

Public Comments: Atlantic RBCA Version 3.0 User Guidance Document

Reference (Page, Table, Paragraph, etc)	Comment	Atlantic PIRI Committee Response
Various	Throughout the document, some formatting changes and text edits (non-technical) were recommended for the purpose of clarification	All recommendations were reviewed and discussed amongst the Atlantic PIRI Committee and several minor editorial/non-technical changes will be made throughout document.
n/a	There does not appear to be a clear definition between land use categories. Agricultural and residential appear the same. Commercial and Industrial appear to be the same with the Industrial receptor changed to an adult. It would be beneficial to include a definition of each land-use category to ensure they are being used in a consistent manner.	Noted. Clear definitions will be provided.
Page 2, Para 1	<i>“Provincial Regulators may also update their policies and guidelines as required to support these changes.”</i> Has the draft document already received the support of provincial regulators in Atlantic Canada?	Yes. Regulators from the four Atlantic Provinces sit on the Atlantic PIRI Committee. The PIRI committee had reviewed and approved the document prior to release for public review.
Page 2, Para 2	Recommended to add “Upper concentration limits have been added to the table for the purposes of practical limits for delineation at Tier I”.	It has been decided not to add this statement, as it is consistent with previous practice. The calculated concentrations have always been shown in the Tier II PSSL tables, however, UCLs have been provided in the Tier I RBSL tables (i.e., values are capped at UCL). This paragraph is discussing changes.
Table 1	Words have been cut off on the right hand margin.	Formatting will be fixed.
Table 1	Soil and Groundwater to Indoor Air – Adjustment Factor: If the default adjustment factor is always 10, why is this not calculated within the Toolkit?	The adjustment factor of 10 is only applicable to one exposure pathway (indoor air) for petroleum hydrocarbons. There are limitations within the model interface and we don't have the option of adding in the adjustment factor for just one pathway for one group of chemicals. This factor will have to be added manually. It has already been added to the Tier I RBSLs/Tier II PSSLs.
Page 11	Asked why the Tier I RBSLs, Tier II PSSLs and calculated Tier II SSTLs are not applicable to a site which contains free product.	Added clarifying wording stating that RBSLs, PSSLs and SSTLs calculated using a three phase model. The model used does not take a 4th phase into account.
Page 16, Para. 1	<i>“If the Site Professional intends to apply guidelines that are less restrictive than those for the current or expected future land use, Provincial regulators must be consulted in advance.”</i> Does this mean that using the Risk Assessment Process has to be pre-approved by regulators prior to creating SSTLs or applying SSTLs?	No. The choice of a receptor type should be based on current or anticipated future land use. This statement indicates that if the site professional wants to use any guidelines (SSTLs, RBSLs, PSSLs) that are less restrictive (i.e., less conservative) than those for current or expected future land use, consultation with provincial regulators is required.

