

State of Alaska Comments – Pebble Project Preliminary Draft EIS, Section 3.10 – Health and Safety

Agency	Comment No.	Section, Paragraph, and Page #	Cooperating Agency Comment (and Purpose of Comment)	Proposed Resolution (Additions or Deletion of Text)	Response
Note: Section 3.10 was re-organized, and so original section numbers/page numbers are no longer relevant. HEC tables and some of the summary text that was originally in Section 3.10 have been relocated to Appendix K3.10.					
ADHSS/ DPH/ SOE	1	Section 3.10-1	Edit needed: Health data are not always available at the community level for these potentially affected communities, due to privacy concerns and very small community sizes, and are not considered to be severe limitations for the purposes of the project.	Suggested edit: Health data are not always available at the community level for these potentially affected communities, due to privacy concerns and very small community sizes. To address these limitations, regional data sources within and near the EIS analysis area, including the Lake and Peninsula Borough, Bristol Bay Borough, Dillingham Census Area, Kenai Peninsula Borough, and city of Anchorage, were included in the evaluation.	The suggested edit was made.
ADHSS/ DPH/ SOE	2	Table 3.10-1	Inclusion of population size with age ranges is important, as children are more susceptible to many types of environmental fluctuations. Also, due to the importance of the subsistence lifestyle in these communities, the relevance of the proposed project to the quality and abundance of fishery resources, and the relationship between the shift toward a western diet and rates of chronic diseases of poor nutrition, it would be useful to include community level data on the number of residents that rely on subsistence practices in the table.	Include a column for population size and % subsistence users for each community in the table	Population sizes were added to text in Section 3.10.1.1, under the heading Identifying Potentially Affected Communities, for the eleven potentially affected communities (PACs) closest to the Pebble Project, within the Bristol Bay drainages (i.e., within the Socioeconomic EIS Analysis Area). Clearer references were added to Section 3.10 to refer the reader to Socioeconomics, Section 3.3, for further demographic details including age ranges and to Subsistence, Section 3.9, for details on levels of subsistence use in subsistence PACs. This was done in order to maintain document-wide consistency in not repeating detailed information

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					sourced from other EIS sections.
ADHSS/ DPH/ SOE	3	Table 3.10-1	The indicators on this table have implications for human health. This should be discussed in section 3.10.4.1	Include a discussion of SES factors (presented in this table) in 3.10.4.1	A discussion was added to the HEC 1 text to clarify what social determinants of health (SDH) are, why they are relevant to the EIS health evaluation, and summarizing the key baseline data findings. Please note: the HEC 1 table was moved to Appendix K3.10.
ADHSS/ DPH/ SOE	4	Table 3.10-1	Data sources should not be presented as a bulk footnote. In-text citations that enable the reader to locate sources and full datasets relatively easily, and to make choices about quality of data, etc. are needed.	Include full, in-text citations for each piece of data. At minimum, include a separate footnote for each source at the end of the table.	Comment noted. The suggested edit was not completed in order to maintain document-wide convention for citations. In-text citations were included, when relevant.
ADHSS/ DPH/ SOE	5	3.10.4.1	Though discussed in Section 3.3, SES indicators have implications for human health. Key findings should be discussed in this section.	Include a discussion of key SES factors in this section	As noted above, a discussion was added to the HEC 1 text to clarify what SDH are, why they are relevant to the EIS health evaluation, and summarizing the key baseline data findings.
ADHSS/ DPH/ SOE	6	3.10.4.1	Clarification needed on: "While the Kenai Peninsula region typically has SDH similar to Anchorage, the Bristol Bay region tends to have higher rates of inadequate prenatal care and teen pregnancy, but higher rates of adult dental care and lower rates of adult tooth loss, poor mental health, and adult binge drinking."	Clarify which regions are being compared in the last part of this sentence	Clarification was added.
ADHSS/ DPH/ SOE	7	3.10.4.1	More information needed: "While the Kenai Peninsula region typically has SDH similar to Anchorage, the Bristol	Add discrepancy of suicide mortality	A brief discussion of relative suicide rates among the regions relative to the state-wide rate was added to

