

Response to Comments Provided by Federal and Provincial Staff on the Sediment Quality Criteria Documents

Submitted to:

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Response to Comments on the Sediment Criteria Documents

Reviewer 1

Response to Comments Provided by Karen Hutton (DFO) on Guidance Manual - Volume 4 (Comments dated September 3, 2003)

Comment #1

From a quick review, the document seems to be a 'made in the US' guidance that has been somewhat retro-fitted for BC use. The document should reflect what the committee wanted, which was a locally made, locally relevant guidance that acknowledges both BC and Canadian practices, policies, regulations, and laws.

Response to Comment #1

Volume 4 was developed explicitly for use in British Columbia. However, every attempt was made to utilize guidance that was available from all sources in preparing the document, including the guidance that was prepared by U.S. state and federal agencies. Where possible and appropriate, guidance from Canadian sources was highlighted.

On the whole I have few comments further to those of DOE:

Comment #2

Acronyms - Every US body, agency, act, etc, should be prefaced with 'US', ie: US DOE, US NOAA, US NEPA, US OSW. The number of acronyms in the document make it confusing enough without trying to remember who's who.

Response to Comment #2

The list of acronyms was refined to specifically identify U.S. agencies and acts.

Comment #3

Definitions - A number of terms are defined by their US description. These should be defined according to their Canadian definition. This is especially important if these terms are 'legally' defined in BC or Canadian legislation or regulation.

Response to Comment #3

The definitions were refined according to Canadian definitions.

Comment #4

If the Acronyms and Definitions are the same in the other 4 or 5 documents, they should also be revised to reflect Canada/BC.

Response to Comment #4

Done.

Comment #5

When giving references, what is the order in which they are presented, most relevant or most recent first? I recommend the most relevant reference be listed first and then in descending order. Whenever possible the relevant Canadian references should be included.

Response to Comment #5

The references are generally listed in chronological order. Although the recommended approach has merit, the benefits that would accrue would not justify the level of effort required to make the suggested changes. No action was taken to revise the documents to address this comment.

Comment #6

Page 12 last line para 2 are we not concerned with BC waters, rather than US?

Response to Comment #6

The text was revised appropriately.

Comment #7

Does EC have standard procedures for tox testing?

Response to Comment #7

The DOE methods were cited in this section of the report.

Comment #8

Page 23 - last line para 1 'Therefore only an overview of that process is provided...'

Response to Comment #8

Done.

Reviewer 2

Response to Comments Provided by Karen Hutton (DFO) on the Criteria for Managing Contaminated Sediment in B.C. - Technical Appendix (dated August 13, 2003)

Comment #1

Regarding the New technical appendix to Criteria report sent by Mike on Monday, I have some concerns that what I read is not what I remember agreeing to. Page 9 section 3.2 para after the bullets '...the SedQC TCS are intended to identify COPC concentrations above which adverse effects on sediment-dwelling organisms are likely to occur frequently' This is NOT my interpretation of a 50% probability of a 20% effect

Response to Comment #1

The text was revised to reflect the agreed to definition of the SedQC_{TCS}.

Comment #2

Page 10 last line of first 2 para '...significant adverse effects...' even a P50 of an EC20 shouldn't be a significant adverse effect. Is this supposed to mean a 'statistically significant' effect?

Response to Comment #2

The text was revised to include the word, significant.

Comment #3

Page 10 end of first para section 3.3.2 "...the PEL was adopted directly as the preliminary Sed QC..." Not what I remember, and not a good way to represent the criteria, as it doesn't appear to be protective the way it is described. The PEL is not consistent with my sediment management objective.

Response to Comment #3

The text was modified to emphasize that preliminary sediment quality benchmarks were established initially and that these were modified to be consistent with the sediment management objectives.

Comment #4

Page 11 section 3.3.4 if it was not possible to determine a P20 for marine sediments, what are we using?

Response to Comment #4

We are using the freshwater P₂₀ value to derive the SedQC. The text was modified to make this more apparent.

Comment #5

Page 12 para 2 section 3.4 'at concentrations above the SCS criteria sediment toxicity was 39 - 100% for fresh and marine sediments.' Maybe some mention that this included a wide range of contaminant levels and not lead readers to infer that this was just concentrations slightly above the criteria....

Response to Comment #5

The text was modified accordingly.