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Section 3.3.4, Page 16	States “ <i>The applicability of the Tier I RBSL Tables to sites with coarse sands and gravels should be carefully reviewed when the indoor air is a potential concern.</i> ” Can you expand on what the review should entail?	It should be ensured that the defaults with respect to the vapour intrusion pathway are applicable. If not applicable, additional assessment may include assessment of the vapour intrusion pathway (soil vapour, slab vapour, etc), or vapour permeability testing.
Page 17, Table 3	Some values in Table 3 have been changed since version 2.	Atlantic PIRI to review data and make any corrections necessary
Page 17, Table 3	Should provide guidance on what level of variance from these proportions is considered applicable, +/- 20% or perhaps present as a range of typical values	These distributions were used to calculate the Tier I RBSLs/Tier II PSSLs. They are for hydrocarbon mixtures that are commonly found in Atlantic Canada. Atlantic PIRI has not completed a sensitivity analysis on this distribution. It would be up to the site professional to review the distribution to determine which guidelines would be most applicable to the site.
Page 22, Bullet 4	Does PIRI have a suggestion of how to obtain a background environmental quality assessment if there is nothing in place provincially?	This is the decision of the site professional and/or site owner. If no data is available, and background data is required for the assessment, site professionals can create their own background study.
Page 23, 5th Bullet	Physical/Chemical Data and Toxicological Data: Why not make reference to Health Canada data in current risk models or provide other specific sources?	The hierarchy of reference sources is provided. Also toxicological data can change on a fairly regular basis and site professionals should be referring to Health Canada, CCME, Provincial jurisdictions and USEPA for the most recent data.
Page 25, Para. 2	Is it suggested that Site Professionals read additional information on Soil Vapour and Indoor Air Monitoring or is it mandatory to understand the information provided by PIRI or fill in data gaps?	This is a just recommendation for the site professional to gain knowledge in this practice area. There is still ongoing research with respect to vapour assessments and there have been several studies/guidance documents completed since the Atlantic RBCA Document was released.
Page 28, Para.1	Can you provide additional information on EPC calculation, specifically regarding the exclusion of data from the source zone and non-impacted areas?	Clarified in document.
Page 29, Para 4	The user guidance currently states “the Vertical depth in the tool kit should be left as zero unless the user can demonstrate that vertical gradients due to pumping receptor wells do not influence contaminant transport” Comment recommended to add “This is generally not a concern for well casing length > than x m”	It is the responsibility of the site professional to determine on a site by site basis if there is a concern with pumping of a well influencing contaminant transport as it depends on several factors.
Appendix 2	Recommended changes/questions relating to ecological screening assessment	No changes made as section will be amended when new ecoRBCA protocol is released.

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Appendix 3/4	How will solubility and residual saturation concentrations be used?	Added clarifying wording stating Sol/Res is an indicator of potential presence of free product. In circumstances where measured concentrations exceed these levels, the potential for the presence of free product must be specifically addressed.
Appendix 5, Table 9	Table is confusing and difficult to interpret	Table will be replaced with an exposure flowchart from the Atlantic RBCA toolkit

Public Comments: EcoRBCA Protocol (May 2012)

Reference (Page, Table, Paragraph, etc)	Comment	Atlantic PIRI Committee Response
Various	Various typos and grammar fixes required (eg. use of both "meters" and "metres", "occur" should be "occurs", etc	Corrected
Summary Table	Add signature block to summary table	This suggestion was discussed amongst the PIRI members. It was concluded that this protocol is part of the overall document to be submitted for the site and it is the overall documentation that must be signed by the designated Site Professional. It is the Site Professional that is responsible for ensuring the protocol is completed by suitable person(s). While the person completing the protocol must be noted in the actual report, it was decided that it is not necessary for them to actually sign the Summary Table.
Page 13, Ques 1	While a list of questions is provided in Part II to determine/identify habitats or receptors, it is unclear if there are specific steps or research to be conducted prior to answering the questions. For example, is an ACCDC (Atlantic Canada Conservation Data Centre) search or aerial photo review required at a minimum prior to responding?	The details of steps taken and data collected will be at the discretion of the qualified person but the information should be sufficient to support the claims made in addressing the questions. At a minimum, it would be expected that the Habitat Assessment will be based on both a literature review and qualitative/quantitative site investigation.
various	Definitions - "suitable" (eg. "suitable habitat"), "reasonable" "grasslands" "typical sediment" "other sediment" "ditches"	These terms along with their meaning have been added to the glossary.
Page 6, bullet #3	How are PAHs being addressed?	PAHs are outside the scope of this screening protocol. In the Overview section, PAHs have been added to the list of parameters that are to be addressed outside this process. There is a recommendation in the main text of the User Guidance, which advises to assess for PAHs at sites where such contaminants would be expected (eg. creosote contaminated sites, Bunker C spills, etc). This is similar to the CCME CWS User Guidance which states "Polycyclic aromatic hydrocarbons (PAH), particularly those that are considered to be carcinogenic, are assumed herein to be assessed and managed separately..." (User Guidance, 2008).
Page 9	Would there be different consideration if the adjacent land-use to the site is more sensitive than the site land use? Eg AENV and OMOE include a buffer zone on the sites were guidelines for the more sensitive land use apply.	If the contaminants have remained on-site then the site land-use is used to select the appropriate criteria. Where the contaminants have migrated off-site, then the applicable off-site land-use would be used. A buffer might be considered but contaminants should be managed so that it does not have negative effects on off-site neighboring properties.
Page 9 (and Tables 1a and 1b)	Coarse or fine-grained guidelines should be selected based on the subsurface interval that is expected to control contaminant migration and not necessarily of general soil texture	Please refer to the explanation provided in the main text of the User Guidance.