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			Bay region tends to have higher rates of inadequate prenatal care and teen pregnancy, but higher rates of adult dental care and lower rates of adult tooth loss, poor mental health, and adult binge drinking."		HEC 2. (Please note: discussion and baseline data for suicide mortality information was moved from HEC 1 to HEC 2 to be consistent with Section 4.10).
ADHSS/ DPH/ SOE	8	Table 3.10-2	Data sources should not be presented as a bulk footnote. Correct citations needed for each piece of data so that the reader can find the full information, make choices about quality of data, etc.	Include full citations for each piece of data. At minimum, include a separate footnote for each source at the end of the table.	Comment noted. The suggested edit was not completed in order to maintain document-wide convention for table citations.
ADHSS/ DPH/ SOE	9	Table 3.10-2	Many indicators have more recent data available, which would be useful to update, and data for many of the blank cells are available	Add most recent available information, especially where cells are blank	ADHSS has indicated they will provide AECOM with references/direction to the sources and/or updated data they would like considered in the final EIS.
ADHSS/ DPH/ SOE	10	Table 3.10-2	Clarify which communities are included in the 3rd and 4th columns	Add clarification as a footnote	The requested clarification footnotes were added to the HEC 1, HEC 2, and HEC 7 tables in Appendix K3.10.
ADHSS/ DPH/ SOE	11	3.10.4.1	To provide better context, the first paragraph on page (last paragraph of section) should be moved before specific details of regions/communities are discussed.	Move paragraph to earlier in section	As requested, this text was incorporated earlier in the section.
ADHSS/ DPH/ SOE	12	3.10.4.2	Discuss if unintentional injuries are a leading cause of mortality in the PAC regions	Add leading cause of death info for PAC regions	Text was added to indicate that unintentional injuries are a leading cause of mortality among the Iliamna Lake/Lake Clark Communities, Dillingham Census Area, and Bristol Bay Borough (McDowell 2018b).
ADHSS/ DPH/	13	3.10.4.2	More current information needed in second paragraph of section. Data	Update data	Please note, updated data from McDowell 2018b was used and

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SOE			presented are over 13 years old		superseded older data from McDowell 2011a. ADHSS has indicated they will provide AECOM with references/direction to the sources and/or updated data they would like considered for incorporation in the Final EIS.
ADHSS/ DPH/ SOE	14	3.10.4.2	Citations needed for data sources	Add citations for original source of regional hospitalization discharges, leading causes of non-fatal injuries requiring hospitalization, and baseline accident and injury rates	Citations were added to the HEC 2 text.
ADHSS/ DPH/ SOE	15	3.10.4.2	Additional context needed for "The role of alcohol in accidents and injuries is well-known, and various Alaska Native villages have enacted policies that designate a community as dry (i.e., no sale or consumption of alcohol), damp (i.e., no sale, but possession allowed), and wet (i.e., sale, importation, and possession allowed). "	Add contextual details, such as which PACs are dry/damp/wet	This text was deleted after evaluation for the Health PACs, which indicates low relevance for these 20 PACs (i.e., most were wet, few were damp, and only one subsistence-only PAC was dry).
ADHSS/ DPH/ SOE	16	3.10.4.2	For the last paragraph, "table 3.10-3 presents the baseline accident and injury rates for the affected communities..": While this data are presented in a table, some type of summary discussion is needed to contextualize this information for the PACs in order to help highlight existing issues that could be worsened by the project and identify opportunities to improve an adverse outcome and maintain strengths	Add summary discussion of data presented in table 3.10-3	A summary discussion of the data was added to the HEC 2 text.

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ADHSS/ DPH/ SOE	17	3.10.4.2	Citations needed for data sources	Add citations for original source of regional hospitalization discharges, leading causes of non-fatal injuries requiring hospitalization, and baseline accident and injury rates	Comment noted. The suggested edit was not completed in order to maintain document-wide convention for table citations.
ADHSS/ DPH/ SOE	18	3.10.4.2	The last three rows are of minimal utility, since data points are presented at statewide level only	Remove last three rows or add regional information (which is available from sources such as the Alaska Trauma Registry)	The last three rows were removed. Please note: this table was moved to Appendix K3.10.
ADHSS/ DPH/ SOE	19	3.10.4.3	Additional information is needed for sentence "baseline surface water...occasionally exceeded their maximum criteria". Summarize which trace elements/metals had exceedances and where this was in relation to key PACs	Add additional information	Additional detail was added, noting which mean concentrations were above criteria. Clearer references to Water and Sediment Quality, Section 3.8 for further details was added.
ADHSS/ DPH/ SOE	20	3.10.4.3	Additional information is needed for discussion of contaminated sites. Are there sites in close proximity to PAC residents? The project footprint?	Add additional information	Comment noted. Open contaminated sites are under regulatory oversight and control or prevention of exposure is expected under regulatory directives. Additional proximity information is not necessary to disclose the reasonably foreseeable significant impacts of the proposed project nor is it essential to make a reasoned choice among alternatives. Therefore, it has not been included in the Draft EIS.
ADHSS/ DPH/ SOE	21	3.10.4.3	A summary discussion is needed to contextualize the information in section 3.10.4.3 for the PACs in order to help highlight existing issues that could be worsened by the project and identify opportunities to improve an adverse outcome and maintain	Add summary discussion of data presented in section 3.10.4.3	A summary sentence was added to the first paragraph under HEC 3 to add context.

