Red Devil Mine, Alaska
EPA Specific Comments – Draft Final RI Report

41. P. 6-19, Section 6.2.3.4.3. The choice of an exposure duration of 30 years needs further evaluation. General guidance for selecting exposure duration is to use an upper percentile value. David Koster with ADFG has analyzed residence duration for Upper Kuskokwim Villages and has provided the following values:
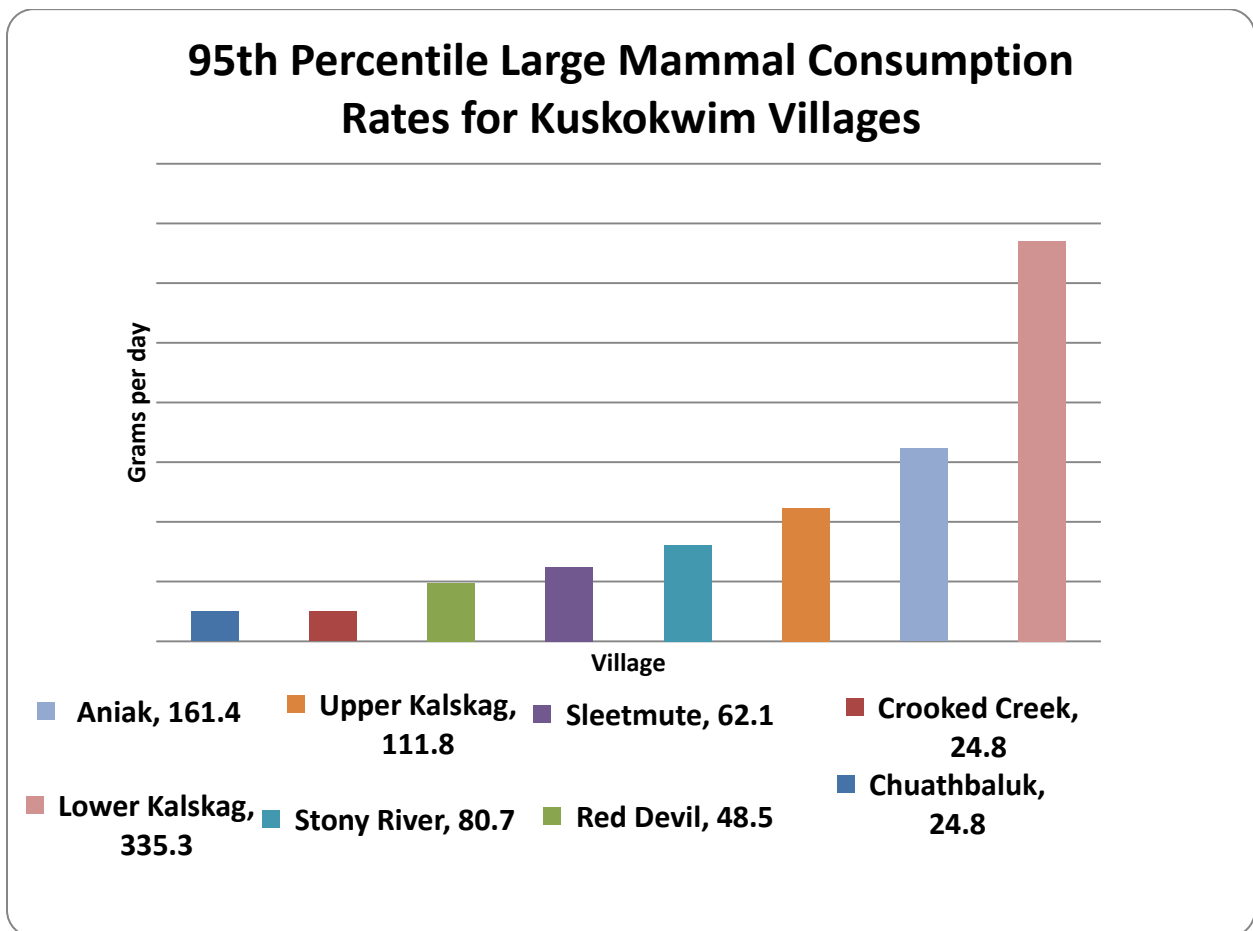
90th percentile Length of residency in years for sampled Kuskokwim area communities, 2009.			
Community	**Population**	**Adults**	**Household Heads**
Aniak	46	50	52
Chuathbaluk	46	52	53
Crooked Creek	53	60	65
Lower Kalskag	56	58	64
Red Devil	54	54	58
Sleetmute	64	67	68
Stony River	49	68	49
Upper Kalskag	53	60	64
Source ADF&G Division of Subsistence household surveys, 2010.			

