyls	0.35	0.35	1.1
Pyrene	160	160	190
Selenium	4.8	4.8	11
Silver	40	40	80
Styrene	0.7	0.7	34
Tetrachloroethane, 1,1,1,2-	0.12	0.12	0.17

Contaminant	Agricultural or Other Property Use	Residential/ Parkland/ Institutional Property Use	Industrial/ Commercial/ Community Property Use
Tetrachloroethane, 1,1,2,2-	0.1	0.1	0.1
Tetrachloroethylene	0.56	0.56	1.9
Thallium	1	1	3.3
Toluene	2.3	2.3	6.4
Trichlorobenzene, 1,2,4-	0.72	0.72	6.3
Trichloroethane, 1,1,1-	0.76	0.76	10
Trichloroethane, 1,1,2-	0.1	0.1	0.1
Trichloroethylene	0.061	0.061	0.55
Trichlorofluoromethane	8	8	8
Trichlorophenol, 2,4,5-	8.8	8.8	18
Trichlorophenol, 2,4,6-	2.1	2.1	2.1
Uranium	23	23	66
Vanadium	86	86	130
Vinyl Chloride	0.04	0.04	0.064
Xylene Mixture	6.3	6.3	26
Zinc	670	670	670
Electrical Conductivity (mS/cm)	1.4	1.4	2.8
Sodium Adsorption Ratio	10	10	24

Notes:

*: The boron *ceiling values* are for hot water soluble extract for all *surface soils*. For *subsurface soils* the *ceiling values* are for total boron (mixed strong acid digest), since plant protection for *soils* below the root zone is not a significant concern.

**: Analysis for methyl mercury only applies when mercury (total) excess soil quality standard is exceeded.

***: The methyl naphthalene *ceiling values* are applicable to both 1-methyl naphthalene and 2- methyl naphthalene, with the provision that if both are detected the sum of the two must not exceed the *ceiling value*.

****: F1 fraction does not include benzene, toluene, ethylbenzene and xylene (BTEX); however, the proponent has the choice as to whether or not to subtract BTEX from the analytical result.

TABLE 3: Ceiling Values for Full Depth Excess Soil in a Non-Potable Ground Water Condition

Small Volume

(Unit in µg/g)

Contaminant	Residential/Parkland/ Institutional Property Use	Industrial/Commercial/ Community Property Use
Acenaphthene	16	190
Acenaphthylene	0.3	0.3
Acetone	32	32
Aldrin	0.05	0.088
Anthracene	1.3	1.3
Antimony	7.5	63
Arsenic	18	18
Barium	790	1300
Benzene	0.42	0.63
Benz[a]anthracene	1	1.9
Benzo[a]pyrene	0.6	0.6
Benzo[b]fluoranthene	1.6	1.9
Benzo[ghi]perylene	13	19
Benzo[k]fluoranthene	1.6	1.9
Beryllium	8	16
Biphenyl 1,1'-	0.31	52
Bis(2-chloroethyl)ether	1	1
Bis(2-chloroisopropyl)ether	0.67	11
Bis(2-ethylhexyl)phthalate	8	55
Boron (Hot Water Soluble)*	3	4
Boron (total)	230	230
Bromodichloromethane	26	35
Bromoform	0.53	1.2
Bromomethane	0.1	0.1
Cadmium	1.4	3.8
Carbon Tetrachloride	0.066	0.36
Chlordane	0.05	0.05
Chloroaniline p-	1	1
Chlorobenzene	3.7	4.8
Chloroform	0.1	0.95
Chlorophenol, 2-	3.1	6.2
Chromium Total	320	320
Chromium VI	16	16

Contaminant	Residential/Parkland/ Institutional Property Use	Industrial/Commercial/ Community Property Use
Chrysene	14	19
Cobalt	22	160
Copper	200	450
Cyanide (CN-)	0.1	0.1
Dibenz[a h]anthracene	0.2	0.2
Dibromochloromethane	19	26
Dichlorobenzene, 1,2-	6.1	14
Dichlorobenzene, 1,3-	9.6	19
Dichlorobenzene, 1,4-	0.17	0.41
Dichlorobenzidine, 3,3'-	2	2
Dichlorodifluoromethane	32	32
DDD	6.6	9.2
DDE	0.26	0.52
DDT	1.4	1.4
Dichloroethane, 1,1-	7	34
Dichloroethane, 1,2-	0.1	0.1
Dichloroethylene, 1,1-	0.051	0.13
Dichloroethylene, 1,2-cis-	6.9	55
Dichloroethylene, 1,2-trans-	0.17	1.3
Dichlorophenol, 2,4-	3.4	6.7
Dichloropropane, 1,2-	0.05	0.28
Dichloropropene, 1,3-	0.1	0.35
Dieldrin	0.05	0.088
Diethyl Phthalate	0.64	0.64
Dimethylphthalate	0.5	0.5
Dimethylphenol, 2,4-	420	790
Dinitrophenol, 2,4-	38	120
Dinitrotoluene, 2,4 & 2,6-	1.8	2.3
Dioxane, 1,4	3.6	3.6
Dioxin/Furan (TEQ)	0.000013	0.000099
Endosulfan	0.04	0.3
Endrin	0.04	0.04
Ethylbenzene	4.1	19
Ethylene dibromide	0.1	0.1
Fluoranthene	1.4	19
Fluorene	120	120

Contaminant	Residential/Parkland/ Institutional Property Use	Industrial/Commercial/ Community Property Use
Heptachlor	0.2	0.38
Heptachlor Epoxide	0.05	0.05
Hexachlorobenzene	1	1.3
Hexachlorobutadiene	0.024	0.062
Hexachlorocyclohexane Gamma-	0.056	0.056
Hexachloroethane	0.18	0.42
Hexane (n)	5.7	91
Indeno[1 2 3-cd]pyrene	0.76	1.5
Lead	120	250
Mercury	0.27	3.9
Methoxychlor	0.26	1.6
Methyl Ethyl Ketone	26	140
Methyl Isobutyl Ketone	1.7	61
Methyl Mercury **	0.0084	0.0084
Methyl tert-Butyl Ether (MTBE)	1.5	23
Methylene Chloride	0.2	3.1
Methlynaphthalene, 2-(1-) ***	0.99	150
Molybdenum	14	80
Naphthalene	1.2	19
Nickel	180	540
Pentachlorophenol	0.1	2.9
Petroleum Hydrocarbons F1****	110	110
Petroleum Hydrocarbons F2	200	460
Petroleum Hydrocarbons F3	600	3400
Petroleum Hydrocarbons F4	5600	6600
Phenanthrene	12	25
Phenol	19	19
Polychlorinated Biphenyls	0.35	1.1
Pyrene	160	190
Selenium	4.8	11
Silver	40	80
Styrene	0.7	69
Tetrachloroethane, 1,1,1,2-	0.12	0.17
Tetrachloroethane, 1,1,2,2-	0.1	0.1
Tetrachloroethylene	0.56	4.5
Thallium	1	3.3

Contaminant	Residential/Parkland/ Institutional Property Use	Industrial/Commercial/ Community Property Use
Toluene	2.3	100
Trichlorobenzene, 1,2,4-	0.72	6.3
Trichloroethane, 1,1,1-	0.76	10
Trichloroethane, 1,1,2-	0.1	0.1
Trichloroethylene	0.061	0.91
Trichlorofluoromethane	8	8
Trichlorophenol, 2,4,5-	8.8	20
Trichlorophenol, 2,4,6-	7.5	7.5
Uranium	23	66
Vanadium	86	130
Vinyl Chloride	0.04	0.064
Xylene Mixture	6.3	53
Zinc	670	670
Electrical Conductivity (mS/cm)	1.4	2.8
Sodium Adsorption Ratio	10	24

Notes:

*: The boron *ceiling values* are for hot water soluble extract for all *surface soils*. For *subsurface soils* the *ceiling values* are for total boron (mixed strong acid digest), since plant protection for *soils* below the root zone is not a significant concern.

**: Analysis for methyl mercury only applies when mercury (total) excess soil quality standard is exceeded.

***: The methyl naphthalene *ceiling values* are applicable to both 1-methyl naphthalene and 2- methyl naphthalene, with the provision that if both are detected the sum of the two must not exceed the *ceiling value*.

****: F1 fraction does not include benzene, toluene, ethylbenzene and xylene (BTEX); however, the proponent has the choice as to whether or not to subtract BTEX from the analytical result.

TABLE 4: Ceiling Values for Stratified Excess Soil in a Potable Ground Water Condition

Small Volume

(Unit in µg/g)

Contaminant	Residential/Parkland/ Institutional Property Use		Industrial/Commercial/ Community Property Use	
	Surface	Subsurface	Surface	Subsurface
Acenaphthene	16	16	42	42
Acenaphthylene	0.3	0.3	0.3	0.3
Acetone	32	32	32	32
Aldrin	0.05	6.4	0.088	13
Anthracene	1.3	1.3	1.3	1.3
Antimony	7.5	63	63	130
Arsenic	18	18	18	94
Barium	790	7700	1300	7700
Benzene	0.42	0.42	0.63	1.8
Benz[a]anthracene	1	1.9	1.9	72
Benzo[a]pyrene	0.6	0.6	0.6	7.2
Benzo[b]fluoranthene	1.6	1.9	1.9	72
Benzo[ghi]perylene	13	19	19	720
Benzo[k]fluoranthene	1.6	1.9	1.9	72
Beryllium	8	120	16	120
Biphenyl 1,1'-	0.31	11	52	52
Bis(2-chloroethyl)ether	0.5	0.5	0.5	0.5
Bis(2-chloroisopropyl)ether	0.67	11	11	11
Bis(2-ethylhexyl)phthalate	8	1700	55	1700
Boron (Hot Water Soluble)*	3	NA	4	NA
Boron (total)	NA	5000	NA	5000
Bromodichloromethane	3	3	3	3
Bromoform	0.53	0.53	1.2	4
Bromomethane	0.1	0.1	0.1	0.1
Cadmium	1.4	16	3.8	16
Carbon Tetrachloride	0.066	0.066	0.36	0.43
Chlordane	0.05	1.6	0.05	30
Chloroaniline p-	1	1	1	1
Chlorobenzene	3.7	4.8	4.8	4.8
Chloroform	0.1	0.1	0.95	1.7
Chlorophenol, 2-	3.1	7.3	6.2	7.3
Chromium Total	320	11000	320	11000

Contaminant	Residential/Parkland/ Institutional Property Use		Industrial/Commercial/ Community Property Use	
	Surface	Subsurface	Surface	Subsurface
Chromium VI	16	80	16	80
Chrysene	14	19	19	39
Cobalt	22	250	160	2500
Copper	200	5600	450	5600
Cyanide (CN-)	0.1	0.1	0.1	0.1
Dibenz[a h]anthracene	0.2	0.2	0.2	7.2
Dibromochloromethane	3.3	3.3	3.3	3.3
Dichlorobenzene, 1,2-	1.2	1.2	1.2	1.2
Dichlorobenzene, 1,3-	9.6	48	19	48
Dichlorobenzene, 1,4-	0.17	0.17	0.4	0.4
Dichlorobenzidine, 3,3'-	2	2	2	2
Dichlorodifluoromethane	32	32	32	32
DDD	6.6	9.2	9.2	110
DDE	0.26	6.5	0.52	110
DDT	1.4	6.5	1.4	110
Dichloroethane, 1,1-	0.94	0.94	0.94	0.94
Dichloroethane, 1,2-	0.1	0.1	0.1	0.11
Dichloroethylene, 1,1-	0.051	0.051	0.13	0.24
Dichloroethylene, 1,2-cis-	1.9	1.9	1.9	1.9
Dichloroethylene, 1,2-trans-	0.17	0.17	1.3	1.9
Dichlorophenol, 2,4-	0.19	0.19	0.19	0.19
Dichloropropane, 1,2-	0.05	0.05	0.28	0.33
Dichloropropene, 1,3-	0.1	0.1	0.12	0.12
Dieldrin	0.05	0.11	0.088	0.11
Diethyl Phthalate	0.64	0.64	0.64	0.64
Dimethylphthalate	0.5	0.5	0.5	0.5
Dimethylphenol, 2,4-	76	76	76	76
Dinitrophenol, 2,4-	4.1	4.1	4.1	4.1
Dinitrotoluene, 2,4 & 2,6-	1	1	1	1
Dioxane, 1,4	3.6	15	3.6	15
Dioxin/Furan (TEQ)	0.000013	0.00065	0.000099	0.0037
Endosulfan	0.04	0.46	0.3	0.46
Endrin	0.04	0.071	0.04	0.071
Ethylbenzene	1.1	1.1	1.1	1.1
Ethylene dibromide	0.079	0.079	0.079	0.079

Contaminant	Residential/Parkland/ Institutional Property Use		Industrial/Commercial/ Community Property Use	
	Surface	Subsurface	Surface	Subsurface
Fluoranthene	1.4	19	19	48
Fluorene	120	120	120	120
Heptachlor	0.2	0.38	0.38	1.8
Heptachlor Epoxide	0.05	0.05	0.05	0.05
Hexachlorobenzene	1	1.3	1.3	2.9
Hexachlorobutadiene	0.024	0.024	0.062	0.12
Hexachlorocyclohexane Gamma-	0.056	0.056	0.056	0.056
Hexachloroethane	0.18	0.18	0.42	0.98
Hexane (n)	5.7	5.7	91	110
Indeno[1 2 3-cd]pyrene	0.76	1.9	1.5	72
Lead	120	1000	250	1000
Mercury	0.27	0.27	3.9	13
Methoxychlor	0.26	1.6	1.6	1.7
Methyl Ethyl Ketone	26	32	140	160
Methyl Isobutyl Ketone	1.7	6.6	31	64
Methyl Mercury **	0.0084	0.0084	0.0084	0.0084
Methyl tert-Butyl Ether (MTBE)	1.5	1.5	1.6	1.6
Methylene Chloride	0.2	0.2	3.1	3.9
Methlynaphthalene, 2-(1-) ***	0.99	30	30	30
Molybdenum	14	1200	80	2500
Naphthalene	1.2	1.3	17	93
Nickel	180	1000	540	1000
Pentachlorophenol	0.1	2.9	2.9	2.9
Petroleum Hydrocarbons F1****	110	110	110	110
Petroleum Hydrocarbons F2	200	200	460	460
Petroleum Hydrocarbons F3	600	5800	3400	5800
Petroleum Hydrocarbons F4	5600	6900	6600	6900
Phenanthrene	12	35	25	35
Phenol	19	93	19	93
Polychlorinated Biphenyls	0.35	2.7	1.1	7.3
Pyrene	160	190	190	470
Selenium	4.8	1200	11	2500
Silver	40	490	80	980
Styrene	0.7	16	34	47
Tetrachloroethane, 1,1,1,2-	0.12	0.12	0.17	0.3

Contaminant	Residential/Parkland/ Institutional Property Use		Industrial/Commercial/ Community Property Use	
	Surface	Subsurface	Surface	Subsurface
Tetrachloroethane, 1,1,2,2-	0.1	0.1	0.1	0.1
Tetrachloroethylene	0.56	0.56	1.9	1.9
Thallium	1	3.3	3.3	33
Toluene	2.3	6.2	6.4	6.4
Trichlorobenzene, 1,2,4-	0.72	0.72	6.3	17
Trichloroethane, 1,1,1-	0.76	0.76	10	10
Trichloroethane, 1,1,2-	0.1	0.1	0.1	0.14
Trichloroethylene	0.061	0.061	0.55	0.55
Trichlorofluoromethane	8	8	8	8
Trichlorophenol, 2,4,5-	8.8	18	18	18
Trichlorophenol, 2,4,6-	2.1	2.1	2.1	2.1
Uranium	23	300	66	300
Vanadium	86	160	130	330
Vinyl Chloride	0.04	0.04	0.064	0.11
Xylene Mixture	6.3	6.3	26	26
Zinc	670	15000	670	15000
Electrical Conductivity (mS/cm)	1.4	NA	2.8	NA
Sodium Adsorption Ratio	10	NA	24	NA

Notes:

NA: Not Applicable.