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			strengths		
ADHSS/ DPH/ SOE	22	3.10.4.4	Entire section could be better organized for readability (i.e., a separate paragraph for food cost, physical activity, subsistence). It is also unclear what the intended meaning of "enough physical activity" is.	Reorganize section	As requested, cost of living, subsistence and nutrition/lifestyle were separated; and clarity was added.
ADHSS/ DPH/ SOE	23	3.10.4.4	This section refers the reader to the paragraph addressing HEC7, which also does not cover nutrition related disease rates in sufficient detail. The relationship between the loss of subsistence practices due to concerns (whether real or perceived) about contamination and adverse health effects has been established. It is important to consider the potential for this to occur in these communities, and include a discussion of the implications.	Recommend discussing how concerns about contamination (whether real or perceived) from regional extractive industry development can lead to a shift away from subsistence practices, and the implications for health in these communities.	A brief discussion on this topic was added to the text in HEC 4.
ADHSS/ DPH/ SOE	24	3.10.4.4	Geologic materials that are enriched in metals (like gold and copper) will also contain higher concentrations of volatile heavy metals (e.g. mercury, and to a lesser extent, cadmium) than standard background materials, which were used in the model. Weathering of ore, and on site ore processing may result in substantial atmospheric deposition of heavy metals, particularly Hg, into nearby bodies of water. Some of these metals exert additive toxicity, and run off/discharge/deposition of other non-metal mining byproducts can increase	Consider including a discussion of the potential for increased atmospheric deposition of heavy metals (from volatilization, dust, and leaching combined) and mobilization into aquatic food webs (in the context of subsistence activities) from mining activities, and potential effects on human health. This should include effects of increased heavy metal exposure through fish consumption, and maternal transfer of dietary metals (particularly MeHg).	Additional text was added to the end of HEC 3 to add more clarity in hazardous materials exposure (e.g., direct includes inhalation), bioaccumulation (e.g., maternal transfer, bioaccumulation and biomagnification in subsistence resources).

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			heavy metal bioavailability (e.g. Hg methylation rates increase in response to increased sulfate and organic carbon). Although referenced as being addressed in section 3.24, the potential impacts of increased mobilization of heavy metals into the food web on subsistence fisheries should be mentioned in sections concerning human health.		
ADHSS/ DPH/ SOE	25	3.10.4.4	Though discussed in Sections 3.3 and 3.9, data from these sections have implications for human health. Key findings should be discussed in this section.	Include a discussion of key subsistence, food cost, and food security factors in this section	Additional text was added to the text of HEC 4, incorporating additional key points on cost of living/food and subsistence from Sections 3.3 and 3.9. In addition, a paragraph on food security was added.
ADHSS/ DPH/ SOE	26	3.10.4.4	Include citations for original sources of data referenced throughout entire section	Add citations for original sources of data	Citations to the data sources or other EIS Sections with details and citations was clarified.
ADHSS/ DPH/ SOE	27	3.10.4.4	Include year/time periods for original sources of data referenced throughout entire section	Add years/time periods for original sources of data	The nutrition data time frame (2011-2015) from McDowell Group 2018b was added to the section.
ADHSS/ DPH/ SOE	28	3.10.4.4	For mentions of 'these communities' throughout section, clarify which communities are included, otherwise just refer to regions	Add clarification	"These communities" was revised to Lake and Peninsula Borough, Dillingham Census Area, and Bristol Bay Borough.
ADHSS/ DPH/ SOE	29	3.10.4.4	For mentions of "these communities report.." change report to self-report (if that is true)	Add clarification of how communities reported info (i.e., self-report?)	Text was revised to specify when information is from self-reporting.
ADHSS/ DPH/ SOE	30	3.10.4.4	Discussion and data on food security are needed	Add information on food security in the region/PACs	A paragraph on food security was added.
ADHSS/	31	3.10.4.4	A discussion of the contribution of	Add additional information	Comment noted. Detailed