Comment #6

Page 19 Risk-based approach ... this is the first time the P20 and P50 description appears, which is what I thought the entire system was based on, and not based on accepting the PEL as a starting point.

Response to Comment #6

The text was modified to describe these terms earlier in the document and emphasize their importance to the SedQC derivation process.

Comment #7

I have some other comments that are more editorial that I won't bore you with. Should we discuss?

Response to Comment #7

None required.

Reviewer 3
Response to Comments Provided by John Ward (BCWLAP) on the Development and Applications of Sediment Quality Criteria for Managing Contaminated Sediment in British Columbia (Comments Dated August 29, 2003)

Mike, thanks for the chance to review this. In addition to noting that this is a very well prepared and written document, I do have a few comments:

Comment #1

I think this should be sent to the Science Advisory Board for comment, accompanied by remarks indicating the long history of this issue.

Response to Comment #1

Report was presented to CSIC for review, which encompasses most of the people who are currently represented on the SAB.

Comment #2

It would benefit by the addition of an executive summary, especially outlining the process in simple steps how the criteria are derived and should be used.

Response to Comment #2

Done.

Comment #3

Page 6, section 1.4 line 3 - use "describes".

Response to Comment #3

Done.

Comment #4

Page 10, section 2.3, line 6 - I suggest deleting "voluntary remediation agreements". One has yet to be signed in BC.

Response to Comment #4

Done.

Comment #5

Page 10, section 2.4, line 4 - suggest replacing the words after ". . . two broad types of remediation" with "including removal of contaminants by excavation or treatment and management of contaminants on-site."

Response to Comment #5

Done.

Comment #6

Page 11, last two sentences. These are a little mixed up. Suggest trying "If the numerical or risk-based standards of the Contaminated Sites Regulation have been satisfied, then a certificate can be issued by the ministry. When the contamination is managed on-site, conditions must be met by a site manager to ensure protection of the environment and human health." (Note it is not useful discussing notification just for risk managed sites because notice to the public is available for both types of sites on the site registry.)

Response to Comment #6

Done.

Comment #7

Page 19, section 3.6 and appendix 1 - as I recall a big feature of the LRMA approach is that it was based in part on real world samples which contained mixtures of substances. This could be emphasized more in both the text and appendix.

Response to Comment #7

Section 3.6 of the report was revised accordingly. Appendix 1 was not modified, as it did not refer to the LRMA directly.

Comment #8

Page 32, lines 1 - 3 - this took very careful reading to understand. I got caught up in the parenthetical material starting on line 2. Perhaps that could be put into a separate sentence "These SQG-Qs were calculated as the arithmetic mean of the SQG-Cs that were calculated for each measured substance, where . . .".

Response to Comment #8

Done.

Comment #9

Page 32, line 6 - readers like me who are not very steeped in this issue may become confused when the discussion abruptly changes from SQG-Qs to PECs and PEC-Qs. Maybe an explanation that a PEC is a type of SQG, and that a PEC-Q is a type of SQG-Q would be helpful, if that is correct.

Response to Comment #9

Text was revised to reduce the potential for confusion for the reader.

Comment #10

Page 34, lines 3 - 5, tables - I notice that in this work, the number of significant digits is 2. Note that if the SQCs in this paper are ported into a ministry criteria document, they will have to be rounded off according to the rounding rules we use.

Response to Comment #10

The SedQC were rounded to two significant figures using the Ministry's rounding rules.

Comment #11

Page 39, last 2 lines - maybe I don't understand this, but I think the incidence of toxicity would be less than 50% for concentrations below the SedQC_{TCS}.

Response to Comment #11

The text was revised to clarify what the incidence of toxicity was below the SedQC_{TCS}.

Comment #12

Page 40, lines 1 and 4 - "an SedQC" should read "a SedQC".

Response to Comment #12

Done.

Comment #13

Page 47, section 6.3, line 7 - voluntary remediation agreements have not used in BC although they are allowed.

Response to Comment #13

The text was modified to indicated that such an agreement can be established.

Comment #14

Page 47, 2nd last line - delete comma between "site-specific" and "criteria-based".

Response to Comment #14

Done.

Comment #15

Page 49, section 6.3.2, 2nd para, lines 5 - 6 - in BC for soils for a specific site, we do not revise standards upwards based on background considerations. We simply say that if your site does not contain substances greater than background, the site is not contaminated. We would want to maintain this approach for sediments. For soils for all site, the Contaminated Sites Regulation contains standards which have been adjusted upwards for provincial background levels of substances, based on a provincial background soils study.

