EPA COMMENTS
DRAFT REMEDIAL ALTERNATIVES SCREENING TECHNICAL MEMORANDUM
LOWER PASSAIC RIVER STUDY AREA
DATED APRIL 15, 2015

No.	General Comments
1	The Draft Remedial Alternatives Screening Technical Memorandum (memorandum) presents the development and preliminary screening of remedial alternatives for the Lower Passaic River Study Area (LPRSA). The memorandum needs to be revised based on EPA-accepted information, evaluations, concepts and conclusions of the remedial investigation (RI), baseline human health risk assessment (BHHRA) and baseline ecological risk assessment (BERA). The RI, BHHRA and BERA are currently being developed and this memorandum may require additional revisions after the three documents are accepted by EPA. In addition, the development of any remedial alternatives must reflect EPA's selected remedy in the Record of Decision (ROD) for the Lower 8.3 Miles of the Lower Passaic River (LPR). This comment set does not include further direction on the remedial action objectives (RAOs) language that was presented in this memorandum. EPA is having further deliberations internally on the RAOs and will provide direction to CPG on the matter at a later date.
2	The memorandum fails to conduct a meaningful screening of remedial alternatives. Please revise the memorandum to provide greater detail regarding the development of alternatives, to recognize EPA's selected remedy for the lower 8.3 miles of the LPR, to develop a wider range of alternatives, and to screen and evaluate them consistent with EPA guidance. The memorandum should include additional alternatives that focus on contaminated sediments upstream of RM 8.3 that are based on a range of remedial action levels (RALs) for COCs identified based on the results of the baseline human health and ecological risk assessments (which will impact the remedial footprint), and provide a discussion of how these RALS were developed and selected. This will allow for the development of a series of targeted cleanup alternative similar to Alternative 4, provided that sufficient data density exists to properly evaluate such a targeted alternative. This will also allow the long- and short-term effectiveness, cost, and implementability of the alternatives to be properly evaluated in the detailed and comparative evaluation of alternatives in the feasibility study (FS) by better understanding the uncertainties and tradeoffs associated with either a targeted or comprehensive remedial strategy above RM 8.3. It is the purpose of the FS to evaluate the tradeoffs associated with either approach through the remedy selection factors.

3	The memorandum makes frequent reference to an adaptive management approach. However, the details of such an approach are not described. Please revise the memorandum to describe the elements of an adaptive management strategy (e.g., interim targets, contingencies, monitoring, etc.) that is specific to each alternative. It should be noted that EPA's selected remedy for the lower 8.3 miles of the LPR as specified in the ROD contemplates an adaptive management approach during the design and implementation of the remedy. As a result, the memorandum should be revised to include adaptive management strategies for Alternatives 2, 3, and 4 (and any additional developed alternatives) as a component of monitored natural recovery (MNR), capping, and dredging activities.
4	The memorandum over-emphasizes the impacts of bridges and other infrastructure on implementation of the remedy. While it is appropriate to acknowledge these difficulties during the implementability evaluation, the memorandum should consider measures to mitigate these issues (e.g., the use of low profile barges that can pass beneath bridges and hydraulic transport of dredged materials via pipelines under bridges to lessen the number of required bridge openings.), as also discussed in the ROD for the Lower 8.3 Miles of the LPR. Also, the memorandum should include the need for coordination with bridge authorities and associated costs in the analysis. Please revise the memorandum to include discussions of these mitigation measures and associated costs.

No.	Page No.	Specific Comments
5	Page 1-1, Section 1	All remedial alternatives (including the no action alternative) should assume dredging and capping of the lower 8.3 miles of the LPR consistent with EPA's selected remedy presented in the ROD for the Lower 8.3 Miles of the LPR.

