DEPT. OF ENVIRONMENTAL CONSERVATION
SPILL PREVENTION AND RESPONSE
DEPARTMENT OF DEFENSE OVERSIGHT PROGRAM
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May 8, 1997

U.S. Army Engineer District, Alaska
Attn: CEPOA-EN-EE-II (Beauchamp)
P.O. Box 898
Anchorage, AK 99506-0898

Dear Ms. Beauchamp:

RE: Review Comments for the Risk Assessment Sections of the Draft Phase II Remedial Investigation/Feasibility Study, Northeast Cape, Alaska

Thank you for providing a copy of the above-mentioned document for Department review. Northeast Cape and Gambell FUDS were transferred from the Fairbanks office in April. It is my understanding that Ms. Tamar Stephens reviewed the Phase II RI/FS and made comment on the report except for the risk assessment sections. The risk assessment sections of the Phase II RI/FS and supporting documentation were sent to a term contractor for review. I received the term contractor comments on April 3, 1997. I have completed my review of the term contractor's comments and the attached table consists of the overall review of the risk assessment sections of the Phase II RI/FS document. I will forward a copy of the comments via e-mail as well.

There are a lot of comments and concerns presented in the comments. I understand that you are trying to program 1998 at this time. I would like to work with all concerned to address everyone's concerns to facilitate keeping the process going.

I look forward to continuing to work with you on this project. If you have any questions regarding my comments or would like to meet to discuss them, please feel free to contact me at 269-7691.

Sincerely,

Katarina Rutkowski
Environmental Specialist

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200-1e

PHASE II RI/FS
RISK ASSESSMENT
NORTHEAST CAPE, ALASKA

ADEC COMMENTS - Katarina Rutkowski

Comment No.	Page	Section/ Paragraph	Comment/Recommendation
1		General	This report indicates that as a result of the risk screening conducted during the Phase I Remedial Investigation, eight areas were retained for further consideration in the Phase II human health risk assessment. These eight do not appear to correspond to recommendations made in the Phase I Remedial Investigation (RI) report. For example, Sites 3, 4, and 5 were recommended for further investigation, including risk assessment; however, only Site 4 is listed in the Phase II report. Please include a section which provides a summary of the areas eliminated from the Phase II risk assessment, including the criteria used. Please include a table which lists each area of concern, media of concern, chemicals of potential concern (COPCs), analytical results and risk-based screening levels (RBSLs) or benchmarks (including references) to support the elimination of areas of concern from the human health and/or ecological risk assessment.
2		General	Please provide a section which presents the media of concern, COPCs and sampling conducted for each site, including those which were dropped from consideration during the Phase I RI. Include identified data gaps for each site.
3		General	It is unclear that there was sufficient sampling conducted during the Phase I RI to adequately characterize each site. Please provide supporting rationale for the number of samples taken in each media and why media such as groundwater, sediment and subsurface soil were not sampled for each site.
4		General	Please include the rationale for excluding all sites except for the Drainage Basin from the ecological risk assessment. Please include information on the applicable ecological RBSLs, measurement endpoints and receptors in the discussion. Please use Soil Screening Levels for the appropriate pathway for screening COPCs at each site (including those sites dropped from consideration during the Phase I RI). If an soil screening level (SSL) is not available, then the appropriate risk-based concentration (RBC) can be used. Please clarify how subsistence use of this area was taken into account in the development of ecological and human health RBSLs.

