494376

CITY AND COUNTY OF DENVER

DEPARTMENT OF ENVIRONMENTAL HEALTH
Robert G. Conrad, Acting Manager

1391 SPEER BOULEVARD
SUITE 700
DENVER, CO 80204-2555
PHONE: (720) 865-5365
FAX: (720) 865-5531
www.denvergov.org/deh

WELLINGTON E. WEBB
Mayor

February 6, 2002

Max M. Howie, Jr.
Chief
Program Evaluation, Records, and Information Services Branch
Agency for Toxic Substances and Disease Registry
Mailstop E-56
1600 Clifton Road NE
Atlanta, GA 30333

RE: Public Health Assessment for the Vasquez Boulevard and I-70 Site
December 26, 2001, Initial Release

Dear Mr. Howie:

Thank you for the opportunity to review the Public Health Assessment (PHA), Initial Release dated December 26, 2001, for the Vasquez Boulevard and I-70 Site. We have the following comments:

General:
While many of the comments below are directed at the text in the summary of the document (pages iii – vi), they also apply to the body of the document that is the source of text for the summary.

A. Given the length of the document and its intended audience (the general public), we believe it is important that the summary of the PHA be concise and focused on ATSDR's "take-home message". This is especially important since it is likely that most readers will read only the summary and, at most, skim portions of the rest of the document. After reading the summary, the reader should come away with a clear understanding of ATSDR's assessment of public health concerns for the site, and its recommendations for further action. It is our opinion that the summary does not clearly convey ATSDR's concerns, in a manner readily accessible to the general public.

   A member of the public reading this document might legitimately ask, "Does ATSDR believe that the levels of arsenic in my yard are of concern?" "Does ATSDR believe

that the cleanup recommended by EPA will protect my health?" The document does not answer these questions. For example, after reading the summary, we understand that ATSDR is concerned about pica behavior in children at the site. For the pica scenario, ATSDR states they are concerned about soil arsenic levels at 650 sampled properties, but does not provide the soil arsenic value that is basis for this statement. A member of the public might ask "Which 650 properties?"

B. There are a number of locations in the report where ATSDR cites EPA's risk assessment calculations, and presents information on the number of homes at which EPA would recommend cleanup. It is not clear if ATSDR supports these recommendations, and if not, what alternate recommendations ATSDR is proposing. For example, ATSDR reports EPA's soil arsenic pica value of 47 ppm, but does not explicitly state if they agree or disagree with that value. For the benefit of a reader from the community, the document should clearly state if ATSDR agrees or disagrees with EPA's assessment. If ATSDR disagrees, the PHA should provide the reader with alternate soil levels of concern, and the basis for these concerns, so the reader can adequately judge health risks for their family.

   Similar comments apply to ATSDR's discussion of long-term health effects for arsenic (i.e., cancer) and findings for lead. ATSDR mentions EPA's assessments for numbers of properties with a concern for long-term exposure to arsenic, but does not state whether or not ATSDR is in agreement with EPA's assessment. Also, ATSDR mentions EPA's range of soil values of concern for lead, but does not take a position on whether it agrees or disagrees with any part of the range of EPA values. If the document presents EPA's levels of concern, they should be presented in a fashion so the reader can understand whether or not ATSDR is in agreement with the values. The reader should be left with a clear message of ATSDR's concern for exposures to soil, at their property. If the document presents numbers of properties at which ATSDR has concern, it should also present the soil concentration from which the number was derived, such that an individual can verify whether ATSDR has concern regarding a specific property.

   In numerous meetings with the community (e.g., Health Team meetings, Working Group meetings), ATSDR has raised issues around EPA's calculations for levels of health concern for arsenic and lead. After raising these issues in the community, it is incumbent on ATSDR to clearly express their findings, so the reader can reconcile ATSDR's previously expressed differences with EPA, and come to meaningful conclusions regarding ATSDR's public health concerns for the site.

C. ATSDR presents several levels of concern in the body of the document (270 ppm arsenic in soil, for noncancer effects from weekly exposure, page 41; and 300 ppm arsenic in soil, cancer from long-term exposure, page 43) but provides very little or no basis for the values. ATSDR should provide explicit supporting documentation for values such as these presented in the text, so the reader can understand and verify calculations.

D. Finally, we have previously stated our concern regarding ATSDR's focus on exposure to arsenic from pica behavior, while appearing to ignore a similar concern

for exposure to lead (DEH 2001). If pica behavior is occurring at the levels suggested by ATSDR, children are at risk for elevated blood lead levels from lead in soil at urban background concentrations. Consequently, we suggest ATSDR address this concern in their *Recommendations* section (page 65), by adding a recommendation for blood lead testing of all young children at the site, as an added method of identifying soil pica behavior. Given the income levels and age of housing in the VB/I70 study area, we believe it is appropriate that the PHA contain a recommendation regarding lead testing for all young children in the VB/I70 area, regardless of their pica status.