Public Comments: EcoRBCA Protocol (May 2012)

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Page 11	From the definition for "typical" it is unclear whether sediments are categorized by biological resources or by site boundaries. Would it be possible to categorize a creek inflow within a harbor as "typical" while the rest of the harbor would be "other"?	Sediment would be categorized by the biological receptors/habitats present and not necessarily site boundaries. It is possible that a stream flowing into an urban harbour would be assessed using the "typical" sediment screening levels while the urban harbour could be assessed using the "other" screening levels.
Page 13, Ques 1	Clarify the description for sensitive species to which schedule in SARA is being referenced (i.e. Schedule 1 and 3, or also 2?) How about habitat used by migratory birds?	SARA species on list 1, 2 and 3 should be considered. In addition, those species listed on provincial lists should also be included in this assessment.
Page 13, Ques 1	What is the rationale for a minimum distance of 200 meters?	This distance/inclusion zone primarily relates to the distance a typical TPH plume will travel. Eg. Shih et al. (2004) conclude that the 90th percentile of TPH plumes will travel less than 150 metres. However, practitioners are encouraged to use professional judgment when scoping in the actual distance.
Page 13, para 3	Managed green spaces such as parks are in part managed for providing habitat.	Agreed. Added a sentence on page 14 to clarify this issue.
Page 14, bullets #1,2,3	Are there any exemptions for very small areas, e.g. grassland along roads or forested areas in towns? The definition of a "small area" as less than one hectare quite substantial. Disagree than an area of one hectare does not support local populations of wildlife when considering small mammals and songbirds.	Definition provided by ASTM 2002. Provided as general guidance only and actual habitat/receptors would be assessed based on conditions present at the site. It will be at the discretion of the qualified person to decide whether the habitat is valued/significant or not but sufficient information needs to be provided in order to adequately support the position. The use of one hectare as a decision point was simply provided as a guideline, but it is agreed that there could be exceptions.
Page 14, Ques 2	It was unclear how question 2a and 2b relate to the identification of habitat as they appear to be questions that identify adverse effects of contaminants on plants.	Subtitle was added to clarify this issue
Page 14, Que 2	What are the decision criteria for determining whether soil can support a soil invertebrate community? What would constitute adequate evidence that soil cannot support soil invertebrates?	It is at the discretion of the qualified person to decide whether the soil/substrate provides suitable habitat for a soil invertebrate community but sufficient information needs to be provided in order to support the position. In absence of this, it would need to be assumed that soil invertebrates would be included as valued ecological components.
Page 16, Ques 3	Part III, question 3, is there a prescribed distance for nearby aquatic habitat for which it can be considered "reasonable" that groundwater contamination will reach the aquatic receptor? Also, this question appears to be the same as question 4b?	This section relies on professional judgment to make such determination in terms of distances and takes into consideration site specific features, conditions, etc. Eg. The paper by Shih cited earlier showing most TPH plumes travel less than 150 m would be part of this judgement. Deleted 4b, as it relates to g/w which is already addressed in Ques 3.

