NJDEP Technical Guidance Document Review Form

Column1

Document: "*Technical Impracticability (TI) for Ground Water*"

Comment Period Begins: Tuesday March 13, 2012

Comment Period Ends: Tuesday April 24, 2012

Reviewer Name / Affiliation :

Master Comment List

Reviewer Email Address (if Committee needs to contact you regarding comment clarification)

Tom O'Neill, Committee Chair, NJDEP/Stakeholder TI Committee

SEND ALL COMMENTS TO:

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	Page	Section	Subsection	COMMENTS	Response
1	General			Throughout the text, it would be helpful to provide online links to the Technical Requirements and Citations for ease of access.	First references to citations and majors sources have been linked.
2	General			It would be helpful if the DEP provided guidance on selecting a TI Determination in place of implementing MNA over an extended period at sites that have reached asymptotic levels as a result of remediation. A series of hypothetical scenarios could be used to illustrate the factors to be considered in the decision.	See the MNA guidance, Section 4.2, for conditions that culd preclude MNA. When MNA cannot be used TI may be considered.
3	General			In a recent submittal to the NJDEP from the Site Remediation Industry Network (SRIN), SRIN stressed the fact that the NJDEP has persisted in its refusal to consider risk-based approaches to remediation. This perpetuates the Site Remediation Program's application of overly conservative remediation standards to all contaminated sites, regardless of the risk (or lack thereof) that such sites pose to human health or the environment. A risk-based approach to site remediation is a cornerstone of the Massachusetts remediation program, after which the New Jersey program is primarily modeled. However, by adopting procedures similar to Massachusetts without the underlying substantive risk-based approach to remediation serves only to put a new layer of administration over the same issues that have historically plagued the effectiveness of Jersey's Site Remediation Program. Instead of going into the details of SRINs suggested proposal (e.g. adoption of a Risk Based Corrective Action (RCBA) approach to site remediation) to resolve these concerns, the following summary of suggested recommendations is provided: a) Use explicit flexibility and implicit risk based components of existing revisions to program; b) Insert language explicitly allowing guidance from ASTM and ITRC; c) Strongly advocate for revising remediation standards to an exposure based format as is done in the Massachusetts program (tiers and methods); and, d.) Support efforts to streamline and reduce the administrative requirements of the LSRP program (forms, submittals, reviews, approvals, etc.)	The comment addresses issues that are beyond the scope of this document.
4	General			The NJDEP has been directed by the Governor that when documents exist that address a proposed new document; an explanation should be provided as to why the new proposed document is needed. There are existing documents that address the TI issue, an EPA Directive (9234.2-25) dated September, 1993 and a USDOE Policy (EH-413/9814) dated August, 1998. The NJDEP arbitrarily incorporated sections of these documents in the newly proposed document without even referencing these documents. Per the Governor's directive, the NJDEP should provide justification as to why they didn't use these documents in-total	Refrence were indadvertantly omitted and have been restored. The documents are USEPA documents and are not specific to the needs of NJDEP as represented by the stakeholder process.
5	General			In its current form, there is no finality in this guidance document for the regulated community. The executive summary sates: *"As a result, TI determinations will be reevaluated periodically to assess whether site conditions or remedial technology have remained effectively the same since the determination was made, or if advances in engineering capabilities now render the TI determination no longer applicable."* As currently written, the guidance document is nothing more than a deferral until a new technology arrives. The TI waiver should remain in effect so long as the TI remedy is protective of human health and the environment	The current language is sufficient.
6	General			The review of TI applicability, acceptance, and reevaluation should be focused on protectiveness as the primary review tier. This is especially critical for the reevaluation process after a TI waiver has been established	The current language is sufficient.
7	General			Technology availability should be a subordinate review tier to protectiveness after a TI determination is established and during any subsequent reevaluation/renewal periods.	The current language is sufficient.
8	General			The TI waiver should be acknowledged in applicable site-associated institutional/engineering controls implemented pursuant to the Technical Requirements for Site Remediation (TRSR) for each site where TI is implemented. For example, if a CEA is required and implemented for a site where TI is employed, then it should be required to acknowledge that the TI waiver exists in the CEA documentation.	Section 3 has been revised.
9	General			The guidance title specifically states TI for Groundwater. It should be made clear that it is also applicable to sites impacted by NAPL in groundwater, both DNAPL and LNAPL	The current language is sufficient.

