

NJDEP Technical Guidance Document Review Form

Document: "Ecological Evaluation Technical Guidance Document Version 2.0"

Comment Period: February 6, 2018 to March 6, 2018

Committee Chairperson: Nancy Hamill

Comment #	Page	Section	Subsection	COMMENTS	RESPONSE
1	8	2	Purpose	Purpose Section - second to last (new) paragraph - The word "managed" in the first sentence should be further clarified to state that "management" may include, but is not limited to, treatment, removal or containment in place as practicable. Additionally, a statement should be added to acknowledge that the remedy selection should be made at the discretion/judgment of the LSRP based on their understanding of the conceptual site model for system of interest.	The committee believes the word "managed" is clear and the two paragraphs are not related. The terms treatment, removal, containment in place, etc. are included in the last paragraph of this section as they relate to NJAC 7:26E 5.1 e, hence, these terms do not need to be added to the beginning of paragraph. An additional statement to acknowledge that remedy selection is at the discretion of the LSRP is not needed as that concept is embodied in the SRRA.
2	8	2.0		The word "pollutant" has been used in the clarification of what pollutants consist of. Suggest using a different term to clarify pollutant, such as material or constituent.	The definition was taken verbatim from N.J.S.A. 58:10A-3, Water Pollution Control Act, and as such, will remain unchanged.
3	9	2.0	--	The last two paragraphs that the Department has proposed for addition to Section 2.0 are not relevant to the ecological guidance document. The LSRP or other environmental professional's management of potential pollutant discharges is regulated under multiple statutes and regulations and several guidance documents are available. As such the additional two paragraphs are extraneous. It is recommended that these two paragraphs be removed.	The Committee disagrees. As stated by the reviewer, these additional paragraphs cite existing regulations. As these site-related pollutants may be located in ENSRs, it is important that they be addressed in parallel with the EE and ERA; their inclusion in this guidance is warranted to insure this takes place.
4	12	4	NA	<p>Regarding the "Biotic Zone" definition, although 0-6" below ground surface (bgs) is standard for consideration of the biotic zone of soils, the variability in surface waters and nature of sediments makes that depth interval much less consistent for sediments. Additionally, exposure to burrowing animals is more likely due to life history attributes of the burrowing animals than to the depth of the biotic zone, and would not normally be a consideration in determining the depth of the biotic zone. Please consider revising the last sentence to read as follows:</p> <p>"This zone is generally related to the 0-6" interval for both sediments and soils, however, it may be less than 6" or it may extend to deeper intervals in certain habitat settings."</p>	<p>The definition has been modified to provide clarity for the biotic zone depth. However, in accordance with Section 3.3 of the <i>Technical Guidance for Site Investigation of Soil, Remedial Investigation of Soil, and Remedial Action Verification Sampling for Soil</i>, discrete 6-inch samples are required. If samples other than 6-inch are needed due to logistical conditions, then justification is required.</p>

5	12	4		The definition of "Biotic Zone" does not include any information from the USEPA's 2015 "Determination fo the Biologically Relevant Sampling Depth for Terrestrial and Aquatic Ecological Risk Assessments" (EPA/600/R-15/176), which broadens the definition of Biologically Active Zone (BAZ) for soil to include the "O" and "A" horizons, and allows for site-specific soil depths from 10cm to 30cm, with a default depth of 25-30cm.	The EETG definition has been modified. While perhaps more general than EPA's definition, it does not conflict with basic principles established in USEPA 2015. The USEPA 2015 document is 75 pages long, making it impossible to include all information in a general definition as intended by NJDEP.
6	12	4.0		It is recommended that the biotic zone for soil be extended to 25-30 centimeters, as recommended in <i>Determination Of The Biologically Relevant Sampling Depth For Terrestrial And Aquatic Ecological Risk Assessments</i> (EPA/600/R-15/176 ERASC-015F October 2015).	The EETG definition has been modified; however, it had already acknowledged that the biotic zone may extend deeper than 0-6."
7	16	4	Definitions	The definition of "sediment" is sufficient for the general understanding of the term, but further clarification may be useful (in an appropriate section) in the context of the biotic zone and ecological evaluation. As defined, the "consolidated" substrate beyond the biotic zone is not sediment and is not ecologically relevant in aquatic systems, if contaminant migration pathways do not exist. For the purposes of vertical delineation/characterization beyond the "sediment" layer or the biotic zone (whichever is thicker), a clarification will be beneficial with respect to the appropriate ecological screening benchmarks (sediment vs. soil) to use, if any.	In an aquatic setting, delineation (horizontal & vertical) is required to the appropriate sediment-based screening value, regardless of consolidated/unconsolidated. The soil screening criteria would not be used. The soil screening values would only be used in a more typical terrestrial upland or wetland soil setting absent of benthic macroinvertebrates.
8	16	4.0		The definition of sediment has been changed to include "All unconsolidated material below a waterbody..."; it is requested that the extent of sediment in an ecological context be left to the judgement of the investigator (e.g., the biotic zone). While the sediment environment can be subject to change more frequently than soils, it should be clarified that deeper sediments that are essentially parent material as distinguished from the relatively recent, shallow biotic zone sediments, and not representative of an exposure zone.	The definition of sediment is not directly tied to the depth of the biotic zone as described by the reviewer. The biotic zone is defined separately in the EETG. The reviewer's comment regarding sediment in a <i>ecological context</i> including factors such deeper sediments, parent material vs. shallow sediments, etc. is acknowledged. The sediment definition does not preclude the investigator from addressing these factors in the context of an EE or ERA.
9	16	4	NA	The definition of "sediment" is sufficient for the general understanding of the term, but further clarification may be useful (in an appropriate section) in the context of the biotic zone and ecological evaluation. As defined, the "consolidated" substrate beyond the biotic zone is not sediment and is not ecologically relevant in aquatic systems, if contaminant migration pathways do not exist. For the purposes of vertical delineation/characterization beyond the "sediment" layer or the biotic zone (whichever is thicker), a clarification will be beneficial with respect to the appropriate ecological screening benchmarks (sediment vs. soil) to use, if any. It is requested that the extent of sediment in an ecological context be left to the judgement of the investigator (e.g. the biotic zone). While the sediment environment can be subject to change more frequently than soils, it should be clarified that deeper sediments that are essentially parent material are distinguished from the relatively recent, shallow biotic zone sediments, and not representative of an exposure zone.	
10	18	4	4	Please consider the following definition (from ASTM documents) : Sediment - A matrix of pore water and particles including gravel, sand, silt, clay and other natural and anthropogenic substances that have settled at the bottom of a tidal or non-tidal body of water.	The definition has been modified.