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5		General	Please include detailed site maps that include surface water bodies; sampling locations for all sampling conducted at each site; wetlands and/or marshes; contour lines; location of potential contaminant sources such as debris, transformers,underground storage tanks (USTs), aboveground storage tanks (ASTs), disposal areas, etc.; and the location of sensitive areas or habitat for sensitive species.
6		General	There appear to be several unnamed creeks at the sites. Please devise a labeling strategy in the text and on the site maps to differentiate the various unnamed creeks.
7		General	The following are comments concerning several RBCs used for several of the analytes: Please ensure that the RBC used for arsenic for soil and water is the carcinogenic RBC. Please clarify why 400 mg/kg lead was not used as the screening level. Please include a reference for the 0.0037 ug/L listed for lead in tap water (no RBC is listed in the EPA Region 3 reference.) Note that an EPA action level of 15 ug/L for lead at the tap is often used in screening. Please verify the following RBCs: 1,1,1-trichloroethane - 2,700 mg/kg rather than 7,000 mg/kg copper - 3,100 mg/kg rather than 2,900 mg/kg 2-butanone - 1,900 ug/L rather than 22,000 ug/L arochlor 1260 - 0.0087 ug/L rather than 0.0076 ug/L beryllium - 0.016 ug/L rather than 0.16 ug/L p-xylene - 520 ug/L rather than 1,400 ug/L PCBs - 0.083 mg/kg (updated value) Please note that the RBCs for diesel range organics and gasoline range organics are based on provisional reference doses identified in a 1992 EPA Region 10 memorandum. These provisional reference doses have been withdrawn. It appears that some RBCs are missing for soil and water: Arochlor 1016 and 1254, 1,2,4 and 1,3,5-trimethylbenzene, n-butylbenzene, and sec-butylbenzene. Please verify whether RBCs are available for these compounds.

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Comment No.	Page	Section/ Paragraph	Comment/Recommendation
8		Table ES-1	This report indicates that Sites 1, 3, 23, 24, 25, and 26 were not addressed during the Phase II RI/FS. Please clarify why these sites were excluded. Please include a discussion on the sampling and human health and ecological risk screening conducted which supports excluding these sites from further consideration.
9	3-5	3.1.6	Please include Site 8 as part of the group of sites that have been identified as sources of contaminants, namely, Sites 10, 11, 19, and 27. It is unclear that visual observance could determine the extent of surface water, groundwater and subsurface soil contamination. Therefore, please include sampling of Site 8 as a data gap that needs to be addressed in order to determine the extent of contamination and to include the data from this site in the Tier II human health and ecological risk assessment. Please clarify how it was determined that the "diesel-contaminated area appears localized, and there is no evidence that it flowed to the unnamed creek." Include in the discussion what sampling has taken place to support this statement. Please include an estimated volume of diesel spilled. Please include supporting rationale for the estimated volume, i.e., fuel transfer rate, time between pressure checks, etc.
10		Figure 1-3	This figure does not clearly define the bounds of the Drainage Basin or Site 8. The boundaries of the Drainage Basin seem to vary throughout the report. In addition, the figure is faded, obscuring some of the surface water drainage channels. Please clarify this figure.
11	2-1	2.1.1/2	Please note that a figure of the vegetation survey transects and plant communities would be helpful.
12	3-25	3.2.2.3	Please include the PCB analysis results in the tables in this section. Also, please include the sample quantitation limits for all nondetected compounds in this and all tables in Section 3.2.
13		Figure 3-6	This figure refers to Figure 2-3, presumably for more information or details concerning the Drainage Basin. However, there is no Figure 2-3 presented in this document. Please clarify the cross-reference. Also, please provide information on how the extent of the drainage basin was determined.
14	4-1	4.1/2	Please indicate on a site map where the tanks that spilled 180,000 gallons of diesel are located.

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Comment No.	Page	Section/ Paragraph	Comment/Recommendation
15	4-2	4.1/3	Please note that Mr. Toolie has indicated that "in the Summer, dust blows from the Cargo Beach Road and the airport Road, as well as the main operations complex. These roads have actually deflated several feet since they were constructed and maintained by the military." Please clarify why inhalation of fugitive dust was not considered a completed pathway. Also, please ensure that a residential scenario is used when calculating risk associated with chemicals of concern (COCs) in all media.
16	4-1	4.1/2	Please discuss the disappearance of the dolly varden/steelhead in the ecological risk assessment. Please provide details on sampling and analysis that was done on the caribou organs that were analyzed in 1990 or 1991. Please clarify what the detection limits were on the analyses that were performed and please indicate which lab conducted the analyses. Please clarify what is meant by "traces."