Specific:

1. Page vii. List of acronyms and abbreviations. For the abbreviation DEH, please change "Denver Environmental Health" to "Denver Department of Environmental Health". Please make this change globally throughout the document.

2. Page 2. Area History. The operational history of a municipal waste incinerator at the Omaha-Grant smelter is incorrect. Please modify the sentence as follows: "From 1944 to 1950, the Omaha-Grant smelter stack was used intermittently by the City of Denver as a municipal waste incinerator." A review of newspaper clippings from the *Denver Post* and *Rocky Mountain News*, as well as anecdotal evidence from this timeframe, suggests that the smelter stack was used primarily for test burns. A combination of issues, such as inconsistent feed rates for the municipal waste, cracks in the structure of the smelter, and the large draft in the stack, resulted in fire and safety concerns, causing Mayor Quigg Newton to recommend the stack for demolition in 1949. If you require additional clarification on this issue, please contact Cindy Bosco at DEH.

3. Page 3. Area History. In the last paragraph, please note that "herbicides" is a subset of "pesticides". The word herbicides can be deleted, or a full list of arsenic-containing pesticides could be provided to make the statement more correct (e.g., insecticides, herbicides, rodenticides).

4. Page 4. Actions to reduce exposure (2nd paragraph). It is incorrect to state that "...EPA has identified an additional 100 properties ... that are eligible for clean-up actions... with arsenic levels greater than 240 ppm." As of the writing of the PHA, EPA had not announced their selection of a preferred alternative from the remedial alternatives presented in the Feasibility Study for the site (MFG 2001). It would be more correct to state that additional properties will be eligible for cleanup, but that the cleanup level will not be announced until after the close of the comment period on the Proposed Plan. Alternately, the PHA could present the estimated numbers of eligible properties associated the various cleanup levels for the different remedial alternatives.

5. Page 4. Actions to reduce exposure (2nd paragraph, continued). The text states "EPA is targeting these 101 properties to protect residents from the risk of cancer. As of summer 2001, EPA has cleaned up about 50 of these properties." We believe the text is incorrect and that properties cleaned to date in the VB area, were cleaned as time-critical removal actions, (i.e., because there was an

assessment of imminent health risk) and not "...to protect residents from the risk of cancer", as stated in the text. Please confirm these facts with EPA and clarify in the text.

6. Page 7. Colorado Department of Public Health and Environment (second sentence). There appears to be a typographical error(s) in the sentence. We believe it was meant to read similar to "The samples were analyzed in a lab for levels of the inorganic elements arsenic, cadmium, and lead." Please correct as appropriate.

7. Page 8. Northeast Park Hill Sampling. Please correct the text globally, to indicate that the Northeast Park Hill neighborhood is located to the east of the site, not to the southwest as stated in the text.

8. Page 9. Other studies. ATSDR might further clarify that EPA selected juvenile swine to mimic children's gastrointestinal absorption of chemicals from soil (i.e., the ultimate goal is to estimate human exposure), and that other animal models are sometimes used for similar experiments.

9. Page 9. Other studies (continued). Please insert clarification the text that the additional EPA studies performed "...to determine the chemical form of arsenic and lead that is present in soil" were chemical or physical tests, as opposed to a biological test, such as the swine study.

10. Page 10. Arsenic in the VB study area. The text references a Table 2, but there is no Table 2 in the text. Please clarify or correct.

11. Page 11. Text for Graph 1, re: estimation of maximum from yard average. The PHA should acknowledge that there is uncertainty in this approach, in that it relies on data from only eight properties and ATSDR assumes that the arsenic distribution pattern from those eight properties applies to all other properties in the site. The text might note that EPA has estimated the maximum level in a residential yard (EPA 2001) using an approach different than that described in the PHA.

12. Page 13. Table 4. Please add text to the title of Table 4, clarifying that the arsenic data are measured values (versus estimates as presented in Table 3). We suggest the title "Maximum measured arsenic levels in soil at properties in the Northeast Park Hill neighborhood".

13. Page 14. Lead. We suggest the addition of text clarifying that deteriorated lead based paint is a common source of elevated levels of lead in soil.