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Page 19	Table 1b: Soil to Protect Wildlife. Not clear about the derivation procedure for Alberta Environment, but recommend that the underlying assumptions are valid for the purpose of the EcoRBCA protocol before adopting these.	Based on the supporting documentation provided by AENV (2011), the soil guidelines for the protection of wildlife (birds and mammals) should be suitably protective of equivalent receptors in Atlantic Canada. The general approach considered exposure pathways associated with the incidental ingestion of soil and the ingestion of contaminants that have bioaccumulated from soil into fodder. However, since it was assumed that neither BTEX nor PHCs accumulated in either plants or animals, only the soil ingestion pathway was included. The livestock parameters used a cow as a surrogate receptor, while the wildlife parameters were based on the meadow vole. The approach for calculating the soil remediation guideline followed standard practice (CCME, 2006) with the only modifications being the use of 0.75 as an allocation factor in recognition of the fact that the receptor might be exposed to contaminants from other sources. For all of the PHC-based compounds, the bioavailability was assumed to be 1. Based on this information, the approach and each of the assumptions were deemed to be valid for the purpose of the EcoRBCA protocol.
Page 20-21	Table 3a: add footnote about HC5. Table 3b: add footnote that alerts users to the limitations of the table if a preferential pathway exists.	Added a footnote to Table 3b in terms of cautions when preferential pathways exist.
Appendix A	Summary Table: Part i: questions 2 and 3 are not as clear as in the main body	Modified text in the table to be more analogous to the text in the actual protocol.
General	Comment period for such a substantial document was too short.	This abbreviated review period was such that Atlantic RBCA Version 3, including this Eco Protocol as an appendix, could be released in an efficient and timely manner. The shorter review period was also based on other Atlantic PIRI projects and schedules.
General	What was the driver for such a change to the RBCA process?	To date, Atlantic PIRI has provided screening levels to assess potential risks to human health. There were no ecological based criteria against which to assess risk to ecological receptors or habitat. This enhanced process now provides such eco-based screening levels and will ensure that sites are assessed for both risks to human and the environment. The CCME's Canada Wide Standards for Petroleum Hydrocarbons, to which all 4 Atlantic provinces are signatories, provides criteria and guidance related to environmental health. In order to ensure achieve the goal that requires the overall RBCA process to be "equal to or better than" the CWS approach, the Protocol now includes eco-based screening levels and additional guidance on how to evaluate a site in terms of potential risks to the environment. This enhanced ecological screening protocol is consistent with other practices across Canada.

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Page 7, bullet #2	<p><u>Site Professionals and those completing the Protocol.</u> Is there a requirement that a biologist/natural resource personnel review the screening document as well as the site professional? How would it be determined that rare, threatened or endangered species may use a site, e.g. is there a requirement for a site visit by a professional biologist, a database of sightings that should be consulted, etc. The qualifications being considered are different than those often used in the respective jurisdictions for "Site Professionals". May be differing opinions among site professionals about the required qualifications resulting in inconsistencies of approach and skill sets.</p>	<p>See page 7, bullet 3. "The ecological screening protocol should be completed by individuals familiar with, and experienced in, ecological assessment and/or ecological risk assessment. Regulatory authorities may specify qualifications for persons completing this ecological screening at petroleum hydrocarbon impacted sites. Unless otherwise specified by Provincial requirements, it is recommended that Site Professionals ensure that the ecological screening protocol be completed by suitably qualified individuals who have training and experience in such disciplines as ecological risk assessment, environmental toxicology, environmental biology, ecology and related disciplines." The Protocol provides this list of skills of those that could complete the protocol. The questions listed in Part II are verbatim from the current Version 2 ecological checklist so presumably those that completed the checklist in the past were able to identify species at risk, rare and threatened species, etc.</p>
General	<p>How are spill situations treated?</p>	<p>The application of this protocol and the overall RBCA process is at the discretion of the provincial regulators. Direct consultation with individual regulators is encouraged in terms of spill scenarios.</p>
Page 9, Ques 1	<p>Confusion in terms of data to be used and/or collected because of the phrase "existing site characterization data". Suggests data must be obtained in order to complete the screening.</p>	<p>The protocol now references Appendix 1 of the User Guidance which provides the Best Management Practice (BMPs) in terms of sampling requirements. There are now a few additions to these BMPs that recommend surface water sediment sampling if contamination of these media are suspected.</p>
General	<p><u>Increased assessment (sampling requirements, etc.) and remediation costs.</u> General concerns were raised about the possible increase in assessment/sampling costs. There were specific concerns raised regarding sediment sampling, as typically sediments has not been assessed as part of the RBCA process. Concerns about sediment sampling included: cost, complex process, difficulty in determining possible sources of TPH, background concentrations, delineation, etc. There was also a concern that there may be increased costs if sites had to be remediated to the sometimes more stringent ecologically-based criteria.</p>	<p>This revised ecological screening protocol improves on existing standards. It formalizes a process that is currently ongoing by providing Site Professionals and those involved with site assessment with the tools to ensure a consistent evaluation of potential risks to the environment as a result of exposure to petroleum hydrocarbons. Currently, if the ecological screening checklist in Version 2 identifies possible habitat on or near the site, Site Professionals and practitioners are required to draw upon screening levels from various other jurisdictions (eg. CCME for soil, Alberta Env for groundwater) or there are no screening levels available (eg TPH in sediment). By providing a single set of screening levels, Site Professionals will consistently assess sites across the Atlantic provinces for potential risks to the environment. The protocol provides practical guidance to both practitioners and clients to determine if there is indeed a requirement for further site assessment. If further assessment deems that there is a risk the environment, remedial measures will be required to mitigate those risks.</p>