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17	4-2	4.1/5	This paragraph makes the following statement: "Human health and/or ecological risk assessments were performed for sites where environmental sampling results confirmed the presence of contaminant concentrations that were above risk-based regulatory criteria, human or ecological receptors are potentially present, and there is an exposure pathway for the contaminants to pose a risk to human health or the environment." However, the comparison of environmental sampling results with risk-based regulatory criteria did not include either ecological regulatory or ecological risk-based criteria. Please include a section on ecological risk-based screening that develops ecological risk-based screening values for all COPCs in all media, screens each contaminant's maximum concentration against the ecological risk-based screening value for all sites and media at each site, and presents data gaps for each site and media at each site. The following sites have an aquatic and/or terrestrial habitat within either their defined boundaries or they potentially impact habitats located downgradient from them: • 2 - aquatic and/or terrestrial • 3, 4, 5 - aquatic, marine, and terrestrial • 6 - aquatic and/or terrestrial • 7 - aquatic and/or terrestrial • 9 - aquatic and/or terrestrial • 13, 15, 19, 27 - aquatic • 14, 21 - wetland • 23, 24, 25 - aquatic and/or terrestrial Please include a discussion on the potential impacts to these habitats in these sites in the ecological risk-based screening. Please include EPA Region 10's Supplemental Risk Assessment Guidance for Superfund, and EPA's Dermal Exposure Assessment: Principles and Applications to the list of guidance documents. Please indicate that the document entitled "Assessing Dermal Exposure in Soil" is a Region 3 Technical Guidance document.
18	4-3	4.1/5	Please verify the reference in the last bulleted item.

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Comment No.	Page	Section/ Paragraph	Comment/Recommendation
19	4-3	4.2/General	It would be helpful to use human health, rather than ecological risk assessment terminology in the headers for the human health risk assessment.
20	4-3	Section 4.2/1,2	Please clarify what is meant by "area of concern" in the first sentence of the first paragraph. Please clarify how sample locations were selected, especially where there were limited samples taken. Please clarify how the eight sites were chosen for further evaluation in the Phase II report. It is unclear that the conclusions of the Phase I Report support the selection of these sites. It is also unclear that potential ecological impacts were taken into account in retaining sites for further risk assessment. This is particularly critical given the heavy reliance of the local indigenous populations on subsistence hunting and fishing. Please clarify whether an objective of the remedial investigaiton/feasibility study (RI/FS) process is the protection of ecological receptors within the region, including subsistence and nonsubsistence species (which may be necessary to the continued survival of subsistence species).

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Comment No.	Page	Section/ Paragraph	Comment/Recommendation
20	4-3	Section 4.2/1,2 cont'd	Please provide more detail on the data collected from each site and the ecological and human health screening values used to eliminate sites from the human health and ecological risk assessments. Please include the human health conceptual site model in this report. Please include the following information in this report: • A summary of all data available from the Phase I and Phase II investigations, sorted by medium • An evaluation of the data useability with respect to sample quantitation limits, data qualifiers, blanks, and tentatively identified compounds • A summary of the COPCs identified for each site and medium • A comparison of COPCs to background concentrations • A comparison of the maximum COPC concentrations with the relevant RBCs Presentation of this information in tabular form would be helpful. Please include the maximum concentration of each COPC for each medium, the benchmark screening value used and the background concentration for each medium in one table. Please provide supporting rationale for the selection of COPCs for each site.
21	4-4	4.2.1/ General	Please include references to specific figures and tables when discussing each site. Please include a discussion of the analytical results for the metals analyses that were done in the environmental media collected from Sites 10, 11, 13, and 27. Please include the lack of polynuclear aromatic hydrocarbon (PAH) data as a data gap in a data gap discussion subsection for each site, including sites dropped from consideration in the Phase I RI. Please provide a specific reference to the EPA Region III RBC for diesel range organics (DRO) and gasoline range organics (GRO) used in this and other sections of the report.