10	General			Sustainable and green remediation principles should be incorporated into the decision-making process for TI determination.	The investigator is free to pursue green remediation principles as long as the rules, standards and guidance are achieved.Text has been added and links to green remediation resources have been referenced.
11	General			Risk assessment/evaluation should be addressed in the document as an acceptable approach in the decision-making process for TI determination. It is inherently built into this process and should not be ignored.	The comment addresses issues that are beyond the scope of this document.
12	General			Risk assessment/evaluation should be addressed in the document as an acceptable approach in the decision-making process for TI determination. It is inherently built into this process and should not be ignored.	Beyond the scope of this guidance.
13	General			The review of TI applicability, acceptance, and reevaluation should be focused on protectiveness as the primary review tier. This is especially critical for the reevaluation process after a TI waiver has been established	The current language is sufficient.
14	General			Technology availability should be a subordinate review tier to protectiveness after a TI determination is established and during any subsequent reevaluation/renewal periods.	The current language is sufficient.
15	Ttitle Page			The guidance title specifically states TI for Groundwater. It should be made clear that it is also applicable to sites impacted by NAPL in groundwater, both DNAPL and LNAPL	The current language is sufficient.
16	iv	TOC		There need to be question marks (?) at the end of sections 2.1 and 2.2 in the Table of Contents.	The current language is sufficient.
17	iv	TOC		Spell out Technical Impracticability in Sect. 2 of the Table of Contents rather than use the TI acronym. Can put the TI in parentheses if preferred.	Text has been changed.
18	1	ES		2nd paragraph, 6th line - Change "its" to "their".	Text has been changed.
19	1	ES		2nd paragraph, 10th line - Change "its" to "their".	Text has been changed.
20	1	ES		1st sentence after bullets - Change "media" (after "contaminated") to "medium".	Text has been changed.
21	2	1	1.1	1st paragraph, 5th line - Change "the evaluation of" to "evaluating". Add "of" after "appropriateness". Replace the comma after "determination" with "and in".	Text has been changed.
22	2	1	1.1	2nd paragraph, end of 3rd line - Change "that" to "who".	Text has been changed.
23	2	1	1.2	2nd line - Change "conduction" to "conducting".	Text has been changed.
24	2	1.1	1st paragraph, last sentence	The last sentence states, “Most importantly, this guidance helps identify the process…..in effect”. Suggest revising to “Most importantly, this guidance helps the “investigator” identify the process….in effect”. The “investigator” will utilize the document to help him/her determine if the TI will be protective of public safety, health and the environment.	Text has been changed.
25	2	1	3rd paragraph, 2nd sentence	Remove imperative "must" from the sentence. "If the investigator does not consider this technical guidance appropriate or necessary, the investigator should describe what was done and explain how the decisions made are still protective of public health, safety and the environment.	Must is appropriate, a citation has been provided. Investigator changed to party conducting the remediation
26	2-3	1	1st paragraph,1st sentence	Under N.J.A.C. 7:26E-5.1(k), regarding presumptive remedy selection, the person responsible for conduction the remediation must provide an analysis explaining why a presumptive remedial action is impractical due to site conditions or if the basis for proposing an alternative remedy is that the presumptive remedies published by the Department are impractical; and a written analysis that the alternative remedy is protective of the public health and safety. An LSRP can propose that a condition is Technically Impracticable BUT only the NJDEP can approve a declaration of TI. The proposal for TI must be done formally through the Remedial Permit Form. A TI condition is temporary and subject to review at any time if new remediation methods become possible. The duty to remediate is only on hold and could be triggered by a review. The Department has the final approval of the TI. This takes away the LSRP professional judgment in the approval of the TI. This is counter to the Purpose of the LSRP program.	The guidance was developed with stakeholder input, the stakeholders on the committee are in agreement with the currrent language.
27	3	1	2nd para	"As per……" needs to be added to the start of the 2nd paragraph beginning with N.J.A.C. 7:26E-6.1 (d).	Text has been changed.
28	3	1.2	3rd para	Items i, ii, and iii should be in brackets and/or formated in three lines for clarity.	Text has been changed.
29	3	1.3	2nd para	There should be question marks (?) at the end of questions posed in the 2nd paragraph.	The current language is sufficient. The guidance provides "how to" guidance not "how do you___?" guidance.
30	3	1	1.2	2nd full paragraph, end of 4th line - Recommend making the phrase "this would cover most, if not all, TI determinations." its own sentence.	Text has been changed.
31	3	1	1.3	2nd sentence - Recommend changing to "This technical guidance also addresses the information needed from an investigator to document: (1) that an appropriate post-determination management program is, or will be, in place to ensure protectiveness of human health and the environment; and (2) the timeframe for re-evaluating the TI from a technical and regulatory viewpoint."	Text has been changed.