*: The boron *ceiling values* are for hot water soluble extract for all *surface soils*. For *subsurface soils* the *ceiling values* are for total boron (mixed strong acid digest), since plant protection for *soils* below the root zone is not a significant concern.

**: Analysis for methyl mercury only applies when mercury (total) excess soil quality standard is exceeded.

***: The methyl naphthalene *ceiling values* are applicable to both 1-methyl naphthalene and 2- methyl naphthalene, with the provision that if both are detected the sum of the two must not exceed the *ceiling value*.

****: F1 fraction does not include benzene, toluene, ethylbenzene and xylene (BTEX); however, the proponent has the choice as to whether or not to subtract BTEX from the analytical result.

TABLE 5: Ceiling Values for Stratified Excess Soil in a Non-Potable Ground Water Condition

Small Volume

(Unit in µg/g)

Contaminant	Residential/Parkland/ Institutional/Property Use		Industrial/Commercial/ Community Property Use	
	Surface	Subsurface	Surface	Subsurface
Acenaphthene	16	16	190	650
Acenaphthylene	0.3	0.3	0.3	0.3
Acetone	32	32	32	32
Aldrin	0.05	6.4	0.088	13
Anthracene	1.3	1.3	1.3	1.3
Antimony	7.5	63	63	130
Arsenic	18	18	18	94
Barium	790	7700	1300	7700
Benzene	0.42	0.42	0.63	12
Benz[a]anthracene	1	1.9	1.9	72
Benzo[a]pyrene	0.6	0.6	0.6	7.2
Benzo[b]fluoranthene	1.6	1.9	1.9	72
Benzo[ghi]perylene	13	19	19	720
Benzo[k]fluoranthene	1.6	1.9	1.9	72
Beryllium	8	120	16	120
Biphenyl 1,1'-	0.31	11	52	100
Bis(2-chloroethyl)ether	1	1	1	33
Bis(2-chloroisopropyl)ether	0.67	11	11	11
Bis(2-ethylhexyl)phthalate	8	7100	55	7100
Boron (Hot Water Soluble)*	3	NA	4	NA
Boron (total)	NA	5000	NA	5000
Bromodichloromethane	26	35	35	100
Bromoform	0.53	0.53	1.2	4
Bromomethane	0.1	0.1	0.1	0.1
Cadmium	1.4	16	3.8	16
Carbon Tetrachloride	0.066	0.066	0.36	0.43
Chlordane	0.05	1.6	0.05	30
Chloroaniline p-	1	1	1	1
Chlorobenzene	3.7	4.8	4.8	4.8
Chloroform	0.1	0.1	0.95	1.7
Chlorophenol, 2-	3.1	41	6.2	41
Chromium Total	320	11000	320	11000

Contaminant	Residential/Parkland/ Institutional Property Use		Industrial/Commercial/ Community Property Use	
	Surface	Subsurface	Surface	Subsurface
Chromium VI	16	80	16	80
Chrysene	14	19	19	720
Cobalt	22	250	160	2500
Copper	200	5600	450	5600
Cyanide (CN-)	0.1	0.1	0.1	0.1
Dibenz[a h]anthracene	0.2	0.2	0.2	7.2
Dibromochloromethane	19	26	26	97
Dichlorobenzene, 1,2-	6.1	69	14	120
Dichlorobenzene, 1,3-	9.6	120	19	120
Dichlorobenzene, 1,4-	0.17	0.17	0.41	0.79
Dichlorobenzidine, 3,3'-	2	2	2	49
Dichlorodifluoromethane	32	32	32	32
DDD	6.6	9.2	9.2	110
DDE	0.26	6.5	0.52	110
DDT	1.4	6.5	1.4	110
Dichloroethane, 1,1-	7	7	34	120
Dichloroethane, 1,2-	0.1	0.1	0.1	0.11
Dichloroethylene, 1,1-	0.051	0.051	0.13	0.24
Dichloroethylene, 1,2-cis-	6.9	6.9	55	110
Dichloroethylene, 1,2-trans-	0.17	0.17	1.3	2.9
Dichlorophenol, 2,4-	3.4	93	6.7	93
Dichloropropane, 1,2-	0.05	0.05	0.28	0.33
Dichloropropene, 1,3-	0.1	0.1	0.35	0.69
Dieldrin	0.05	0.11	0.088	0.11
Diethyl Phthalate	0.64	0.64	0.64	0.64
Dimethylphthalate	0.5	0.5	0.5	0.5
Dimethylphenol, 2,4-	420	790	790	790
Dinitrophenol, 2,4-	38	120	120	120
Dinitrotoluene, 2,4 & 2,6-	1.8	2.3	2.3	30
Dioxane, 1,4	3.6	200	3.6	1600
Dioxin/Furan (TEQ)	0.000013	0.00065	0.000099	0.0088
Endosulfan	0.04	0.46	0.3	0.46
Endrin	0.04	0.071	0.04	0.071
Ethylbenzene	4.1	4.1	19	34
Ethylene dibromide	0.1	0.1	0.1	0.1

Contaminant	Residential/Parkland/ Institutional Property Use		Industrial/Commercial/ Community Property Use	
	Surface	Subsurface	Surface	Subsurface
Fluoranthene	1.4	19	19	720
Fluorene	120	120	120	120
Heptachlor	0.2	0.38	0.38	1.8
Heptachlor Epoxide	0.05	0.05	0.05	0.05
Hexachlorobenzene	1	1.3	1.3	14
Hexachlorobutadiene	0.024	0.024	0.062	0.12
Hexachlorocyclohexane Gamma-	0.056	0.056	0.056	0.056
Hexachloroethane	0.18	0.18	0.42	3.3
Hexane (n)	5.7	5.7	91	110
Indeno[1 2 3-cd]pyrene	0.76	1.9	1.5	72
Lead	120	1000	250	1000
Mercury	0.27	0.27	3.9	13
Methoxychlor	0.26	1.6	1.6	1.7
Methyl Ethyl Ketone	26	32	140	300
Methyl Isobutyl Ketone	1.7	6.6	61	64
Methyl Mercury **	0.0084	0.0084	0.0084	0.0084
Methyl tert-Butyl Ether (MTBE)	1.5	1.5	23	28
Methylene Chloride	0.2	0.2	3.1	3.9
Methlynaphthalene, 2-(1-) ***	0.99	34	150	150
Molybdenum	14	1200	80	2500
Naphthalene	1.2	1.3	19	250
Nickel	180	1000	540	1000
Pentachlorophenol	0.1	2.9	2.9	2.9
Petroleum Hydrocarbons F1****	110	110	110	110
Petroleum Hydrocarbons F2	200	200	460	460
Petroleum Hydrocarbons F3	600	5800	3400	5800
Petroleum Hydrocarbons F4	5600	6900	6600	6900
Phenanthrene	12	530	25	530
Phenol	19	93	19	93
Polychlorinated Biphenyls	0.35	2.7	1.1	7.3
Pyrene	160	190	190	5100
Selenium	4.8	1200	11	2500
Silver	40	490	80	980
Styrene	0.7	18	69	100
Tetrachloroethane, 1,1,1,2-	0.12	0.12	0.17	0.49

Contaminant	Residential/Parkland/ Institutional/Property Use		Industrial/Commercial/ Community Property Use	
	Surface	Subsurface	Surface	Subsurface
Tetrachloroethane, 1,1,2,2-	0.1	0.1	0.1	0.1
Tetrachloroethylene	0.56	0.56	4.5	9.5
Thallium	1	3.3	3.3	33
Toluene	2.3	9	100	140
Trichlorobenzene, 1,2,4-	0.72	0.72	6.3	17
Trichloroethane, 1,1,1-	0.76	0.76	10	10
Trichloroethane, 1,1,2-	0.1	0.1	0.1	0.14
Trichloroethylene	0.061	0.061	0.91	1.8
Trichlorofluoromethane	8	8	8	8
Trichlorophenol, 2,4,5-	8.8	54	20	54
Trichlorophenol, 2,4,6-	7.5	7.5	7.5	7.5
Uranium	23	300	66	300
Vanadium	86	160	130	330
Vinyl Chloride	0.04	0.04	0.064	0.11
Xylene Mixture	6.3	6.3	53	53
Zinc	670	15000	670	15000
Electrical Conductivity (mS/cm)	1.4	NA	2.8	NA
Sodium Adsorption Ratio	10	NA	24	NA

Notes:

NA: Not Applicable.

*: The boron *ceiling values* are for hot water soluble extract for all *surface soils*. For *subsurface soils* the *ceiling values* are for total boron (mixed strong acid digest), since plant protection for *soils* below the root zone is not a significant concern.

**: Analysis for methyl mercury only applies when mercury (total) excess soil quality standard is exceeded.

***: The methyl naphthalene *ceiling values* are applicable to both 1-methyl naphthalene and 2- methyl naphthalene, with the provision that if both are detected the sum of the two must not exceed the *ceiling value*.

****: F1 fraction does not include benzene, toluene, ethylbenzene and xylene (BTEX); however, the proponent has the choice as to whether or not to subtract BTEX from the analytical result.

TABLE 6: Ceiling Values for Full Depth Excess Soil in Shallow Soils in a Potable Ground Water Condition

Small Volume

(Unit in µg/g)

Contaminant	Agricultural or Other Property Use	Residential/ Parkland/ Institutional Property Use	Industrial/ Commercial/ Community Property Use
Acenaphthene	16	16	42
Acenaphthylene	0.3	0.3	0.3
Acetone	32	32	32
Aldrin	0.05	0.05	0.088
Anthracene	1.3	1.3	1.3
Antimony	7.5	7.5	63
Arsenic	11	18	18
Barium	790	790	1300
Benzene	0.21	0.21	0.32
Benz[a]anthracene	1	1	1.9
Benzo[a]pyrene	0.16	0.6	0.6
Benzo[b]fluoranthene	1.6	1.6	1.9
Benzo[ghi]perylene	13	13	19
Benzo[k]fluoranthene	1.6	1.6	1.9
Beryllium	8	8	16
Biphenyl 1,1'-	0.31	0.31	52
Bis(2-chloroethyl)ether	0.5	0.5	0.5
Bis(2-chloroisopropyl)ether	0.67	0.67	11
Bis(2-ethylhexyl)phthalate	8	8	55
Boron (Hot Water Soluble)*	3	3	4
Boron (total)	230	230	230
Bromodichloromethane	3	3	3
Bromoform	0.53	0.53	1.2
Bromomethane	0.05	0.05	0.05
Cadmium	1.4	1.4	3.8
Carbon Tetrachloride	0.05	0.05	0.21
Chlordane	0.05	0.05	0.05
Chloroaniline p-	1	1	1
Chlorobenzene	3.7	3.7	4.8
Chloroform	0.1	0.1	0.95
Chlorophenol, 2-	3.1	3.1	6.2
Chromium Total	320	320	320

Contaminant	Agricultural or Other Property Use	Residential/ Parkland/ Institutional Property Use	Industrial/ Commercial/ Community Property Use
Chromium VI	16	16	16
Chrysene	14	14	19
Cobalt	22	22	160
Copper	200	200	450
Cyanide (CN-)	0.1	0.1	0.1
Dibenz[a h]anthracene	0.2	0.2	0.2
Dibromochloromethane	3.3	3.3	3.3
Dichlorobenzene, 1,2-	1.2	1.2	1.2
Dichlorobenzene, 1,3-	9.6	9.6	19
Dichlorobenzene, 1,4-	0.17	0.17	0.4
Dichlorobenzidine, 3,3'-	2	2	2
Dichlorodifluoromethane	32	32	32
DDD	3.8	3.8	4.6
DDE	0.26	0.26	0.52
DDT	0.078	1.4	1.4
Dichloroethane, 1,1-	0.94	0.94	0.94
Dichloroethane, 1,2-	0.1	0.1	0.1
Dichloroethylene, 1,1-	0.05	0.05	0.064
Dichloroethylene, 1,2-cis-	1.9	1.9	1.9
Dichloroethylene, 1,2-trans-	0.084	0.084	1.3
Dichlorophenol, 2,4-	0.19	0.19	0.19
Dichloropropane, 1,2-	0.05	0.05	0.16
Dichloropropene, 1,3-	0.1	0.1	0.12
Dieldrin	0.05	0.05	0.088
Diethyl Phthalate	0.56	0.56	0.56
Dimethylphthalate	0.5	0.5	0.5
Dimethylphenol, 2,4-	76	76	76
Dinitrophenol, 2,4-	4.1	4.1	4.1
Dinitrotoluene, 2,4 & 2,6-	1	1	1
Dioxane, 1,4	0.4	3.6	3.6
Dioxin/Furan (TEQ)	0.000013	0.000013	0.000099
Endosulfan	0.04	0.04	0.3
Endrin	0.04	0.04	0.04
Ethylbenzene	1.1	1.1	1.1
Ethylene dibromide	0.05	0.05	0.05