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Comment No.	Page	Section/ Paragraph	Comment/Recommendation
22	4-5	4.2.1.3	Please provide supporting rationale for not collecting surface water and sediment samples from the impacted wetland in Site 11. Please provide additional information on how the released diesel fuel was burned, how much was burned, and whether PCBs from other sources were potentially commingled with the diesel fuel that was burned. Please provide a specific reference to the section in 18 AAC 80 where an MCL is given for DRO in drinking water. Drainage Basin: Please include a summary of the results of the surface water samples taken from the discharge point of a culvert which receives drainage from Site 27. Also, please insert units for Arochlor 1260 concentration missing from the second to the last sentence in the second paragraph in this subsection.
23	4-7	4.2.1.5	Based on site history, it is unclear why the potential presence of fuel constituents, lead and PCBs in the environment at Site s14 was not investigated. It is also unclear why Site 14 is recommended for no further action. Please clarify in the text.
24	4-8	4.2.1.6	Please clarify why GRO/DRO and total recoveralbe petroleum hydrocarbons (TRPH) were not analyzed for Site 16, considering an AST at this site still contained a fuel compound. Please provide information on the possible sources for the PCBs detected in the surface soil sample.

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Comment No.	Page	Section/ Paragraph	Comment/Recommendation
25	4-10	4.2.2	Please ensure that the following elements are included in the discussion of the exposure assessment for each site where COPCs have been identified: • Characterization of the physical setting • Identification of complete exposure pathways, i.e., a conceptual site model • Calculation of exposure point concentrations • Identification of exposure parameters selected for each pathway • Presentation of intake equations and results Considering that a family lives at Northeast Cape on a semi-permanent basis, please clarify the following statement: "No permanent workers or residents utilize any areas of the Northeast Cape." Also, please clarify whether a residential scenario was used in the risk assessment. Please clarify how it was determined that the area is used only three months. Please provide detail on the average number of snow-free months in the area. Please clarify whether the family includes children.

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Comment No.	Page	Section/ Paragraph	Comment/Recommendation
26	4-10	4.2.2/3	It is unclear that inhalation of particulates is not a complete exposure pathway considering the Phase I RI report indicates that fugitive dust emissions generated from high winds common to the NEC area seem the most likely mode of transport for surface soil COPCs. The Phase II RI also states that deflation has caused the erosion of roads no longer maintained by the military. Please address this complete exposure pathway in the risk assessment. Please clarify why the inhalation of volatile organic compounds (VOCs) released into the air was not evaluated. Please include a quantitative evaluation of food chain pathways (e.g., ingestion of fish, game, and berries) in the human health risk assessment. The area is used for subsistence hunting and fishing, and bioaccumulating chemicals have been found in environmental media. Please include the incidental ingestion of sediments as a potential exposure route. The third sentence indicates that the local groundwater is not used as a water supply. However, the Phase I RI report indicates that groundwater was used as a drinking water supply while the facility was in operation. Therefore, unless it can be demonstrated that the local aquifer is not a suitable drinking water source, the ingestion and inhalation of groundwater would be considered a complete future exposure pathway for the risk assessment. The fourth and fifth sentences in this paragraph state: "The seasonal native residents collect drinking water at the washed out bridge on an unnamed creek immediately south of the Site 4 area. This water supply is not believed to be impacted by former military operations." Please provide more detail on the basis for believing a drinking water source is not contaminated. Please clarify whether the water supply was sampled.
27	4-10/11	4.2.2/4.2.2.1	Please clarify whether these sites share common sources or simply common types of contamination. It appears that different sources are present at each of these sites.

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28	4-11	4.2.2.1	Please modify the first sentence as required to take into account ecological risk-based screening of COPCs. Please clarify why the aquifer is considered nonpotable when it was used by the military as a drinking water source. Also, please clarify what sampling and analysis has been conducted on the aquifer to determine whether it is potable. Please clarify whether military activities, including the diesel spill, have contaminated the groundwater. Please clarify whether groundwater interfaces with surface water before it reaches the Bering Sea. Please clarify why subsurface soil is not considered a current or future exposure medium at Site 4 and other sites. Please provide more detail on the fate and transport of chemicals from Site 4 and the potential impact to downgradient surface water and sediment via erosion and/or groundwater discharge. This statement applies to all sites. Please verify the reference to Section 4.1.2, which does not exist in this report. Please clarify throughout the report.