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General	There seem to be many "outs" in the screening protocol. Consideration could be given to add a "management limit" as in the Canada-wide standards, which specifies to what level a site needs to be cleaned up even when all pathways have been screened out.	The human health-based Risk Based Screening Levels (RBSLs) would apply, even if all the ecological pathways have been screened out. Comment has been added to delineation section on page 17, in terms of RBSLs.
Page 11	A recent decision in BC now considers all man-made ditches with the primary purpose of conveying irrigation and storm water not an aquatic receiving environment (unless a species at risk is present), as biota would be removed during regular maintenance and the material would likely be deposited on land. Therefore, soil standards apply.	Thank you for this information. The four provincial environment departments each manage such issues differently and they are now aware of this recent development in BC.
Page 14, Ques 2a	Stressed vegetation - some sites require vegetation management program to ensure adequate operation. This may result in stressed vegetation but not as a result of petroleum impacts.	This issue speaks to land-use operations and such rationale would be included as part of completing Part II and/or Part III.
	Is only current use considered, or also a future land use scenario?	The overall RBCA process considers current land uses and reasonably foreseeable future land uses.
Page 19, Table 1a	Are the coarse and fine soil types representatives for the soil types encountered on the majority of your sites? BC had some reservations adopting these standards as none of our soils are isotropic, and therefore based all standards on the more conservative coarse soils.	RBCA User Guidance provides information on the two soil types and will continue to use these designations.
Page 19, Table 1a	Land uses defined? What about parks, mine sites, vacant lots, campgrounds, etc.?	RBCA User Guidance provides land use definitions based on the CCME land use definitions.
Page 19, table 1a	Active commercial or industrial sites, with paved or gravel parking lots which surface soils are not likely to support any ecological habitat. Would these soil ecological screening levels be applied?	Such sites are not specifically excluded. Part III deals with "suitable habitat" and rationale provided in this section that could conclude that certain habitats would not be "suitable habitat" for soil invertebrates or plants.
Page 20	PETROTOX is not an appropriate model for this application. The resulting trigger levels represents a significant reduction in Tier 1 standards compared to CCME levels.	Perhaps a specific discussion with this reviewer about PETROTOX and the resulting ecological screening values would be of benefit. We would respectfully disagree with the reviewer's general comment but are certainly open to discuss the merits and limitations of the PETROTOX model.