11	25	5.3.4	The section states that a minimum of 3-5 soil samples should be collected for background. The middle of the third full paragraph discusses the number of background samples and mentions using the 95%UCL rather than the mean. USEPA's ProUCL software (likely the most commonly used software for determining UCLs) requires a minimum of 8 samples to derive the 95% UCL. While 3-5 samples may be the minimum acceptable number, for a more appropriate background data set, the document should state that it would be preferable to collect 8 or more samples.	
12	27	5	3.4	While the minimum number of samples (for surface water, sediment, and soil) recommended is three to five, much of the discussion on the use of statistics (e.g. 95% Upper Confidence Limits (UCLs) and outlier evaluations) for the calculations and use of the background concentrations is predicated upon achieving a sufficient sample size (e.g. n=7). It is unclear when a larger sample size may be considered or recommended so that these statistical approaches can be used.
13	27	5	3.4	While the minimum number of samples (for surface water, sediment, and soil) recommended is three to five, much of the discussion on the use of statistics (e.g. 95% UCLs and outlier evaluations) for the calculations and use of the background concentrations is predicated upon achieving a sufficient sample size (e.g. n=7). It is unclear when a larger sample size may be considered or recommended so that these statistical approaches can be used. For example, the Compliance Attainment guidance document limits the number of samples to be averaged at nine, but the use of the 95% UCL is generally more than 20.
14	27	5.3.4		The document recommends three to five background locations, rather than ten locations which EPA recommends. Further, as per comments above regarding the soil biotic zone, it is recommended that background soil samples be collected from the top 25 - 30 cm, rather than the zero to six-inch depth interval.
15	27	5	3.4	More description should be added to explanation of what constitutes similar structure of background area locations.

16	27	5	3.4	Why would it be inappropriate to select a background location that is not "directly influenced by or in proximity to other obvious sources of contamination (e.g. other contaminated sites, sewer and storm-water outfalls, tributaries, and other point and nonpoint source discharges)"? It may be critical to collect background samples from these types of locations when they are located immediately upstream and are the suspected source for COPECs detected adjacent to or on the property. I suggest selecting from both types of background locations.	The reviewer is referring to off-site sources, which differ from background conditions. Collection of additional source data is not inappropriate to determine off-site source contribution, but is outside of the background sample collection.
17	27	5	3.4	It is unclear why background samples for ecological evaluation would need to be collected at depth intervals beyond 0-6" (beyond the biotic zone). Further clarification with specific examples may be useful in considering when to collect background samples at these depth intervals.	In accordance with Section 3.3 of the <i>Technical Guidance for Site Investigation of Soil, Remedial Investigation of Soil, and Remedial Action Verification Sampling for Soil</i> , discrete 6-inch samples are required. If samples other than 6-inch are needed due to logistical conditions, then justification is required. It is not clear if the reviewer is referring to the paragraph on soils or sediment. Soil biotic zone is considered at least 1 foot as earthworms will burrow up to that depth and burrowing mammals may burrow even deeper. Sediment is important as many sediment systems are dynamic in nature and may be subject to erosion or dredging. In addition, the text also states "other intervals as appropriate to correspond to site-related samples" and "other six-inch intervals as appropriate." It would be difficult to list all possible scenarios. The language referring to sample depth remained unchanged from the previous edition.
18	27	5	3.4	It is unclear why background samples for ecological evaluation would need to be collected at depth intervals beyond 0-6" (beyond the biotic zone). Further clarification with specific examples may be useful in considering when to collect background samples at these depth intervals.	
19	27	5.3.4		Ait is noted that background contaminant concentrations should be delineated for each contaminant of concern. Verify that all contaminants are considered, rather than just inorganic contaminants.	The committee believes the reviewer means that contaminants should be delineated to background. Background contamination may result from naturally occurring elements, or from diffuse anthropogenic precipitation. Therefore, background contamination may consist of both inorganics and organics.
20	28	5.0	3.4	It is unclear what "NJDEP 2015" is referring to. If "NJDEP 2015" is referring to the current (February 2015) version of the ecological guidance document, why would a new guidance document reference an old guidance document? It is recommended that these references be clarified.	In the reference section of the <i>Ecological Evaluation Technical Guidance</i> is the following: NJDEP. 2015. <i>Technical Guidance for the Site Investigation of Soil, Remedial Investigation of Soil, and Remedial Action Verification Sampling for Soil</i> , March 2015 http://www.nj.gov/dep/srp/guidance/srra/soil_inv_si_ri_ra.pdf
21	28	5	3.4	The paragraph related to Reference data needs to be revised because appropriate Reference Areas may have some degree of contamination. Specifically, the following sentences should be deleted: "Reference data should never be collected from contaminated areas, which would translate to using contaminated controls and which could result in flawed evaluation of site data. Specifically, if ERA biological data are compared with data from reference areas with elevated contaminant concentrations, elevated risk in the study area could be inappropriately diminished and/or specific contaminants could be inappropriately disregarded." Recommend the following revised text, "Reference data should not be collected from contaminated areas, if possible. If ERA biological data are compared with data from reference areas with elevated contaminant concentrations, then conclusions should be interpreted so that potential risk in the study area is not inappropriately diminished and/or specific contaminants inappropriately disregarded. In some cases, where suitable reference areas are limited, use of multiple reference areas could be employed."	This language remains unchanged from the previous version. As stated in the last sentence, "if a suitable reference area cannot be found, use of multiple reference areas could be employed." This may be necessary if one reference area is impacted by one site-related COPEC, and another area is impacted by a different site COPEC. Also, the laboratory controls for toxicity tests may be used if a suitable, uncontaminated reference area(s) cannot be located.