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Comment No.	Page	Section/ Paragraph	Comment/Recommendation
29	4-13	4.2.2.6	Please clarify what is meant by "the only human receptors currently, or anticipated, to utilize the Northeast Cape Site are native inhabitants or incidental visitors who use the Fishing and Hunting Camp approximately three months out of the year." Mr. Toolie has indicated that the local population "knows and avoids the operations area." Please clarify whether the local community concurs with the anticipated future use of the site presented in this report and whether the community would have more contact and possibly inhabit this area if it wasn't for the contamination present. The future scenario and the exposure assumptions, including the assumption that groundwater is not a drinking water source, may require the use of institutional controls to ensure that these assumptions remain valid for future use of the site. Please indicate in the report whether the local community has been notified of the potential restrictions on the use of the site and groundwater, fully understand these restrictions, and concur with these restrictions. Please clarify whether the risk assessments for each site assume that residents drink from the same surface water source or from site-specific surface water. Please provide supporting rationale for assumptions made. Please include the incidental ingestion of sediments and fish, game, and plant ingestion, as appropriate, as exposure routes.

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Comment No.	Page	Section/ Paragraph	Comment/Recommendation
30	4-13/14	4.2.2.7	Please clarify how the exposure point concentrations were calculated for Sites 10, 11, 13, 19, and 21. Please clarify the third paragraph in terms of previous risk screening conducted during the Phase I work. Please provide a table that lists the human health compounds of potential concern , detection information, the background concentration for each COPC, the RBSL and the appropriate ARAR/TBC for each media of concern at each site. Please clarify whether COPC concentrations in associated blanks were taken into account when eliminating COPCs from further consideration. Normally, COPCs are eliminated if concentrations in site samples are less than 10 times the concentration of that COPC in associated blank samples. Please include a section on background sampling that discusses the numbers of samples taken, the rationale for the sample locations and includes a reference to the table that lists the background concentrations for all media sampled. Please include a discussion of sample quantitiation limit (SQL) adequacy for all COPCs eliminated for all sites because they were not detected. Please include a data evaluation/COPC selection section that addresses these comments, rather than including all the COPC information in the exposure assessment section.
31	4-14	4.2.2.8	Please clarify the ingestion dose equation. It appears to be inconsistent with EPA guidance in that it appears that the ingestion of water equations is added to the ingestion of soil equation to come up with an ingestion dose for soil. If the second equation is for the ingestion of water, please remove the conversion factor from the numerator.

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32	4-15	4.2.3/1	In order to quantitatively assess the risk associated with GRO and DRO at these sites, ADEC recommends using the surrogate approach presented in the 18 AAC 75 Draft Development Document. This comment applies to other sections where risk associated with GRO and DRO are only qualitatively addressed. Please clarify whether the last site listed in the last sentence of this paragraph is Site 21 rather than Site 27.
33	4-17	4.2.4	Please include a section on uncertainty factors which provides a semi-quantitative or qualitative analysis of the uncertainty associated with risk assessment values. In this section, please clarify whether EPA Region 10's uncertainty factors published in their Risk Assessment Guidance for Superfund (February 1996) were used.
34	4-17	4.2.4.1	Please edit the units for the CSF in the risk equation to $(mg/kg\text{-}d)^{-1}$. Please provide a reference or quantitative analysis for the following statement: "The risk is an upper bound estimate of risk; thus, it is probable that the true risks are less than the calculated risks that are presented here." For sensitive receptors, it is possible for the calculated cancer risk to be understated. Therefore, the Department does not concur with this statement and requests that statements concerning how to interpret risk assessment results are removed from the risk assessment report. Please note that ADEC's risk management level for carcinogenic risk is $1x10^{-5}$ for carcinogenic risks Therefore, any calculated carcinogenic risk than this value would be examined in further detail to determine whether further action is warranted. Please state the following in this section: "If the calculated cancer risk is greater than 1, it indicates a need to further evaluate the site to determine whether remedial action is necessary." Please note that it is Department policy that statements concerning how to interpret risk assessment results not be included in a risk assessment report Risk management decisions are based on additional factors that are external to the risk assessment.