6	Page 1-1, Section 1, second paragraph, last sentence	Paragraph two makes reference to the "site-specific" Baseline Human Health Risk Assessment. If this is referring to the separate risk assessment submitted by the CPG on Feb. 18, 2015 with the letter transmitting the draft RI Report to EPA, the risk assessment should not be used in support of the FS and alternative screening technical memo. As previously stated, this risk assessment was developed outside the RI/FS process using assumptions and methods that are unacceptable to EPA. As noted in EPA's comments on the draft RAO/PRG Technical Memorandum provided to the CPG on August 4, 2016 references to the "alternate" BHHRA should be deleted and the memorandum should be revised to be consistent with EPA comments on the RI, BHHRA, and BERA.
7	Page 2-1, Section 2.1, bullets	As discussed in General Comment 1, EPA will provide direction to CPG on this section at a later date.
8	Page 2-1, Section 2.2	The PRGs presented in this section were developed using unacceptable risk assessment assumptions and conclusions which will require significant modifications. The PRGs should be revised to be consistent with EPA comments on the BHHRA, BERA and RAO/PRG technical memorandum.
9	Page 2-2, Section 2.3, first paragraph, third through fifth sentences	The text states: "At many sites, attaining a final cleanup level will not be achieved solely by active remediation and will rely in whole or part on natural recovery processes continuing over time. There are also circumstances…" This is not relevant to the discussion of RALs. Please delete these sentences from the paragraph.
10	Page 2-2, Section 2.3	Although the concept and potential application of RALs for the LPR may be acceptable, the development of the RALs requires close coordination with the EPA to ensure use of appropriate methods relative to conditions within the LPR. The development of RALs must be consistent with an appropriate PRG, and the agreed upon COPC mapping procedures that appropriately consider uncertainty and sediment bed dynamics.
11	Page 2-2, Section 2.4	This section references CPG's fate and transport modeling work, which has not been fully presented, reviewed or approved by EPA. This section also mentions that within this modeling, CPG has used two exposure zones, 0-2 cm and 0-15 cm. Consistent with the June 28, 2016 letter from Walter Mugdan, EPA

		Director, Emergency and Remedial Response Division to Dr. Robert Law, the top 15 cm of sediment must be used to represent contaminant concentrations applicable to the biological exposure depth.
12	Page 3-1, Section 3, last bullet	Adaptive management represents a management framework and should not be considered a general response action (GRA). Please revise the text accordingly.
13	Page 3-2, Section 3.1, second paragraph	Consistent with EPA guidance, the text should note that "cost plays a limited role in the screening of process options" (Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA, Interim Final, EPA/540/G-89/004, October 1988). Please revise the text accordingly.
14	Page 3-3, Section 3.1.1	The No Action alternative should not include five year reviews.
15	Page 3-5, Section 3.1.3	Please revise the text to consider monitoring as an ancillary activity, rather than as a process option. Monitoring does nothing to reduce risk; rather, it documents whether risk reduction is occurring and helps to inform if the remedy is functioning as intended.
16	Page 3-6, Section 3.1.4.1, first paragraph, third sentence	The text states that "natural recovery may be inhibited by ongoing contaminant sources and is not applicable in areas subject to net erosion." It is more appropriate to state that MNR may not be effective in areas subject to erosion. In addition, MNR may not be effective in areas that, while stable and not defined as "net erosional," are subject to periodic erosion and deposition. Please revise the text accordingly.
17	Page 3-10, Section 3.1.5.2, Thermal Desorption	The CPG removed thermal desorption from further consideration. However, given the successful use of thermal desorption for PAHs and other organic contaminants from hazardous waste sites (coal gas wastes in particular), retention of this technology should be re-considered. Although elevated levels of metals exist in sediment, the observed levels may not present conditions that would preclude use of thermal desorption along with other remedial technologies within a future sediment treatment train.
18	Page 3-11, Section 3.1.5.3	The boxed text regarding the conclusion that beneficial reuse may be an effective alternative to landfill disposals should also note the requirements of the state where the material is destined for beneficial use as one of the factors relevant to the feasibility of this

		approach.
19	Page 3-12, Section 3.1.6, first bullet	Please revise the discussion of physical isolation to note that the goal of physical isolation is to prevent exposure by human and ecological receptors.
20	Page 3-15, Section 3.1.7	The ROD and responsiveness summary for the Lower 8.3 Miles of the LPR explain why it is necessary to either obtain de-authorization of the federal navigation channel and/or modification of the authorized depth, or to dredge to meet the authorized depth after capping. The second sentence should be deleted. Alternately, the text could note that the selected remedy for the sediment of the lower 8.3 miles includes deeper dredging in the lower 1.7 miles. The CPG's opinion that it is "not a requirement of the LPRSA AOC or under CERCLA" to consider the navigation channel should be omitted.
21	Page 3-18, Section 3.1.7.2	The statement that "locations within the LPRSA … would more easily comply with EPA's Off-Site Rule" is perplexing. How is the location of the processing facility related to the Off-Site Rule? The Off-Site Rule has to do with whether disposal facilities where material is sent for disposal are in compliance with RCRA or other applicable Federal or State regulations. The location of the processing facility within the LPRSA would mean that permits would not be required, but how would that change the application of the Off-Site rule?
22	Page 3-20, Section 3.1.7.3, second paragraph, third sentence	The text states: "A mass balance analysis using monitoring data from 11 environmental dredging projects estimated generated residuals from 2 to 9 percent of the mass of contaminant removed (Patmont and Palermo 2007; USACE 2008b)." Please revise this analysis to include residuals estimates from more recent dredging projects such as the recent Boeing Plant 2 dredging project on the Lower Duwamish Waterway in Seattle, WA. Recent improvements in engineering controls and best management practices (BMPs) have the potential to reduce the mass of generated residuals.
23	Page 3-23, Section 3.1.9.1, continuing paragraph from previous page	Please revise the last sentence to state that the Tierra Phase 2 Removal is for 160,000 cubic yards (not 140,000).