22	28	5.3.4		The last sentence in this section notes that "If a suitable reference area cannot be found, use of multiple reference areas could be employed." This statement is confusing and further clarification should be provided. Specifically why wouldn't one of the "multiple" reference areas be used instead?	
23	28	5	5.3.4	Background section is much improved. Please consider referring to USDON 2003 guidance on background, often cited by USEPA: https://www.navfac.navy.mil/content/dam/navfac/Specialty%20Centers/Engineering%20and%20Expeditionary%20Warfare%20Center/Environmental/Restoration/er-pdfs/gpr/navfacesc-ev-ug-2054-env-bkgrd-seds-200304.pdf	The committee believes that the revised background section appropriately supports performance of the EE and ERA objectives. If the investigator wishes to use methodologies used in USDON 2003 or other references, they will be considered with adequate justification.
24	29	5.0	3.4	New language in Section 5.3.4 states "The background dataset should be examined for outliers (NJDEP 2015, Section 4.2), and any outliers should be removed from the dataset prior to performing statistical analysis or comparing to the site dataset." It is recommended that a sentence be added that states that it may be appropriate to remove outliers and/or hot-spot data from the site dataset prior to performing statistical analysis or comparing to the background dataset.	Hotspots are addressed in Section 6.4.4 of this document. Site data and statistics are addressed in Section 5.2.2 and 5.3 of this document. NJDEP. 2015. <i>Technical Guidance for the Site Investigation of Soil, Remedial Investigation of Soil, and Remedial Action Verification Sampling for Soil</i> , March 2015 does not consider outliers in samples other than background samples. Therefore, the EETG will not differ from this guidance.
25	49	6	1.3.3	The ability to deviate from the summarized approach for developing TRVs by proposing an alternative TRV is appreciated as long as valid TRVs that are supported by science are actually approvable. In many cases, this flexibility is provided in theory but not in reality.	Comment noted.
26	49	6	6.1.3.3	Tier I: It is understood that the use of the Tier I Toxicity Reference Values (TRV) would be unconditionally accepted by the NJDEP but may be used as a conservative screening tool. Please consider supplementing the text to indicate that the Tier I TRV are not considered as mandatory, and represent one of three TRV selection criteria.	The three tier approach already makes this clear.
27	49	6	6.1.3.3	Tier II: Per Tier III requirements, note that the Lower Passaic River study by Culp, et al (2000) for High Molecular Weight PAHs was among those rejected by the USEPA. The Department should consider the use of an alternative TRV (e.g., Tier II EcoSSL) for any based on rejected studies, as required by the Tier III TRV guidance.	The language in the third tier is "caution should be used to be sure these literature sources were not reviewed and rejected by USEPA during derivation of the Eco-SSLs." This language does not prevent sources from being used if they are appropriate and applicable.
28	50	6	1.3.3	Per Tier III requirements, note that the Lower Passaic River study by Culp, et al (2000) for High Molecular Weight Polycyclic Aromatic Hydrocarbons (PAHs) was among those rejected by the USEPA. Please consider the use of an alternative TRV (e.g. Tier II Eco-SSL) for any based on rejected studies, as required by the Tier III TRV guidance.	
29	49	6	6.1.3.3	Tier III: For literature-derived TRV, it is recommended that the NJDEP develop a publically accessible database of TRVs approved by the NJDEP for various sites.	Comment noted. NJDEP will consider this for the future.

					Comment noted. NJDEP will consider this for the future.
30	50	6	1.3.3	Tier III: For literature-derived TRVs, it is recommended that the NJDEP develop a publically accessible database of TRVs approved by the NJDEP for various sites.	
31	50	6	1.3.3	While the NJDEP allows use of Toxicity Reference Values (TRVs) with justification, three tiers of TRVs are provided; however, the specific purpose of these tiers is not clear. The tiers appear to represent the level of confidence that the NJDEP has in the TRVs and, hence, the likelihood of their approval. The tiers also appear to represent a hierarchy for the selection of TRVs and the approaches to refine the TRVs at different tiers of ecological evaluations. Further clarification is required in the recommended approaches for the selection and/or refinement of the TRVs.	The tiers do represent a level of confidence, which will facilitate the selection, review and approval process. TRVs are only used in ERA, not EEs.
32	50	6	1.3.3	While the NJDEP allows use of TRVs with justification, three tiers of TRVs are provided; however, the specific purpose of these tiers is not clear. The tiers appear to represent the level of confidence that the NJDEP has in the TRVs and, hence, the likelihood of their approval. The tiers also appear to represent a hierarchy for the selection of TRVs and the approaches to refine the TRVs at different tiers of ecological evaluations. Further clarification is required in the recommended approaches for the selection and/or refinement of the TRVs.	
33	50	6	1.3.3	Requiring use of the Passaic River Focused Feasibility Study (FFS) TRVs as Tier 1 TRVs presumes that the FFS TRVs are appropriate for use at all sites, which may not be true. First, the FFS TRVs were developed for specific receptor species (great blue heron and mink) which may or may not be appropriate receptor species at other sites. Second, as demonstrated by the number of comments on the FFS TRVs that the USEPA received during the FFS public comment period, there is considerable professional disagreement on the appropriateness of the FFS TRVs. Specific criticisms of the FFS TRVs included: (1) use of extrapolation factors to develop benchmarks lower than effect concentrations reported in the literature; (2) use of field studies to derive TRVs where cause-effect relationship between chemical and non-chemical stressors and adverse effects difficult to identify; (3) use of chicken reproductive data when accepted that chickens are overly sensitive to certain Contaminants of Concern (COCs) and, therefore, that chickens are not suitable for estimating effects in native populations; and, (4) use of lab exposures involving topical applications and gavage exposures not relevant to estimating field conditions. The ecological risk assessor should be allowed to use professional judgment to determine which TRVs are appropriate for a site given site-specific receptors and conditions.	