32	3	1.2	2nd paragraph, last sentence	The last sentence states, “Depending on the nature of the contamination, that being free and/or residual or dissolved product, the remediating party may put in place various measures.” A sentence should follow this such as, “For example, heavily-weathered petroleum products may have very little soluble components and may no longer represent a source of ground water contamination. In these cases, institutional controls may be appropriate instead of treatment or removal.”	The current language is sufficient.
33	3-4	1.4	1st paragraph, 2nd sentence	The guidance document should not express any expectation about the frequency of TI determinations. Instead, it is important to point out the need to provide robust technical evidence. Recommend modifying the text as: " Existing sites and new cases may be eligible for a TI evaluation; however, investigators should ensure that submissions are clear, robust, and auditable."	The current language is sufficient.
34	4	1	1.4	4th line - delete the "s" in "systems".	Text has been changed.
35	4	1	1.4	2nd paragraph, end of 8th line - Change "is" to "are" (since "data" is plural).	Text has been changed.
36	4	1	1.4	4th paragraph regarding DNAPL. See http://www.epa.gov/superfund/health/conmedia/gwdocs/pdfs/642756.pdf. In particular, note that the mere presence of DNAPL should not be the sole basis for considering a TI waiver.	Added reference.
37	4	1	1.4	4th paragraph, last sentence - Change "alternate" to "alternative".	Text has been changed.
38	4	1	1.4	5th paragraph, 2nd sentence - Recommend changing "For example" to "An example is".	Text has been changed.
39	4	1	1.4	last line - Recommend changing to "An example is a structure that would interfere with the remedial effort"	Text has been changed.
40	4	1.4	2nd paragraph, 3rd sentence	Risk management strategies should be emphasized. " In some cases it may not be feasible to attain the applicable standards by source-treatment, but alternative risk-management strategies such as pathway interception or receptor control may be applicable. Alternatively, it may be feasible to conduct source treatment remedial activities to approach those standards."	Beyond the scope of this guidance.
41	4	1.4	2nd paragraph, 5th sentence	Include the words, “For example,” at the beginning of the 5th sentence.“For example, this may be particularly true for remedial systems that have been in operation…..to time and resource expenditure”	The current language is sufficient.
42	4	1.4	2nd paragraph, 5th sentence	Recommend highlighting effective use of resources and sustainability, as follows, "This may be particularly true for remedial systems that have been in operation for a period of time, and there is data to demonstrate that contaminant mass removed is not commensurate to time and resource expenditure, or to the ongoing environmental or social impacts of continued system operation."	The current language is sufficient.
43	4	1.4	3rd paragraph	Recommend emphasizing sustainability as follows, "There may also be cases where the remedy can adversely impact the public, for example, in the case of excavations under permanent structures, or when remedial actions will substantially interrupt public service or threaten public safety. In those situations, it should be considered that alternative risk-management strategies offer a more sustainable alternative to source-removal based remediation."	The current language is sufficient.
44	4	1.4	4th paragraph, 1st stentece	The guidance document should not express any limitation on the use of TI determinations. Delete the phrase, "for a limited number of cases".	The current language is sufficient.
45	4	1.4	4th paragraph, 2nd sentence	The 2nd sentence should be corrected as follows to add the word "or": “In this example, the investigator….must operate to achieve cleanup, construction and operation costs, possible impacts to the community from installation of the recovery system, and/or other site specific factors.”	Text has been changed.
46	4-5	1.4	last paragraph, first sentence	“TI determinations are not applicable when the site conditions have been altered post discharge that creates potential TI conditions. For example: It is determined that a structure is placed on the site that would interfere with the remedial effort. The person responsible for conducting the remediation cannot file for a TI determination based on the presence of the structure.” This statement seems very limiting for facilities that have long operational histories with unknown dates of discharge and should have more flexibility. Site conditions may have been altered historically that created or contributed to causing a TI condition. Is our interpretation correct that an existing structure can be “TI’d”? While if you decide to build a structure over existing contamination, a TI would not be allowed. A suggestion to rewrite this statement would be “The person responsible for conducting the remediation cannot file for a TI determination solely based on the presence of the structure. Moving forward from the date of this guidance document, alterations to site conditions should be designed to prevent creating a TI condition, where possible.”	Correct, there are times when an existing structure may impact a TI determination. Changes have been made to clarify the language regarding new structures.
47	5	2		Bottom paragraph on page. Potential typo in this sentence ... "The Department is not limiting to TI determination to post technology deployment sites". Seems that "to" should be "the" or "a".	Text has been changed.
48	5	2	4th para	The last senctence in the paragraph ends with exceptional. It needs clarification as to what conditions meet exceptional criteria?	The current language is sufficient.
49	5	2		sentence before bullets - recommend changing "would" to "may".	Text has been changed.
50	5	2		2nd bullet. Again, see http://www.epa.gov/superfund/health/conmedia/gwdocs/pdfs/642756.pdf regarding DNAPL.	Reference added.