24	Page 3-23, Section 3.1.9.1, second paragraph	With regard to the State of New Jersey's and the other Natural Resource Trustees' opposition to citing a CAD in Newark Bay for Passaic River sediments, the text states: "For the purpose of this evaluation, it assumed that these administrative feasibility challenges can be overcome through thoughtful consideration of the technical merits of this disposal option, in the context of the relative risks and impacts to the environment and the public posed by upland landfill disposal options." Please revise the second sentence to reference NJ Governor's November 28, 2012 letter to Lisa Jackson regarding the matter.
25	Page 3-24, Section 3.1.9.3	In the description of landfill disposal of dredged sediment from the lower Passaic River for both the Tierra Phase I Removal Action and the RM 10.9 TCRA, the CPG omitted information on where prior dredged sediments were actually disposed. This section should be amended to indicate that these sediments were disposed at properly-licensed, hazardous waste facilities. Most dredged materials were taken to a selection of Subtitle C Hazardous Waste Landfills, however, a small portion of Phase I dredged material was taken for pre-treatment at a licensed hazardous waste incineration facility, prior to Subtitle C landfill placement. Insert a sentence prior to last sentence of the last paragraph that reads "Testing will be performed to properly characterize the sediment for disposal, and all applicable disposal requirements will be met."
26	Page 3-26, Section 3.2	The last sentence refers to "adaptive management" as though it were a phase of the remedial action. Revise the last sentence to read "Emerging and innovative technologies not considered by the feasibility study may be evaluated during remedial design and remedial action under an adaptive management strategy."
27		The memorandum includes the following alternatives: • Alternative 1: No further action (river mile [RM] 0 to 17.4) • Alternative 2: Targeted dredge and cap, MNR, and adaptive management (RM 0 to 17.4) • Alternative 3: Dredge and cap for RM 0 to 8.3, including reestablishment of the navigation channel from RM 0 to 2.2 (EPA FFS Alternative 3), and MNR for RM 8.3 to 17.4

	Page 4-1, Section 4	Alternative 4: Dredge and cap for RM 0 to 8.3, including reestablishment of the navigation channel from RM 0 to 2.2, targeted upstream dredge and cap for RM 8.3 to 17.4, and MNR Alternative 1 should be "no action" – not "no further action" which implies some action is being taken. All remedial alternatives, including the No Action alternative should assume dredging and capping of the lower 8.3 miles of the LPR consistent with EPA's selected remedy. The other alternatives should only address remedial actions in RM8.3 to RM 17.4 and any additional remedial actions in RM 0 to RM 8.3 that are necessary to address surface water quality (if any). In addition, Alternatives 2 and 4 utilize an RAL of 500 nanograms per kilogram (ng/kg) 2,3,7,8-tetrachlorodibenzodioxin (TCDD). EPA recommends development and evaluation of additional alternatives that rely on a range of RALs for 2,3,7,8-TCDD and other COCs identified based on the results of the baseline human health and ecological risk assessments. A break point analysis should be performed that investigates the relationship between surface weighted average concentration (SWAC) and area remediated for 2,3,7,8-TCDD RALs ranging from 50 ng/kg to 1,000 ng/kg. The results of this analysis should be used to develop supplemental alternatives that target a range of 2,3,7,8-TCDD RALs under a targeted dredge and cap scenario, in conjunction with bank-to-bank remediation between RM 0 and RM 8.3. A similar analysis should be performed for other COCs.
28	Page 4-2, Section 4.1.1	References to deepening or reestablishment of the FNC should be eliminated since dredging within the FNC is addressed through EPA's selected remedy for the Lower 8.3 Miles of the LPR. The discussion of dredge depths should focus on the targeted removal upstream of RM 8.3 and the dredging depth required to remove contamination, limit flooding if conducted in conjunction with capping and any allowable overdredging.
29	Page 4-2, Section 4.1.1, first paragraph, third sentence	The text states: "The removal of this additional sediment is not necessary to achieve the RAOs, and there is no evidence of reasonably anticipated future uses that would require accommodation through deepening of the FNC." This statement of the CPG's opinion conflicts with EPA's analysis as documented in the FFS Report, the Proposed Plan, and ROD for the Lower 8.3 Miles of the LPR, and it is not relevant because dredging in the navigation channel is incorporated in the remedy between RM 0 and 1.7. The two sentences beginning with "The removal of this additional sediment…" should be removed. Further discussion of the navigation channel should reference, or be consistent with, the