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Comment No.	Page	Section/ Paragraph	Comment/Recommendation
35	4-17/18	4.2.4.2	Please note that ADEC's risk management level for noncarcinogenic risk is 1. Therefore, any calculated hazard index greater than this value would be examined in further detail to determine whether further action is warranted. Please state the following in this section: "If the calculated hazard index (HI) or hazard quotient (HQ) is greater than 1, it indicates a need to further evaluate the site to determine whether remedial action is necessary." Please note that it is Department policy that statements concerning how to interpret risk assessment results not be included in a risk assessment report. Risk management decisions are based on additional factors that are external to the risk assessment.
36	4-18	4.2.4.3/1	Please note that in general, ADEC's risk management levels are $1x10^{-5}$ for carcinogenic risks and 1 for noncarcinogenic risk. Therefore sites where calculated values exceed these risk management levels would be examined in further detail to determine whether further action is warranted. Therefore, please clarify "typically" in the third sentence. Please include a discussion on community concerns, types of chemicals and additional data that were reviewed in concluding that risk management levels are acceptable. Please note that it is Department policy that risk management not be discussed in a risk assessment report. This comment applies to other sections of the report, as appropriate.
37	4-18	4.2.4.3/2 and General	Please include a reference to the appropriate tables that list exposure dose and risk calculations, i.e., Tables 4-19 through 4-21. Please include the appropriate exposure route and receptors for each site in each table.
38	4-20	4.2.5/2	Please clarify whether the last sentence in this paragraph is referring to Site 4 rather than Site 16.
39	4-21	4.2.5/3	Please clarify what is meant by "potential indicator compounds" in the second to the last sentence of paragraph 3. Please note that the benchmark for DRO presented in the Phase I RI , 8,760 mg/kg, is based on an EPA 1992 Memorandum that has since been rescinded. Please use the surrogate approach outlined in the 18 AAC 75 Draft Cleanup Standards to calculate a site-specific RBC for DRO and GRO. Please clarify whether soil samples were analyzed for PAHs, especially carcinogenic PAHs, and please discuss the adequacy of the SQLs for these analyses.
40	4-21	4.2.5/4	Please note that the risk from lead exposure may be overestimated. A value of 400 mg/kg is normally used as a screening value for risks to human health.

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41	4-21	4.3.1/1	This sentence provides a partial rationale for limiting the ecological risk assessment to the Drainage Basin. However, this rationale is not supported by the site descriptions provided in the Phase I RI. Although the Drainage Basin likely represents the most significant ecological area within the Northeast Cape Facility bounds, other sites may also require an ecological risk assessment. This may be especially true given that there has been no comparison of site contaminant concentrations with ecological risk-based screening concentrations. Therefore, please provide supporting rationale for excluding sites from the ecological risk assessment. For each site, please provide either a comparison of contaminant concentrations relative to ecological benchmarks or a detailed description of why there is no current habitat and why a habitat is not expected to become reestablished in the future. Please clarify if other areas of the site would be "significant" ecological resources if contamination and debris were not present. In the discussion, please clarify "significant."
42	4-21	4.3.1/2	Please ensure that the most recent reference documents are listed in this paragraph.
43	4-22	4.3.2	Please clarify the apparent inconsistency in what sites are grouped together between the human health and ecological risk assessments. In this section, Sites 10, 11, 13, and 27 are grouped together as sources to the Drainage Basin, while Site 19 is excluded. Subsection 4.2.2.2 includes Site 19 in this group as part of the human health exposure assessment due to common contaminants and the fact that all the sites drain to the Drainage Basin.
44	4-23	4.3.2.1/6	Please provide more detail on the quantity and quality of ecological habitat present at Sites 10, 11, 13, and 27. Please include future land use plans for the facility in discussing exposure pathways to ecological receptors. While sites may not currently support an ecological habitat, they may in the future, depending on whether structures will be abandoned in-place or demolished.

