

Applicability of Sodium (Na⁺) and Chloride (Cl⁻) Soil Relocation Standards to Marine and Estuarine Dredge Materials

Introduction

This document provides guidance on the applicability of sodium (Na⁺) and chloride (Cl⁻) Contaminated Site Regulation, Schedule 7 - Soil Standards Triggering Relocation Agreements to dredged material of marine and estuarine origin when applied to land.

This guidance is intended to remain in effect until June 2011. However, the Director retains the right to: review, revise, extend or cancel this guidance at any time.

Sediment deposited to land constitutes "soil", under section 1 of the Contaminated Sites Regulation (CSR). Consequently, dredged material deposited to land must comply with the provisions of the *Environmental Management Act* and the *Act's* regulations, including the Contaminated Sites and Hazardous Waste Regulations. In the case that contamination of sediment is considered a reasonable possibility due to current or historical

activities at, or adjacent to, a dredging area, assessment of sediment quality is required to ensure proper off-site management of dredged material.

Regulatory Requirements

For all CSR Schedule 7 prescribed contaminants, including salt (i.e. Na⁺ or Cl⁻) in sediment to be relocated to land under Provincial jurisdiction, the requirements of Section 55 of the *Environmental Management Act* and Part 8 of the Contaminated Sites Regulation apply in determining if a Contaminated Soil Relocation Agreement is required to deposit sediment to land. See:

http://www.env.gov.bc.ca/epd/remediation/fact_sheets/pdf/fs41.pdf.

Schedule 9 of the CSR, is used to assess the in-situ quality of sediment. See: http://www.bclaws.ca/Recon/document/reeside/--%20e%20--/environmental%20management%20act%200%20sbc%202003%20%20c.%2053/05_regulations/20_375_96%20contaminated%20sites%20regulation/375_96_11.xml#FOUND-NOTHING

Assessment/Characterization Requirements

An environmental professional experienced in contaminated site remediation should review relevant information related to commercial and industrial activities which may have acted to contaminate sediment to be dredged and deposited on land. The results of that review should then be used to generate a list of potential contaminants of concern (PCOCs) for the sediment. If there is a reasonable possibility that PCOCs present in the sediment could exceed CSR Schedule 9 sediment criteria or CSR Schedule 7 soil standards triggering soil relocation agreements, sediment samples should be collected and analyzed for the list of PCOCs. PCOC sediment sample results should then be compared to the sediment criteria (in-situ aquatic life concerns) and if the sediment is to be relocated to land, to the soil standards (receiving site concerns).

Note:

Sodium (Na^+) and chloride (Cl^-) may constitute potential contaminants of concern for all marine and estuarine sediments to be relocated to land.

Sediment samples should be collected from locations most likely to have been contaminated and in sufficient number to adequately characterize any significant sediment contamination.

Marine and Estuarine Dredged Materials

The CSR Schedule 7 standards for salt are sufficiently stringent that application of the standards to dredged materials of marine or estuarine origin would typically trigger the need to obtain a Contaminated Soil Relocation Agreement to relocate the materials.

However, this requirement may not be warranted in many cases where marine and estuarine dredged material containing only salt is to be relocated to land. Salt as a contaminant of dredged material is highly water soluble and therefore is subject to rapid and progressive leaching by rainwater. Depending on the environmental sensitivity of the receiving site to salt “washed-out” from relocated sediment, the deposit of saline marine and estuarine dredge material may be without any significant deleterious environmental effect.

The majority of dredged material produced in the Province results from the necessity to maintain navigation channels within water-bodies subject to natural siltation (e.g. the mouth of the Fraser River). Due to the large annual volumes of dredged material produced, it is usually not economically or technically feasible to wash or “rainwater leach” salt from bulk materials prior to their deposition.

In British Columbia, dredged material of marine or estuarine origin may be deposited to land on both near-shore and upland sites. At near-shore areas

hydraulically connected to marine or estuarine water-bodies, the deposition or relocation of marine or estuarine dredged material on near-shore as opposed to upland sites is unlikely to result in significant further environmental degradation.