51	5	2		next to last paragraph, 3rd line - Add comma after "Superfund process".	Text has been changed.
52	5	2		last paragraph, 1st line - Word after "limiting" should be "the" or "a". SAME AS 52	Text has been changed.
53	5	2		last paragraph - Perhaps note that "front-end" TI proposals should be supported by thorough site characterization and data analyses (e.g., ground water data, pilot study & treatability study data, data from interim remedies, etc.). Front-end TI evaluations should focus on those data and analyses that define the most critical limitations to ground water restoration (1993 EPA).	Text has been changed and reference added.
54	5	2	1st paragraph, 1st sentence & 4th sentence	This is a guidance document so "will likely require" should be removed. Make changes as follows. 1st sentence – "A TI determination may require….lines of evidence (MLE)." The 4th sentence needs to have "required" removed and should read "However, the types of data and analysis that "should be considered" are... and USEPA guidance."	Text has been changed.
55	5	2	1st bullet, 1st & 2nd sub-bullets	* Complex (e.g. highly heterogeneous) sedimentary deposits. * Low-permieability strata	Text has been changed.
56	5	2	2nd bullet	* Presence of LNAPL or DNAPL	The current language is sufficient.
57	5	2	4th paragraph , last sentence	The last sentence should end with ", but not impossible." There may be situations where no remedial technology is feasible to achieve mass reduction and resources could be better spent on containment, protection and monitoring measures rather than spending resources on testing technological approaches that are highly unlikely to succeed. Field testing should not be required if technologies are already proven ineffective in similar conditions.The document should state, "TI is usually evaluated, see step 4.4 in Figure 1 below, after an effort to deploy the currently available technology has been attempted, evaluated, optimized, and then reevaluated. TI prior to deployment of a technological solution is exceptional, but not impossible."	The current language is sufficient.
58	5	2	Last paragraph	This is essentially a statement of NJDEP policy, in effect a mandate, which is not appropriate in a guidance document. The guidance document should allow for alternative approaches based on additional sources of scientific information. Recommend the following revision, " A TI determination is not necessarily limited to post technology deployment sites. However, there may be less evidence to support a TI determination if the current available technology and techniques have not been evaluated at the site. In such circumstances consideration may be given to evidence from published accounts in similar hydrogeological environments, particularly if published in the peer reviewed literature"	The language is sufficient, it does not limit the ability to develop a TI determination at any point in the remedial process.
59	6			Page 6 is blank	Will be corrected in final editing.
60	8	2	2.1	Section 2.1 "How to Assess Whether an Action or Proposed Action is Technically Impracticable" should be re-organized as described below to improve clarity.	The current language is sufficient.
61				Section 2.1.1 – Apply this subheading to the opening paragraph of Section 2.1 and title the subheading "Information used to Support a TI Determination"	The current language is sufficient.
62				Section 2.1.2 - "Conceptual Site Model". Re-organize existing Figure 2 and all of the existing text on Page 12 and 13 beginning with "TI applicability can be evaluated …" as Section 2.1.2. Placing this text under Section 2.1 better emphasizes the role of the CSM in making a TI determination.	The current language is sufficient.
63				Section 2.1.3 – "Remedial Process Optimization"	The current language is sufficient.
64				Section 2.1.4 – "Cost Considerations"	The current language is sufficient.
65	8	2.1	Title	There should be a question mark (?) at the end of question posed.	The language is sufficent, it states what should be done, it is not a question.
66	8	2	2.1	1st bullet - Should be "and/or"	Text has been changed.
67	8	2	2.1	2nd bullet - Instead of "area", recommend "extent" or "volume" (since both area AND depth are relevant).	Text has been changed.
68	8	2	2.1	1st hollow bullet - Recommend adding "treated" (per 1993 EPA TI guidance).	Text has been changed.
69	8	2	2.1.1	last paragraph, 2nd line - Add comma after "objectives".	Text has been changed.
70	8	2.1	Entire subsection	Remedial Process Optimization is presented as "…one method that can be used to ensure that remediation is effective and efficient." This discussion seems only tangentially relevant to a TI evaluation and may or may not be appropriate depending on the case. It is suggested that this discussion be removed from the TI guidance and replaced with a reference to RPO as a tool that may be appropriate to support a TI evaluation along with a simple cross-reference to the ITRC guidance document.	The current language is sufficient.
71	8	2.1	1st paragraph, last sentence	The sentence should be changed to "The following information should be considered in support of the TI determination:" As this is more reflective of language for a guidance document.	Text has been changed.
72	8	2.1	4th bullet, 1st sub-bullet	Here can be a potential misinterpretation regarding the need to remove source, for instance saturated LNAPL, resisual LNAPL, etc. We recommend the following revision, "A demonstration that contamination sources have been identified to be stable, contained or controlled to the extent necessary to mitigate all unacceptable risks to public safety , health and the environment."	Text has been changed.