34	50	6	1.3.3	<p>Default TRV screening values may be useful for a preliminary ecological screening model; however, the use of the values applied to the Lower Passaic River for all ERAs seems to negate the whole premise of a site-specific ERA. ERAs are meant to be site-specific, allowing the technical expert to apply professional judgement based on their knowledge of site conditions. It would seem that application of values applied to the Passaic River for all ERAs defeats this purpose. If default TRVs are going to be provided for use by the risk assessor, default TRVs for all constituents that present a food chain transfer concern should be made available instead of only constituents that present an ecological concern within the Passaic River. Additionally, any default TRVs provided by the Agency for use in an ERA should consider other major sediment sites throughout the United States in the development of the values, and all rationale and basis for their selection should be provided especially if the risk assessor is required to provide justification of alternate non-default values.</p> <p>It is understood that the use of the Tier 1 TRVs would be unconditionally accepted by the NJDEP but may be used as a conservative screening tool. Please consider supplementing the text to indicate that the Tier 1 TRVs are not considered as mandatory, and represent one of three TRV selection criteria.</p>	<p>There are three (3) options available for TRV selection, which have been designated as "tiers," and any may be used. The first tier TRVs are not required; however, if they are used, there will not be further scrutiny in the Component Review process. Use of other TRVs is allowed, thus the tiered approach. Further, the TRVs were not developed for specific receptors, but rather for the general mammalian and avian receptor groups. The exposure factors in the numerator of the HQ and PRG equations reflect site-specific exposure. Even with comments received by USEPA for the Passaic TRVs, they were vetted and approved by all partner agencies for the ROD. As reference doses for contaminant-receptor pairs, the TRVs are applicable to any avian or mammalian receptor, regardless of geographic locations.</p>
35	50	6	1.3.3	<p>Default TRV screening values may be useful for a preliminary ecological screening model; however, the use of the values applied to the Lower Passaic River for all ERAs seems to negate the whole premise of a site-specific ERA. ERAs are meant to be site-specific, allowing the technical expert to apply professional judgement based on their knowledge of site conditions. It would seem that application of values applied to the Passaic River for all ERAs defeats this purpose. If default TRVs are going to be provided for use by the risk assessor, default TRVs for all constituents that present a food chain transfer concern should be made available instead of only constituents that present an ecological concern within the Passaic River. Additionally, any default TRVs provided by the Agency for use in an ERA should consider other major sediment sites throughout the United States in the development of the values, and all rationale and basis for their selection should be provided especially if the risk assessor is required to provide justification of alternate non-default values.</p>	

36	53	6	1.3.3	<p>Default TRV screening values may be useful for a preliminary ecological screening model. However, the use of the values applied to the Lower Passaic River for all ecological risk assessments (ERAs) seems to negate the whole premise of a site-specific ERA. ERAs are meant to be site-specific, allowing the technical expert to apply professional judgement based on their knowledge of site conditions. It would seem that application of values applied to the Passaic River for all ERAs defeats this purpose. If default TRVs are going to be provided for use by the risk assessor, default TRVs for all constituents that present a food chain transfer concern should be made available instead of only constituents that present an ecological concern within the Passaic River. Additionally, any default TRVs provided by the Agency for use in an ERA should consider other major sediment sites throughout the United States in the development of the values and all rationale and basis for their selection should be provided especially if the risk assessor is required to provide justification of alternate non-default values.</p>		
37	50	6	1.3.3	<p>Ecological Risk Assessment (ERA) is a quantitative assessment of the actual or potential impacts of Contaminants of Potential Ecological Concern (COPECs) from a contaminated site on wildlife and plants, and an ecological risk assessor performs this quantitative assessment. The NJDEP states that utilizing the Tier 1 TRVs will not be subject to further scrutiny during the Site Remediation & Waste Management Program's inspection and review process if selected and used in the ERA. This removes the ecological risk assessor's ability to use professional judgment in the selection of the TRVs and will lead to more stringent remediation goals for a site that may be outside of the Lower Eight Miles of the Passaic River.</p>	<p>The third tier precisely provides the selection of TRVs based on professional judgement.</p>	
38	50	6	1.3.3	<p>For a contaminated site that utilizes the Tier 1 TRVs for all contaminants, the ecological risk assessor demonstrates that all exceedances of the Tier 1 TRVs are also above background/reference levels and concludes that no further ecological evaluation is required; will the NJDEP accept the conclusions of the LSRP?</p>	<p>The reviewer appears to be confusing TRVs with ecological screening criteria; however, if background contaminant concentrations in the site media is greater than calculated site-specific cleanup goals (based on calculations utilizing TRVs), then remediation would only be conducted to the background levels.</p>	
39	50	6	1.3.3	<p>Are ERAs that were submitted to the NJDEP to comply with the May 2014 and May 2016 statutory timeframe for Remedial Investigation which utilized TRVs from the USEPA (i.e. 2018 draft - Tier 2) considered incomplete since Tier 1 TRVs were not utilized for a site located on the Lower Eight Miles of the Passaic River or anywhere on the Passaic River?</p>	<p>No, the ERAs are not considered incomplete. Guidance that was in place at the time the documents were submitted would be applicable. Regardless, the ecological risk assessor may use second or third tier TRVs with justification.</p>	
40	50	6	1.3.3	<p>Are ERAs that were submitted to the NJDEP to comply with the May 2014 and May 2016 statutory timeframe for Remedial Investigation which utilized TRVs from the USEPA (i.e. 2018 draft - Tier 2) considered incomplete since Tier 1 TRVs were not utilized for a site located outside the Lower Eight Miles of the Passaic River?</p>		