In consideration of the above, the ministry has prepared this guidance to determine when CSR Schedule 7 soil standards triggering relocation agreements are, or are not, applicable to dredged material solely contaminated with salt to be relocated to near-shore or upland sites.

Checklist 1

To determine if the CSR Schedule 7 - Soil Standards Triggering Relocation Agreements for salt apply in the case of relocation of marine and estuarine dredged sediment, complete Checklist 1.

Any checklist completed to support the relocation of dredged material of marine and estuarine origin is a requisite component of environmental documentation related to the relocation. The completed checklist must be retained by the responsible person relocating the dredged material and must be provided if requested by the Director.

Note:

Appendix 1 provides a summary of controlling conditions which would require a Contaminated Soil Relocation Agreement, under Checklist 1, to relocate salty soil of dredged marine/estuarine origin.

Responsibilities Related to Possible Off-site Contamination

Persons depositing dredged material on their site remain responsible for any contamination resulting from the dredged material that migrates off-site to other properties.

Need to submit a Site Profile for the Receiving Site

Submission of a site profile under section 40 of the *Environmental Management Act* is not required to remove or deposit dredged sedimentary material.

However, in the case that checklist 1 of this guidance indicates that a Contaminated Soil Relocation Agreement (CSRA) is required to deposit dredged material at a receiving site; the CSRA must be obtained prior to the relocation of the dredged material to the receiving site.

Status as a Contaminated Site of an Estuarine River System

The Fraser River is an estuarine river system and as such is subject to tidal sea-water infiltration. This tidal infiltration takes the form of a deep lying salt-water wedge which progresses inland from the mouth of the river to a variable degree dependant largely on seasonal variation in the rate of flow of freshwater exiting the system and the rate and extent of tidal mixing of sea-water and freshwater within the system. As a result, dredged material taken from locations along the river

subject to the sea-water wedge can contain variable concentrations of salt-water resulting in corresponding variable concentrations of salt within the dredged material.

For the regulatory purposes of section 39 of the *Environmental Management Act*, the Contaminated Sites Regulation, 11 (1) defines a contaminated site as a site at which “(c) the concentration of any substance in sediment at the site is greater than the applicable generic numerical sediment criterion”.

CSR Schedule 9 does not list criteria for salt, chloride (Cl-) or sodium (Na+) and provided no CSR Schedule 9 prescribed substance other than salt is present in the sediment of an estuarine river, the river does not constitute a contaminated site under the CSR.

Further, the *Act*, 55 (1) (a) only requires a CSRA to be obtained in the case that a person relocates contaminated soil (i.e. soil which exceeds the applicable CSR Schedule 7 standards for a substance) from a contaminated site. Since an estuarine river is not a contaminated site for salt, it follows that no CSRA would be required to initially relocate dredged sediment contaminated only with salt, from the river to land.

However, once deposited to land, the dredged material becomes “soil” for CSR regulatory purposes. If the concentration of salt in the dredged material deposited exceeds the CSR soil quality standards for the specified land use applicable at the deposit or any subsequent relocation site, the deposit of

the dredged material may effectively “create” a new contaminated site.

Dredged sand from the Fraser River is a valuable resource and has been successfully used for a wide variety of purposes at: commercial, industrial, residential and even agricultural sites for many years. The majority of Fraser River sand (and in particular the sand extracted from upstream of the river’s salt wedge) is not expected to be contaminated with salt or any other prescribed contaminant in the context of Schedule 7 of the Contaminated Sites Regulation.

This guidance, by specifying when a CSRA is or is not required to deposit or relocate marine or estuarine dredged material contaminated solely with salt, is designed to preclude the possibility of creating a new contaminated site in consequence of such deposit or relocation.

For more information contact the Environmental Management Branch at site@gov.bc.ca.

Checklist 1

Purpose:

This checklist is to be used to determine if CSR Schedule 7 soil standards triggering Soil Relocation Agreements for salt apply to the relocation of dredged materials of marine or estuarine origin on near-shore or upland sites.

Limitations:

This checklist is specific, and solely limited, to the applicability of CSR Schedule 7 standards for sodium (Na^+) and chloride (Cl^-) in marine or estuarine dredged material to be relocated on land.