73	8	2	4th Bullet, 4th sub-bullet	The guidance document states: “An evaluation of the remediation potential of the site, including data and analyses that support the assertion that attainment of the applicable Ground Water Quality Standards are technically impracticable from an engineering perspective. Should generally include:… A demonstration that no other remedial technologies (conventional or innovative) could attain the applicable standards at the site within a reasonable timeframe.” This requirement is overly broad and does not consider practicable aspects beyond timeframes such as implementability, safety and cost. Many technologies may be able to attain applicable standards while still being technically impracticable at a given site. Recommend the new wording for the sub-bullet to " A demonstration that no other practicable remedial technologies (conventional or innovative) could attain the applicable standards."	This is not a requirement, it is guidance. The language is sufficcient.
74	8	2.1.1	1st paragraph, 2nd to last sentence	The second to last sentence should read – “The primary consideration for any RPO is ensuring the protection of human health and the environment at existing installations.” Either a remediation system is protective or not. No need to try and define “maximize protection” of human health and the environment.	Text has been changed.
75	9	2	2.1.1	1st paragraph, 1st line - Add comma after "periodic".	The current language is sufficient.
76	9	2	2.1.1	1st paragraph, 5th line - Add comma after "determination".	Text has been changed.
77	9	2	2.1.1	Recommend that consideration of sustainability parameters (e.g. energy consumption, green house gas emissions) be added to the RPO evaluation process. This may be added to #2 in the RPO process.	Ad language per DEP guidance, see Cary Compton (TKO'N)
78	10	2	2.1.2	The contaminant mass should be determined and used in conjunction with a cost per unit of mass removed. A high cost per unit may be justified with a small contaminat mass, but not with a much larger mass. The duration of the remedial action may also be utilized as a factor and should be compared with natural attenuation.	Text has been changed.
79	10	2	1.2	The cost analysis may also demonstate that a remedial action may be technically and financially practical to a level that is higher than the regulatory target, but that it is practical until that level is reached.	The current language is sufficient.
80	10	2.1.2	2nd paragraph of 2.1.2	“Costs may not include sampling and analysis for delineation purposes, system engineering and bid specification preparation.” Costs should incorporate all items associated with the various remedial alternatives to properly compare “true” costs. Some alternatives might require little systems engineering while others might need extensive systems engineering. In a similar manner, some remedies might require more accurate delineation efforts than others. The statement should read "In addition, there are costs associated with sampling and analysis delineation, system engineering, and bid specification preparation. Costs should include all of the items from above to ensure that all costs are considered in the selection process."	Text has been changed.
81	10	2.1.2	2nd paragraph, last sentence	Recommend the following revision, "A convenient way to present cost data is to present the cost per unit of contaminant removed, e.g. dollars spent per gallon of DNAPL recovered., or the cost per unit reduction in health risk associated (i.e., dollars spent to reduce risk to human health or the environment, particularly once remedial works have achieved a tolerable risk level). "	Beyond the scope of the guidance.
82	11	2.1.2	5th para	Reference is made to "Draft Instructions…..". Online link or more info needs to be provided for accessibility.	Text changed, link provided.
83	11	2.2	Title	There should be a question mark (?) at the end of question posed.	Text has been changed.
84	11	2.1.2	References for determining costs	Recommend additional references for cost of remediation and value of groundwater: • Cost and benefits associated with remediation of contaminated groundwater: A review of the issues. Environment Agency R&D Technical Report P278 (1999). EA, Bristol, UK: http://publications.environment-agency.gov.uk/PDF/STR-P278-E-E.pdf • Assessing the value of groundwater. Environment Agency Science Report SC040016/SR1 (2007). EA, Bristol, UK: http://publications.environment-agency.gov.uk/PDF/SCHO0207BMBD-E-E.pdf	Included as a reference.
85	12 to 14	2	2.2	Section 2.2 addresses the timing of a TI proposal. However, various components of a TI evaluation are discussed (mainly focused on the CSM). Everything after the 1st sentence in the 1st full paragraph on page 12 could be included in Section 3.3 (as Table 1 on page 17 lists the minimum required information in support of a TI decision).	Language is sufficient.
86	12	2	2	Add as an item : After the reevaluation of a selected RA, where there is a significant change in the use of the site.	Text has been changed.