Response: 30 years has been presented in the RAWP and draft HHRA based on standard default values. Lon Kissinger made the data available to Stephanie Pingree Buss April 2, 2013. The exposure duration value of 58 years is based on a small sample set (n=54). It is unclear if this data is based on 54 responses or was based off of household surveys. With a small sample set, the 90th percentile can be easily skewed by individual points on the tails of the data set. Additional statistical information (sample number, range, variance, etc.) is needed to assess the appropriateness of this data and for potential use in the HHRA. In addition, a full reference is needed for this data. Increasing the exposure duration (ED) from 30 years to 60 years will have the greatest impact on the carcinogenic risk calculated at the site. The carcinogenic risk at the site is driven by arsenic. The risk-based cleanup level (RBCL) for arsenic is lower than the background concentration at the site. Increasing the ED by a factor of two (from 30 years to approximately 60 years) will reduce the arsenic RBCL in half, still below the background concentration. The remedial action objective for arsenic proposed in the Feasibility Study is not based on the RBCL because of the background concentration of arsenic and other compounds of concern. The impact of using an ED of 60 years versus 30 years will be discussed in the uncertainty analysis.

47. P. 6-25. The subtitle "Potential Suppression Effect" should be in bold font. In addition the risks associated with subsistence consumption of fish, game, and plants were developed using two pieces of information:

1) The 95th percentile harvest rates for various categories surveyed by ADF&G.
2) Contaminant concentrations for indicator species included within each of these categories

Table 6-23 clearly delineates these choices. Such information should be included in Table 6-19j. It is recognized that 95th percentile moose harvest data were not available at the time the draft final risk assessment was prepared. Risks for large mammal consumption should be based on the 95th percentile harvest of large game for Red Devil consistent with the approach taken for other subsistence food categories.

95th Percentile Large Mammal Consumption Rates for Kuskokwim Villages

- Aniak, 161.4
- Upper Kalskag, 111.8
- Sleetmute, 62.1
- Crooked Creek, 24.8
- Lower Kalskag, 335.3
- Stony River, 80.7
- Red Devil, 48.5
- Chuathbaluk, 24.8

Response: The subtitle will be bolded and Table 6-19j will provide additional information. The reference (study and year) for the value proposed by EPA for BLM to use in the HHRA should be provided to BLM. The recommended value of 48.5 g/d is lower than the 76 g/d used in the Draft Final HHRA. The value used in the Draft Final HHRA represents the mean harvest rate from the 2003 large game survey, which was determined to be the most representative survey to

obtain large game harvest data that is not potentially impacted by suppression. In absence of the reference for the 95th percentile moose harvest data, the mean harvest rate from the 2003 large game survey will be used, as this is a health protective approach compared to the proposed value of 48.5 g/d.

66. P. 6-72, Section 6.3.4.2 and P. 6-159, Table 6-39. Although the new Table 6-39 is an improvement on the previous draft of the BERA, there are still several contaminants for which screening benchmarks are available in the literature which were not used. A low molecular weight PAH benchmark of 1100 µg/kg in soil for mammals is available in the NOAA SQUIRT tables which, if assumed to be applicable to birds as well, would give a more quantitative basis for not identifying LPAH as a BERA COPC.

Response: The suggested substitution will be made.

The NOAA SQUIRT tables also have a sediment LPAH benchmark of 76 µg/kg, higher than the highest measured LPAH in sediment concentration, and which also could be used to eliminate LPAH as a BERA COPC.

Response: The suggested substitution will be made

4-methylphenol is also known as p-cresol, which has a soil screening benchmark of 163,000 µg/kg, resulting in 4-methylphenol not being a BERA COPC.