Definitions:

“freshwater” means natural water bodies having a natural salinity < 1.5 g/L, but does not include estuarine water bodies subject to tidal salt water infiltration.

“high-density residential” means a residential complex, housing multiple persons or families in: a) individual units, including; boarding houses, apartments, condominiums, lodges, townhouses or b) institutional facilities, including; residential schools, hospitals, residential daycare operations, retirement homes, prisons, correctional centres and community centres, but does not include commercial hotels or motels .

“marine or estuarine dredged material” means dredged sediments or other particulate material obtained from a water body other than a freshwater water body.

“near-shore” means land located above the marine or estuarine high water mark within an area where groundwater quality is, or may be, under marine tidal influence. Unless groundwater characterization data indicates otherwise, the near-shore area is assumed to extend from the marine or estuarine high water mark for a distance of 1 km inland.

“single-family residential” means a residential complex, housing a single person or family in a common unit, including; a private home, cabin, shack, hut or tent.

“undeveloped land” means any bare or vegetated soil, excluding gravelled walkways, roadways or highways and associated roadside or highway margins, parking areas and soil contained and isolated in planters and similar structures.

“upland” means land located inland of the near-shore.

Documentation:

This checklist if completed to support the relocation of dredged materials of marine or estuarine origin is a requisite component of environmental documentation related to the relocation. The completed checklist must be retained by the responsible person relocating the soil and must be provided if requested by the Director.

Instructions:

Answer the questions in Parts A through Q as directed, either “Yes” or “No”.

PART A - CSR exemptions - all receiving sites			
Question Number	Question	Yes	No
A-1¹	If the concentration of chloride and sodium in the marine/estuarine dredged materials to be relocated is known, are the concentrations of chloride (Cl ⁻) ≤ 35 ug/g and sodium (Na ⁺) ≤ 200 ug/g?		
A-2	Is the dredged material to be deposited for disposal at an authorized treatment or disposal facility (e.g. permitted landfill or treatment facility)?		
A-3	Is the dredged material to be deposited on the same site from which it originated?		
A-4	Is the volume of the dredged material to be deposited ≤ 5 m ³ ?		
A-5	Is the receiving site located in an area designated as a “Wide Area Site” under the Contaminated Sites Regulation?		
A-6	Is the receiving site a federal property or located outside of British Columbia?		
A-7	Are chloride and sodium concentrations in the dredged materials known to be less than or equal to background soil chloride and sodium concentrations determined for the geographic area of the receiving site?		
A-8	Will the dredged marine or estuarine material be relocated to land other than undeveloped land?		

¹ If the concentrations of chloride and sodium in the marine/estuarine dredged materials to be deposited are unknown, answer “No” to question A-1.

If you answered “Yes” to any of the questions comprising Part A, the relocation of the dredged marine or estuarine materials is exempt from the need to obtain a Contaminated Soil Relocation Agreement under the provisions of the Contaminated Sites Regulation.

If you answered “No” to all of the questions comprising Part A, proceed to Part B.

Note: Only complete Part B below, if you answered “No” to all of the questions comprising Part A above.

PART B - Other regulatory considerations - all receiving sites			
Question Number	Question	Yes	No
B-1	Does the dredged material constitute hazardous waste under the Hazardous Waste Regulation?		
B-2	Is the receiving site subject to regulation under an <i>Environmental Management Act</i> authorization?		
B-3	Is the receiving site subject to regulation under any other Provincial regulatory authorization (e.g. <i>Mines Act</i> permit)?		
B-4	Is the dredged marine or estuarine material to be relocated contaminated with substances other than chloride or sodium?		

If you answered “Yes” to question B-1, the relocation of the dredged materials is prohibited unless authorized under the provisions of the Hazardous Waste Regulation.

If you answered “Yes” to question B-2 or B-3 and the authorization does not authorize the deposit of dredged materials, the standards of CSR Schedule 7 apply. Obtain the required Contaminated Soil Relocation Agreement prior to depositing the dredged material.

If you answered “Yes” to question B-4, the standards of CSR Schedule 7 apply. Obtain the required Contaminated Soil Relocation Agreement prior to depositing the dredged material.