87	13	2	Paragraph 2	"The data and analyses needed to address each of these components of a TI evaluation should be determined on a site-specific basis. Where an investigator is preparing a TI proposal, its contents generally should be discussed with the Department's technical consultation team prior to submittal of the final document to the Department. Early agreement between the investigator and Department on the type, quantity and quality of data and analyses required for TI decisions will promote efficient review of TI evaluations. In addition, technical discussions should be supported by tabulated data, statistical analyses or other types of data reduction to facilitate the TI evaluation." This paragraph should be removed from the guidance document. This statement is not required by the Tech reg. In addition, it removes the LSRP professional judgment. This is counter to the Purpose of the LSRP program. Finally, the guidance document does not describe any mechanism to enter into an early agreement for a TI evaluation as part of an LSRP case. As noted in Section 3, NJDEP recommends that the investigator use the Technical Consultation process before initiating a TI proposal. However, the NJDEP's Technical Consultation states explicitly that resulting recommendations are not considered Departmental approval. If this section remains it should state explicitly whether the results of Technical Consultation constitute "early agreement between the investigator and Department".	Language changed, agreement has been deleted, discussions inserted. Consultation is not required, simply recommended.
88	14	3	F. 2.	Under Chemical Properties - contaminants with high contaminant sorption potential are more difficult to remediate, not less difficult. Desorption (and back diffusion) of contaminants from aquifer and aquiclude materials results in prolonged groundwater restoration timeframes.	Table corrected.
89	17	3	3.3	Table 1: Recommend adding a Suggested Section for "Alternative Remedial Strategy". This section would develop a risk management approach for the CEA where the TI determination applies. After describing the approach, the later sections can propose a monitoring program and estimate costs.	Table 1 is a suggested report format, additional considerations such as ARS may be added as appropriate.
90	15	3	Title	There should be a question mark (?) at the end of question posed.	Language is sufficient.
91	15	3	2nd para	"Remedial Action Permit" needs to be added before RAP in the beginning of paragraph.	Text has been changed.
92	15	3	1st para	"(listed below)" needs to be added after "The report transmittal form" in the 1st sentence.	Text has been changed.
93	15	3		1st paragraph, 3rd line - Change "it is" to "they are".	Text has been changed.
94	15	3		1st paragraph, 4th line - Change "its" (before "CSM") to "a".	Text has been changed.
95	15	3		1st paragraph, 6th line - Add "proposal" after "TI".	Language changed to TI determination.
96	15	3		2nd paragraph, 2nd line - Add comma after "result".	Text has been changed.
97	15	3		2nd paragraph - Current guidance indicates that (excluding natural attenuation) application for a RAP can only occur after a system has been operating for some time (usually 1 year). How will this accommodate "front-end" TI proposals? Will the RAP guidance be changed to include timing for a TI proposal?	The RAP application will be changed as necessary.