Response to Comment #15

Section on background levels was removed from the text.

Comment #16

Page 50, line 1 - in the Contaminated Sites Regulation all standards have been preadjusted so that none are below analytical detection limits. This adjustment will have to be done before the criteria are moved into a ministry sediment criteria document.

Response to Comment #16

Section on detection limits was removed from the text.

Comment #17

Page 72, LRMA - do the two strengths of the AET approach not also apply to the LRMA?

Response to Comment #17

Table was modified to incorporate the strengths of the AETA in the section on the LRMA.

Comment #18

Page 74, second bullet - there is a formatting problem.

Response to Comment #18

Formatting problem was fixed.

Comment #19

Page 74, bold section at end - these look to me like rules for developing site-specific standards. Maybe they should be moved to section 6.3.2 or somewhere else like Appendix 2.

Response to Comment #19

This section is intended to highlight the potential for applying the SedQC_{TCS} within certain portions of areas that are designated as sensitive contaminated sites. This was requested by DFO. No changes were made to the document to address this comment.

Comment #20

Page 90, low reliability criteria - perhaps I missed it, but I did not read a discussion about what to do with low reliability criteria. Should they be used? If not, what should be done?

Response to Comment #20

Text was added to the document to indicate that the SedQC with lower reliability can still be applied at contaminated sites in the province. However, the option for deriving site-specific criteria was also highlighted for the reader.

Comment #21

Page A-9, end of para 1 - the term matrix standards is introduced here, but I don't believe it should be used in this context, or if it is, it should be explained.

Response to Comment #21

The term matrix was deleted from the document.

Comment #22

Page A-10 - see previous comments on how the ministry deals with background in soils, and analytical detection limits in relation to environmental quality standards.

Response to Comment #22

These sections were removed from the document.

Reviewer 4

Responses to Comments Provided by Deanna Lee (DOE) on the Director's Criteria for Contaminated Sites (Comments dated September 4, 2003)

Comment #1

Following are comments on the Director's Criteria for Contaminated Sites July 2003 and the accompanying Technical Appendix. I've noticed that many of the sediment criteria listed in the most current draft have changed since the November and December drafts, and I am wondering what the rationale for the change is. While for the most part, changes to the sediment criteria were within the same order of magnitude, either moving up or down from the values from the November draft, some rationale as to why the criteria have changed would have been useful and if the criteria are expected to change again. This is of concern since we have been looking at the draft sediment criteria values from the previous drafts when reviewing risk assessments.

Response to Comment #1

The SedQC in the earlier drafts of the document were calculated using a different procedure. Based on the comments received from stakeholders, a consistent procedure was adopted to calculate all of the SedQC, as described in the document and associated technical appendix.

Comment #2

There is also a 10 fold increase in the PCDD/F sediment values which should be explained. (The original values in the November draft are more in line with the CCME PEL values for PCDD/PCDF). In addition, we cannot provide any comment on the evaluation of the sediment criteria since the data used to evaluate the criteria are not readily available with the review material provided. I also have not looked at the derivation of the sediment criteria (i.e., calculations of P_{50} of an EC_{20} , mean PEL-Q's), too closely, due to time constraints.

Response to Comment #2

The CCME PEL values incorporate a 10-fold safety factor. When this was discovered, the SedQC that were derived from these PELs were revised to eliminate the safety factor that was applied by the CCME.

Comment #3

This document appears to have been converted from another application into a WORD document since some of the symbols don't appear to be correct. eg. Pg 1 should be a bulleted list as opposed to using \$ in the list itemizing environmental concerns; Pg. 5 "Ministry=s" should be "Ministry's"; Pg. 7; \$ list

Response to Comment #3

The symbols have been corrected.

Comment #4

Pg. 1; 3rd para; 1st sentence - change order of CEPA and WMA in sentence so federal acts are listed together so it is clear which are federal and which are provincial legislation

Response to Comment #4

Done.

Comment #5

Pg 7; 2nd para -definition of a contaminated site may be clearer if the three qualifying conditions are listed in bullet form, as opposed to within the body of the paragraph. SedQC-Q should also be defined in the text.

Response to Comment #5

Done.