14. Page 17 and 18. Air Data. The discussion of the status of the air quality in the Denver metropolitan area is incorrect. Denver currently meets the carbon monoxide, PM10 and ozone standards. The state has developed attainment and maintenance plans for all three criteria pollutants (see

http://www.cdphe.state.co.us/ap/attainmaintain.asp). Please correct the PHA text to reflect this information. Contact our office if you need additional clarification.

15. Page 22. Eating home-grown produce. The text might clarify that chemicals also can be present on the exterior of plants as a surface deposition from contaminated soil. Hence, the importance of thoroughly washing and/or peeling home-grown fruits and vegetables from a yard with elevated levels of contaminants.

16. Page 23. Sediments. It is our understanding that there are more sediment and surface water data available for the VB/I70 area than are discussed in the PHA. Please review EnviroGroup (2001) for a discussion of available data, or contact our office and we will refer you to the appropriate DEH contact.

17. Page 24. Surface Water. See comment #16 above, for sediments.

18. Page 25. Breathing outdoor and indoor air. It is our understanding that the Colorado Department of Transportation (CDOT) has air monitoring data for several parameters, including arsenic and lead, from a site(s) near the area. Please consider an evaluation of the CDOT data for its appropriateness as an indication of air quality for the site.

19. Page 25. Breathing outdoor and indoor air (continued). ATSDR implies that arsenic and lead could be present in indoor air due to contaminant evaporation from contaminated soils in crawlspaces, and that indoor air sampling data would be necessary in order to "...determine whether this type of exposure is actually occurring in the VBI70 study area." We suggest that, if ATSDR believes this to be a potential exposure pathway, then ATSDR conduct screening calculations regarding the concentrations necessary for this to pathway to be of concern. It is our assumption that this pathway is extremely unlikely to be completed, given the extremely low evaporation rate of inorganic arsenic and lead compounds from soil. If ATSDR intended to express a different concern in the referenced paragraph, then we suggest ATSDR clarify its meaning.

20. Page 27. Lead distribution throughout the study area (last paragraph). ATSDR states "ATSDR can be reasonably confident that unusually high levels of residential soil lead contamination do not occur in areas further north or east than the current boundaries of the study area." DEH suggests that ATSDR review the available data on lead concentrations outside of the VB/I70 area to confirm this statement, including the Skyline data and other recent data collected by the National Association of Black Environmentalists, CDPHE, and the University of Colorado. Given the paucity of data regarding industrial/commercial properties, the lack of data in residential communities to the north and east of the site, and that no apparent spatial pattern exists within the arsenic concentrations that are of health concern, we believe this statement should be revisited.

    In any event, we suggest that ATSDR add a qualifier to the above referenced statement, indicating that ATSDR is referring to "yard-wide average lead levels" or "sources of area-wide lead as defined in this PHA", or a similar statement.

Obviously, ATSDR does not have sufficient information to make a general statement that there are no areas of high lead levels in the yards of any properties to the north and east of the study area. For example, it is not uncommon to find elevated soil lead levels in localized areas of yards, next to houses or other buildings that were historically painted with lead-based paint.

21. Page 28. Discussion of the surface arsenic data presented in Figures 17 and 18. The figures present soil arsenic levels below 30 ppm and 25 ppm, respectively. In the accompanying text and figures, please clarify that these levels are below levels of health concern for arsenic in soil, if ATSDR agrees that is the case. We have spoken with several community members who believed that these levels were of health concern because ATSDR had taken the time to map the data, and believed the neighborhood was highly contaminated because the map had covered the neighborhood with red dots.

22. Page 30. Arsenic distribution in the study area. It is unclear how ATSDR selected the areas recommended for further sampling. While a great deal of attention is paid to contaminant trends at concentration levels considered below health concern by both EPA and ATSDR (as we understand ATSDR's position), justification is not provided for the selection of areas recommended for further sampling. While we agree that further sampling is warranted, we do not believe that the existing data demonstrate any areas that can be eliminated from consideration at this time, including other portions of the Denver Metro area.

23. Page 38. Table 10. DEH suggests that, in general, tables should contain "stand alone" information explaining what calculations or assumptions were made, so that the reader can verify the calculations. For example, we suggest that Table 10 contain a footnote providing the concentration of soil arsenic used in the dose calculations. Also, the table should contain the other assumptions used in the dose calculations (e.g., calculations assume an RBA of x, a body weight of y, etc.) or refer the reader to another section of the PHA that explicitly presents those assumptions.

24. Page 38. Possible non-cancerous health effects in children with typical soil intake (text immediately following Table 10). We suggest that the text explain how an arsenic exposure can exceed an MRL but "...still [be] sufficiently below the dose that cause harmful effects." (i.e., discuss the use of safety factors in the derivation of an MRL).