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DPH/ SOE			subsistence resources to daily food intake is needed. Data from section 3.9 Subsistence should be summarized (for example, percent of households harvesting XX amount of salmon, top harvested resources in the PACs		summaries on subsistence resources and daily food intakes are not repeated in this section; however, a clearer citation was added in the text directing the reader to Section 3.9 for those details.
ADHSS/ DPH/ SOE	32	3.10.4.5	Leading cause of death in PAC needed	Add how infectious disease deaths rated in leading causes of death in PACs, or add that data were not available (if that's the case)	A sentence was added in the last paragraph of this section in Appendix K3.10 that deaths from infectious disease were not rated among the top leading causes of deaths reported for the PAC regions (ADHSS 2017a; McDowell 2018b). [Note: The leading causes of death among the PAC regions are chronic disease and unintentional injury, which are discussed under HEC 2 and HEC 7].
ADHSS/ DPH/ SOE	33	3.10.4.5	For "noteworthy are the conditions that promise the spread of infectious disease, such as unsafe water, poor personal hygiene, and unsanitary conditions" additional context is needed, otherwise it seems to imply that PACs are unsanitary.	Rewrite sentence: expand on the point and add data	The sentence was revised and additional context relating to the PACs was added. Please note: this discussion was moved to Appendix K3.10.
ADHSS/ DPH/ SOE	34	3.10.4.5	Edit sentence: Immunizations play an important role in decreasing the rates of infectious diseases.	Suggested edit: Immunizations play an important role in decreasing the rates of some infectious diseases.	The suggested edit was made. Please note: this discussion was moved to Appendix K3.10.
ADHSS/ DPH/ SOE	35	3.10.4.5	Data sources should not be presented as a bulk footnote. Correct citations needed for each piece of data so that the reader can find the full information, make choices about quality of data, etc.	Include full citations for each piece of data. At minimum, include a separate footnote for each source at the end of the table.	Comment noted. The suggested edit was not completed in order to maintain document-wide convention for citations.

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ADHSS/ DPH/ SOE	36	3.10.4.5	Row of laboratory confirmed influenza is of limited utility, given that only counts are available. Suggest removing this row	Remove this row or add rate information (if available)	As suggested, the row of laboratory confirmed influenza was deleted.
ADHSS/ DPH/ SOE	37	3.10.4.5	A summary discussion is needed to contextualize the information in Section 3.10.4.5 for the PACs in order to help highlight existing issues that could be worsened by the project and identify opportunities to improve an adverse outcome and maintain strengths	Add summary discussion of data presented in section 3.10.4.5	Additional summary discussion text was added to the text in HEC 5.
ADHSS/ DPH/ SOE	38	3.10.4.6	Mentions of invasive pneumococcal disease and unserved Alaska communities should be tied to PACs or these sentences should be removed to avoid confusion. It is also unclear whether the paragraph is including the statistics on Southwest Alaska because it encompasses some of the PACs, or if the YK is mentioned to discount this statistic (in which case, remove this part of the sentence)	Clarify what points are being made in the first paragraph of this section	The requested clarification was added in Appendix K3.10. The two sentences ("Residents of Southwest Alaska... Yukon-Kuskokwim Delta that are not near the project area") were deleted. The preceding sentence was modified to state that "Lack of in-home water and sewer service may cause severe skin infections and respiratory illnesses".
ADHSS/ DPH/ SOE	39	3.10.4.6	Suggest also including water/sewer service data from the US census	Add additional water/sewer information	Given the high rates of water/sewer service in these PAC regions (ANTHC 2017n), additional information may be available but has not been included in the Draft EIS. However, AECOM added additional detail in Appendix K3.10 regarding the complexities with maintaining water and sanitation in rural communities and will consider additional data for incorporation in the Final EIS.