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45		4.3.2.5/General	Please include a discussion of all chemicals analyzed or suspected in environmental media within each site when selecting the chemicals of potential ecological concern for the ecological risk assessment. It appears that the selection process does not take into account possible metal contamination.
46	4-25	4.3.2.5/1	Please clarify whether background concentrations of both inorganic and organic contaminants will be established. Also, please clarify how background concentrations were calculated and compared with site results. Please provide reference to a table that lists all the chemicals of potential ecological concern (COPECs).
47	4-25/26	4.3.2.4	PAHs: Please note that although lower molecular weight PAHs are not carcinogenic, they can cause chronic toxicity in addition to acute toxicity. Some aquatic organisms are very sensitive to PAHs. Please discuss in the ecological risk assessment. PCBs: Please clarify whether pesticides were detected on site, as pesticides are discussed in this section. Please provide a reference to the information about the rate of pesticide and PCB movement in groundwater. Please clarify the role of combustion in the natural degradation of PCBs.
48	4-29	4.3.2.6	Please add the word "subsistence" to the last bullet item. Please clarify whether the availability of toxicity data, exposure information, and representativeness of various trophic levels were factors considered in the selection of ecological receptor species. Please clarify why potential estuarine and marine receptors were not discussed considering contamination has apparently reached the estuary and marine environment.

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49	4-30	4.3.2.7/2	Please clarify whether the reduction in growth, reproduction or survival refers to individuals or populations. In the case of endangered species, the former would be appropriate. Please clarify whether reductions in growth are measured against current (possibly depleted) populations living on-site or those populations found in the more pristine areas of the island.
50	4-31	4.3.3.1/4	Please include the transport of PCBs as a potential environmental problem.
51	4-32	4.3.3.2/General	Please note that the lack of PAH data is a significant data gap that contributes a very high level of uncertainty to the ecological risk assessment.
52	4-32	4.3.3.2/2	Please clarify whether the concentration values are lognormally distributed. Please clarify why the exposure point concentrations determined may not be completely adequate to address bioaccumulation of PCBs within the food web at the site. The use of a 95% UCL across the entire drainage basin may or may not be appropriate. Please evaluate the distribution of contaminants with respect to sample locations to determine whether this is appropriate.
53	4-33	4.3.4.1	Please clarify for each site whether the surface water is or may be a potential drinking water source. The Alaska Water Quality Standards, 18 AAC 70, states that for the growth and propagation of fish, shellfish, other aquatic life and wildlife, the following petroleum hydrocarbon aqueous concentrations may not be exceeded: for total aqueous hydrocarbons, 15 ug/l and total aromatic hydrocarbons, 10 ug/l. Therefore, please use these values as benchmarks rather than 0.3 mg/l.
54	4-34	4.3.4.2	Please compare the sum of the PCB congeners with the toxicity benchmark for PCBs.

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55	4-34	4.3.4.3	The first paragraph indicates that there is a significant potential for adverse ecological effects to receptors inhabiting the Drainage Basin area; however there is insufficient data to assess the impact of bioaccumulation of PCBs within applicable food webs. Please clarify what will be done to address this data gap. Please include the impacts of PAHs via the food chain for animals that prey on invertebrates that bioaccumulate PAHs as a data gap in the ecological risk assessment. The second paragraph indicates that the conceptual site model and exposure assessment indicate there may be complete exposure pathways for receptors inhabiting the unnamed stream and possibly the estuary leading to the Bering Sea. However, insufficient data exists to assess the ecological effects in these areas beyond the Drainage Basin. Please clarify how this data gap will be addressed.
56	4-35/36	4.3.5.2	Please include a discussion of the organic carbon content and sediment grain size distribution between the various locations being compared in this section.
57	4-38	4.3.6/3	Please also include consideration of the duration of the impact of remediation. It may be that the duration of the impact of remediation is less than that of no action.
58	4-40	4.4.2	Please note the following comments concerning the Tier II Proposed Work Plan: • Please co-locate surface water, sediment and aquatic invertebrate and plant samples. • Please include the determination of the extent of contamination and the potential for ongoing migration of contaminants as an objective in the work plan. Of particular concern is whether the estuary and the marine environment have been and/or are continuing to be impacted by contaminant migration. • Due to the difficulties in interpretation associated with bioassay results, bioassays should be conducted only if they are needed to meet very specific predefined objectives.