41	50	6	1.3.3	<p>The paragraph regarding Tier 2 TRVs is unclear. Specifically regarding the part that begins "However, Eco-SSLs may have been derived for select contaminants from the geometric mean...." to the end of paragraph, we are not sure what is being requested. Is it wrong to select the geometric mean and, if so, why? Are you saying to use "an appropriately conservative LOAEL" instead of the geommean based on No Observed Adverse Effect Levels (NOAELs) as the TRV NOAEL? In the last sentence of the paragraph regarding Tier 2 TRVs (i.e. "If TRVs other than these were used by USEPA to develop the Eco-SSLs, then those TRVs should be used."), it is not clear what is meant by "these" and "those".</p>	<p>The Eco-SSLs focused only on the NOAELs for selecting national screening levels. The point this statement is making is that an appropriate LOAEL must be selected, since the Eco-SSLs did not provide a LOAEL. The LOAEL should be greater than the NOAEL selected in the Eco-SSLs; however, it should be appropriately conservative within the range available.</p>
42	50	6	1.3.3	<p>The Eco-SSL documents referenced in this section have identified soil screening criteria based on toxicity studies (laundry lists of approved studies) that suggest less conservative TRVs are just as applicable as those used on the Passaic. The guidance suggests that the TRVs on Table 1 should be used in ERAs strictly based on the fact that the USEPA, USFWS, NOAA and NJDEP approved them for use on the Passaic, but that TRVs should be established by the risk assessor from the Eco-SSLs documents for all other COCs not listed on the table. It appears that the TRVs noted on Table 1 are the lowest of all possible values approved by the USEPA in the Eco-SSL documents for these select COCs. However, the USEPA did not imply that all other studies considered in the development of the Eco-SSLs were obsolete and inappropriate. That said, why would PRPs in NJ be asked to use the most conservative of many agency-approved studies just because the approach was applied to the Passaic? Selection of the lowest TRVs does not make it a valid, scientific approach for all sites. The Passaic is a unique system and it seems inappropriate to suggest that these TRVs should be applied across the board especially when it comes to development of an eco-risk based cleanup number.</p>	
43	53	6	1.3.3	<p>The Eco-SSL documents referenced in this section have identified soil screening criteria based on toxicity studies (laundry lists of approved studies) that suggest less conservative TRVs are just as applicable than those used on the Passaic. The guidance suggests that the TRVs on Table 1 should be used in ERAs strictly based on the fact that USEPA, USFWS, NOAA and NJDEP approved them for use on the Passaic, but that TRVs should be established by the risk assessor from the Eco-SSLs documents for all other compounds of ecological concern (COCs) not listed on table. It appears that the TRVs noted on Table 1 are the lowest of all possible values approved by the EPA in the EcoSSL documents for these select COCs. However, the EPA did not imply that all other studies considered in the development of the Eco-SSLs were obsolete and inappropriate. That said, why would PRPs in NJ being asked to use the most conservative of many agency-approved studies just because the approach was applied to the Passaic? Selection of the lowest TRVs does not make it a valid, scientific approach for all sites. The Passaic is a unique system and it seems inappropriate to suggest that these TRVs should be applied across the board especially when it comes to development of an eco-risk based cleanup number.</p>	<p>The tiers were established based on a level of confidence in the values, with the first tier TRVs vetted and approved by all partner agencies and the second tier TRVs being well respected values among the risk assessment community, given their rigorous development. The TRVs in Table 1 were not selected based on being lower than values in the second tier, but were selected based on their merits. Further, the TRVs were not developed for specific receptors, but rather for the general mammalian and avian receptor groups. The exposure factors in the numerator of the HQ and PRG equations reflect site-specific exposure. As reference doses for contaminant-receptor pairs, the TRVs are applicable to any avian or mammalian receptor, regardless of geographic locations. PRPs are not being "asked to use the most conservative of many agency-approved studies." This is a tiered approach and other TRVs, as per the third tier, may be selected with proper justification.</p>

44	50, 51	6	1.3.3	The Eco-SSL documents referenced in this section have identified soil screening criteria based on toxicity studies (laundry lists of approved studies) that suggest less conservative TRVs are just as applicable as those used on the Passaic. The guidance suggests that the TRVs on Table 1 should be used in ERAs strictly based on the fact that USEPA, USFWS, NOAA and NJDEP approved them for use on the Passaic, but that TRVs should be established by the risk assessor from the Eco-SSLs documents for all other COCs not listed on the table. It appears that the TRVs noted on Table 1 are the lowest of all possible values approved by the EPA in the EcoSSL documents for these select COCs. However, the EPA did not imply that all other studies considered in the development of the Eco-SSLs were obsolete and inappropriate. That said, why would PRPs in NJ be asked to use the most conservative of many agency-approved studies just because the approach was applied to the Passaic? Selection of the lowest TRVs does not make it a valid, scientific approach for all sites. The Passaic is a unique system and it seems inappropriate to suggest that these TRVs should be applied across the board especially when it comes to development of an eco-risk based cleanup number.		
45	50	6	1.3.3	For a contaminated site that is located on a tributary of the upper Passaic River and utilizes the Tier 2 TRVs for all contaminants, the ecological risk assessor demonstrates that the Tier 2 TRVs are appropriate by using multi-lines of evidence and concludes that no further ecological evaluation is required; will the NJDEP accept the conclusions of the LSRP?	The location of the site does not factor into selection of TRVs. TRVs are based on contaminant-receptor pairs, not location. The first tier TRVs are not required; however, they may be used without further scrutiny. Use of other TRVs is allowed, thus the tiered approach.	
46	50	6	1.3.3	The approach to the third tier for TRV selection seems to contradict the USEPA's approach as noted in the Eco-SSL documents. In several cases, the geometric mean was used by the USEPA in development of the Eco-SSLs using multiple studies across different receptors. Therefore, incorporation of a policy that suggests the geomean should not be derived across different receptors implies that the science used by the USEPA is incorrect.		
47	50	6	1.3.3	With regards to the third tier of TRVs, the following sentence, "Notwithstanding the use of statistical evaluations in USEPA 2005a, it is recommended that third-tier TRVs be developed from a single study or receptor with bounded NOAELs and LOAELs and should not be based on statistical evaluations of multiple TRVs/studies across several receptors, as errors and uncertainty can be introduced into the calculations; moreover, it expected that this third tier will be used for less common contaminants, with potentially too few studies available for statistical evaluations." should be deleted or appropriately modified to reflect that any scientifically-defensible TRV should be permitted with sufficient documentation and justification.	The EETG committee does acknowledge that geometric mean is used for certain NOAELs within the Eco-SSLs; however, the committee is stating a preference for single bounded studies for a sensitive receptor, when available, rather than a geometric mean which may incorporate unbounded studies and non-sensitive species.	