		ROD for the Lower 8.3 Miles of the LPR.
30	Page 4-2, Section 4.1.1, third paragraph	The text notes that "a clean stable surface over the removal areas" will be in place at the end of construction and that this clean surface material would "range in thickness from approximately 6 inches to 3 ft." Please revise the text to discuss the difference between a 6-inch residual management layer and a 3-foot cap in this section.
31	Page 4-3, Section 4.1.2.2	Please revise the text to incorporate a treatment option into Dredge Material Management (DMM) Scenario A – Off-Site Disposal for management of dredged materials that may require treatment due to land disposal restrictions (LDRs) or other regulatory disposal requirements or to facilitate beneficial use of contaminated sediments subsequent to treatment.
32	Page 4-4, Section 4.1.3	Please revise the text to include analyses to determine whether reactive amendments should be included in the cap design. In addition, the memorandum should investigate whether armoring is required in potential high-scour areas.
33	Page 4-4, Section 4.1.4	Ongoing contaminant sources include both internal sources (e.g., areas of sediment contamination subject to erosion and transport) and external sources (e.g., sediment entering the LPR from above Dundee Dam, and from Newark Bay). Please revise this section to discuss these classes of sources.
34	Page 4-5, Section 4.1.5, first paragraph, second sentence	The text in line three that refers to baseline monitoring should be changed from post-remediation to pre-remediation.
35	Page 4-5, Section 4.1.6	In light of EPA's selected remedy for the lower 8.3 miles of the LPR, the discussion of adaptive management should focus on areas upstream of RM 8.3 where either MNR or targeted remediation is planned. Please revise the text accordingly. Furthermore, please revise the third paragraph to allow for adaptive management to be a component of all remedial alternatives. Contrary to CPG's assertion, adaptive management practices could be implemented for all active remedial alternatives and are

		explicitly included in the lower 8.3 mile remedy. Adaptive management methods, which are wide-ranging, can always be considered and used to enhance attaining remedial goals sooner, more safely, and/or with lower costs, depending on the circumstances.
36	Page 4-7, Section 4.1.8	CPG should address whether impacts to aquatic habitat will require compensation beyond restoration, e.g., for the temporal loss of natural resources.
37	Page 4-7, Section 4.1.9	Please provide citation for the projections of sea level rise by researchers at Rutgers University. Missing from the description of potential sea level rise in the Passaic River is the additional, inseparable component of expected higher frequency of extreme storm and flooding events. Both sea level rise and extreme storm and flooding events will need to be considered during remedial design. This section should be amended accordingly.
38	Page 4-7, Section 4.1.10	The Lower 8.3 Miles Responsiveness Summary discusses how EPA identified the depths included in the ROD. Please revise this discussion, removing the CPG's critique of the 2010 survey and its conclusion that EPA has not provided sufficient basis for the additional dredging in the navigation channel. Deauthorization and/or modification of the federal navigational depths in the Lower 8.3 Miles will be addressed during the remedial design phase for OU2. Please delete Paragraph 3 of Section 4.1.10 ("The USACE has not performed…") because it is incorrect. This has previously been addressed by EPA in the responsiveness summary of the lower 8.3 mile ROD. For the same reason, the last sentence of paragraph 5 should be deleted ("However, as detailed above…" Additionally, the 6th paragraph should be deleted as it is unnecessary, since the lower 8.3 mile ROD will be included as the No Action alternative.
39	Pages 4-9 through 4-10, Section 4.1.11.1	The text describes in length the effects of bridges on remedial measures. EPA acknowledges the challenges associated with bridges within the LPRSA. Please revise the text to discuss management approaches such as the use of low profile barges that can pass beneath bridges and hydraulic transport of dredged materials via pipelines under bridges to lessen the number of required bridge openings that can minimize the effect of bridges and bridge openings on the transport of dredged material and dredging