Comment #6

A site is designated as a contaminated site under Part 5 of the CSR if any of the following apply:

- the 90th percentile concentration of any COPC in sediments at the site is greater or equal to the applicable SedQC;
- if the concentration of any COPC in any sediment sample from the site is greater or equal to two times the applicable SedQC; and
- if the 90th percentile mean SedQC-Q equals or exceeds one or if the mean SedQC in any sediment sample equals or exceeds two.

A site is not contaminated with respect to a substance in the sediment if the site does not contain any substance with a concentration greater than the local background concentration of that substance in the sediment.

Response to Comment #6

The recommended formatting change was incorporated.

Comment #7

Pg. 10; 3rd para; 2nd line - delete 'pollutants that are'

Response to Comment #7

Done:

Comment #8

Pg. 11; 9.3 Change title to: Canadian Environmental Protection Act (CEPA), 1999 - delete '(Toxic Substance)' since this section covers more than 'Toxic Substances'

Response to Comment #8

Done.

Comment #9

1st sentence 'Proclaimed on March 31, 2000, the Canadian Environmental Protection Act (CEPA), 1999 is an act... Section on CEPA needs to be clarified. 2nd para; Substances declared "toxic" as defined by CEPA Part 5 (Controlling Toxic Substances) are added to the List of Toxic Substances under Schedule 1 of the Act. Under CEPA, Part 5 (Controlling Toxic Substances), regulations or other instruments in respect of preventive or control actions in relation to substances declared "toxic" and listed on the list of Toxic Substances under Schedule 1 of CEPA, can be made. Tools may be used to control any or all aspects of the substance's life cycle from the design and development stage to its manufacture, use, storage, transport and ultimate disposal. In the context of managing contaminated sites, regulations or other control instruments developed under CEPA may apply in respect of certain toxic substances present on the site.

When determining disposal options for sediment contaminated sites, Part 7, Division 3 of CEPA and the Disposal at Sea regulations should be consulted. In Canada, disposal at sea is controlled by a system of permits administered and issued by Environment Canada. The permit system allows Canada to meet international obligations under the London Convention, 1972 and the 1996 Protocol to the London Convention.

Compliance with CEPA and its regulations are mandatory.

Response to Comment #9

Done.

Comment #10**9.4. Canadian Environmental Assessment Act**

The Canadian Environmental Assessment Act (CEAA) is administered by the Canadian Environmental Assessment Agency. All federal departments, agencies and federal crown corporations are required to conduct environmental assessments of proposed projects where:

- the federal government is the proponent;
- a project involved federal funding;
- the sale or lease of federal land; or
- the issuance of a federal permit, license or other approval.

Response to Comment #10

Done.

Comment #11**Pg. 16; Table 1 Generic Sediment Quality Criteria**

The criteria have changed since the December 2002 draft. Why have they changed? - Are the criteria anticipated to change or will they remain the same until the documents are finalized?

Response to Comment #11

See response to Comment #1. The SedQC will not change again before the document is finalized.

Comment #12

Total PAH is now based on 13 parent compounds and not the 23 compounds listed in the December draft. There should be a footnote for Total PCBs to define whether the criterion is based on congener or Aroclor concentrations. The footnote should also denote if total PCBs are based on all 209 congeners or a subset of congeners or if based on Aroclors, which Aroclors or subset of Aroclors are included.

Response to Comment #12

Footnotes related to the compounds that are included in measurements of total PAHs and total PCBs were added to the table.

Comment #13

Column V - space btwn some of the numbers need to be re-edited.

Response to Comment #13

Done.

Comment #14

PCDD and PCDFs - the revised numbers are an order of magnitude higher than those values proposed in the December draft. This may be a typo? The values in the December draft for typical sites (26 ng/kg) are more in line with the CCME values for PEL (21.5 ng/kg) whereas the current draft has the standard at 260 ng/kg, which is a 10-fold increase. The standard should also be listed as 2,3,7,8-TCDD/F (since the criterion applies to both dioxins and furans).

Response to Comment #14

See response to Comment #2.

Comment #15

Pg. 18 - Table 2 - the guideline values should be listed as "ng TEQ/kg" not "ng/TEQ/kg" in mammalian PCB and mammalian 2,3,7,8 TCDD and it should be noted that the guidelines are based on diet wet weight. Can also delete 'TEQ' in 1st column, following 2,3,7,8 TCDD.