48	50	6	1.3.3	The approach to the third tier for TRV selection seems to contradict the USEPA's approach as noted in the Eco-SSL documents. In several cases, the geometric mean was used by the USEPA in development of the EcoSSLs using multiple studies across different receptors. Therefore, incorporation of a policy that suggests the geomean should not be derived across different receptors implies that the science used by EPA is incorrect.	
49	53	6	1.3.3	The approach to the third tier for TRV selection seems to contradict the USEPA's approach as noted in the Eco-SSL documents. In several cases, the geometric mean was used by the USEPA in development of the EcoSSLs using multiple studies across different receptors. Therefore, incorporation of a policy that suggests the geomean should not be derived across different receptors implies that the science used by EPA is incorrect.	
50	52	6	1.3.3	The Department has added three tiers (in order of Department's preference) for selection of TRVs with the first tier based on the <i>Focused Feasibility Study Report for the Lower Eight Miles of the Lower Passaic River</i> (2014). These first tier values may result in order-of-magnitude TRV reduction for certain COPEC-receptor pairings, resulting in overestimation of ecological risk and needless limitations on the use of professional judgement. It is recommended that the three tiers of TRVs be removed or replaced with a simple list of literature references that may be used by the professional to develop appropriate TRVs. In addition, Appendix E of the <i>Focused Feasibility Study Report for the Lower Eight Miles of the Lower Passaic River</i> , that described the development of the ecological preliminary remedial goals, was not available in the online document. At a minimum, the Department should make that information available and extend the comment period so the regulated community can further evaluate the impacts of the first tier TRVs.	The Table 1 TRVs are unique in that they have been vetted by multiple agencies throughout USEPA Region 2 and therefore, appropriately, should be the first tier. Appendix E is available at: http://passaic.sharepointspace.com/Public%20Documents/2014-02-04%20Appendix%20E%20Development%20of%20PRGs.pdf .
51	53	6	1.3.4	The weight-of-evidence section should state that site-specific lines of evidence are always weighted higher than screening criteria.	This section is not part of the revisions and comments are not being entertained at this time.
52	75	6	6.2.3.4	Biological Sampling - please consider adding a statement that laboratory analysis of biological tissue samples must be performed by a laboratory holding certification for the biological tissue (BT) sample matrix as well as the analyte of concern, in accordance with N.J.A.C. 7:18.	This section is not part of the revisions and comments are not being entertained at this time.

53	78	6	4.5	<p>Regarding Extractable Petroleum Hydrocarbons (EPH), it is suggested that the NJDEP revise language where the text states "NJDEP has not established an ESC for sediment" since the NJDEP's EPH guidance is written based upon the method "Analysis of Extractable Petroleum Hydrocarbon Compounds (EPH) in Aqueous and Soil/Sediment/Sludge Matrices" (NJDEP EPH Method Revision 3). No distinction is made regarding the EPH guidance ecological screening criterion of 1,700 parts per million (ppm) being applicable only to soils and the title indicates it does apply to sediment. The EPH guidance states that 1,700 milligrams per kilogram (mg/kg) criterion applies to ecological areas, e.g. wetlands, etc., which would logically, and often do, include wetland sediments.</p> <p>The last sentence in this section regarding PAH assessment should reference sediments. Also, "If EPH is identified..." requires clarification, e.g. "identified" is subjective and not defined. The text as-is seems to imply that any EPH detection warrants evaluation of PAHs.</p> <p>Please consider adding a definition of "Ecological Remediation Goal", as this is a heretofore unidentified term.</p>	<p>The committee reaffirms that an ecological screening criterion (ESC) is not established for EPH in sediment; availability of an analytical method does not imply an ESC is available. The applicability of the EPH ecological screening criterion of 1700 mg/kg to only soils in environmentally sensitive natural resources is fully explained in <i>Health Based and Ecological Screening Criteria for Petroleum Hydrocarbons Frequently Asked Questions</i>, V. 4.0 August 9, 2010, Question # 3: "How was the 1700 mg TPH/kg ecological screening level derived?", incorporated by reference into <i>Protocol for Addressing Extractable Petroleum Hydrocarbons</i>, V. 5.0. August 9, 2010. As indicated in this reference, the 1700 mg/kg value is based on earthworm reproduction and not sediment benthos.</p>
54	77-78	6	6.4.5	<p>Regarding EPH:</p> <ul style="list-style-type: none"> - It is suggested that the NJDEP revise language on pg. 78 where the text states "NJDEP has not established an ESC for sediment" since the NJDEP's EPH guidance is written based upon the method "Analysis of Extractable Petroleum Hydrocarbon Compounds (EPH) in Aqueous and Soil/Sediment/Sludge Matrices" (NJDEP EPH Method Revision 3; emphasis added). No distinction is made regarding the EPH guidance ecological screening criterion of 1700 ppm being applicable only to soils and the title indicates it does apply to sediment. The EPH Guidance states that 1,700 mg/kg criterion applies to ecological areas, e.g., wetlands, etc., which would logically and often do include wetland sediments. - The last sentence in this section regarding PAH assessment should reference sediments. Also, "If EPH is identified..." requires clarification, e.g., "identified" is subjective and not defined. The text as-is seems to imply that any EPH detection warrants evaluation of PAHs. - Consider adding a definition of "Ecological Remediation Goal", as this is a heretofore unidentified term. 	<p>Guidance for assessing wetland media as soil vs sediment is available in the EETG, Section 5.4.3. The paragraph containing the last sentence of section 6.4.5 begins with "sediment," which the committee believes to be adequate. The determination of EPH in sediment is based on multiple lines of evidence, including analytical data, pursuant to N.J.A.C.7:26E-2.1(a)14.</p> <p>"Ecological Remediation Goal" is defined in the EETG in both the definitions section and the revised Section 7, second sentence.</p>
55	78	6.0	6.4.5	<p>The maximum soil ecological remediation goal has been set at 4,000 mg EPH/kg. Is this applicable to both Category 1 and 2 EPH? If NJDEP states that the reduction in microbial activity begins at 4,000 mg/kg, then this seems to conflict with the language in the EPH FAQ that indicates adverse effects begin at 1,700 mg/kg. Please clarify what the purpose of the 1,700 mg/kg screening value will be if the remediation goal is now 4,000 mg/kg.</p>	<p>Yes, 4000 mg/kg applies to both Category 1 and Category 2 discharges, i.e., total EPH as per NJDEP's Extractable Petroleum Hydrocarbons Methodology (Version 3.0) August 2010, Rev. 3. If the total EPH concentration in soil is below 1700 mg/kg, adverse effects to soil organisms (e.g., reduced earthworm reproduction) are not expected. Similar to exceedences of ecological screening criteria for other contaminants, concentrations above 1700 mg/kg indicate the potential for adverse ecological effects, and an ecological risk assessment may be appropriate to determine site-specific risk-based remediation goal, which may be higher than 1700 mg/kg. 4000 mg/kg total EPH should not be exceeded in soil in an environmentally sensitive natural resource because natural functions are impaired as described in the revised EETG text.</p>