25. Page 39. Possible non-cancerous health effects in children with typical soil intake (2nd from last paragraph). The text states that "... only one property ... has an average arsenic level of 759 ppm.... As part of their clean up efforts, EPA has cleaned up the properties where a possible risk exists to children with typical soil intake." We suggest that the text specifically state that EPA has cleaned up the property containing 759 ppm arsenic, if that is the case.

26. Page 40. Table 11. Again, as with Table 10 (and all tables) we suggest that the tables specifically present the assumptions used in dose calculations, so that the reader can verify the calculations.

27. Page 41. Weekly exposure. The text is confusing in that fewer properties (45 properties) in the study area are stated to be of concern for "habitual" soil-pica behavior than are listed as of concern (650 properties) for a one-time pica exposure (page 39). The text should clarify this apparent discrepancy, as well as differences in health effects associated with the toxicity values used for comparison.

28. Page 41. Weekly exposure (continued). The text states "ATSDR considers average arsenic levels greater than about 270 ppm to be a concern". Please clarify that the 270 ppm value is meant to apply to children exhibiting habitual soil pica behavior. Also, please provide the basis for the 270 ppm value, including the assumptions used in the calculations. The document should be explicit in providing details, so that the reader can understand and verify calculations.

29. Page 43. The possibility of cancer (2nd paragraph). The document provides a soil concentration of 300 ppm arsenic, as a level comparable to literature doses associated with increased risk of cancer. As above, please briefly provide the basis for this statement.

30. Page 45. The possibility of cancer (2nd from last paragraph). The paragraph begins by stating "in addition to the uncertainties listed above....", and discusses the threshold dose effects of arsenic. We suggest that this text is not an additional point, but a further elaboration on the first bullet listed above the text. We suggest combining this paragraph with the first bullet above that discusses limitations of the mathematical model possibly resulting from the human body's ability to eliminate arsenic at low levels before it has cancer causing effects (i.e., a threshold).

31. Page 46. Possible health effects from exposures to lead (second paragraph). As pointed out in the text, there are many sources of lead exposure. To the sentence that begins ..."In addition, children can also be exposed to lead ...", we suggest a reference to several additional common sources of lead exposure, such as a) some parents' hobbies and b) vinyl miniblinds for windows.

32. Page 48. Possible health effects from exposures to lead (middle and bottom of the page). Regarding the statement that "CDPHE has a state-wide blood lead program that tests children for blood lead." It is our understanding that CDPHE does not have an ongoing state-wide program of blood lead testing. Rather, CDPHE does, on occasion, perform limited and targeted blood lead testing events, often through cooperative funding agreements with other organizations. The state does not have funding to perform ongoing blood lead testing for the VB/I70 study area, or other parts of the state. The state has an ongoing surveillance program that tracks reported cases of children with elevated blood lead, usually identified by other health care providers, and reports them to CDC. Also, the state assists

local agencies in their education, outreach, and elevated blood lead case investigation efforts. We suggest ATSDR verify the scope of CDPHE's lead program with CDPHE's lead program manager.

33. Page 48. Possible health effects from exposures to lead (bottom of the page, continued). Please correct the spelling of "Michelle" Macias to "Mishelle" Macias.

34. Page 49. Possible health effects from exposures to lead (top of the page). Please make a global correction for the telephone number for the Denver Department of Environmental Health's lead program to (720) 865-5452, the new telephone number for the Environmental Protection Division.

35. Page 49. Possible health effects from exposures to lead (last paragraph). This paragraph appears to duplicate information provided above. Please correct.

36. Page 57. Lead in blood (bottom of page, and global). As discussed above, please correct the sentence to indicate that the blood lead testing offered by CDPHE in the VB/I70 area was part of a cooperative funding agreement with another organization, that applied to a limited and targeted testing effort. It is our understanding that CDPHE does not have an ongoing state-wide blood lead testing program.

37. Page 61. Health hazard category (1st paragraph, and global). The text states "ATSDR has determined that soil arsenic levels at many but not all of the properties in the VBI70 study area are safe regardless of how much soil a child or an adult might ingest" (emphasis added). We suggest that ATSDR qualify this statement with the addition of some text indicating this statement is true "...for individuals with typical soil exposures" or "...within the limits of the evaluation performed in the PHA." While we agree with the sentiment, in general, it does not seem appropriate or accurate to make a statement that a substance is safe, "regardless of the amount of exposure".

38. Page 62. Uncertainty (bulleted list in middle of the page). Please clarify the difference between the ideas expressed in the last two bullets regarding "the estimation of dose in drinking water studies", and "the accuracy of exposure estimates in studies used to develop health guideline values."