98	15	3	3.1	1st paragraph, last line - Add comma after "Department".	The current language is sufficient.
99	15	3	3.2	3rd line - Add comma after "process".	Text has been changed.
100	15	3	1st paragraph	This paragraph "highly recommending" "full use" of the NJDEP Technical Consultation process before initiating a TI proposal is not appropriate. This supersedes LSRP best professional judgement by essentially requiring NJDEP pre-review and approval of a TI determination. As LSRPs are fully aware of the availability of the Technical Consultation process if they choose to use it, we recommend that this paragraphis unnecessary and should be deleted. If it is not deleted, it should be revised to remove the high recommendation and simply be a reminder of the availability of the Technical Consultation process if the LSRP chooses to use it.	The LSRP is welcome to proceed as he or she sees fit, a Technical Consultation is not required, only recommended.
101	15	3	1st paragraph	When the implemented remedial action includes a TI determination, we agree it is appropriate to apply an institutional control (and perhaps an engineering control) under a Remedial Action Permit. Demonstration of protectiveness of health, safety, and the environment is a routine element when a Remedial Action Permit is obtained, so a RAP which includes a TI would not be unusual in this regard. It is therefore inappropriate for the NJDEP to automatically flag every site with a TI determineation for audit, as it is redundant to the existing permitting process, and serves to supersede LSRP best professional judgement. The comment about the automatic audit flag seems to primarily serve as a threat and deterrant to the use of TI determinations. We recommend deleting this paragraph.	TI Determinations should be considered unusual actions and will be reviewed, not necessarily audited, by the Department. A review should not be considered a deterent.
102	15	3	1st paragraph	The comment that "in most cases" two separate CEAs will be issued when a TI determination is made is unfounded and inappropriate. For many sites, especially smaller sites, a single CEA would suffice for all purposes. We recommend either deleting this comment entirely or revising the paragraph to indicate that the LSRP has the option, if appropriate based on their best professional judgement, to establish more than one CEA.	Language changed, "in most cases deleted". The Department will still be issuing the CEA, the LSRP will propose the CEA.
103	15	3	3.2	Current guidance indicates that (excluding natural attenuation) application for a RAP can only occur after a system has been operating for some time (usually 1 year). How will this accommodate "front-end" TI proposals? Will the RAP guidance be changed to include timing for a TI proposal?	The RAP application will be changed as necessary.
104	16	3	3.2	4th line - Delete 2nd instance of "submitted". Change "to the" to "for". Delete "for" after "Department" (i.e. would read "…application for Department inspection and review.")	Text has been changed.
105	16	3	3.3	2nd sentence - Recommend changing "presents" to "provides".	Text has been changed.
106	17	3	3.3	Table 1, #1, 2nd line - Add comma after "Generally".	Text has been changed.