56	78	6.4.5	Note that this section describes an ESC of 1700 mg/kg EPH and a maximum ecological remedial goal at 4,000 mg/kg EPH (units should be written the same way in the document). However the referenced link, Question # 3 of the "Health Based and Ecological Screening Criteria for Petroleum Hydrocarbons - Frequently Asked Questions" indicates that the soil should be remediated to 1700 mg/kg TPH or a site-specific remediation goal. This information seems to be inconsistent with the revised guidance.	The soil ecological screening criterion of 1700 mg EPH/kg and maximum ecological remediation goal of 4000 mg/kg have been in the <i>Protocol for Addressing Extractable Petroleum</i> since 2010 (Category 1, Step 9 and Category 2, Step 7). As per N.J.A.C. 7:26E-4.8, remediation can be to the ESC or site specific remediation goal, which may be higher than 1700 mg/kg. 4000 mg/kg total EPH should not be exceeded in soil in an environmentally sensitive natural resource because natural functions are impaired as described in the revised EETG text. "TPH" has been corrected to "EPH."
57	81	6.0	The Department has added a maximum ecological soil remedial goal of 4,000 mg EPH/Kg. The Department indicated that this goal was set based on review of over 80 literature references with particular emphasis placed on Megharaj et al. (2000) . It is noted that while the Megharaj et al. (2000) article indicates reduced soil enzyme activity and microbial biomass at a mid-level concentration range of 5,200–21,430 mg/kg, it also states that "inhibition of all the tested parameters was more severe in soil considered to have medium-level pollution than in soils that were highly polluted. This result could not be explained by chemical analysis alone." Given this level of uncertainty and subjectivity in selection of a maximum ecological soil remedial goal, it is recommended that the Department remove this value from the guidance or make the list of 80 literature references available and extend the comment period so the regulated community can further evaluate the impacts of the maximum ecological soil remedial goal for TPH.	The soil ecological screening criterion of 1700 mg EPH/kg and maximum ecological remediation goal of 4000 mg/kg have been in the <i>Protocol for Addressing Extractable Petroleum</i> since 2010 (Category 1, Step 9 and Category 2, Step 7). The "Dialog" search results with 80 references will be available as a separate document on the website along with this response to comments and the 2018 version of the document; the limited number of references ultimately used were identified in the EETG revised text, therefore further extension of the comment period is not warranted (one extension has already been granted).
58	85	6	At top of page 85, please confirm: Refer to Section 6.4.7 for management of PCB congener data via the Toxic Equivalency (TEQ) approach. Should this read: refer to Appendix I ... ?	This section is not part of the revisions and comments are not being entertained at this time; however, a correction has been made to refer to Section 6.4.8.
59	83	6	Historic Fill Material and Dredged Material - Assessment of potential impacts from historic fill, when the site area of fill represents only a small portion of the total amount of historic fill present in a much larger or regional area is not appropriate. Any impacts from the historic fill present on site will be indistinguishable from those due to larger and/or adjacent non-site related areas, which actually would constitute background for the site. Often, due to absence of appropriate regulatory triggers, those areas will never be addressed. Therefore, the process must be changed so that it is applicable only when the historic fill investigated is entirely contained within the site boundaries and does not extend onto additional lands or present in much larger/regional context.	In accordance with N.J.S.A.58:10B-12 and N.J.A.C. 7:26E-4.7, investigation and remediation of historic fill must be conducted to the site boundaries when the historic fill extends beyond the site boundaries. Therefore, the language in the document is correct.

60	83	6	4.9	Historic Fill Material and Dredged Material - There continues to be debate on whether historic fill is a discharge. There are a number of New Jersey Court findings, including NJDEP v. Ofra Dimant and White Oak Funding v. George Winning, which suggest that historic fill is not a discharge as defined in N.J.A.C. 7:26E and N.J.S.A. 58:10-23.11. Because historic fill is not a discharge, the requirement to remediate specified in N.J.A.C. 7:26C-2.2 and, subsequently, the requirement conduct a Receptor Evaluation/Ecological Evaluation specified in N.J.A.C. 7:26-1.12/1.16 do not apply. Therefore, Section 6.4.9 Historic Fill and Dredged Material should be deleted.	In accordance with N.J.S.A.58:10B-12, N.J.A.C. 7:26E-4.7, and the <i>Historic Fill Material Technical Guidance</i> (NJDEP 2013), investigation and remediation of historic fill must be conducted. The placement of historic[al] fill material is a discharge. The Brownfield Act defines "historic fill material" to mean "generally large volumes of non-indigenous material, no matter what date they were emplaced on the site, used to raise the topographic elevation of a site, which were contaminated prior to emplacement and are in no way connected with the operations at the location of emplacement and which include, but are not limited to, construction debris, dredge spoils, incinerator residue, demolition debris, fly ash, and non-hazardous solid waste." The placement of any contaminated material is a discharge. The referenced cases do not alter this position.
61	84	6	4.9	Last sentence in this section - can a parenthetical be added after "bank stabilization" with examples (i.e. vegetative, geotextile, gabion block, etc.)	Numerous types of bank stabilization are available, and the choice of bank stabilization will be dependent on site conditions. Therefore, the text will just remain as generic 'bank stabilization.'
62	84	6	4.9	In the paragraph with "However, it is appropriate to delineate historic fill impacts in an offsite ESNR if the historic fill is not regional or if the historic fill is regional but contaminant source attribution is uncertain (i.e., ...)", what is meant by "regional"?	Regional historic fill is generally associated with fill used to raise the elevation of an area that extends to or beyond the site boundaries over areas typically encompassing several sites. Many of these areas are mapped and are located in the Department Geographic Information Systems (NJ-GeoWeb/i-Map NJ DEP) or New Jersey Geological Survey historic fill maps.
63	84	6	4.9	Please confirm the following: If historic fill is identified as regionally, the only Area of Concern (AOC) for the contaminated site, there is no additional contribution from the Responsible Party (RP), and the AOC is located adjacent to an Environmental Sensitive Natural Resource (ESNR), then the RP is not required to delineate the historic fill beyond the property boundary.	If the historic fill is regional with no site contributions, then in accordance with N.J.A.C. 7:26E-4.7, the historic fill must be delineated to the property boundary. If the portion of the historic fill on the site is contributing contaminants above the ESC to the ESNR, then evaluation is required in accordance with this Section of the EETG.
64	84	6	4.9	Please confirm the following: If historic fill is identified as regionally, the only AOC for the contaminated site, there is no additional contribution from the RP, the AOC is located adjacent to an ESNR, and there are no contaminants above ECO Soil Screening Levels that impact the ESNR, then the RP remediates the historic fill with a presumptive remedy.	If the appropriate ESC (soil or sediment based) is not exceeded in the ESNR, then the presumptive remedy (e.g., capping) is likely appropriate for the upland portion of the site.
65	84	6	4.9	Please confirm the following: If historic fill is identified as regionally, the AOC for the contaminated site, there is no additional contribution from the RP, the AOC is located adjacent to an ESNR, and contaminants are above ECO Soil Screening Levels that impact the ESNR, then the RP conducts an ecological evaluation to determine if a presumptive remedy can be utilized.	