Response: The p-cresol soil screening benchmark will be used as suggested

We also are unable to find a soil benchmark for benzoic acid, and agree that it should be forwarded to the BERA as a COPC. Because benzoic acid risks cannot be quantified due to the absence of screening benchmarks or baseline TRVs, benzoic acid should be identified as a contaminant of concern (COC) at the conclusion of the BERA. Its potential ecological risks are unknown and unquantifiable. It would be acceptable to EPA for the BERA to have a separate table listing benzoic acid and any other contaminants without screening benchmarks or baseline TRVs, with appropriate modifications to the BERA text as needed to briefly discuss such chemicals. Chemicals whose risks cannot be quantified must be discussed in the uncertainty section as a factor that may underestimate site risks to ecological receptors.

Final Response: Benzoic acid and other chemicals without baseline TRVs will be identified in the uncertainty section as a factor that may underestimate risk.

EPA concurs with the benzyl alcohol discussion in Table 6-39.

Final Response: Noted.

bis(2-ethylhexyl)phthalate has a soil benchmark in the NOAA SQUIRT tables as low as 100 µg/kg, lower than the highest detected BEHP concentration in soil. BEHP must be identified as a COPC and evaluated in the BERA. The rationale for not further evaluating BEHP risks in the

BERA (i.e. contamination from surgical gloves) given in Section 6.3.4.2 is not acceptable to EPA, is speculative, and must be removed from the BERA text.

Final Response: BEHP was detected in eight of 12 surface soil samples analyzed for SVOCs. The eight detects for this chemical were 11, 12, 12, 13, 13, 13, 17, and 220 µg/kg. One detect exceeded the Dutch soil screening level of 100 µg/kg included in the NOAA Screening Quick Reference Tables (SQuiRTs). Hence, BEHP may present a localized risk to some receptor groups exposed to soil, such as plants and soil invertebrates. BERA Section 6.3.4.2 (COPCs and Refinement of COPC List) and Section 6.3.9 (Risk Summary) will be revised to acknowledge this possibility. Also, the speculation that BEHP in site soil samples may be from surgical gloves will be deleted from Section 6.3.4.2.

The treatment of and conclusions for dibenzofuran in Table 6-39 are acceptable to EPA.

Final Response: Noted.

Diethylphthalate should be evaluated in the BERA, it does not screen out as a COPC because the maximum detected soil concentration is lower than a 100 µg/kg soil screening benchmark from the NOAA SQUIRT tables.

Final Response: Diethylphthalate was detected in two of 12 surface soil samples analyzed for SVOCs. The two detects for this chemical were 8 and 140 µg/kg. One detect exceeded the Dutch soil screening level of 100 µg/kg included in the NOAA SQuiRTs. Hence, diethylphthalate may present a localized risk to some receptor groups exposed to soil, such as plants and soil invertebrates. BERA Section 6.3.4.2 (COPCs and Refinement of COPC List) and Section 6.3.9 (Risk Summary) will be revised to acknowledge this possibility. Also, the speculation that diethylphthalate in site samples may be from surgical gloves will be deleted from Section 6.3.4.2.

EPA agrees that the maximum 1.7 µg/kg diethylphthalate concentration in sediment is unlikely to pose unacceptable risks to snipe and kingfisher, and can be screened out as a sediment COPC for these two avian species.

Final Response: Noted.

Dimethylphthalate and hexachlorobenzene can both screen out as soil COPCs; although Table 6-39 should be amended to point out that the maximum detected soil hexachlorobenzene concentration of 1.3 µg/kg is well below the lowest soil screening benchmark of 199 µg/kg for mammals.

Response: Table 6-39 will be amended as suggested.

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Additional Comments from EPA's Lon Kissinger received April 19, 2013**

Comment: I would request that the 95th percentile harvest rates derived by Koster be added as an appendix to the HHRA.

Response: This data was provided as an Excel spreadsheet to BLM's contractors through EPA. The data are summarized in Table 6-22 of the HHRA. The ADF&G spreadsheet does not include any introductory information that would explain the contents or is in a format that would be easily understandable as a standalone appendix. No change to the document will be made.