If you answered “No” to all of the questions comprising Part B, proceed to Part C.

Note: Only complete Part C below, if you answered "No" to all of the questions comprising Part B above.

PART C - General environmental considerations - all receiving sites			
Question Number	Question	Yes	No
C-1	Will the dredged materials be deposited in a "riparian assessment area" or freshwater "stream" as defined in the Riparian Area Regulation?		
C-2	Will the dredged materials be deposited in a "sensitive stream" designated under the Sensitive Streams Designation and Licensing Regulation?		
C-3	Will dredged materials be deposited at a receiving site which has engineered works to collect and return effluent and leachate arising from the dredged materials to a sewer, or directly to a marine or estuarine water-body?		

If you answered "Yes" to question C-1 or C-2, the standards of CSR Schedule 7 apply. Obtain the required Contaminated Soil Relocation Agreement prior to depositing the dredged material.

If you answered "Yes" to question C-3, proceed to Part D

If you answered "No" to question C-3, proceed to Part I

Note: Only complete Part D below, if you answered "Yes" to question C-3 in Part C above. Part D identifies the location of the receiving site with engineered works to which the dredged materials will be deposited.

PART D - Receiving site with engineered works - location			
Question Number	Question	Yes	No
D-1	Will dredged marine or estuarine materials be deposited at a near-shore site?		
D-2	Will dredged marine or estuarine materials be deposited at an upland site?		

If you answered "Yes" to question D-1 proceed to Part E.

If you answered "Yes" to question D-2 proceed to Part G.

Note: Only complete Part E below, if you answered “Yes” to question D-1 in Part D above.

PART E - Near-shore receiving site with engineered works - land use			
Question Number	Question	Yes	No
E-1	Will the dredged materials be deposited on, “agricultural land” as defined in the CSR?		

If you answered “Yes” to question E-1 proceed to Part F.

If you answered “No” to question E-1, the standards of CSR Schedule 7 do not apply. The relocation of the dredged materials to a near-shore receiving site does not require a Contaminated Soil Relocation Agreement to proceed. However, in all other respects, it remains the responsibility of the party depositing the dredged materials to ensure that all Federal, Provincial and Local government requirements are met prior to depositing the dredged material.

Note: Only complete Part F below, if you answered “Yes” to question E-1 in Part E above.

PART F - Near-shore agricultural land receiving site with engineered works - environmental considerations			
Question Number	Question	Yes	No
F-1	Is the concentration of chloride (Cl ⁻) in the dredged material to be deposited at the near-shore agricultural receiving site > 350 ug/g?		
F-2	Is the concentration of sodium (Na ⁺) in the dredged material to be deposited at the near-shore agricultural receiving site > 200 ug/g?		

If you answered “Yes” to either question comprising Part F, the standards of CSR Schedule 7 apply. Obtain the required Contaminated Soil Relocation Agreement prior to depositing the dredged material.

If you answered “No” to both of the questions comprising Part F, the standards of CSR Schedule 7 do not apply. The relocation of the dredged materials to a near-shore agricultural land receiving site does not require a Contaminated Soil Relocation Agreement to proceed. However, in all other respects, it remains the responsibility of the party depositing the dredged materials to ensure that all Federal,

Provincial and Local government requirements are met prior to depositing the dredged material.

Note: Only complete Part G below, if you answered "Yes" to question D-2 in Part D above. Part G identifies the CSR land use of the upland receiving site with engineered works to which the dredged materials will be deposited.

PART G - Upland receiving site with engineered works - land use			
Question Number	Question	Yes	No
G-1	Will the dredged materials be deposited on, "agricultural land" as defined in the CSR?		
G-2	Will the dredged materials be deposited on "wildlands" as defined in the CSR?		
G-3	Will the dredged materials be deposited on "urban parkland" as defined in the CSR?		
G-4	Will the dredged materials be deposited on "residential land" as defined in the CSR?		
G-4a	If the receiving site is residential land, is the site primarily comprised of "single-family residential" dwellings?		

If you answered "Yes" to any question comprising Part G proceed to Part H.