Contaminant	Agricultural or Other Property Use	Residential/ Parkland/ Institutional Property Use	Industrial/ Commercial/ Community Property Use
Fluoranthene	1.4	1.4	19
Fluorene	120	120	120
Heptachlor	0.15	0.15	0.19
Heptachlor Epoxide	0.05	0.05	0.05
Hexachlorobenzene	1	1	1.3
Hexachlorobutadiene	0.024	0.024	0.062
Hexachlorocyclohexane Gamma-	0.056	0.056	0.056
Hexachloroethane	0.11	0.11	0.21
Hexane (n)	2.9	2.9	46
Indeno[1 2 3-cd]pyrene	0.76	0.76	1.5
Lead	90	120	250
Mercury	0.25	0.27	3.9
Methoxychlor	0.26	0.26	1.6
Methyl Ethyl Ketone	16	16	70
Methyl Isobutyl Ketone	1.7	1.7	31
Methyl Mercury **	0.0084	0.0084	0.0084
Methyl tert-Butyl Ether (MTBE)	1.5	1.5	1.6
Methylene Chloride	0.17	0.17	1.6
Methylnaphthalene, 2-(1-) ***	0.99	0.99	30
Molybdenum	14	14	80
Naphthalene	0.76	0.76	9.6
Nickel	180	180	540
Pentachlorophenol	0.1	0.1	2.9
Petroleum Hydrocarbons F1****	55	55	55
Petroleum Hydrocarbons F2	98	98	230
Petroleum Hydrocarbons F3	600	600	3400
Petroleum Hydrocarbons F4	5600	5600	6600
Phenanthrene	12	12	25
Phenol	19	19	19
Polychlorinated Biphenyls	0.35	0.35	1.1
Pyrene	78	78	96
Selenium	4.8	4.8	11
Silver	40	40	80
Styrene	0.7	0.7	34
Tetrachloroethane, 1,1,1,2-	0.12	0.12	0.14

Contaminant	Agricultural or Other Property Use	Residential/ Parkland/ Institutional Property Use	Industrial/ Commercial/ Community Property Use
Tetrachloroethane, 1,1,2,2-	0.1	0.1	0.1
Tetrachloroethylene	0.28	0.28	1.9
Thallium	1	1	3.3
Toluene	2.3	2.3	6.4
Trichlorobenzene, 1,2,4-	0.36	0.36	3.2
Trichloroethane, 1,1,1-	0.38	0.38	6.1
Trichloroethane, 1,1,2-	0.1	0.1	0.1
Trichloroethylene	0.061	0.061	0.55
Trichlorofluoromethane	8	8	8
Trichlorophenol, 2,4,5-	8.8	8.8	18
Trichlorophenol, 2,4,6-	2.1	2.1	2.1
Uranium	23	23	66
Vanadium	86	86	130
Vinyl Chloride	0.04	0.04	0.064
Xylene Mixture	3.1	3.1	26
Zinc	670	670	670
Electrical Conductivity (mS/cm)	1.4	1.4	2.8
Sodium Adsorption Ratio	10	10	24

Notes:

*: The boron *ceiling values* are for hot water soluble extract for all *surface soils*. For *subsurface soils* the *ceiling values* are for total boron (mixed strong acid digest), since plant protection for *soils* below the root zone is not a significant concern.

**: Analysis for methyl mercury only applies when mercury (total) excess soil quality standard is exceeded.

***: The methyl naphthalene *ceiling values* are applicable to both 1-methyl naphthalene and 2- methyl naphthalene, with the provision that if both are detected the sum of the two must not exceed the *ceiling value*.

****: F1 fraction does not include benzene, toluene, ethylbenzene and xylene (BTEX); however, the proponent has the choice as to whether or not to subtract BTEX from the analytical result.

TABLE 7: Ceiling Values for Full Depth Excess Soil in Shallow Soils in a Non-Potable Ground Water Condition

Small Volume

(Unit in µg/g)

Contaminant	Residential/Parkland/ Institutional Property Use	Industrial/Commercial/ Community Property Use
Acenaphthene	16	190
Acenaphthylene	0.3	0.3
Acetone	32	32
Aldrin	0.05	0.088
Anthracene	1.3	1.3
Antimony	7.5	63
Arsenic	18	18
Barium	790	1300
Benzene	0.21	0.63
Benz[a]anthracene	1	1.9
Benzo[a]pyrene	0.6	0.6
Benzo[b]fluoranthene	1.6	1.9
Benzo[ghi]perylene	13	19
Benzo[k]fluoranthene	1.6	1.9
Beryllium	8	16
Biphenyl 1,1'-	0.31	52
Bis(2-chloroethyl)ether	1	1
Bis(2-chloroisopropyl)ether	0.67	11
Bis(2-ethylhexyl)phthalate	8	55
Boron (Hot Water Soluble)*	3	4
Boron (total)	230	230
Bromodichloromethane	26	35
Bromoform	0.53	1.2
Bromomethane	0.05	0.05
Cadmium	1.4	3.8
Carbon Tetrachloride	0.05	0.21
Chlordane	0.05	0.05
Chloroaniline p-	1	1
Chlorobenzene	3.7	4.8
Chloroform	0.1	0.95
Chlorophenol, 2-	3.1	6.2
Chromium Total	320	320
Chromium VI	16	16

Contaminant	Residential/Parkland/ Institutional Property Use	Industrial/Commercial/ Community Property Use
Chrysene	14	19
Cobalt	22	160
Copper	200	450
Cyanide (CN-)	0.1	0.1
Dibenz[a h]anthracene	0.2	0.2
Dibromochloromethane	19	26
Dichlorobenzene, 1,2-	6.1	14
Dichlorobenzene, 1,3-	9.6	19
Dichlorobenzene, 1,4-	0.17	0.41
Dichlorobenzidine, 3,3'-	2	2
Dichlorodifluoromethane	32	32
DDD	3.8	4.6
DDE	0.26	0.52
DDT	1.4	1.4
Dichloroethane, 1,1-	3.5	17
Dichloroethane, 1,2-	0.1	0.1
Dichloroethylene, 1,1-	0.05	0.064
Dichloroethylene, 1,2-cis-	3.4	55
Dichloroethylene, 1,2-trans-	0.084	1.3
Dichlorophenol, 2,4-	3.4	6.7
Dichloropropane, 1,2-	0.05	0.16
Dichloropropene, 1,3-	0.1	0.34
Dieldrin	0.05	0.088
Diethyl Phthalate	0.56	0.56
Dimethylphthalate	0.5	0.5
Dimethylphenol, 2,4-	420	790
Dinitrophenol, 2,4-	38	120
Dinitrotoluene, 2,4 & 2,6-	1.8	2.3
Dioxane, 1,4	3.6	3.6
Dioxin/Furan (TEQ)	0.000013	0.000099
Endosulfan	0.04	0.3
Endrin	0.04	0.04
Ethylbenzene	4.1	9.5
Ethylene dibromide	0.05	0.05
Fluoranthene	1.4	19
Fluorene	120	120

Contaminant	Residential/Parkland/ Institutional Property Use	Industrial/Commercial/ Community Property Use
Heptachlor	0.15	0.19
Heptachlor Epoxide	0.05	0.05
Hexachlorobenzene	1	1.3
Hexachlorobutadiene	0.024	0.062
Hexachlorocyclohexane Gamma-	0.056	0.056
Hexachloroethane	0.11	0.21
Hexane (n)	2.9	46
Indeno[1 2 3-cd]pyrene	0.76	1.5
Lead	120	250
Mercury	0.27	3.9
Methoxychlor	0.26	1.6
Methyl Ethyl Ketone	16	70
Methyl Isobutyl Ketone	1.7	31
Methyl Mercury **	0.0084	0.0084
Methyl tert-Butyl Ether (MTBE)	1.5	15
Methylene Chloride	0.17	1.6
Methlynaphthalene, 2-(1-) ***	0.99	150
Molybdenum	14	80
Naphthalene	0.76	9.6
Nickel	180	540
Pentachlorophenol	0.1	2.9
Petroleum Hydrocarbons F1****	55	55
Petroleum Hydrocarbons F2	98	230
Petroleum Hydrocarbons F3	600	3400
Petroleum Hydrocarbons F4	5600	6600
Phenanthrene	12	25
Phenol	19	19
Polychlorinated Biphenyls	0.35	1.1
Pyrene	78	96
Selenium	4.8	11
Silver	40	80
Styrene	0.7	34
Tetrachloroethane, 1,1,1,2-	0.12	0.14
Tetrachloroethane, 1,1,2,2-	0.1	0.1
Tetrachloroethylene	0.28	4.5
Thallium	1	3.3

Contaminant	Residential/Parkland/ Institutional Property Use	Industrial/Commercial/ Community Property Use
Toluene	2.3	68
Trichlorobenzene, 1,2,4-	0.36	3.2
Trichloroethane, 1,1,1-	0.38	6.1
Trichloroethane, 1,1,2-	0.1	0.1
Trichloroethylene	0.061	0.91
Trichlorofluoromethane	8	8
Trichlorophenol, 2,4,5-	8.8	20
Trichlorophenol, 2,4,6-	7.5	7.5
Uranium	23	66
Vanadium	86	130
Vinyl Chloride	0.04	0.064
Xylene Mixture	3.1	26
Zinc	670	670
Electrical Conductivity (mS/cm)	1.4	2.8
Sodium Adsorption Ratio	10	24

Notes:

*: The boron *ceiling values* are for hot water soluble extract for all *surface soils*. For *subsurface soils* the *ceiling values* are for total boron (mixed strong acid digest), since plant protection for *soils* below the root zone is not a significant concern.

**: Analysis for methyl mercury only applies when mercury (total) excess soil quality standard is exceeded.

***: The methyl naphthalene *ceiling values* are applicable to both 1-methyl naphthalene and 2- methyl naphthalene, with the provision that if both are detected the sum of the two must not exceed the *ceiling value*.

****: F1 fraction does not include benzene, toluene, ethylbenzene and xylene (BTEX); however, the proponent has the choice as to whether or not to subtract BTEX from the analytical result.

TABLE 8: Ceiling Values for Full Depth Excess Soil for Use within 30 metres of a Water Body in a Potable Ground Water Condition

Small Volume

(Unit in µg/g)

Contaminant	Agricultural or Other Property Use	Residential/ Parkland/ Institutional Property Use	Industrial/ Commercial/ Community Property Use
Acenaphthene	0.1	0.14	0.14
Acenaphthylene	0.19	0.19	0.19
Acetone	1	1	1
Aldrin	0.05	0.05	0.05
Anthracene	0.44	0.44	0.44
Antimony	2	2.6	2.6
Arsenic	11	18	18
Barium	390	430	430
Benzene	0.04	0.04	0.04
Benz[a]anthracene	0.64	0.72	0.72
Benzo[a]pyrene	0.16	0.6	0.6
Benzo[b]fluoranthene	0.59	0.94	0.94
Benzo[ghi]perylene	0.4	1.4	1.4
Benzo[k]fluoranthene	0.48	0.97	0.97
Beryllium	4	5	5
Biphenyl 1,1'-	0.1	0.1	0.1
Bis(2-chloroethyl)ether	0.5	0.5	0.5
Bis(2-chloroisopropyl)ether	0.67	0.67	1
Bis(2-ethylhexyl)phthalate	8	8	8
Boron (Hot Water Soluble)*	1.5	3	3
Boron (total)	72	72	72
Bromodichloromethane	0.1	0.1	0.1
Bromoform	0.1	0.1	0.1
Bromomethane	0.1	0.1	0.1
Cadmium	1.4	1.4	2.4
Carbon Tetrachloride	0.066	0.066	0.1
Chlordane	0.05	0.05	0.05
Chloroaniline p-	1	1	1
Chlorobenzene	0.1	0.1	0.1
Chloroform	0.1	0.1	0.1
Chlorophenol, 2-	0.2	0.2	0.2
Chromium Total	130	140	140

Contaminant	Agricultural or Other Property Use	Residential/ Parkland/ Institutional Property Use	Industrial/ Commercial/ Community Property Use
Chromium VI	1.3	1.3	1.3
Chrysene	0.68	5.5	5.5
Cobalt	22	22	43
Copper	120	180	180
Cyanide (CN-)	0.1	0.1	0.1
Dibenz[a h]anthracene	0.2	0.2	0.2
Dibromochloromethane	0.1	0.1	0.1
Dichlorobenzene, 1,2-	0.1	0.1	0.1
Dichlorobenzene, 1,3-	0.1	0.1	0.1
Dichlorobenzene, 1,4-	0.1	0.1	0.1
Dichlorobenzidine, 3,3'-	2	2	2
Dichlorodifluoromethane	0.1	0.1	0.1
DDD	0.1	0.1	0.1
DDE	0.1	0.1	0.1
DDT	0.078	1.4	1.4
Dichloroethane, 1,1-	0.1	0.1	0.1
Dichloroethane, 1,2-	0.1	0.1	0.1
Dichloroethylene, 1,1-	0.051	0.051	0.1
Dichloroethylene, 1,2-cis-	0.1	0.1	0.1
Dichloroethylene, 1,2-trans-	0.1	0.1	0.1
Dichlorophenol, 2,4-	0.19	0.19	0.19
Dichloropropane, 1,2-	0.05	0.05	0.1
Dichloropropene, 1,3-	0.1	0.1	0.1
Dieldrin	0.05	0.05	0.05
Diethyl Phthalate	0.56	0.56	0.56
Dimethylphthalate	0.5	0.5	0.5
Dimethylphenol, 2,4-	0.4	0.4	0.4
Dinitrophenol, 2,4-	4	4	4
Dinitrotoluene, 2,4 & 2,6-	1	1	1
Dioxane, 1,4	0.4	0.4	0.4
Dioxin/Furan (TEQ)	0.000013	0.000013	0.000013
Endosulfan	0.04	0.04	0.04
Endrin	0.04	0.04	0.04
Ethylbenzene	0.1	0.1	0.1
Ethylene dibromide	0.079	0.079	0.079