		equipment rather than only indicating that remedial activities will be impacted. The memorandum should consider these measures to mitigate the issues as also discussed in the ROD for the Lower 8.3 Miles of the LPR.
40	Page 4-12, Section 4.1.11.3	Many of the constraints described in Section 4.1.11 can be minimized during remedial design through appropriate selection of equipment, development of multiple processing stations, active management of the transport and staging of equipment and dredged material, and development of specifications regarding the timing of dredging and transport activities. Please revise the text accordingly. Note, construction constraints are typically not considered a "long-term stress" in the nine criteria analysis. These are better described as short term impacts. Third and fourth bullets include broad statements referring to frequent bridge openings and "economic, social and environmental impacts" that are not well supported.
41	Pages 4-13 through 4-21, Section 4.2	Please revise the text to provide additional detail regarding the development of the proposed remedial alternatives. In addition, please develop a larger suite of alternatives followed by screening consistent with EPA guidance. All alternatives (including the no action alternative) should assume that capping and dredging will take place within the lower 8.3 miles of the LPR consistent with EPA's selected remedy for this portion of the LPR. Alternatives for the upper portion of the LPR should be developed by considering a range of RALs that achieve a range of SWACs, including at least one alternative that will achieve a protective SWAC or background concentrations immediately following construction. Furthermore, site-specific data should be evaluated to identify the preferred remedial technology/process option in various portions of the river considering contaminant characteristics, sediment characteristics, land and waterway use characteristics, physical characteristics and other relevant information. Please revise the discussion of RALs, the associated target areas for given RAL and the resulting reduction in SWAC to reflect the updates to the CPG's mapping approach once it receives approval from EPA. Alternative 1 should be "No Action" not "no further action", or no further remedial action, though it is appropriate to acknowledge the remedy for the Lower 8.3 Miles. "No Action" typically should not include five year reviews – however, the text can acknowledge that five year reviews will be conducted for the Lower 8.3 Miles, as that is part of the selected remedy.

42	Pages 4-13 through 4-18, Section 4.2.2	Please revise the text to provide greater justification for the selection of a 500 ng/kg RAL for 2,3,7,8-TCDD and describe the resulting sediment concentrations on a SWAC basis over a range of exposure areas (e.g., site-wide and over 1 RM). A similar analysis should be conducted for other COCs identified based on the results of the baseline human health and ecological risk assessments. The text should provide analysis for the selection of a range of RALs (e.g., SWAC vs. area curves with a range of RALs depicted on the curve). Ultimately, the text should be revised to consider a range of RALs for targeted remediation.
43	Page 4-14, Section 4.2.2, first full paragraph	Alternative 2 calls for targeted dredge and cap. However, no basis for the targeted dredge depth of 3 feet is provided. If this depth is to accommodate a 3-foot cap, that should be stated in the text. In addition, dredging and capping between RM 0 and RM 8.3 will be addressed as part of OU2, so the targeted dredge and cap option should focus on the portion of the LPR upstream of RM 8.3. Please revise the text to discuss the dredge depths in different areas of the upper portion of the LPR based on consideration of water depth and other factors (e.g., scour potential).
44	Page 4-14, Section 4.2.2, second full paragraph, first sentence	Dredging and capping between RM 0 and RM 8.3 will be addressed as part of OU2. Above RM 8.3, some dredging and capping is likely implementable near some structures. Please revise the text to include an allowance for dredging and capping in these areas using specialized equipment and consideration of the removal of certain structures to facilitate the application of capping and dredging technologies. The added costs associated with capping and dredging in the vicinity of structures should be included in the cost estimate.
45	Pages 4-15 through 4-16, Section 4.2.2.1	For human health, only risks due to direct contact are discussed here. Please revise this section to discuss the risks associated with fish and shellfish consumption as well. In addition, the development of RALs must be consistent with the results of the RI (including delineation of contamination and contaminant fate and transport modeling), BHHRA and BERA and, as a result, may require revision based on the resolution of EPA comments on these documents.
46	Page 4-16, Section 4.2.2.1, last bullet	Please revise the text to provide information regarding incoming particle concentrations at Dundee Dam for other COCs, in addition to 2,3,7,8-TCDD and total polychlorinated biphenyls (PCBs). This information can be used to evaluate recontamination potential and