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Page 21	The coarse soil groundwater standards in table 3b are higher than the fine soil standards for the BTEX compounds. Conversely the coarse soil groundwater standards are lower than the fine soil standards for the gasoline, diesel and lube oil groups. This is consistent with CCME but counterintuitive. It may be worthwhile to provide an explanation for the different behavior of the BTEX and other groups in different soil types.	The flip in behavior between the coarse and fine grained soils is the product of two competing processes involved with the predicted time for the chemical to reach the point of compliance (POC). Where time is not limiting (BTEX compounds), the contaminant concentration is mitigated by mechanical dispersion which is a function of the velocity. Since the contaminant will have a higher velocity through coarse soil, the dispersion is greater and the resulting groundwater standard is higher then for the fine-grained soil. Where the contaminant takes >100 years to reach the POC (F1 to F4), the focus shifts to the retardation factor. When biodegradation is ignored, this is influenced primarily by the contaminant adsorption to soil particles. Adsorption is greatest with fine-grain soils , so the resulting groundwater is higher for these soils when compared to the coarse-grained soils. Additional information regarding the Domenico 2-D and 3-D models can be found in associated references
Page 7	Page 7 states that sites could be excluded from further ecological assessment even if there are concentrations of TPH in exceeds of the screening levels if Parts II and III indicate that there are non-operable pathway, no receptors nearby, etc. However, its felt that even by the reviewer that exceeding some of these screening levels, there is an expectation/legal requirement, etc. that the site will be then be considered "contaminated", at least by NS definition.	Designation of a site as "contaminated" per the various provincial regulatory regimes is outside the scope of this Protocol. Discussions with individual regulators is encouraged.

Public Comments: EcoRBCA Scientific Rationale for Tier 1 Screening Levels (May 2012)

Reference (Page, Table, Paragraph, etc)	Comment	Atlantic PIRI Committee Response
General	Various typos and grammar fixes required (eg. use of both "Foc" and "foc", species names to be italicized, units are missing in some tables. etc.)	Corrected
Page 2	Add Table of Contents	Added
Page 35, Table 14	Footnotes in tables with new abbreviations would be useful (e.g. Table 14 "static" and "static-renewal").	Amended
General	Ontario Ministry of Environment inconsistently referenced as MOE and OME. Use of MOE is confusing with MOE of other provinces.	Done
Page 16, Table 6	What is the reference for the groundwater LC50's in Table 6?	Done, CCME reference provided.
Table 1a, footnote	Rationale states it is easy to convert between CWS and RBCA fractions and that such wording should be verified with the lab.	James MacDonald, Maxxam, provided comments. Amendments to Tables 1a and 1b have been made, based on these comments.
Page 17, Table 6a	CCME considers F3 and F4 to be insoluble however in the experience of SNC, detectable concentrations F3 and F4 can be identified. Given the low freshwater aquatic life values for surface water, this could be an issue in groundwater discharging to surface water.	Yes, the surface water screening levels for the #6/lube is set at the method detection limit. Maybe an issue, particularly if the sample is turbid. Will have to discuss further although the actual screening level is still valid.
Page 13	Why was an HC5 for algae selected rather than a typical 20th or 25th percentile? Was the CCME approach such as species sensitivity distribution (SSD) considered?	The HC5 was selected from a species sensitivity distribution generated using Petrotox. The 5th percentile was associated with an algal species but it was not selected specifically, as suggested. The 5th percentile was chosen over a 20th or 25th percentile in order to be consistent with the approach used by Environment Canada.
Page 14	It is understood why the authors consider toxicity benchmark values for PHCs and BTEX to apply to both marine and fresh water however it may be more appropriate to use relevant seawater test species to identify marine benchmarks or provide additional documentation	Agreed. Future validation testing will include marine water organisms.
Page 13	When selecting toxicity studies for the derivation of site criteria, study quality considerations are made. It does not appear that the studies used to derive the criteria were evaluated against a series of requirements (eg statistical power, peer vs non-peer reviewed sources, etc). It may be worthwhile summarizing the studies considered and how the studies were selected as suitable.	In compiling the CONCAWE database used in the PETROTOX model, the data was appropriately scrutinized. Details of this are provided in the PETROTOX Users Manual, available at: http://www.concawe.be/Content/Default.asp?PageID=778
Page 15	It may be useful to solicit Environment Canada's review of the approach to setting groundwater benchmarks.	EC Enforcement was consulted.
Page 3	Rather than converting between F1-F4 and RBCA fractions in soil tables, would prefer to have all F1-F4 for all media.	Thank-you. However, RBCA is a product-based approach so EcoRBCA has taken the same philosophy.