Contaminant	Agricultural or Other Property Use	Residential/ Parkland/ Institutional Property Use	Industrial/ Commercial/ Community Property Use
Fluoranthene	1.4	1.4	1.4
Fluorene	0.38	0.38	0.38
Heptachlor	0.05	0.05	0.05
Heptachlor Epoxide	0.05	0.05	0.05
Hexachlorobenzene	0.04	0.04	0.04
Hexachlorobutadiene	0.02	0.02	0.02
Hexachlorocyclohexane Gamma-	0.02	0.02	0.02
Hexachloroethane	0.02	0.02	0.02
Hexane (n)	0.1	0.1	0.1
Indeno[1 2 3-cd]pyrene	0.4	0.46	0.46
Lead	45	120	250
Mercury	0.25	0.27	0.53
Methoxychlor	0.1	0.1	0.1
Methyl Ethyl Ketone	1	1	1
Methyl Isobutyl Ketone	1	1	1
Methyl Mercury **	NV	NV	NV
Methyl tert-Butyl Ether (MTBE)	0.1	0.1	0.1
Methylene Chloride	0.1	0.1	0.1
Methylnaphthalene, 2-(1-) ***	0.1	0.99	1.2
Molybdenum	4	4	4
Naphthalene	0.1	0.18	0.18
Nickel	74	160	160
Pentachlorophenol	0.1	0.1	0.1
Petroleum Hydrocarbons F1****	34	50	50
Petroleum Hydrocarbons F2	20	20	20
Petroleum Hydrocarbons F3	300	480	480
Petroleum Hydrocarbons F4	240	240	240
Phenanthrene	1.1	1.4	1.4
Phenol	1	1	1
Polychlorinated Biphenyls	0.35	0.35	0.6
Pyrene	0.98	2.1	2.1
Selenium	2.4	3.1	3.1
Silver	1	1	1
Styrene	0.1	0.1	0.1
Tetrachloroethane, 1,1,1,2-	0.1	0.1	0.1

Contaminant	Agricultural or Other Property Use	Residential/ Parkland/ Institutional Property Use	Industrial/ Commercial/ Community Property Use
Tetrachloroethane, 1,1,2,2-	0.1	0.1	0.1
Tetrachloroethylene	0.1	0.1	0.1
Thallium	1	1	2
Toluene	0.4	0.4	0.4
Trichlorobenzene, 1,2,4-	0.1	0.1	0.1
Trichloroethane, 1,1,1-	0.1	0.1	0.1
Trichloroethane, 1,1,2-	0.1	0.1	0.1
Trichloroethylene	0.05	0.05	0.05
Trichlorofluoromethane	0.1	0.51	0.51
Trichlorophenol, 2,4,5-	0.2	0.2	0.2
Trichlorophenol, 2,4,6-	0.2	0.2	0.2
Uranium	3.8	5	5
Vanadium	86	86	130
Vinyl Chloride	0.04	0.04	0.04
Xylene Mixture	0.1	0.1	0.1
Zinc	340	590	590
Electrical Conductivity (mS/cm)	0.7	1.4	1.4
Sodium Adsorption Ratio	5	10	10

Notes:

NV: No Value.

*: The boron *ceiling values* are for hot water soluble extract for all *surface soils*. For *subsurface soils* the *ceiling values* are for total boron (mixed strong acid digest), since plant protection for *soils* below the root zone is not a significant concern.

**: Analysis for methyl mercury only applies when mercury (total) excess soil quality standard is exceeded.

***: The methyl naphthalene *ceiling values* are applicable to both 1-methyl naphthalene and 2- methyl naphthalene, with the provision that if both are detected the sum of the two must not exceed the *ceiling value*.

****: F1 fraction does not include benzene, toluene, ethylbenzene and xylene (BTEX); however, the proponent has the choice as to whether or not to subtract BTEX from the analytical result.

TABLE 9: Ceiling Values for Full Depth Excess Soil for Use within 30 metres of a Water Body in a Non-Potable Ground Water Condition

Small Volume

(Unit in µg/g)

Contaminant	Residential/Parkland/ Institutional/ Property Use	Industrial/Commercial/ Community Property Use
Acenaphthene	0.14	0.14
Acenaphthylene	0.19	0.19
Acetone	1	1
Aldrin	0.05	0.05
Anthracene	0.44	0.44
Antimony	2.6	2.6
Arsenic	18	18
Barium	430	430
Benzene	0.04	0.04
Benz[a]anthracene	0.72	0.72
Benzo[a]pyrene	0.6	0.6
Benzo[b]fluoranthene	0.94	0.94
Benzo[ghi]perylene	1.4	1.4
Benzo[k]fluoranthene	0.97	0.97
Beryllium	5	5
Biphenyl 1,1'-	0.1	0.1
Bis(2-chloroethyl)ether	1	1
Bis(2-chloroisopropyl)ether	0.67	1
Bis(2-ethylhexyl)phthalate	8	8
Boron (Hot Water Soluble)*	3	3
Boron (total)	72	72
Bromodichloromethane	0.1	0.1
Bromoform	0.1	0.1
Bromomethane	0.1	0.1
Cadmium	1.4	2.4
Carbon Tetrachloride	0.066	0.1
Chlordane	0.05	0.05
Chloroaniline p-	1	1
Chlorobenzene	0.1	0.1
Chloroform	0.1	0.1
Chlorophenol, 2-	0.2	0.2
Chromium Total	140	140
Chromium VI	1.3	1.3

Contaminant	Residential/Parkland/ Institutional/ Property Use	Industrial/Commercial/ Community Property Use
Chrysene	5.5	5.5
Cobalt	22	43
Copper	180	180
Cyanide (CN-)	0.1	0.1
Dibenz[a h]anthracene	0.2	0.2
Dibromochloromethane	0.1	0.1
Dichlorobenzene, 1,2-	0.1	0.1
Dichlorobenzene, 1,3-	0.1	0.1
Dichlorobenzene, 1,4-	0.1	0.1
Dichlorobenzidine, 3,3'-	2	2
Dichlorodifluoromethane	0.1	0.1
DDD	0.1	0.1
DDE	0.1	0.1
DDT	1.4	1.4
Dichloroethane, 1,1-	0.1	0.1
Dichloroethane, 1,2-	0.1	0.1
Dichloroethylene, 1,1-	0.051	0.1
Dichloroethylene, 1,2-cis-	0.1	0.1
Dichloroethylene, 1,2-trans-	0.1	0.1
Dichlorophenol, 2,4-	0.2	0.2
Dichloropropane, 1,2-	0.05	0.1
Dichloropropene, 1,3-	0.1	0.1
Dieldrin	0.05	0.05
Diethyl Phthalate	0.56	0.56
Dimethylphthalate	0.5	0.5
Dimethylphenol, 2,4-	0.4	0.4
Dinitrophenol, 2,4-	4	4
Dinitrotoluene, 2,4 & 2,6-	1	1
Dioxane, 1,4	0.4	0.4
Dioxin/Furan (TEQ)	0.000013	0.000013
Endosulfan	0.04	0.04
Endrin	0.04	0.04
Ethylbenzene	0.1	0.1
Ethylene dibromide	0.1	0.1
Fluoranthene	1.4	1.4
Fluorene	0.38	0.38

Contaminant	Residential/Parkland/ Institutional/ Property Use	Industrial/Commercial/ Community Property Use
Heptachlor	0.05	0.05
Heptachlor Epoxide	0.05	0.05
Hexachlorobenzene	0.04	0.04
Hexachlorobutadiene	0.02	0.02
Hexachlorocyclohexane Gamma-	0.02	0.02
Hexachloroethane	0.02	0.02
Hexane (n)	0.1	0.1
Indeno[1 2 3-cd]pyrene	0.46	0.46
Lead	120	250
Mercury	0.27	0.53
Methoxychlor	0.1	0.1
Methyl Ethyl Ketone	1	1
Methyl Isobutyl Ketone	1	1
Methyl Mercury **	NV	NV
Methyl tert-Butyl Ether (MTBE)	0.1	0.1
Methylene Chloride	0.1	0.1
Methylnaphthalene, 2-(1-) ***	0.99	1.2
Molybdenum	4	4
Naphthalene	0.18	0.18
Nickel	160	160
Pentachlorophenol	0.1	0.1
Petroleum Hydrocarbons F1****	50	50
Petroleum Hydrocarbons F2	20	20
Petroleum Hydrocarbons F3	480	480
Petroleum Hydrocarbons F4	240	240
Phenanthrene	1.4	1.4
Phenol	1	1
Polychlorinated Biphenyls	0.35	0.6
Pyrene	2.1	2.1
Selenium	3.1	3.1
Silver	1	1
Styrene	0.1	0.1
Tetrachloroethane, 1,1,1,2-	0.1	0.1
Tetrachloroethane, 1,1,2,2-	0.1	0.1
Tetrachloroethylene	0.1	0.1
Thallium	1	2

Contaminant	Residential/Parkland/ Institutional/ Property Use	Industrial/Commercial/ Community Property Use
Toluene	0.4	0.4
Trichlorobenzene, 1,2,4-	0.1	0.1
Trichloroethane, 1,1,1-	0.1	0.1
Trichloroethane, 1,1,2-	0.1	0.1
Trichloroethylene	0.05	0.05
Trichlorofluoromethane	0.51	0.51
Trichlorophenol, 2,4,5-	0.2	0.2
Trichlorophenol, 2,4,6-	0.2	0.2
Uranium	5	5
Vanadium	86	130
Vinyl Chloride	0.04	0.04
Xylene Mixture	0.1	0.1
Zinc	590	590
Electrical Conductivity (mS/cm)	1.4	1.4
Sodium Adsorption Ratio	10	10

Notes:

NV: No Value.

*: The boron *ceiling values* are for hot water soluble extract for all *surface soils*. For *subsurface soils* the *ceiling values* are for total boron (mixed strong acid digest), since plant protection for *soils* below the root zone is not a significant concern.

**: Analysis for methyl mercury only applies when mercury (total) excess soil quality standard is exceeded.

***: The methyl naphthalene *ceiling values* are applicable to both 1-methyl naphthalene and 2- methyl naphthalene, with the provision that if both are detected the sum of the two must not exceed the *ceiling value*.

****: F1 fraction does not include benzene, toluene, ethylbenzene and xylene (BTEX); however, the proponent has the choice as to whether or not to subtract BTEX from the analytical result.

TABLE 2.1: Ceiling Values for Full Depth Excess Soil in a Potable Ground Water Condition

Volume Independent

(Unit in µg/g)

Contaminant	Agricultural or Other Property Use	Residential/ Parkland/ Institutional Property Use	Industrial/ Commercial/ Community Property Use
Acenaphthene	4.1	4.1	4.1
Acenaphthylene	0.17	0.17	0.17
Acetone	1	1	1
Aldrin	0.05	0.05	0.088
Anthracene	0.12	0.32	0.32
Antimony	7.5	7.5	63
Arsenic	11	18	18
Barium	790	790	1300
Benzene	0.029	0.029	0.04
Benz[a]anthracene	1	1	1.8
Benzo[a]pyrene	0.63	0.63	0.63
Benzo[b]fluoranthene	6.4	6.4	6.4
Benzo[ghi]perylene	13	13	26
Benzo[k]fluoranthene	6.3	6.3	6.3
Beryllium	8	8	16
Biphenyl 1,1'-	0.05	0.05	0.05
Bis(2-chloroethyl)ether	0.5	0.5	0.5
Bis(2-chloroisopropyl)ether	0.5	0.5	0.5
Bis(2-ethylhexyl)phthalate	8	8	20
Boron (Hot Water Soluble)*	3	3	4
Boron (total)	230	230	230
Bromodichloromethane	0.05	0.05	0.05
Bromoform	0.1	0.1	0.1
Bromomethane	0.05	0.05	0.05
Cadmium	1.4	1.4	3.8
Carbon Tetrachloride	0.05	0.05	0.05
Chlordane	0.05	0.05	0.05
Chloroaniline p-	0.5	0.5	0.5
Chlorobenzene	0.083	0.083	0.083
Chloroform	0.097	0.097	0.097
Chlorophenol, 2-	0.19	0.19	0.19
Chromium Total	320	320	320

Contaminant	Agricultural or Other Property Use	Residential/ Parkland/ Institutional Property Use	Industrial/ Commercial/ Community Property Use
Chromium VI	16	16	16
Chrysene	14	14	19
Cobalt	22	22	160
Copper	200	200	450
Cyanide (CN-)	0.051	0.051	0.051
Dibenz[a h]anthracene	1.1	1.1	1.4
Dibromochloromethane	0.05	0.05	0.05
Dichlorobenzene, 1,2-	4.6	4.6	14
Dichlorobenzene, 1,3-	0.52	0.52	0.52
Dichlorobenzene, 1,4-	0.05	0.05	0.05
Dichlorobenzidine, 3,3'-	1	1	1
Dichlorodifluoromethane	3.1	3.1	3.1
DDD	6.6	6.6	9.2
DDE	0.26	0.26	0.52
DDT	0.078	1.4	1.4
Dichloroethane, 1,1-	0.1	0.1	0.1
Dichloroethane, 1,2-	0.05	0.05	0.05
Dichloroethylene, 1,1-	0.05	0.05	0.05
Dichloroethylene, 1,2-cis-	0.05	0.05	0.05
Dichloroethylene, 1,2-trans-	0.05	0.05	0.05
Dichlorophenol, 2,4-	0.1	0.1	0.1
Dichloropropane, 1,2-	0.05	0.05	0.05
Dichloropropene, 1,3-	0.05	0.05	0.05
Dieldrin	0.05	0.05	0.088
Diethyl Phthalate	0.5	0.5	0.5
Dimethylphthalate	0.5	0.5	0.5
Dimethylphenol, 2,4-	0.86	0.86	0.86
Dinitrophenol, 2,4-	2	2	2
Dinitrotoluene, 2,4 & 2,6-	0.5	0.5	0.5
Dioxane, 1,4	0.2	0.2	0.2
Dioxin/Furan (TEQ)	0.000013	0.000013	0.000044
Endosulfan	0.04	0.04	0.04
Endrin	0.04	0.04	0.04
Ethylbenzene	0.05	0.05	0.05
Ethylene dibromide	0.05	0.05	0.05