If you answered "No" to all questions comprising Part G, the standards of CSR Schedule 7 do not apply. The relocation of the dredged materials to a near-shore receiving site does not require a Contaminated Soil Relocation Agreement to proceed. However, in all other respects, it remains the responsibility of the party depositing the dredged materials to ensure that all Federal, Provincial and Local government requirements are met prior to depositing the dredged material.

Note: Only complete Part H below, if you answered “Yes” to any question comprising Part G above.

PART H - Upland agricultural, wildlands, urban parkland or single-family residential land receiving site with engineered works - environmental considerations			
Question Number	Question	Yes	No
H-1	Is the concentration of chloride (Cl ⁻) in the dredged material to be deposited at the upland agricultural, wildlands, urban parkland or single-family residential receiving site > 350 ug/g?		
H-2	Is the concentration of sodium (Na ⁺) in the dredged material to be deposited at the near-shore agricultural, wildlands, urban parkland or single-family residential receiving site > 200 ug/g?		

If you answered “Yes” to any question comprising Part H, the standards of CSR Schedule 7 apply. Obtain the required Contaminated Soil Relocation Agreement prior to depositing the dredged material.

If you answered “No” to all of the questions comprising Part H, the standards of CSR Schedule 7 do not apply. The relocation of the dredged materials to an upland agricultural, wildlands, urban parkland or single-family residential land receiving site does not require a Contaminated Soil Relocation Agreement to proceed. However, in all other respects, it remains the responsibility of the party depositing the dredged materials to ensure that all Federal, Provincial and Local government requirements are met prior to depositing the dredged material.

Note: Only complete Part I below, if you answered “No” to question C-3 in Part C above. Part I identifies the location of the receiving site without engineered works to which the dredged materials will be deposited.

PART I - Receiving site without engineered works - location			
Question Number	Question	Yes	No
I-1	Will dredged marine or estuarine materials be deposited at a near-shore site?		
I-2	Will dredged marine or estuarine materials be deposited at an upland site?		

If you answered “Yes” to question I-1 proceed to Part J.

If you answered “Yes” to question I-2 proceed to Part N.

Note: Only complete Part J below, if you answered “Yes” to question I-1 in Part I above. Part J identifies the CSR land use of the near-shore receiving site without engineered works to which the dredged materials will be deposited.

PART J - Near-shore receiving site without engineered works - land use			
Question Number	Question	Yes	No
J-1	Will the dredged materials be deposited on, “agricultural land” as defined in the CSR?		
J-2	Will the dredged materials be deposited on “wildlands” as defined in the CSR?		
J-3	Will the dredged materials be deposited on “urban parkland” as defined in the CSR?		
J-4	Will the dredged materials be deposited on “residential land” as defined in the CSR?		
J-4a	If the receiving site is residential land, is the site primarily comprised of “single-family residential” dwellings?		
J-4b	If the receiving site is residential land, is the site primarily comprised of “high-density residential” dwellings?		
J-5	Will the dredged materials be deposited on “commercial land” as defined in the CSR?		
J-6	Will the dredged materials be deposited on “industrial lands” as defined in the CSR?		

If you answered “Yes” to question J-1 proceed to Part K.

If you answered “Yes” to question J-2, J-3, or J-4 and J-4a proceed to Part L.

If you answered “Yes” to question J-4 and J-4b, J-5 or J-6 proceed to Part M.

Note: Only complete Part K below, if you answered “Yes” to question J-1 in Part J above.

PART K – Near-shore agricultural receiving site without engineered works – environmental considerations			
Question Number	Question	Yes	No
K-1	Is the near-shore agricultural receiving site: 1. located 300 m or less up-gradient from a drinking water well, and 2. are the concentrations of chloride (Cl ⁻) > 90 ug/g and of sodium (Na ⁺) > 15 000 ug/g in the dredged materials to be deposited?		
K-2	Is the near-shore agricultural receiving site: 1. located 300 m or less up-gradient from a livestock watering well, and 2. is the concentration of chloride (Cl ⁻) in the dredged materials to be deposited > 200 ug/g?		
K-3	Is the near-shore agricultural receiving site located: 1. 300 m or less up-gradient from an irrigation well, and 2. is the concentration of chloride (Cl ⁻) in the dredged materials to be deposited > 35 ug/g?		
K-4	Is the concentration of chloride (Cl ⁻) in the dredged material to be deposited at the near-shore agricultural receiving site > 350 ug/g?		
K-5	Is the concentration of sodium (Na ⁺) in the dredged material to be deposited at the near-shore agricultural receiving site > 200 ug/g?		