				Please confirm the following:	
66	84	6	4.9	If historic fill is identified as regionally, the only AOC for the contaminated site, there is no additional contribution from the RP, the AOC is located adjacent to an ESNR, and contaminants are above ECO Soil Screening Levels and are also above background/reference levels that impact the ESNR, then the RP remediates the historic fill with a presumptive remedy.	
67	84	6	4.9	<p>Please consider revising the text "...bank stabilization would be an example of an appropriate remedial action" in the last sentence of the last paragraph of this section as follows:</p> <p>"...bank stabilization would be an example of an alternative remedial action".</p> <p>While we recognize the NJDEP is providing an example, we are concerned that this text, as currently written, could be interpreted as a prescriptive requirement for such situations and may be strictly applied as a default requirement.</p>	<p>This is a guidance document and is not prescriptive. Bank stabilization is provided as an example.</p>
68	83, 84	6	6.4.9	Please consider revising the text as follows: "...bank stabilization would be an example of an appropriate remedial action" to "...bank stabilization would be an example of an alternative remedial action" in the last sentence of the last paragraph of this section. While we recognize the NJDEP is providing an example, we are concerned that this text, as currently written, could be interpreted as a prescriptive requirement for such situations and may be strictly applied as a default requirement.	
69	84	6.0	6.4.9	<p>"However, it is appropriate to delineate historic fill impacts in an offsite ESNR..... or if the historic fill is regional but contaminant source attribution is uncertain (i.e., possibly site related) or contaminants are aberrant qualitatively and/or quantitatively (e.g., elevated concentrations of Mercury, PCBs)." The portion of this sentence relating to the delineation of atypical chemicals within regional fill appears to contradict the current regulations/guidance, which does not require delineation of regional fill offsite. The word "aberrant" implies that data indicative of heterogeneous conditions require such off-site sampling, when it is in fact reasonably expected that heterogeneities in historic fill could result in anomalous data findings. Further, historic fill guidance includes no requirement to delineate off-site because the contamination in such fill is not due to a site-related discharge. It is therefore suggested that this revision be updated to align with current guidance regarding historic fill and clarify that delineation in an off-site ESNR is not required.</p>	<p>If contaminants not typically associated with historic fill are present (i.e., Hg or PCBs), then it is appropriate to delineate these contaminants to determine if they are associated with the site or are part of the regional historic fill, particularly for persistent, biomagnifying, toxic contaminants.</p>
70	88-89	6	6.4.10	AVS/SEM - please consider adding a statement that sample collection and handling procedures should be conducted to minimize exposure of samples to the atmosphere; the validity of the sample analytical method is based on maintenance of anoxic conditions from field sample collection through laboratory processing; a portable glove box can be constructed for use in the field.	<p>This section is not part of the revisions and comments are not being entertained at this time.</p>

71	86	7	7	Please consider adding a definition for "Risk-based Remediation Goals", which appears in the section's title.	Ecological Remediation Goal is defined in the EETG in both the definitions section and the revised Section 7, second sentence.
72	86	7	NA	Please consider adding a definition for "Risk-Based Remediation Goals", which appears in the section's title.	
73	89	7	7.3	As noted in Comment 1, above, the site-specific definition of sediments should be subject to professional judgement of the investigator. Application of sediment ESCs is more appropriate for recent deposits (e.g. biotic zone).	The remediation goal applies as written in the section and the remediation may need to extend beyond the biotic zone for the reasons described in this section.
74	88, 89	7	3	<p>This section implies ecological remediation goals can only be defined by Ecological Screening Criteria (ESC), background, or site-specific risk-based goals using biological test data. This list seems narrow and implies biological data (e.g. tissue data or toxicity testing) is required to be collected as part of an ERA to develop a risk-based goal. Dietary models are often used in risk assessment to quantify risk and to develop remediation goals without gathering biological data from the site. The last part of this statement (i.e. "which are determined from biological test data collected in accordance with Section 6.0") should be removed.</p> <p>As noted in our earlier comment, the site-specific definition of "sediment" should be subject to professional judgement of the investigator. Application of sediment ESC is more appropriate for recent deposits (e.g. biotic zone).</p>	<p>There is no mention of biological tissue testing as a requirement in this section; however, site-specific remediation goals are based on the results of the ERA which generally includes some type of tissue testing or toxicity testing.</p> <p>See response to above comment regarding definition of sediment.</p>
75	98	11.0	--	It is recommended that the Department make all 80 of the petroleum hydrocarbon literature references available for review by the regulated community.	The "Dialog" search results with 80 references will be available as a separate document on the website along with this response to comments and the 2018 version of the document.
76	131	F	F	Appendix F – Sediment Pore Water Sampling Techniques: please consider adding a reference for: USEPA/SERDP/ESTCP. 2017. Laboratory, Field, and Analytical Procedures for Using Passive Sampling in the Evaluation of Contaminated Sediments: User's Manual. EPA/600/R- 16/357. USEPA, Office of Research and Development, Washington, DC 20460 https://www.serdp-estcp.org/Program-Areas/Environmental-Restoration/Contaminated-Sediments/ER-201216/ER-201216-UM / https://cfpub.epa.gov/si/si_public_record_report.cfm?dirEntryId=338548	This section is not part of the revisions and comments are not being entertained at this time.
77	131	F	F	Appendix F – Sediment Pore Water Sampling Techniques: please update reference for ASTM D7363 (from rev.2007 to rev.2013) as the analyte list and quantitation procedures have changed: https://www.astm.org/Standards/D7363.htm	This section is not part of the revisions and comments are not being entertained at this time.