Contaminant	Agricultural or Other Property Use	Residential/ Parkland/ Institutional Property Use	Industrial/ Commercial/ Community Property Use
Fluoranthene	1.4	1.4	5.7
Fluorene	14	14	14
Heptachlor	0.072	0.072	0.072
Heptachlor Epoxide	0.05	0.05	0.05
Hexachlorobenzene	0.034	0.034	0.034
Hexachlorobutadiene	0.02	0.02	0.02
Hexachlorocyclohexane Gamma-	0.01	0.01	0.01
Hexachloroethane	0.02	0.02	0.02
Hexane (n)	3.2	3.2	3.2
Indeno[1 2 3-cd]pyrene	0.76	0.76	1.5
Lead	90	120	250
Mercury	0.24	0.27	0.27
Methoxychlor	0.26	0.26	0.38
Methyl Ethyl Ketone	0.5	0.5	0.5
Methyl Isobutyl Ketone	0.5	0.5	0.5
Methyl Mercury **	0.00097	0.00097	0.00097
Methyl tert-Butyl Ether (MTBE)	0.05	0.05	0.05
Methylene Chloride	0.1	0.1	0.1
Methlynaphthalene, 2-(1-) ***	0.096	0.59	0.59
Molybdenum	14	14	80
Naphthalene	0.2	0.2	0.2
Nickel	180	180	540
Pentachlorophenol	0.1	0.1	0.34
Petroleum Hydrocarbons F1****	17	25	50
Petroleum Hydrocarbons F2	16	16	52
Petroleum Hydrocarbons F3	480	480	480
Petroleum Hydrocarbons F4	5600	5600	6600
Phenanthrene	12	12	25
Phenol	4.9	4.9	4.9
Polychlorinated Biphenyls	0.35	0.35	1.1
Pyrene	56	56	56
Selenium	4.8	4.8	11
Silver	40	40	80
Styrene	0.05	0.05	0.05
Tetrachloroethane, 1,1,1,2-	0.059	0.059	0.1

Contaminant	Agricultural or Other Property Use	Residential/ Parkland/ Institutional Property Use	Industrial/ Commercial/ Community Property Use
Tetrachloroethane, 1,1,2,2-	0.05	0.05	0.05
Tetrachloroethylene	0.05	0.05	0.05
Thallium	1	1	3.3
Toluene	0.2	0.2	0.2
Trichlorobenzene, 1,2,4-	0.35	0.35	1
Trichloroethane, 1,1,1-	0.21	0.21	0.25
Trichloroethane, 1,1,2-	0.05	0.05	0.05
Trichloroethylene	0.05	0.05	0.05
Trichlorofluoromethane	0.34	0.51	0.51
Trichlorophenol, 2,4,5-	0.21	0.21	0.21
Trichlorophenol, 2,4,6-	8.8	8.8	20
Uranium	23	23	66
Vanadium	86	86	130
Vinyl Chloride	0.02	0.02	0.02
Xylene Mixture	0.091	0.091	0.091
Zinc	670	670	670
Electrical Conductivity (mS/cm)	1.4	1.4	2.8
Sodium Adsorption Ratio	10	10	24

Notes:

*: The boron *ceiling values* are for hot water soluble extract for all *surface soils*. For *subsurface soils* the *ceiling values* are for total boron (mixed strong acid digest), since plant protection for *soils* below the root zone is not a significant concern.

**: Analysis for methyl mercury only applies when mercury (total) excess soil quality standard is exceeded.

***: The methyl naphthalene *ceiling values* are applicable to both 1-methyl naphthalene and 2- methyl naphthalene, with the provision that if both are detected the sum of the two must not exceed the *ceiling value*.

****: F1 fraction does not include benzene, toluene, ethylbenzene and xylene (BTEX); however, the proponent has the choice as to whether or not to subtract BTEX from the analytical result.

TABLE 3.1: Ceiling Values for Full Depth Excess Soil in a Non-Potable Ground Water Condition

Volume Independent

(Unit in µg/g)

Contaminant	Residential/Parkland/ Institutional Property Use	Industrial/ Commercial/ Community Property Use
Acenaphthene	29	31
Acenaphthylene	0.17	0.17
Acetone	3.6	3.6
Aldrin	0.05	0.088
Anthracene	0.32	0.32
Antimony	7.5	63
Arsenic	18	18
Barium	790	1300
Benzene	0.029	0.069
Benz[a]anthracene	1	2
Benzo[a]pyrene	1.1	1.4
Benzo[b]fluoranthene	11	14
Benzo[ghi]perylene	13	26
Benzo[k]fluoranthene	11	14
Beryllium	8	16
Biphenyl 1,1'-	0.3	43
Bis(2-chloroethyl)ether	1	1
Bis(2-chloroisopropyl)ether	0.5	11
Bis(2-ethylhexyl)phthalate	8	55
Boron (Hot Water Soluble)*	3	4
Boron (total)	230	230
Bromodichloromethane	12	12
Bromoform	4.2	4.9
Bromomethane	0.05	0.05
Cadmium	1.4	3.8
Carbon Tetrachloride	0.05	0.05
Chlordane	0.05	0.05
Chloroaniline p-	0.51	0.51
Chlorobenzene	0.55	0.55
Chloroform	0.16	0.51
Chlorophenol, 2-	3.1	4.7
Chromium Total	320	320

Contaminant	Residential/Parkland/ Institutional Property Use	Industrial/ Commercial/ Community Property Use
Chromium VI	16	16
Chrysene	14	28
Cobalt	22	160
Copper	200	450
Cyanide (CN-)	0.051	0.051
Dibenz[a h]anthracene	1.1	1.4
Dibromochloromethane	11	11
Dichlorobenzene, 1,2-	4.6	14
Dichlorobenzene, 1,3-	9.6	14
Dichlorobenzene, 1,4-	0.1	0.1
Dichlorobenzidine, 3,3'-	2	2
Dichlorodifluoromethane	3.7	3.7
DDD	6.6	9.2
DDE	0.26	0.52
DDT	1.4	1.4
Dichloroethane, 1,1-	0.18	0.72
Dichloroethane, 1,2-	0.05	0.081
Dichloroethylene, 1,1-	0.05	0.05
Dichloroethylene, 1,2-cis-	0.1	0.1
Dichloroethylene, 1,2-trans-	0.05	0.05
Dichlorophenol, 2,4-	3.4	6.7
Dichloropropane, 1,2-	0.05	0.061
Dichloropropene, 1,3-	0.076	0.1
Dieldrin	0.05	0.088
Diethyl Phthalate	0.5	0.5
Dimethylphthalate	0.5	0.5
Dimethylphenol, 2,4-	90	90
Dinitrophenol, 2,4-	13	13
Dinitrotoluene, 2,4 & 2,6-	1.8	2.3
Dioxane, 1,4	3.6	3.6
Dioxin/Furan (TEQ)	0.000013	0.000099
Endosulfan	0.04	0.04
Endrin	0.04	0.04
Ethylbenzene	2.8	3.8
Ethylene dibromide	0.05	0.05

Contaminant	Residential/Parkland/ Institutional Property Use	Industrial/ Commercial/ Community Property Use
Fluoranthene	1.4	140
Fluorene	14	14
Heptachlor	0.072	0.072
Heptachlor Epoxide	0.05	0.05
Hexachlorobenzene	1	1.3
Hexachlorobutadiene	0.02	0.02
Hexachlorocyclohexane Gamma-	0.01	0.01
Hexachloroethane	0.02	0.26
Hexane (n)	3.2	3.2
Indeno[1 2 3-cd]pyrene	0.76	1.5
Lead	120	250
Mercury	0.27	0.27
Methoxychlor	0.26	0.38
Methyl Ethyl Ketone	14	52
Methyl Isobutyl Ketone	0.89	25
Methyl Mercury **	0.00097	0.00097
Methyl tert-Butyl Ether (MTBE)	0.1	0.1
Methylene Chloride	0.12	0.39
Methlynaphthalene, 2-(1-) ***	0.92	17
Molybdenum	14	80
Naphthalene	1.2	3.5
Nickel	180	540
Pentachlorophenol	0.1	0.34
Petroleum Hydrocarbons F1****	25	50
Petroleum Hydrocarbons F2	16	52
Petroleum Hydrocarbons F3	600	3400
Petroleum Hydrocarbons F4	5600	6600
Phenanthrene	12	25
Phenol	11	11
Polychlorinated Biphenyls	0.35	1.1
Pyrene	140	140
Selenium	4.8	11
Silver	40	80
Styrene	0.5	14
Tetrachloroethane, 1,1,1,2-	0.059	0.1

Contaminant	Residential/Parkland/ Institutional Property Use	Industrial/ Commercial/ Community Property Use
Tetrachloroethane, 1,1,2,2-	0.093	0.1
Tetrachloroethylene	0.05	0.05
Thallium	1	3.3
Toluene	0.99	16
Trichlorobenzene, 1,2,4-	0.35	2.6
Trichloroethane, 1,1,1-	0.21	0.79
Trichloroethane, 1,1,2-	0.093	0.1
Trichloroethylene	0.05	0.05
Trichlorofluoromethane	0.91	0.91
Trichlorophenol, 2,4,5-	6.2	6.2
Trichlorophenol, 2,4,6-	0.86	0.86
Uranium	23	66
Vanadium	86	130
Vinyl Chloride	0.02	0.02
Xylene Mixture	1.8	6
Zinc	670	670
Electrical Conductivity (mS/cm)	1.4	2.8
Sodium Adsorption Ratio	10	24

Notes:

*: The boron *ceiling values* are for hot water soluble extract for all *surface soils*. For *subsurface soils* the *ceiling values* are for total boron (mixed strong acid digest), since plant protection for *soils* below the root zone is not a significant concern.

**: Analysis for methyl mercury only applies when mercury (total) excess soil quality standard is exceeded.

***: The methyl naphthalene *ceiling values* are applicable to both 1-methyl naphthalene and 2- methyl naphthalene, with the provision that if both are detected the sum of the two must not exceed the *ceiling value*.

****: F1 fraction does not include benzene, toluene, ethylbenzene and xylene (BTEX); however, the proponent has the choice as to whether or not to subtract BTEX from the analytical result.

TABLE 4.1: Ceiling Values for Stratified Excess Soil in a Potable Ground Water Condition

Volume Independent

(Unit in µg/g)

Contaminant	Residential/Parkland/ Institutional Property Use		Industrial/Commercial/ Community Property Use	
	Surface	Subsurface	Surface	Subsurface
Acenaphthene	4.1	4.1	4.1	4.1
Acenaphthylene	0.17	0.17	0.17	0.17
Acetone	1	1	1	1
Aldrin	0.05	0.47	0.088	0.47
Anthracene	0.32	0.32	0.32	0.32
Antimony	7.5	63	63	130
Arsenic	18	18	18	78
Barium	790	7700	1300	7700
Benzene	0.029	0.029	0.04	0.04
Benz[a]anthracene	1	1.8	1.8	1.8
Benzo[a]pyrene	0.63	0.63	0.63	0.63
Benzo[b]fluoranthene	6.4	6.4	6.4	6.4
Benzo[ghi]perylene	13	140	26	210
Benzo[k]fluoranthene	6.3	6.3	6.3	6.3
Beryllium	8	120	16	120
Biphenyl 1,1'-	0.05	0.05	0.05	0.05
Bis(2-chloroethyl)ether	0.5	0.5	0.5	0.5
Bis(2-chloroisopropyl)ether	0.5	0.5	0.5	0.5
Bis(2-ethylhexyl)phthalate	8	20	20	20
Boron (Hot Water Soluble)*	3	NA	4	NA
Boron (total)	NA	5000	NA	5000
Bromodichloromethane	0.05	0.05	0.05	0.05
Bromoform	0.1	0.1	0.1	0.1
Bromomethane	0.05	0.05	0.05	0.05
Cadmium	1.4	16	3.8	16
Carbon Tetrachloride	0.05	0.05	0.05	0.05
Chlordane	0.05	1.6	0.05	3.4
Chloroaniline p-	0.5	0.5	0.5	0.5
Chlorobenzene	0.083	0.083	0.083	0.083
Chloroform	0.097	0.097	0.097	0.097
Chlorophenol, 2-	0.19	0.19	0.19	0.19
Chromium Total	320	11000	320	11000

Contaminant	Residential/Parkland/ Institutional Property Use		Industrial/Commercial/ Community Property Use	
	Surface	Subsurface	Surface	Subsurface
Chromium VI	16	80	16	80
Chrysene	14	19	19	19
Cobalt	22	250	160	2500
Copper	200	1900	450	1900
Cyanide (CN-)	0.051	0.051	0.051	0.051
Dibenz[a h]anthracene	1.1	1.4	1.4	2.1
Dibromochloromethane	0.05	0.05	0.05	0.05
Dichlorobenzene, 1,2-	4.6	9.8	14	14
Dichlorobenzene, 1,3-	0.52	0.52	0.52	0.52
Dichlorobenzene, 1,4-	0.05	0.05	0.05	0.05
Dichlorobenzidine, 3,3'-	1	1	1	1
Dichlorodifluoromethane	3.1	3.1	3.1	3.1
DDD	6.6	9.2	9.2	15
DDE	0.26	6.5	0.52	15
DDT	1.4	6.5	1.4	22
Dichloroethane, 1,1-	0.1	0.1	0.1	0.1
Dichloroethane, 1,2-	0.05	0.05	0.05	0.05
Dichloroethylene, 1,1-	0.05	0.05	0.05	0.05
Dichloroethylene, 1,2-cis-	0.05	0.05	0.05	0.05
Dichloroethylene, 1,2-trans-	0.05	0.05	0.05	0.05
Dichlorophenol, 2,4-	0.1	0.1	0.1	0.1
Dichloropropane, 1,2-	0.05	0.05	0.05	0.05
Dichloropropene, 1,3-	0.05	0.05	0.05	0.05
Dieldrin	0.05	7.9	0.088	12
Diethyl Phthalate	0.5	0.5	0.5	0.5
Dimethylphthalate	0.5	0.5	0.5	0.5
Dimethylphenol, 2,4-	0.86	0.86	0.86	0.86
Dinitrophenol, 2,4-	2	2	2	2
Dinitrotoluene, 2,4 & 2,6-	0.5	0.5	0.5	0.5
Dioxane, 1,4	0.2	0.2	0.2	0.2
Dioxin/Furan (TEQ)	0.000013	0.000044	0.000044	0.000044
Endosulfan	0.04	0.04	0.04	0.04
Endrin	0.04	7.8	0.04	7.8
Ethylbenzene	0.05	0.05	0.05	0.05
Ethylene dibromide	0.05	0.05	0.05	0.05