39. Page 64. The distribution of arsenic and lead (last sentence). Typographical error. We believe ATSDR meant to say "that" instead of "at".

40. Page 65. Recommendations. Please consider adding an ATSDR recommendation for blood lead testing in young children at the site, as discussed in our General comment D, above.

41. Page 65. Recommendations (bullet #2). Mentioned in Part C of planned activities for the site is "nurse visits to homes" to identify cases of acute arsenic

poisoning. Please clarify if the nurse visits are still planned as part of the described activity.

42. Page 65. Recommendations (bullet #2 continued, and page vi of summary). We suggest the addition of the word "potential" to the above referenced phrase in Part C, i.e., "identify potential cases of acute arsenic poisoning...".

43. Page 67. Medical testing. Regarding the recent CDPHE testing and the statement that "CDPHE did not find a relationship between blood lead results and lead levels in soil but too few children were tested to conclude whether or not soil lead levels are contributing to blood lead levels". The text would benefit from a brief discussion of the CDPHE blood data presented in EPA (2001) acknowledging that additional data are available from the state's surveillance program that suggest 1) soil is not likely to be the main source of exposure for most children analyzed, and 2) there is no clear difference between the elevations in blood lead for reported cases located within and outside of the boundaries of the VB/I70 site.

44. Page 69. Health education to the community (last sentence on page). Please clarify who or what is meant by "the three groups" in the sentence, "Working very closely with residents in each of the three groups...".

45. Page 79. List of health team members. Please verify that the list is current. Please correct the agency affiliation for Gene Hook and Celia VanDerLoop to "Denver Department of Environmental Health, Denver." Please verify the spelling of Margaret Schonbeck's name and correct the name of the agency to Colorado Department of Public Health and Environment. Correct the location affiliation for Chris Poulet, as appropriate.

46. Page 113. Table D-1. Please clarify the difference between the columns labeled "data for the area within the VBI70 NPL site" versus "data for the area within the VBI70 study area."

47. Page 125. Appendix H. ATSDR's quantitative approach for estimating arsenic doses in children. The PHA assumes a bioavailability factor for arsenic in soil that is "...estimated to range from 40 to 60%...". We suggest ATSDR provide a brief explanation of the basis of using a bioavailability factor (upper range) that differs from that determined in EPA's animal study.

48. Page 125. Table H-1. It is slightly confusing to the reader to note a dose estimate that is greater for a one-time exposure than the dose estimate for a multiple-time exposure. If it is accurate, we suggest the table contain a footnote that explains that these values are not meant to be compared across exposure frequency, but with toxicity values that differ, depending on the length of exposure. Alternately, the doses for different exposure frequencies could be presented in separate tables.

49. Page 127. Table H-2. The accompanying text states that calculations were performed using 11 and 16.6 kgs. The table does not appear to contain values

calculated with different body weights. Please correct the text or the table as appropriate.

50. Page 127. Table H-2. The label in the last column does not appear to be accurate, in that is does not tell the reader "how the doses compare to the toxicity value". We suggest the column be re-labeled to "Comparison Value" or "Provisional Acute MRL" or similar.

51. Figure 9. Neighboring Industry. There are two dots with similar labels: "Asarco" (blue dot) and "Asarco Inc. Globe" (green dot). Please verify the accuracy of the data depicted on the map.

References:

EnviroGroup. 2001. Draft Technical Memorandum, Draft Facility Conceptual Model Omaha & Grant Smelter Location, On-Facility Soils, Operable Unit 2. ASARCO Incorporated, Vasquez Boulevard/Interstate 70 Site, Denver, Colorado. EnviroGroup Limited, Englewood, CO, December 7.

EPA. 2001. Baseline human health risk assessment, Vasquez Boulevard and I-70 Superfund Site. U.S. Environmental Protection Agency, Region VIII, Denver, CO. August.

DEH. 2001. Letter to Dr. Dave Campagna, ATSDR, Atlanta, GA. Regarding ATSDR's soil-pica, soil-ingestion and health outcome investigation. Denver Department of Environmental Health, Denver, CO. March 16.

MFG. 2001. Feasibility study report for Operable Unit 1, Vasquez Boulevard/Interstate 70 Superfund Site, Denver, Colorado. MFG, Inc., Boulder, CO. October 31.

Thank you for this opportunity to comment. If you have any questions, please contact Gene Hook at 720 865-5443 or me at 720 865-5459.

Sincerely,

Celia VanDerLoop
Environmental Protection Division

cc: VB/I70 Working Group