Response to Comment #15

Done.

Comment #16

Standard should be listed as 2,3,7,8-TCDD/F since it applies to both dioxins and furans.

Response to Comment #16

SedQC is issued as 2,3,7,8-TCDD TEQs. That the SedQC applies to PCDDs and PCDFs is evident in the column subheading.

Reviewer 5
Responses to Comments Provided by Deanna Lee (DOE) on the Criteria for Managing Contaminated Sediment in British Columbia - Technical Appendix (Comments dated September 4, 2003)

Comment #1

Pg 6; Preface; 2nd para - 1st sentence - change to "... under the Fisheries Act (FA), the Canadian Environmental Protection Act (CEPA) and the Waste Management Act...

Response to Comment #1

Done.

Comment #2

Pg. 10; 2nd para; last sentence - '...sites that are considered not to be potentially contaminated.'

Response to Comment #2

Done.

Comment #3

Pg. 10; last para; 3rd sentence "Initially, a Stage I PSI is conducted..."

Response to Comment #3

Done.

Comment #4

Pg. 13 TRCs (Tissue Residue Criteria) should probably be referred to as TRGs (tissue residue guidelines) in keeping with CCME terminology

Response to Comment #4

Done.

Comment #5

Pg. 13; 3rd para; "In addition to these special circumstances, a tiered testing approach has been specified by Environment Canada for evaluating the acceptability of dredged materials for open water disposal as detailed in the Disposal at Sea regulations. - delete reference to dependence of framework on CCME screening and rejection - testing framework with regulated limits are detailed in the Disposal at Sea regulations (National Action List and Mechanisms for Screening).

Response to Comment #5

Done.

Comment #6

Pg. 15; 3rd and 4th para - how is 'near-term' and 'longer-term' defined? - and how were the probabilities of effects (20% for sensitive sites and 50% for typical sites) chosen?

Response to Comment #6

These terms were not defined in the document to provide the Ministry with maximum flexibility in applying the SedQC. However, near-term is considered to be three to five years, while the longer term is considered to be greater than five years.

Comment #7

Pg. 16; Formula for Mean PEL-Q; Needs a few more explanatory notes. Are the PEL-Qs for PAHs and PCBs for total PAHs and total PCBs or are individual congeners included? -and which metals are included in the mean PEL-Q for metals?

Response to Comment #7

Clarifications were added to the text as suggested.

Comment #8

Pg. 17-18; Evaluation of the Sediment Quality Criteria - can't really comment on this since the data which are used in the evaluation are not provided.

Response to Comment #8

The data that were used in the evaluation will be available from USEPA, NOAA, and/or USGS in the near future.

Comment #9

Pg. 19; TRC's should probably be referred to as TRGs if they are an outright adoption of the CCME values.

Response to Comment #9

See response to Comment #4.

Comment #10

Pg.21 and Pg.23; rule #3 Clarify - this should be '...applied to a depth of 0 to 100 cm...?'

Response to Comment #10

Done.

Comment #11

Pg. 29; 1st para - last line - change 'contaminated sediments' to 'dredged material'

Response to Comment #11

Done.

Comment #12

Pg. 30; 2nd para - delete "of pollutants" so sentence reads 'The deposit of deleterious substances...'

Response to Comment #12

Done

Comment #13

Pg. 30; Section 9.3; 2nd sentence '... substance's life cycle from the design...' - also see comments above under Director's Criteria

Response to Comment #13

Same changes were made to this document as were made to the Director's Criteria document.

Comment #14

Pg. 31; Ocean Disposal Regulations should be 'Disposal at Sea Regulations'; see comments above under Director's Criteria.

Response to Comment #14

Same changes were made to this document as were made to the Director's Criteria document.

Comment #15

Pg. 31; 9.4 See comments above under Director's Criteria for CEAA

Response to Comment #15

Same changes were made to this document as were made to the Director's Criteria document.

Comment #16

Pg. 41-45 - Tables 1 and 2 -see comments above on sediment quality criteria under Director's Criteria.

Response to Comment #16

Same changes were made to this document as were made to the Director's Criteria document.

Comment #17

Comments listed above also apply to the new technical appendix to Criteria report. I am uncertain what the difference is between the July Technical appendix (2nd attachment) and the New Technical Appendix document (3rd attachment). The text appears to be the same in both documents.

Response to Comment #17

There is no difference between the two documents.