Contaminant	Residential/Parkland/ Institutional Property Use		Industrial/Commercial/ Community Property Use	
	Surface	Subsurface	Surface	Subsurface
Fluoranthene	1.4	5.7	5.7	5.7
Fluorene	14	14	14	14
Heptachlor	0.072	0.072	0.072	0.072
Heptachlor Epoxide	0.05	0.05	0.05	0.05
Hexachlorobenzene	0.034	0.034	0.034	0.034
Hexachlorobutadiene	0.02	0.02	0.02	0.02
Hexachlorocyclohexane Gamma-	0.01	0.01	0.01	0.01
Hexachloroethane	0.02	0.02	0.02	0.02
Hexane (n)	3.2	3.2	3.2	3.2
Indeno[1 2 3-cd]pyrene	0.76	14	1.5	21
Lead	120	1000	250	1000
Mercury	0.27	0.27	0.27	1.9
Methoxychlor	0.26	0.38	0.38	0.39
Methyl Ethyl Ketone	0.5	0.5	0.5	0.5
Methyl Isobutyl Ketone	0.5	0.5	0.5	0.5
Methyl Mercury **	0.00097	0.00097	0.00097	0.00097
Methyl tert-Butyl Ether (MTBE)	0.05	0.05	0.05	0.05
Methylene Chloride	0.1	0.1	0.1	0.1
Methlynaphthalene, 2-(1-) ***	0.59	0.59	0.59	0.59
Molybdenum	14	1200	80	2500
Naphthalene	0.2	0.2	0.2	0.2
Nickel	180	1000	540	1000
Pentachlorophenol	0.1	0.34	0.34	0.34
Petroleum Hydrocarbons F1****	25	25	50	50
Petroleum Hydrocarbons F2	16	16	52	52
Petroleum Hydrocarbons F3	480	480	480	480
Petroleum Hydrocarbons F4	5600	6900	6600	6900
Phenanthrene	12	46	25	46
Phenol	4.9	4.9	4.9	4.9
Polychlorinated Biphenyls	0.35	2.7	1.1	7.3
Pyrene	56	56	56	56
Selenium	4.8	1200	11	2500
Silver	40	490	80	980
Styrene	0.05	0.05	0.05	0.05

Contaminant	Residential/Parkland/ Institutional Property Use		Industrial/Commercial/ Community Property Use	
	Surface	Subsurface	Surface	Subsurface
Tetrachloroethane, 1,1,1,2-	0.059	0.059	0.1	0.1
Tetrachloroethane, 1,1,2,2-	0.05	0.05	0.05	0.05
Tetrachloroethylene	0.05	0.05	0.05	0.05
Thallium	1	3.3	3.3	33
Toluene	0.2	0.2	0.2	0.2
Trichlorobenzene, 1,2,4-	0.35	0.35	1	1
Trichloroethane, 1,1,1-	0.21	0.21	0.25	0.25
Trichloroethane, 1,1,2-	0.05	0.05	0.05	0.05
Trichloroethylene	0.05	0.05	0.05	0.05
Trichlorofluoromethane	0.51	0.51	0.51	0.51
Trichlorophenol, 2,4,5-	0.21	0.21	0.21	0.21
Trichlorophenol, 2,4,6-	8.8	24	20	24
Uranium	23	300	66	300
Vanadium	86	160	130	330
Vinyl Chloride	0.02	0.02	0.02	0.02
Xylene Mixture	0.091	0.091	0.091	0.091
Zinc	670	15000	670	15000
Electrical Conductivity (mS/cm)	1.4	1.4	2.8	2.8
Sodium Adsorption Ratio	10	10	24	24

Notes:

NA: Not Applicable.

*: The boron *ceiling values* are for hot water soluble extract for all *surface soils*. For *subsurface soils* the *ceiling values* are for total boron (mixed strong acid digest), since plant protection for *soils* below the root zone is not a significant concern.

**: Analysis for methyl mercury only applies when mercury (total) excess soil quality standard is exceeded.

***: The methyl naphthalene *ceiling values* are applicable to both 1-methyl naphthalene and 2- methyl naphthalene, with the provision that if both are detected the sum of the two must not exceed the *ceiling value*.

****: F1 fraction does not include benzene, toluene, ethylbenzene and xylene (BTEX); however, the proponent has the choice as to whether or not to subtract BTEX from the analytical result.

TABLE 5.1: Ceiling Values for Stratified Excess Soil in a Non-Potable Ground Water Condition

Volume Independent

(Unit in µg/g)

Contaminant	Residential/Parkland/ Institutional Property Use		Industrial/Commercial/ Community Property Use	
	Surface	Subsurface	Surface	Subsurface
Acenaphthene	29	29	31	130
Acenaphthylene	0.17	0.17	0.17	0.17
Acetone	3.6	3.6	3.6	3.6
Aldrin	0.05	6.4	0.088	13
Anthracene	0.32	0.32	0.32	0.32
Antimony	7.5	63	63	130
Arsenic	18	18	18	78
Barium	790	7700	1300	7700
Benzene	0.029	0.029	0.069	0.15
Benz[a]anthracene	1	14	2	520
Benzo[a]pyrene	1.1	1.4	1.4	34
Benzo[b]fluoranthene	11	14	14	520
Benzo[ghi]perylene	13	140	26	5200
Benzo[k]fluoranthene	11	14	14	520
Beryllium	8	120	16	120
Biphenyl 1,1'-	0.3	11	43	43
Bis(2-chloroethyl)ether	1	1	1	21
Bis(2-chloroisopropyl)ether	0.5	11	11	11
Bis(2-ethylhexyl)phthalate	8	7100	55	7100
Boron (Hot Water Soluble)*	3	NA	4	NA
Boron (total)	NA	5000	NA	5000
Bromodichloromethane	12	12	12	12
Bromoform	4.2	4.9	4.9	4.9
Bromomethane	0.05	0.05	0.05	0.05
Cadmium	1.4	16	3.8	16
Carbon Tetrachloride	0.05	0.05	0.05	0.05
Chlordane	0.05	1.6	0.05	3.4
Chloroaniline p-	0.51	0.51	0.51	0.51
Chlorobenzene	0.55	0.55	0.55	0.55
Chloroform	0.16	0.16	0.51	0.51
Chlorophenol, 2-	3.1	4.7	4.7	4.7
Chromium Total	320	11000	320	11000

Contaminant	Residential/Parkland/ Institutional Property Use		Industrial/Commercial/ Community Property Use	
	Surface	Subsurface	Surface	Subsurface
Chromium VI	16	80	16	80
Chrysene	14	140	28	5200
Cobalt	22	250	160	2500
Copper	200	1900	450	1900
Cyanide (CN-)	0.051	0.051	0.051	0.051
Dibenz[a h]anthracene	1.1	1.4	1.4	52
Dibromochloromethane	11	11	11	11
Dichlorobenzene, 1,2-	4.6	9.8	14	14
Dichlorobenzene, 1,3-	9.6	14	14	14
Dichlorobenzene, 1,4-	0.1	0.1	0.1	0.1
Dichlorobenzidine, 3,3'-	2	2	2	15
Dichlorodifluoromethane	3.7	3.7	3.7	3.7
DDD	6.6	9.2	9.2	110
DDE	0.26	6.5	0.52	110
DDT	1.4	6.5	1.4	110
Dichloroethane, 1,1-	0.18	0.18	0.72	0.72
Dichloroethane, 1,2-	0.05	0.05	0.081	0.081
Dichloroethylene, 1,1-	0.05	0.05	0.05	0.05
Dichloroethylene, 1,2-cis-	0.1	0.1	0.1	0.1
Dichloroethylene, 1,2-trans-	0.05	0.05	0.05	0.05
Dichlorophenol, 2,4-	3.4	11	6.7	11
Dichloropropane, 1,2-	0.05	0.05	0.061	0.061
Dichloropropene, 1,3-	0.076	0.076	0.1	0.1
Dieldrin	0.05	7.9	0.088	12
Diethyl Phthalate	0.5	0.5	0.5	0.5
Dimethylphthalate	0.5	0.5	0.5	0.5
Dimethylphenol, 2,4-	90	90	90	90
Dinitrophenol, 2,4-	13	13	13	13
Dinitrotoluene, 2,4 & 2,6-	1.8	2.3	2.3	3.4
Dioxane, 1,4	3.6	180	3.6	180
Dioxin/Furan (TEQ)	0.000013	0.00065	0.000099	0.0088
Endosulfan	0.04	0.04	0.04	0.04
Endrin	0.04	7.8	0.04	7.8
Ethylbenzene	2.8	3.8	3.8	3.8
Ethylene dibromide	0.05	0.05	0.05	0.05

Contaminant	Residential/Parkland/ Institutional Property Use		Industrial/Commercial/ Community Property Use	
	Surface	Subsurface	Surface	Subsurface
Fluoranthene	1.4	140	140	2100
Fluorene	14	14	14	14
Heptachlor	0.072	0.072	0.072	0.072
Heptachlor Epoxide	0.05	0.05	0.05	0.05
Hexachlorobenzene	1	1.3	1.3	1.6
Hexachlorobutadiene	0.02	0.02	0.02	0.02
Hexachlorocyclohexane Gamma-	0.01	0.01	0.01	0.01
Hexachloroethane	0.02	0.02	0.26	0.44
Hexane (n)	3.2	3.2	3.2	3.2
Indeno[1 2 3-cd]pyrene	0.76	14	1.5	520
Lead	120	1000	250	1000
Mercury	0.27	0.27	0.27	1.9
Methoxychlor	0.26	0.38	0.38	0.39
Methyl Ethyl Ketone	14	32	52	52
Methyl Isobutyl Ketone	0.89	6.6	25	25
Methyl Mercury **	0.00097	0.00097	0.00097	0.00097
Methyl tert-Butyl Ether (MTBE)	0.1	0.1	0.1	0.1
Methylene Chloride	0.12	0.12	0.39	0.39
Methlynaphthalene, 2-(1-) ***	0.92	17	17	17
Molybdenum	14	1200	80	2500
Naphthalene	1.2	1.2	3.5	46
Nickel	180	1000	540	1000
Pentachlorophenol	0.1	0.34	0.34	0.34
Petroleum Hydrocarbons F1****	25	25	50	50
Petroleum Hydrocarbons F2	16	16	52	52
Petroleum Hydrocarbons F3	600	5800	3400	5800
Petroleum Hydrocarbons F4	5600	6900	6600	6900
Phenanthrene	12	46	25	46
Phenol	11	11	11	11
Polychlorinated Biphenyls	0.35	2.7	1.1	7.3
Pyrene	140	140	140	140
Selenium	4.8	1200	11	2500
Silver	40	490	80	980
Styrene	0.5	3.2	14	14
Tetrachloroethane, 1,1,1,2-	0.059	0.059	0.1	0.1

Contaminant	Residential/Parkland/ Institutional Property Use		Industrial/Commercial/ Community Property Use	
	Surface	Subsurface	Surface	Subsurface
Tetrachloroethane, 1,1,2,2-	0.093	0.093	0.1	0.1
Tetrachloroethylene	0.05	0.05	0.05	0.05
Thallium	1	3.3	3.3	33
Toluene	0.99	9	16	16
Trichlorobenzene, 1,2,4-	0.35	0.35	2.6	2.6
Trichloroethane, 1,1,1-	0.21	0.21	0.79	0.79
Trichloroethane, 1,1,2-	0.093	0.093	0.1	0.1
Trichloroethylene	0.05	0.05	0.05	0.05
Trichlorofluoromethane	0.91	0.91	0.91	0.91
Trichlorophenol, 2,4,5-	6.2	6.2	6.2	6.2
Trichlorophenol, 2,4,6-	0.86	0.86	0.86	0.86
Uranium	23	300	66	300
Vanadium	86	160	130	330
Vinyl Chloride	0.02	0.02	0.02	0.02
Xylene Mixture	1.8	1.8	6	6
Zinc	670	15000	670	15000
Electrical Conductivity (mS/cm)	1.4	1.4	2.8	2.8
Sodium Adsorption Ratio	10	10	24	24

Notes:

NA: Not Applicable.

*: The boron *ceiling values* are for hot water soluble extract for all *surface soils*. For *subsurface soils* the *ceiling values* are for total boron (mixed strong acid digest), since plant protection for *soils* below the root zone is not a significant concern.

** : Analysis for methyl mercury only applies when mercury (total) excess soil quality standard is exceeded.

***: The methyl naphthalene *ceiling values* are applicable to both 1-methyl naphthalene and 2- methyl naphthalene, with the provision that if both are detected the sum of the two must not exceed the *ceiling value*.

****: F1 fraction does not include benzene, toluene, ethylbenzene and xylene (BTEX); however, the proponent has the choice as to whether or not to subtract BTEX from the analytical result.