		background concentrations.
47	Page 4-17, Section 4.2.2.3	This section should be revised to remove references to the CPG's Fish Exchange Program. EPA offered in 2014 to discuss and/or evaluate the CPG's carp management/fish exchange program, but the CPG declined to submit its program for EPA review. Also, any remaining language that references carp as being invasive species should be revised. Carp should be referred to as non-native species.
48	Page 4-19 to 4-20, Section 4.2.3.0	The discussion of the work below RM 8.3 is largely unnecessary as this will be addressed as part of OU2. Last sentence of this section incorrectly refers to the need to modify and/or deauthorize portions of the federal navigation channel as an institutional control. It is a legal prerequisite for a capping remedy, not an IC.
49	Page 4-21, Section 4.2.3.1, second paragraph	Please provide information regarding the number of dredge plants, production rates, etc. that can be used to determine dredging durations in order to evaluate the durations presented in this memorandum.
50	Page 4-21, Section 4.2.4.1, first paragraph, second sentence	Both Alternatives 3 and 4 state 2.6 million cy of fill and capping material. Please correct one or both of the volumes stated.
51	Page 5-1, Section 5	The entirety of Section 5, which presents the preliminary screening of remedial alternatives, must be revised to reflect changes in the remedial action alternatives. Remedial action alternatives should focus on a range of RALs and remedial technologies targeting contaminated sediments within the LPR upstream of RM 8.3. All alternatives (including the no action alternative) should assume that capping and dredging will take place within the lower 8.3 miles of the LPR consistent with EPA's selected remedy for this reach of the LPR. In addition, the alternatives should be revised to address EPA comments on the screening technical memorandum and revisions to the RI, BHHRA and BERA resulting from EPA comments on these documents.

52	Section 5.1 and Section 5.1.1	Alternative 1 should be "No Action" not "no further action", or no further remedial action, though it is appropriate to acknowledge the remedy for the Lower 8.3 Miles. "No Action" typically does not include five year reviews – however, the text can acknowledge that five year reviews will be conducted for the Lower 8.3 Miles, as that is part of the selected remedy.
53	Page 5-1, Section 5.1.1, first paragraph, first sentence	Please provide further discussion of the mechanism for declines in fish and crab tissue concentrations given the statement about little change in the SWAC.
54	Page 5-1, Section 5.1.1, footnote 7	EPA anticipates that revisions to the CPG's model projections resulting from EPA's review of the CPG's mapping approach, contaminant fate, and bioaccumulation models as presented in the RI may be potentially significant. This document should be revised once EPA has approved the necessary changes to the models and reviewed both the calibration and projection model code, inputs, and results. To date the CPG has not provided the 2014 version of their model projection code, inputs, or results for EPA's review.
55	Page 5-2, Section 5.1.3	Revise to reflect that there is no cost associated with the No Action alternative.
56	Page 5-5, Section 5.3.1, Second Paragraph	Projection runs should extend 30 years past the completion of each remedy, the impact of each remedy on fluxes should also be evaluated over this same period.
57	Page 5-4, Section 5.3.1, Page 5-6 Section 5.4.1	Please provide further details about the analysis that was done to determine that COCs other than 2,3,7,8-TCDD and Tetra-PCB would decline and approach regional background levels.
58		The summary states: "A thorough consideration of the primary balancing criteria involves evaluation of cost-effectiveness in the context of differences in the manner and degree to which the alternatives address the remaining primary balancing criteria. Alternatives that involve "[c]osts that are grossly excessive" compared to their overall effectiveness in comparison to other alternatives may be eliminated from further consideration, as may those that provide "effectiveness and implementability similar to that of another

	Page 6-1, Section 6, second paragraph, last two sentences	alternative by employing a similar method of treatment or engineering controls, but at greater cost" (40 CFR 430(e)(7)(iii); USEPA 1996)." The overall idea conveyed seems to be preference for less costly alternatives that are judged to similarly achieve the project's remedial action objectives. However, long-term, post remedial monitoring and maintenance costs must be considered for alternatives that leave material in place that must be managed in place over time. Since surface and near surface contaminated sediments are the primary source of unacceptable chemical risks/hazards to human and ecological receptors, use of in-place control measures, particularly for uncapped areas where sediment contamination remains in place, will require development of comprehensive cost estimates for long term (in perpetuity) monitoring and maintenance.