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Reference (Page, Table, Paragraph, etc)	Comment	Atlantic PIRI Committee Response
Page 4	Is "natural areas land use" (page 4) defined in the document? It does not appear separately in any of the tables. What soil screening values are applied in natural areas?	Default to most conservative soil screening values. Term is now in the glossary.
Page 3	Soil screening levels for TEX are higher than BC environmental protection (soil invertebrates & plants) standards. Were the soil standards from different jurisdictions compared and evaluated? This would be valuable information in the technical appendix as a rationale for choosing CWS and AE.	For soil, it was decided to select CCME criteria where possible. Other sources (eg Alberta) were selected if no CCME criteria were available. Did not see the need to compare CCME values to other jurisdictions. (For water, both surface water and groundwater, PETROTOX was the selected process. Comparisons for both surface water groundwater of the PETROTOX-generated values and other jurisdictions was done because the PETROTOX values are "new" and it was done to see how such levels compared to other jurisdictions.)
Page 10	More detailed clarification on the conversion from loading to WAF would be helpful.	The details of the Petrotox model can be found in the User Guide that accompanies the software, available at: http://www.concawe.be/Content/Default.asp?PageID=778
Page 9	Ecological protection goal of the surface water screening levels was higher as they are set for contaminated sites. It would be useful to add information on what surface water is considered to be part of contaminated sites, i.e. only surface water on-site, or surface waters within X meters of a contaminated site.	From an ecological perspective, there are no boundaries and protection would be the same regardless of being on-site or off-site.
Page 21-22, Tables 7 & 8	Comparison of BC MOE Schedule 6 values to the ecological screening levels may not be a valid approach to support the PETROTOX values, as Schedule 6 only applies to groundwater at least 10 meters away from an aquatic receiving environment. Within the 10 meter distance the more conservative BC WQGs apply.	Thank you for this information. The Schedule 6 standards have been removed from Tables 7 and 8 (which are surface water criteria) and are now included in Table 9 (groundwater criteria). The text has also been adjusted accordingly.
Page 27	Sediment porewater is mentioned as a media for which no guidelines exist. This is incorrect. Sediment porewater is compared to the Canadian Water Quality Guidelines for Aquatic Life under the interim federal groundwater guidelines, and to BC WQG in British Columbia.	No suggestion that there are no sediment porewater standards; perhaps reviewer mis-read the text.
Page 28	TPH concentrations in urban sediments relative to screening levels are briefly mentioned. Is there a background release for sites in those urban zones?	Not at this time.

Public Comments: EcoRBCA Scientific Rationale for Tier 1 Screening Levels (May 2012)

Reference (Page, Table, Paragraph, etc)	Comment	Atlantic PIRI Committee Response
Page 30, Table 12	Typical sediment screening levels are very low. Is there any concern about how many sites will be captured by adopting such low levels for contaminated sites purposes? You may want to restrict your definition for "typical sediment" further. For example, it currently reads "important to the preservation of fish" which would capture almost all sediment sites.	Defined in glossary. Approach will be to screen all sediment as typical unless site conditions are such that the "other" category is acceptable.
Page 31	The literature review has missed a number of significant studies including those completed after the Exxon Valdez spill.	We will revisit the sediment TPH screening levels as new data becomes available. This may also include conducting further toxicity testing, in cooperation with other stakeholders (both freshwater and marine tox tests).
Page 33	What was the composition of the formulated sediment based on? Did it meet the particle size requirements of the test protocol? It contains a large proportion of sand, while it is known that test organisms interact less with the larger particles.	The sediment toxicity tests were conducted using artificial sediment created by following OECD Method 218 (OECD 2004). The tox tests followed Environment Canada's Biological Test Method EPS 1/RM/33 and Environment Canada's Biological Test Methods for Chironomid spp. Environment Canada 1997b; EPS 1/RM/32.
Page 33	Sediment toxicity was conducted with <i>Hyalella</i> that interact primarily with overlying water. It is recommended that sediment toxicity with an organism in closer contact with the sediment is also evaluated (e.g. juvenile mussel test).	Further validation of the sediment values is pending.
Page 14	It is unclear if values were derived for freshwater only, or both freshwater and marine environments.	The mode of action (narcosis) is the same for marine/freshwater organism therefore the criteria can be applicable to both marine and freshwater ecosystems. Any further validation will include a marine species.