TABLE 6.1: Ceiling Values for Full Depth Excess Soil in Shallow Soils in a Potable Ground Water Condition

Volume Independent

(Unit in µg/g)

Contaminant	Agricultural or Other Property Use	Residential/ Parkland/ Institutional Property Use	Industrial/ Commercial/ Community Property Use
Acenaphthene	3.8	3.8	3.8
Acenaphthylene	0.17	0.17	0.17
Acetone	1	1	1
Aldrin	0.05	0.05	0.088
Anthracene	0.1	0.32	0.32
Antimony	7.5	7.5	63
Arsenic	11	18	18
Barium	790	790	1300
Benzene	0.02	0.02	0.02
Benz[a]anthracene	1	1	1.7
Benzo[a]pyrene	0.63	0.63	0.63
Benzo[b]fluoranthene	6.4	6.4	6.4
Benzo[ghi]perylene	2.1	2.1	2.1
Benzo[k]fluoranthene	4.4	4.4	4.4
Beryllium	8	8	16
Biphenyl 1,1'-	0.05	0.05	0.05
Bis(2-chloroethyl)ether	0.5	0.5	0.5
Bis(2-chloroisopropyl)ether	0.5	0.5	0.5
Bis(2-ethylhexyl)phthalate	8	8	20
Boron (Hot Water Soluble)*	3	3	4
Boron (total)	230	230	230
Bromodichloromethane	0.05	0.05	0.05
Bromoform	0.1	0.1	0.1
Bromomethane	0.05	0.05	0.05
Cadmium	1.4	1.4	3.8
Carbon Tetrachloride	0.05	0.05	0.05
Chlordane	0.05	0.05	0.05
Chloroaniline p-	0.5	0.5	0.5
Chlorobenzene	0.083	0.083	0.083
Chloroform	0.05	0.05	0.05
Chlorophenol, 2-	0.19	0.19	0.19
Chromium Total	320	320	320

Contaminant	Agricultural or Other Property Use	Residential/ Parkland/ Institutional Property Use	Industrial/ Commercial/ Community Property Use
Chromium VI	16	16	16
Chrysene	0.66	3.3	3.3
Cobalt	22	22	160
Copper	200	200	450
Cyanide (CN-)	0.051	0.051	0.051
Dibenz[a h]anthracene	1.1	1.1	1.4
Dibromochloromethane	0.05	0.05	0.05
Dichlorobenzene, 1,2-	4.6	4.6	14
Dichlorobenzene, 1,3-	0.52	0.52	0.52
Dichlorobenzene, 1,4-	0.05	0.05	0.05
Dichlorobenzidine, 3,3'-	1	1	1
Dichlorodifluoromethane	3.1	3.1	3.1
DDD	0.55	0.55	0.55
DDE	0.26	0.26	0.52
DDT	0.078	1.4	1.4
Dichloroethane, 1,1-	0.05	0.05	0.05
Dichloroethane, 1,2-	0.05	0.05	0.05
Dichloroethylene, 1,1-	0.05	0.05	0.05
Dichloroethylene, 1,2-cis-	0.05	0.05	0.05
Dichloroethylene, 1,2-trans-	0.05	0.05	0.05
Dichlorophenol, 2,4-	0.1	0.1	0.1
Dichloropropane, 1,2-	0.05	0.05	0.05
Dichloropropene, 1,3-	0.05	0.05	0.05
Dieldrin	0.05	0.05	0.088
Diethyl Phthalate	0.5	0.5	0.5
Dimethylphthalate	0.5	0.5	0.5
Dimethylphenol, 2,4-	0.86	0.86	0.86
Dinitrophenol, 2,4-	2	2	2
Dinitrotoluene, 2,4 & 2,6-	0.5	0.5	0.5
Dioxane, 1,4	0.2	0.2	0.2
Dioxin/Furan (TEQ)	0.000013	0.000013	0.000029
Endosulfan	0.04	0.04	0.04
Endrin	0.04	0.04	0.04
Ethylbenzene	0.05	0.05	0.05
Ethylene dibromide	0.05	0.05	0.05

Contaminant	Agricultural or Other Property Use	Residential/ Parkland/ Institutional Property Use	Industrial/ Commercial/ Community Property Use
Fluoranthene	1.4	1.4	5.7
Fluorene	13	13	13
Heptachlor	0.05	0.05	0.05
Heptachlor Epoxide	0.05	0.05	0.05
Hexachlorobenzene	0.034	0.034	0.034
Hexachlorobutadiene	0.012	0.012	0.012
Hexachlorocyclohexane Gamma-	0.01	0.01	0.01
Hexachloroethane	0.02	0.02	0.02
Hexane (n)	0.05	0.05	0.05
Indeno[1 2 3-cd]pyrene	0.76	0.76	1.5
Lead	90	120	250
Mercury	0.16	0.27	0.27
Methoxychlor	0.1	0.1	0.1
Methyl Ethyl Ketone	0.5	0.5	0.5
Methyl Isobutyl Ketone	0.5	0.5	0.5
Methyl Mercury **	0.00097	0.00097	0.00097
Methyl tert-Butyl Ether (MTBE)	0.05	0.05	0.05
Methylene Chloride	0.07	0.07	0.07
Methlynaphthalene, 2-(1-) ***	0.096	0.59	0.59
Molybdenum	14	14	80
Naphthalene	0.16	0.18	0.18
Nickel	180	180	540
Pentachlorophenol	0.1	0.1	0.34
Petroleum Hydrocarbons F1****	17	25	25
Petroleum Hydrocarbons F2	10	10	10
Petroleum Hydrocarbons F3	480	480	480
Petroleum Hydrocarbons F4	5600	5600	6600
Phenanthrene	12	12	25
Phenol	4.9	4.9	4.9
Polychlorinated Biphenyls	0.3	0.3	0.3
Pyrene	1.6	2.1	2.1
Selenium	4.8	4.8	11
Silver	40	40	80
Styrene	0.05	0.05	0.05
Tetrachloroethane, 1,1,1,2-	0.05	0.05	0.05

Contaminant	Agricultural or Other Property Use	Residential/ Parkland/ Institutional Property Use	Industrial/ Commercial/ Community Property Use
Tetrachloroethane, 1,1,2,2-	0.05	0.05	0.05
Tetrachloroethylene	0.05	0.05	0.05
Thallium	1	1	3.3
Toluene	0.2	0.2	0.2
Trichlorobenzene, 1,2,4-	0.1	0.1	0.1
Trichloroethane, 1,1,1-	0.071	0.071	0.071
Trichloroethane, 1,1,2-	0.05	0.05	0.05
Trichloroethylene	0.05	0.05	0.05
Trichlorofluoromethane	0.34	0.51	0.51
Trichlorophenol, 2,4,5-	0.21	0.21	0.21
Trichlorophenol, 2,4,6-	8.8	8.8	20
Uranium	23	23	66
Vanadium	86	86	130
Vinyl Chloride	0.02	0.02	0.02
Xylene Mixture	0.091	0.091	0.091
Zinc	670	670	670
Electrical Conductivity (mS/cm)	1.4	1.4	2.8
Sodium Adsorption Ratio	10	10	24

Notes:

*: The boron *ceiling values* are for hot water soluble extract for all *surface soils*. For *subsurface soils* the *ceiling values* are for total boron (mixed strong acid digest), since plant protection for *soils* below the root zone is not a significant concern.

**: Analysis for methyl mercury only applies when mercury (total) excess soil quality standard is exceeded.

***: The methyl naphthalene *ceiling values* are applicable to both 1-methyl naphthalene and 2- methyl naphthalene, with the provision that if both are detected the sum of the two must not exceed the *ceiling value*.

****: F1 fraction does not include benzene, toluene, ethylbenzene and xylene (BTEX); however, the proponent has the choice as to whether or not to subtract BTEX from the analytical result.

TABLE 7.1: Ceiling Values for Full Depth Excess Soil in Shallow Soils in a Non-Potable Ground Water Condition

Volume Independent

(Unit in µg/g)

Contaminant	Residential/Parkland/ Institutional Property Use	Industrial/Commercial/ Community Property Use
Acenaphthene	3.8	3.8
Acenaphthylene	0.17	0.17
Acetone	3.6	3.6
Aldrin	0.05	0.088
Anthracene	0.32	0.32
Antimony	7.5	63
Arsenic	18	18
Barium	790	1300
Benzene	0.02	0.02
Benz[a]anthracene	1	1.7
Benzo[a]pyrene	1.1	1.4
Benzo[b]fluoranthene	11	14
Benzo[ghi]perylene	2.1	2.1
Benzo[k]fluoranthene	4.4	4.4
Beryllium	8	16
Biphenyl 1,1'-	0.3	43
Bis(2-chloroethyl)ether	1	1
Bis(2-chloroisopropyl)ether	0.5	11
Bis(2-ethylhexyl)phthalate	8	20
Boron (Hot Water Soluble)*	3	4
Boron (total)	230	230
Bromodichloromethane	12	12
Bromoform	4.2	4.9
Bromomethane	0.05	0.05
Cadmium	1.4	3.8
Carbon Tetrachloride	0.05	0.05
Chlordane	0.05	0.05
Chloroaniline p-	0.51	0.51
Chlorobenzene	0.55	0.55
Chloroform	0.05	0.05
Chlorophenol, 2-	3.1	4.7
Chromium Total	320	320
Chromium VI	16	16

Contaminant	Residential/Parkland/ Institutional Property Use	Industrial/Commercial/ Community Property Use
Chrysene	3.3	3.3
Cobalt	22	160
Copper	200	450
Cyanide (CN-)	0.051	0.051
Dibenz[a h]anthracene	1.1	1.4
Dibromochloromethane	11	11
Dichlorobenzene, 1,2-	1.4	1.4
Dichlorobenzene, 1,3-	9.6	14
Dichlorobenzene, 1,4-	0.1	0.1
Dichlorobenzidine, 3,3'-	2	2
Dichlorodifluoromethane	3.7	3.7
DDD	0.55	0.55
DDE	0.26	0.52
DDT	1.4	1.4
Dichloroethane, 1,1-	0.18	2.9
Dichloroethane, 1,2-	0.05	0.05
Dichloroethylene, 1,1-	0.05	0.05
Dichloroethylene, 1,2-cis-	0.05	0.05
Dichloroethylene, 1,2-trans-	0.05	0.05
Dichlorophenol, 2,4-	3.4	6.7
Dichloropropane, 1,2-	0.05	0.05
Dichloropropene, 1,3-	0.05	0.05
Dieldrin	0.05	0.088
Diethyl Phthalate	0.5	0.5
Dimethylphthalate	0.5	0.5
Dimethylphenol, 2,4-	90	90
Dinitrophenol, 2,4-	13	13
Dinitrotoluene, 2,4 & 2,6-	1.8	2.3
Dioxane, 1,4	3.6	3.6
Dioxin/Furan (TEQ)	0.000013	0.000029
Endosulfan	0.04	0.04
Endrin	0.04	0.04
Ethylbenzene	1.2	1.2
Ethylene dibromide	0.05	0.05
Fluoranthene	1.4	21
Fluorene	13	13

Contaminant	Residential/Parkland/ Institutional Property Use	Industrial/Commercial/ Community Property Use
Heptachlor	0.05	0.05
Heptachlor Epoxide	0.05	0.05
Hexachlorobenzene	1	1.3
Hexachlorobutadiene	0.012	0.012
Hexachlorocyclohexane Gamma-	0.01	0.01
Hexachloroethane	0.02	0.02
Hexane (n)	0.05	0.05
Indeno[1 2 3-cd]pyrene	0.76	1.5
Lead	120	250
Mercury	0.27	0.27
Methoxychlor	0.1	0.1
Methyl Ethyl Ketone	4.5	4.5
Methyl Isobutyl Ketone	0.89	1.9
Methyl Mercury **	0.00097	0.00097
Methyl tert-Butyl Ether (MTBE)	0.1	0.1
Methylene Chloride	0.07	0.073
Methylnaphthalene, 2-(1-) ***	0.92	17
Molybdenum	14	80
Naphthalene	0.18	0.18
Nickel	180	540
Pentachlorophenol	0.1	0.34
Petroleum Hydrocarbons F1****	25	25
Petroleum Hydrocarbons F2	10	10
Petroleum Hydrocarbons F3	600	3400
Petroleum Hydrocarbons F4	5600	6600
Phenanthrene	12	25
Phenol	11	11
Polychlorinated Biphenyls	0.3	0.3
Pyrene	2.1	2.1
Selenium	4.8	11
Silver	40	80
Styrene	0.45	0.45
Tetrachloroethane, 1,1,1,2-	0.05	0.05
Tetrachloroethane, 1,1,2,2-	0.05	0.05
Tetrachloroethylene	0.05	0.05
Thallium	1	3.3

Contaminant	Residential/Parkland/ Institutional Property Use	Industrial/Commercial/ Community Property Use
Toluene	0.99	1.8
Trichlorobenzene, 1,2,4-	0.1	0.1
Trichloroethane, 1,1,1-	0.071	0.071
Trichloroethane, 1,1,2-	0.05	0.05
Trichloroethylene	0.05	0.05
Trichlorofluoromethane	0.91	0.91
Trichlorophenol, 2,4,5-	6.2	6.2
Trichlorophenol, 2,4,6-	0.86	0.86
Uranium	23	66
Vanadium	86	130
Vinyl Chloride	0.02	0.02
Xylene Mixture	0.24	0.24
Zinc	670	670
Electrical Conductivity (mS/cm)	1.4	2.8
Sodium Adsorption Ratio	10	24

Notes:

*: The boron *ceiling values* are for hot water soluble extract for all *surface soils*. For *subsurface soils* the *ceiling values* are for total boron (mixed strong acid digest), since plant protection for *soils* below the root zone is not a significant concern.

**: Analysis for methyl mercury only applies when mercury (total) excess soil quality standard is exceeded.

***: The methyl naphthalene *ceiling values* are applicable to both 1-methyl naphthalene and 2- methyl naphthalene, with the provision that if both are detected the sum of the two must not exceed the *ceiling value*.

****: F1 fraction does not include benzene, toluene, ethylbenzene and xylene (BTEX); however, the proponent has the choice as to whether or not to subtract BTEX from the analytical result.