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Comment No.	Page	Section/ Paragraph	Comment/Recommendation
59	4-43	Figure 4-1	Please clarify where the direct contact pathway was discussed in the text of the report. Please ensure that this route, along with associated physical hazards due to oiling and sheens is discussed. Please add an arrow to indicate partitioning between sediment and surface water.
60	4-44	Table 4-1	Please include a conceptual site model for the human health risk assessment. Please include a section which explains the information summarized in the table. Also, the table lists a Footnote 2, which is not provided.
61	4-45	Table 4-2	Please clarify why childhood exposure parameters were not used, especially for noncarcinogenic risk. The soil to skin adherence factor is listed as 0.2; however, EPA's *Dermal Exposure Assessment: Principles and Applications* recommends 1 mg/cm2 as a reasonable upper value for the parameter. Please clarify the use of 0.2. The absorption factor for PCBs should be 6% (or 0.06) per EPA's *Dermal Exposure Assessment: Principles and Applications*. The absorption factor for arsenic should be 3.2% per EPA *Region 3 Technical Guidance*
62	4-46/47	Tables 4-3 and 4-4	Please verify that the reference for the chronic reference dose (RfD) for benzene listed in these tables is IRIS. Please clarify why some chemicals that were detected at Northeast Cape are not included on these tables (1,2,4- and 1,3,5-trimethylbenzene). Please ensure that the most recent toxicity data is used (see HEAST and Region III RBC tables for additional toxicity values beyond those presented in IRIS). Please provide a listing of those COPCs for which no toxicity data was found.

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Comment No.	Page	Section/ Paragraph	Comment/Recommendation
63	4-48	Table 4-5	Please note that current EPA PCB Guidance specifies three cancer slope factor (CSF) values for PCBs based on exposure pathways or persistence. Please provide supporting rationale for the value used in this risk assessment.
64	4-54	4-11	Please include references in this table for the information listed.
65		Table 4-12	Please ensure that the measurement endpoints are protective of upper trophic level receptors. The use of AWQCs and NOAA effects range low valuesas measurement endpoints are not necessarily protective of upper trophic level receptors. It does not appear that the recommendations for the Tier II assessment address the measurement endpoints associated with upper trophic level receptors. Please clarify. Please ensure that the stated assessment and measurement endponts are sufficiently specific to be applicable across all phases and tiers of the ecological risk assessment.
66		Table 4-13	A statement under the "Basis for Benchmark" column states: "NOAA ER-L; sedimetn bioassays with flounder and field benthic infaunal analysis showed effects below this level." Please clarify why the value was used when effects were observed below this value. This level does not appear to be protective.
67		Table 4-14	Please include references for the benchmark values listed in this table. Please clarify whether the 95% upper confidence level (UCL) or the maximum detected concentration was used in the risk assessment. In some cases, the 95% UCL is greater than the maximum concentration. For these COCs, please clarify whether insufficient sampling resulting in the maximum concentration exceedances.

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Comment No.	Page	Section/ Paragraph	Comment/Recommendation
68		Appendix B	The data quality review suggests that there were a number of problems associated with the handling and analyses of the samples collected during the 1996 field season. As a result, PCBs, aromatic volatile hydrocarbons, DRO, and possibly base/neutral/acid extractable compound concentrations were biased low. The problems included holding time exceedances, discrepancies between the primary and quality control labs on split samples, matrix spike interferences, and low surrogate recoveries. Please include a subsection for each site that discusses the results of the QA/QC analysis and the useability of the data. Please include a discussion of SQL adequacy/sensitivity for nondetected chemicals in this section.