If you answered “Yes” to any question comprising Part K, the standards of CSR Schedule 7 apply. Obtain the required Contaminated Soil Relocation Agreement prior to depositing the dredged material.

If you answered “No” to all of the questions comprising Part K, the standards of CSR Schedule 7 do not apply. The relocation of the dredged materials to a near-shore agricultural land receiving site does not require a Contaminated Soil Relocation Agreement to proceed. However, in all other respects, it remains the responsibility of the party depositing the dredged materials to ensure that all Federal, Provincial and Local government requirements are met prior to depositing the dredged material.

Note: Only complete Part L below, if you answered “Yes” to question J-2, J-3 or J-4 and J-4a in Part J above.

PART L - Near-shore wildlands, urban parkland or single-family residential receiving site without engineered works - environmental considerations			
Question Number	Question	Yes	No
L-1	Is the near-shore wildlands, urban parkland or single-family residential receiving site: 1. located 300 m or less up-gradient from a drinking water well, and 2. are the concentrations of chloride (Cl ⁻) > 90 ug/g and of sodium (Na ⁺) > 15 000 ug/g in the dredged materials to be deposited?		
L-2	Is the near-shore wildlands, urban parkland or single-family residential receiving site located: 1. 300 m or less up-gradient from an irrigation well, and 2. is the concentration of chloride (Cl ⁻) in the dredged materials to be deposited > 35 ug/g?		
L-3	Is the concentration of chloride (Cl ⁻) in the dredged material to be deposited at the near-shore wildlands, urban parkland or single-family residential receiving site > 350 ug/g?		
L-4	Is the concentration of sodium (Na ⁺) in the dredged material to be deposited at the near-shore wildlands, urban parkland or single-family residential receiving site > 200 ug/g?		

If you answered “Yes” to any question comprising Part L, the standards of CSR Schedule 7 apply. Obtain the required Contaminated Soil Relocation Agreement prior to depositing the dredged material.

If you answered “No” to all of the questions comprising Part L, the standards of CSR Schedule 7 do not apply. The relocation of the dredged materials to a near-shore wildlands, urban parkland or single-family residential land receiving site does not require a Contaminated Soil Relocation Agreement to proceed. However, in all other respects, it remains the responsibility of the party depositing the dredged materials to ensure that all Federal, Provincial and Local government requirements are met prior to depositing the dredged material.

Note: Only complete Part M below, if you answered “Yes” to question J-4 and J-4b, J-5 or J-6 in Part J above.

PART M - Near-shore high-density residential, commercial or industrial receiving site without engineered works - environmental considerations			
Question Number	Question	Yes	No
M-1	Is the near-shore high-density residential, commercial or industrial receiving site: <ol style="list-style-type: none"> 1. located 300 m or less up-gradient from a drinking water well, and 2. are the concentrations of chloride (Cl⁻) > 90 ug/g and of sodium (Na⁺) > 15 000 ug/g in the dredged materials to be deposited? 		

If you answered “Yes” to question M-1, the standards of CSR Schedule 7 apply. Obtain the required Contaminated Soil Relocation Agreement prior to depositing the dredged material.

If you answered “No” to question M-1, the standards of CSR Schedule 7 do not apply. The relocation of the dredged materials to a near-shore high-density residential, commercial or industrial land receiving site does not require a Contaminated Soil Relocation Agreement to proceed. However, in all other respects, it remains the responsibility of the party depositing the dredged materials to ensure that all Federal, Provincial and Local government requirements are met prior to depositing the dredged material.

Note: Only complete Part N below, if you answered “Yes” to question I-2 in Part I above. Part N identifies the CSR land use of the upland receiving site without engineered works to which the dredged materials will be deposited.