TABLE 8.1: Ceiling Values for Full Depth Excess Soil for Use within 30 metres of a Water Body in a Potable Ground Water Condition

Volume Independent

(Unit in µg/g)

Contaminant	Agricultural or Other Property Use	Residential/ Parkland/ Institutional Property Use	Industrial/ Commercial/ Community Property Use
Acenaphthene	0.1	0.14	0.14
Acenaphthylene	0.17	0.17	0.17
Acetone	1	1	1
Aldrin	0.05	0.05	0.05
Anthracene	0.1	0.32	0.32
Antimony	2	2.6	2.6
Arsenic	11	18	18
Barium	390	430	430
Benzene	0.029	0.029	0.04
Benz[a]anthracene	0.64	0.72	0.72
Benzo[a]pyrene	0.63	0.63	0.63
Benzo[b]fluoranthene	0.59	0.94	0.94
Benzo[ghi]perylene	0.4	1.4	1.4
Benzo[k]fluoranthene	0.48	0.97	0.97
Beryllium	4	5	5
Biphenyl 1,1'-	0.05	0.05	0.05
Bis(2-chloroethyl)ether	0.5	0.5	0.5
Bis(2-chloroisopropyl)ether	0.5	0.5	0.5
Bis(2-ethylhexyl)phthalate	8	8	8
Boron (Hot Water Soluble)*	1.5	3	3
Boron (total)	72	72	72
Bromodichloromethane	0.05	0.05	0.05
Bromoform	0.1	0.1	0.1
Bromomethane	0.05	0.05	0.05
Cadmium	1.4	1.4	2.4
Carbon Tetrachloride	0.05	0.05	0.05
Chlordane	0.05	0.05	0.05
Chloroaniline p-	0.5	0.5	0.5
Chlorobenzene	0.083	0.083	0.083
Chloroform	0.097	0.097	0.097
Chlorophenol, 2-	0.19	0.19	0.19
Chromium Total	130	140	140

Contaminant	Agricultural or Other Property Use	Residential/ Parkland/ Institutional Property Use	Industrial/ Commercial/ Community Property Use
Chromium VI	1.3	1.3	1.3
Chrysene	0.66	3.3	3.3
Cobalt	22	22	80
Copper	120	180	180
Cyanide (CN-)	0.051	0.051	0.051
Dibenz[a h]anthracene	0.2	0.2	0.2
Dibromochloromethane	0.05	0.05	0.05
Dichlorobenzene, 1,2-	0.1	0.1	0.1
Dichlorobenzene, 1,3-	0.1	0.1	0.1
Dichlorobenzene, 1,4-	0.05	0.05	0.05
Dichlorobenzidine, 3,3'-	1	1	1
Dichlorodifluoromethane	0.1	0.1	0.1
DDD	0.1	0.1	0.1
DDE	0.1	0.1	0.1
DDT	0.078	1.4	1.4
Dichloroethane, 1,1-	0.1	0.1	0.1
Dichloroethane, 1,2-	0.05	0.05	0.05
Dichloroethylene, 1,1-	0.05	0.05	0.05
Dichloroethylene, 1,2-cis-	0.05	0.05	0.05
Dichloroethylene, 1,2-trans-	0.05	0.05	0.05
Dichlorophenol, 2,4-	0.1	0.1	0.1
Dichloropropane, 1,2-	0.05	0.05	0.05
Dichloropropene, 1,3-	0.05	0.05	0.05
Dieldrin	0.05	0.05	0.05
Diethyl Phthalate	0.5	0.5	0.5
Dimethylphthalate	0.5	0.5	0.5
Dimethylphenol, 2,4-	0.4	0.4	0.4
Dinitrophenol, 2,4-	2	2	2
Dinitrotoluene, 2,4 & 2,6-	0.5	0.5	0.5
Dioxane, 1,4	0.2	0.2	0.2
Dioxin/Furan (TEQ)	0.000013	0.000013	0.000013
Endosulfan	0.04	0.04	0.04
Endrin	0.04	0.04	0.04
Ethylbenzene	0.05	0.05	0.05
Ethylene dibromide	0.05	0.05	0.05

Contaminant	Agricultural or Other Property Use	Residential/ Parkland/ Institutional Property Use	Industrial/ Commercial/ Community Property Use
Fluoranthene	1.4	1.4	1.4
Fluorene	0.38	0.38	0.38
Heptachlor	0.05	0.05	0.05
Heptachlor Epoxide	0.05	0.05	0.05
Hexachlorobenzene	0.034	0.034	0.034
Hexachlorobutadiene	0.02	0.02	0.02
Hexachlorocyclohexane Gamma-	0.01	0.01	0.01
Hexachloroethane	0.02	0.02	0.02
Hexane (n)	0.1	0.1	0.1
Indeno[1 2 3-cd]pyrene	0.4	0.46	0.46
Lead	45	120	250
Mercury	0.24	0.27	0.27
Methoxychlor	0.1	0.1	0.1
Methyl Ethyl Ketone	0.5	0.5	0.5
Methyl Isobutyl Ketone	0.5	0.5	0.5
Methyl Mercury **	NV	NV	NV
Methyl tert-Butyl Ether (MTBE)	0.05	0.05	0.05
Methylene Chloride	0.1	0.1	0.1
Methlynaphthalene, 2-(1-) ***	0.096	0.59	0.59
Molybdenum	4	4	4
Naphthalene	0.1	0.18	0.18
Nickel	74	160	160
Pentachlorophenol	0.1	0.1	0.1
Petroleum Hydrocarbons F1****	17	25	46
Petroleum Hydrocarbons F2	16	16	20
Petroleum Hydrocarbons F3	300	480	480
Petroleum Hydrocarbons F4	240	240	240
Phenanthrene	1.1	1.4	1.4
Phenol	1	1	1
Polychlorinated Biphenyls	0.3	0.3	0.3
Pyrene	0.98	2.1	2.1
Selenium	2.4	3.1	3.1
Silver	1	1	1
Styrene	0.05	0.05	0.05
Tetrachloroethane, 1,1,1,2-	0.059	0.059	0.1

Contaminant	Agricultural or Other Property Use	Residential/ Parkland/ Institutional Property Use	Industrial/ Commercial/ Community Property Use
Tetrachloroethane, 1,1,2,2-	0.05	0.05	0.05
Tetrachloroethylene	0.05	0.05	0.05
Thallium	1	1	2
Toluene	0.2	0.2	0.2
Trichlorobenzene, 1,2,4-	0.1	0.1	0.1
Trichloroethane, 1,1,1-	0.1	0.1	0.1
Trichloroethane, 1,1,2-	0.05	0.05	0.05
Trichloroethylene	0.05	0.05	0.05
Trichlorofluoromethane	0.1	0.51	0.51
Trichlorophenol, 2,4,5-	0.2	0.2	0.2
Trichlorophenol, 2,4,6-	0.2	0.2	0.2
Uranium	3.8	5	5
Vanadium	86	86	130
Vinyl Chloride	0.02	0.02	0.02
Xylene Mixture	0.091	0.091	0.091
Zinc	340	590	590
Electrical Conductivity (mS/cm)	0.7	1.4	1.4
Sodium Adsorption Ratio	5	10	10

Notes:

NV: No Value.

*: The boron *ceiling values* are for hot water soluble extract for all *surface soils*. For *subsurface soils* the *ceiling values* are for total boron (mixed strong acid digest), since plant protection for *soils* below the root zone is not a significant concern.

**: Analysis for methyl mercury only applies when mercury (total) excess soil quality standard is exceeded.

***: The methyl naphthalene *ceiling values* are applicable to both 1-methyl naphthalene and 2- methyl naphthalene, with the provision that if both are detected the sum of the two must not exceed the *ceiling value*.

****: F1 fraction does not include benzene, toluene, ethylbenzene and xylene (BTEX); however, the proponent has the choice as to whether or not to subtract BTEX from the analytical result.

TABLE 9.1: Ceiling Values for Full Depth Excess Soil for Use within 30 metres of A Water Body in a Non-Potable Ground Water Condition

Volume Independent

(Unit in µg/g)

Contaminant	Residential/Parkland/ Institutional/ Property Use	Industrial/Commercial/ Community Property Use
Acenaphthene	0.14	0.14
Acenaphthylene	0.17	0.17
Acetone	1	1
Aldrin	0.05	0.05
Anthracene	0.32	0.32
Antimony	2.6	2.6
Arsenic	18	18
Barium	430	430
Benzene	0.029	0.04
Benz[a]anthracene	0.72	0.72
Benzo[a]pyrene	0.74	0.74
Benzo[b]fluoranthene	0.94	0.94
Benzo[ghi]perylene	1.4	1.4
Benzo[k]fluoranthene	0.97	0.97
Beryllium	5	5
Biphenyl 1,1'-	0.1	0.1
Bis(2-chloroethyl)ether	1	1
Bis(2-chloroisopropyl)ether	0.5	1
Bis(2-ethylhexyl)phthalate	8	8
Boron (Hot Water Soluble)*	3	3
Boron (total)	72	72
Bromodichloromethane	0.1	0.1
Bromoform	0.1	0.1
Bromomethane	0.05	0.05
Cadmium	1.4	2.4
Carbon Tetrachloride	0.05	0.05
Chlordane	0.05	0.05
Chloroaniline p-	0.51	0.51
Chlorobenzene	0.1	0.1
Chloroform	0.1	0.1
Chlorophenol, 2-	0.2	0.2
Chromium Total	140	140
Chromium VI	1.3	1.3

Contaminant	Residential/Parkland/ Institutional/ Property Use	Industrial/Commercial/ Community Property Use
Chrysene	3.3	3.3
Cobalt	22	80
Copper	180	180
Cyanide (CN-)	0.051	0.051
Dibenz[a h]anthracene	0.2	0.2
Dibromochloromethane	0.1	0.1
Dichlorobenzene, 1,2-	0.1	0.1
Dichlorobenzene, 1,3-	0.1	0.1
Dichlorobenzene, 1,4-	0.1	0.1
Dichlorobenzidine, 3,3'-	2	2
Dichlorodifluoromethane	0.1	0.1
DDD	0.1	0.1
DDE	0.1	0.1
DDT	1.4	1.4
Dichloroethane, 1,1-	0.1	0.1
Dichloroethane, 1,2-	0.05	0.081
Dichloroethylene, 1,1-	0.05	0.05
Dichloroethylene, 1,2-cis-	0.1	0.1
Dichloroethylene, 1,2-trans-	0.05	0.05
Dichlorophenol, 2,4-	0.2	0.2
Dichloropropane, 1,2-	0.05	0.061
Dichloropropene, 1,3-	0.076	0.1
Dieldrin	0.05	0.05
Diethyl Phthalate	0.5	0.5
Dimethylphthalate	0.5	0.5
Dimethylphenol, 2,4-	0.4	0.4
Dinitrophenol, 2,4-	4	4
Dinitrotoluene, 2,4 & 2,6-	1	1
Dioxane, 1,4	0.4	0.4
Dioxin/Furan (TEQ)	0.000013	0.000013
Endosulfan	0.04	0.04
Endrin	0.04	0.04
Ethylbenzene	0.1	0.1
Ethylene dibromide	0.05	0.05
Fluoranthene	1.4	1.4
Fluorene	0.38	0.38

Contaminant	Residential/Parkland/ Institutional/ Property Use	Industrial/Commercial/ Community Property Use
Heptachlor	0.05	0.05
Heptachlor Epoxide	0.05	0.05
Hexachlorobenzene	0.04	0.04
Hexachlorobutadiene	0.02	0.02
Hexachlorocyclohexane Gamma-	0.01	0.01
Hexachloroethane	0.02	0.02
Hexane (n)	0.1	0.1
Indeno[1 2 3-cd]pyrene	0.46	0.46
Lead	120	250
Mercury	0.27	0.27
Methoxychlor	0.1	0.1
Methyl Ethyl Ketone	1	1
Methyl Isobutyl Ketone	0.89	1
Methyl Mercury **	NV	NV
Methyl tert-Butyl Ether (MTBE)	0.1	0.1
Methylene Chloride	0.1	0.1
Methlynaphthalene, 2-(1-) ***	0.92	1.2
Molybdenum	4	4
Naphthalene	0.18	0.18
Nickel	160	160
Pentachlorophenol	0.1	0.1
Petroleum Hydrocarbons F1****	25	46
Petroleum Hydrocarbons F2	16	20
Petroleum Hydrocarbons F3	480	480
Petroleum Hydrocarbons F4	240	240
Phenanthrene	1.4	1.4
Phenol	1	1
Polychlorinated Biphenyls	0.3	0.3
Pyrene	2.1	2.1
Selenium	3.1	3.1
Silver	1	1
Styrene	0.1	0.1
Tetrachloroethane, 1,1,1,2-	0.059	0.1
Tetrachloroethane, 1,1,2,2-	0.093	0.1
Tetrachloroethylene	0.05	0.05

Contaminant	Residential/Parkland/ Institutional/ Property Use	Industrial/Commercial/ Community Property Use
Thallium	1	2
Toluene	0.4	0.4
Trichlorobenzene, 1,2,4-	0.1	0.1
Trichloroethane, 1,1,1-	0.1	0.1
Trichloroethane, 1,1,2-	0.093	0.1
Trichloroethylene	0.05	0.05
Trichlorofluoromethane	0.51	0.51
Trichlorophenol, 2,4,5-	0.2	0.2
Trichlorophenol, 2,4,6-	0.2	0.2
Uranium	5	5
Vanadium	86	130
Vinyl Chloride	0.02	0.02
Xylene Mixture	0.1	0.1
Zinc	590	590
Electrical Conductivity (mS/cm)	1.4	1.4
Sodium Adsorption Ratio	10	10

Notes:

NV: No Value.

*: The boron *ceiling values* are for hot water soluble extract for all *surface soils*. For *subsurface soils* the *ceiling values* are for total boron (mixed strong acid digest), since plant protection for *soils* below the root zone is not a significant concern.

**: Analysis for methyl mercury only applies when mercury (total) excess soil quality standard is exceeded.

***: The methyl naphthalene *ceiling values* are applicable to both 1-methyl naphthalene and 2- methyl naphthalene, with the provision that if both are detected the sum of the two must not exceed the *ceiling value*.

****: F1 fraction does not include benzene, toluene, ethylbenzene and xylene (BTEX); however, the proponent has the choice as to whether or not to subtract BTEX from the analytical result.