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ADHSS/ DPH/ SOE	40	3.10.4.7	For "The three recent leading causes of death due to non-communicable and chronic diseases were cancer, heart disease, and chronic obstructive pulmonary disease..", clarify which PACs/regions are being discussed	Add clarification	As requested, clarification was added.
ADHSS/ DPH/ SOE	41	3.10.4.7	Discussion of leading causes of death may be better achieved with the addition of a table. As is, it is confusing to read	Add table with leading causes of death in Lake and Peninsula Borough and Dillingham Census area	Comment noted. An additional table, summarizing the information presented in the text, was not added to the Draft EIS but may be considered for the Final EIS.
ADHSS/ DPH/ SOE	42	3.10.4.7	Discussion of leading causes of death may be better achieved with the addition of a table. As is, some important pieces of information are likely missing, such as reliability of the data (small numbers) and years/time period of data	Add table with leading causes of death in Lake and Peninsula Borough and Dillingham Census area and appropriate footnotes	Comment noted. An additional table, summarizing the information presented in the text, was not added to the Draft EIS but may be considered for the Final EIS.
ADHSS/ DPH/ SOE	43	3.10.4.7	Discussion of leading causes of death may be better achieved with the addition of a table. As is, some important pieces of information are likely missing, such as how data compare to other regions/the state/etc.	Add table with leading causes of death and include tables for regions of comparison to better contextualize the information	Comment noted. An additional table, summarizing the information presented in the text, was not added to the Draft EIS but may be considered for the Final EIS.
ADHSS/ DPH/ SOE	44	3.10.4.7	Discussion of cancer mortality may be better achieved with the addition of a table. As is, it is confusing to read	Add table for cancer mortality in Lake and Peninsula Borough and Dillingham Census area	Comment noted. An additional table, summarizing the information presented in the text, was not added to the Draft EIS but may be considered for the Final EIS.
ADHSS/ DPH/ SOE	45	3.10.4.7	Discussion of cancer incidence may be better achieved with the addition of a table. As is, some important pieces of information are likely missing, such as reliability of the data (small	Add table for cancer incidence in Lake and Peninsula Borough and Dillingham Census area and appropriate footnotes	Comment noted. An additional table, summarizing the information presented in the text, was not added to the Draft EIS but may be considered for the Final EIS.

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			numbers) and years/time period of data		
ADHSS/ DPH/ SOE	46	3.10.4.7	Discussion of cancer incidence may be better achieved with the addition of a table. As is, some important pieces of information are likely missing, such as how data compare to other regions/the state/etc.	Add table for cancer incidence and include tables for regions of comparison to better contextualize the information	Comment noted. An additional table, summarizing the information presented in the text, was not added to the Draft EIS but may be considered for the Final EIS.
ADHSS/ DPH/ SOE	47	3.10.4.7	Data sources should not be presented as a bulk footnote. Correct citations needed for each piece of data so that the reader can find the full information, make choices about quality of data, etc.	Include full citations for each piece of data. At minimum, include a separate footnote for each source at the end of the table.	Comment noted. The suggested edit was not completed in order to maintain document-wide convention for table citations.
ADHSS/ DPH/ SOE	48	3.10.4.7	While there is a lot of data presented in Table 3.10-5, some type of summary discussion is needed to contextualize this information for the PACs in order to help highlight existing issues that could be worsened by the project and identify opportunities to improve an adverse outcome and maintain strengths	Add summary discussion of data presented in table 3.10-5	A summary discussion of the data was added to the HEC 7 text.
ADHSS/ DPH/ SOE	49	3.10.4.8	Update data for: "The top three leading hospital discharges in the Lake and Peninsula Borough, Bristol Bay Borough, and Dillingham Census Area by diagnosis (2001 to 2005) were..." These data are over 13 years old and a comparison to the next sentence with 2015 data should not be made.	Update data	The first sentence summarizing the 2001 to 2005 data was deleted. The last sentence in the paragraph, and subsequent bullets, summarize more recent hospitalization data from 2016 and 2017. See Appendix K3.10.
ADHSS/ DPH/	50	3.10.4.8	The figure does not add much value to this section, consider removing	Remove figure unless it can be tied to PAC data	As suggested, Figure 3.10-1 was deleted.

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SOE					
ADHSS/ DPH/ SOE	51	3.10.4.8	This figure appears to be repeated due to a formatting error	Fix formatting issue	As suggested, Figure 3.10-1 was deleted.
ADHSS/ DPH/ SOE	52	Table 3.10-5	There exists some potential for anthropogenic heavy metal release in any operation that exposes metal-containing ores to weathering processes (particularly mercury, due to its high volatility). Because many metals are known to be neurotoxic, it would be good to include baseline data on the prevalence of neurodegenerative disorders (e.g. Parkinson's Disease, Alzheimer's Disease) among adults, and neurobehavioral/cognitive disorders in children for these populations.	Add current incidence of neurodegenerative disorders for adults and neurobehavioral disorders in children in these communities to table.	<p>The percentage of Medicare recipients with Alzheimer's disease/dementia (McDowell 2018b) was added to the HEC 7 table in Appendix K3.10.</p> <p>ADHSS has indicated they will provide AECOM with references/direction to the sources and/or updated data they would like considered for incorporation in the Final EIS.</p>