107	17	3	3.3	Table 1, #2 - Recommend changing to "TI Spatial Extent" or simply "TI Extent". Use of "Areal" may be misinterpreted to literally refer to area when volume (i.e., area AND depth) is required.	Text has been changed.
108	17	3	3.3	Table 1, #2 - 1st sentence - The area and depth should be provided in absolute terms - based on available information in the CSM. If the phrase "relative terms" is retained, examples should be provided (e.g., the upper aquifer, the Cohansey Formation, etc.).	Text has been changed.
109	17	3.3	Table 1	The suggested discussion for TI Areal Extent states: “Avoid depicting the extent of the TI area based on contaminant concentration contour intervals because they are highly interpretive and their position may change with time.” The TI request should include the horizontal area covered by the TI proposal. Presumably this would cover the area over which ground water quality standards cannot be met. A common method for depicting such areas is a plume map based on contaminant concentrations. If such common mapping is not recommended then the guidance should state exactly what type of information should be provided to delineate the horizontal extent of the TI proposal.	Text has been changed.
110	17	3.3	Table 1	The table should include another section that states “TI Renewal Schedule” or “TI Reevaluation Schedule”	See Section 4 for post determination management.
111	18	4	1	Add as an item : reevaluation when the selected RA is ineffective at achieving the designed remedial outcome.	See Section 4.2 second, third and fourth bullits.
112	18	4	4.1	4th line - Recommend deleting "at the property"; as "property" is referenced later in this sentence.	Text has been changed.
113	18	4	4.1	Recommend that all TI decisions be reviewed on a regular basis (e.g., every 5 years - consistent with Section 121 of CERCLA). The bulleted items can form the basis for requiring more frequent review.	Text has been changed.
114	18	4	4.1	Recommend adding another bullet to read "Contamination is detected in previously uncontaminated area(s) or contaminant concentrations are increasing."	Text has been changed.
115	19	4	2	suggest adding "New" to technology in second bullet. In the middle of the twentieth century, it was technically impractical to drill for oil offshore. It should be emphasized that TI may be temporary and not for the duration of the RA.	See section 4.3 second bullit. Language changed.
116	19	4	4.2	3rd bullet, 5th line - Note that contaminant concentration rebound can also occur after in situ remedies are implemented; not only when an "active" system (e.g, pump & treat) ceases.	Text has been changed.
117	19	4	4.3	last sentence - Delete "of" after "termination".	Text has been changed.
118	19	4	2nd Bullet	Reconsider changing this bullet to read, “In instances where a new technology is developed and available, and it is shown that the existing TI determination is no longer protective of human health and the environment.”	Language has changed per comment 115, remaining language sufficient.
119	19	4.3	4th Bullet	Remove or revise “Regulatory changes” as it is not applicable, unclear and not specific in its current form.	Language changed, deleted bullit.
120	20-21	Ref		Various documents related to TI (including the 1993 EPA guidance referenced in the text) are not included here. I have a list of related documents (with links) that can be provided if desired.	Added references.
121	23	App A		Defininition of Technical Impracticability - Last line refers to 7:26E-6.1(d). This applies only to free/residual product. A broader reference (e.g., 6.1) would cover product and the need for institutional controls. Alternatively, 7:26E-1.12(a)1 and 6.3(a) call for removal, containment or stabilization of contaminant sources.	Citation has been updated to reflect current regulations.
122	25	App B		Recommend adding a dash or more space between acronyms and definitions to improve legibility. Also, the first letter of some definitions are capitalized while others are not. While a formatting issue, consistency is recommended.	Text has been changed.