PART N - Upland receiving site without engineered works - land use			
Question Number	Question	Yes	No
N-1	Will the dredged materials be deposited on, “agricultural land” as defined in the CSR?		
N-2	Will the dredged materials be deposited on “wildlands” as defined in the CSR?		
N-3	Will the dredged materials be deposited on “urban parkland” as defined in the CSR?		
N-4	Will the dredged materials be deposited on “residential land” as defined in the CSR?		
N-4a	If the receiving site is residential land, is the site primarily comprised of “single-family residential” dwellings?		
N-4b	If the receiving site is residential land, is the site primarily comprised of “high-density residential” dwellings?		
N-5	Will the dredged materials be deposited on “commercial land” as defined in the CSR?		
N-6	Will the dredged materials be deposited on “industrial lands” as defined in the CSR?		

If you answered “Yes” to question N-1 proceed to Part O.

If you answered “Yes” to question N-2, N-3, or N-4 and N-4a proceed to Part P.

If you answered “Yes” to question N-4 and N-4b, N-5 or N-6 proceed to Part Q.

Note: Only complete Part O below, if you answered “Yes” to question N-1 in Part N above.

PART O - Upland agricultural receiving site without engineered works - environmental considerations			
Question Number	Question	Yes	No
O-1	Is the upland agricultural receiving site: 1. located 300 m or less up-gradient from freshwater aquatic life, and 2. is the concentration of chloride in the dredged material to be deposited > 550 ug/g)?		
O-2	Is the upland agricultural receiving site: 1. located 300 m or less up-gradient from a drinking water well, and 2. are the concentrations of chloride (Cl ⁻) > 90 ug/g and of sodium (Na ⁺) > 15 000 ug/g in the dredged materials to be deposited?		
O-3	Is the upland agricultural receiving site: 1. located 300 m or less up-gradient from a livestock watering well, and 2. is the concentration of chloride (Cl ⁻) in the dredged materials to be deposited > 200 ug/g?		
O-4	Is the upland agricultural receiving site: 1. located 300 m or less up-gradient from an irrigation well, and 2. is the concentration of chloride (Cl ⁻) in the dredged materials to be deposited > 35 ug/g?		
O-5	Is the concentration of chloride (Cl ⁻) in the dredged material to be deposited at the upland agricultural receiving site > 350 ug/g?		
O-6	Is the concentration of sodium (Na ⁺) in the dredged material to be deposited at the upland agricultural receiving site > 200 ug/g?		

If you answered “Yes” to any question comprising Part O, the standards of CSR Schedule 7 apply. Obtain the required Contaminated Soil Relocation Agreement prior to depositing the dredged material.

If you answered “No’ to all of the questions comprising Part O, the standards of CSR

Schedule 7 do not apply. The relocation of the dredged materials to an upland agricultural land receiving site does not require a Contaminated Soil Relocation Agreement to proceed. However, in all other respects, it remains the responsibility of the party depositing the dredged materials to ensure that all Federal, Provincial and Local government requirements are met prior to depositing the dredged material.

Note: Only complete Part P below, if you answered "Yes" to question N-2, N-3 or N-4 and N-4a in Part N above.

PART P - Upland wildlands, urban parkland or single-family residential receiving site without engineered works - environmental considerations			
Question Number	Question	Yes	No
P-1	Is the upland wildlands, urban parkland or single-family residential receiving site: <ol style="list-style-type: none"> 1. located 300 m or less up-gradient from freshwater aquatic life, and 2. is the concentration of chloride (Cl⁻) in the dredged material to be deposited > 550 ug/g? 		
P-2	Is the upland wildlands, urban parkland or single-family residential receiving site: <ol style="list-style-type: none"> 1. located 300 m or less up-gradient from a drinking water well, and 2. are the concentrations of chloride (Cl⁻) > 90 ug/g and of sodium (Na⁺) > 15 000 ug/g in the dredged materials to be deposited? 		
P-3	Is the upland wildlands, urban parkland or single-family residential receiving site located: <ol style="list-style-type: none"> 1. 300 m or less up-gradient from an irrigation well, and 2. is the concentration of chloride (Cl⁻) in the dredged materials to be deposited > 35 ug/g? 		
P-4	Is the concentration of chloride (Cl ⁻) in the dredged material to be deposited at the upland wildlands, urban parkland or single-family residential receiving site > 350 ug/g?		
P-5	Is the concentration of sodium (Na ⁺) in the dredged material to be deposited at the upland wildlands, urban parkland or single-family residential receiving site > 200 ug/g?		

If you answered “Yes” to any question comprising Part P, the standards of CSR Schedule 7 apply. Obtain the required Contaminated Soil Relocation Agreement prior to depositing the dredged material.

If you answered “No” to all of the questions comprising Part P, the standards of CSR Schedule 7 do not apply. The relocation of the dredged materials to an upland wildlands, urban parkland or single-family residential land receiving site does not require a Contaminated Soil Relocation Agreement to proceed. However, in all other respects, it remains the responsibility of the party depositing the dredged materials to ensure that all Federal, Provincial and Local government requirements are met prior to depositing the dredged material.

Note: Only complete Part Q below, if you answered “Yes” to question N-4 and N-4b, N-5 or N-6 in Part N above.

PART Q - Upland high-density residential, commercial or industrial receiving site without engineered works - environmental considerations			
Question Number	Question	Yes	No
Q-1	Is the upland high-density residential, commercial or industrial receiving site: <ol style="list-style-type: none"> 1. located 300 m or less up-gradient from freshwater aquatic life, and 2. is the concentration of chloride (Cl⁻) in the dredged material to be deposited > 550 ug/g)? 		
Q-2	Is the upland high-density residential, commercial or industrial land receiving site: <ol style="list-style-type: none"> 1. located 300 m or less up-gradient from a drinking water well, and 2. are the concentrations of chloride (Cl⁻) > 90 ug/g and of sodium (Na⁺) > 15 000 ug/g in the dredged materials to be deposited? 		

If you answered “Yes” to any question comprising Part Q, the standards of CSR Schedule 7 apply. Obtain the required Contaminated Soil Relocation Agreement prior to depositing the dredged material.

If you answered “No” to all of the questions comprising Part Q, the standards of CSR Schedule 7 do not apply. The relocation of the dredged materials to an upland high-density residential, commercial or industrial land receiving site does not require a Contaminated Soil Relocation Agreement to proceed. However, in all other respects, it

remains the responsibility of the party depositing the dredged materials to ensure that all Federal, Provincial and Local government requirements are met prior to depositing the dredged material.

END

Appendix 1

Summary of controlling conditions which would require a CSRA under Checklist 1 to relocate salty soil of dredged marine/estuarine origin.

Receiving Site Location & Engineered Works Status	Receiving Site Land Use Status		
	AL	UP/WL/SFR	CL/IL/HDR
NS + works	SIP (no well check)	none	none
NS - no works	SIP, well check [DW, LW, IW]	SIP, well check [DW & IW]	well check [DW] (no SIP)
UP +works	SIP (no well check)	SIP (no well check)	none
UP - no works	SIP, well check [DW, LW, IW] & Aq	SIP, well check [DW & IW] & Aq	well check [DW] & Aq (no SIP)

Note: TG 33 includes an exemption from need to get CSRA if deposit will be to land other than undeveloped land (where undeveloped land is bare or vegetated soil which is not a walkway, roadway or highway or associated road or highway margin or soil contained in planter boxes).

Key

CSRA: Contaminated soil relocation agreement	+ works: Engineered works to collect water present at site
AL : Agricultural land	SIP: CSR Schedule 5 soil invertebrate and plants standard
UP: Urban parkland	well check: Site is within 300m of specified type of well
WL: Wildlands	- no works: No engineered works to collect water present at site
SFR: Single-family residential land	DW: Drinking water
CL: Commercial land	LW: Livestock water
IL: Industrial land	IW: Irrigation water
HDR: High-density residential land	UP: Upland receiving site
NS: Near-shore receiving site	AQ: Within 300 m of aquatic life and CSR Schedule 5 aquatic life protective soil standard exceeded?