US EPA RECORDS CENTER REGION 5
505732

EPA Phase 2 GW Approval Letter 5-11-09 Resent 5-19-09

Karen Cibulskis to: Quigley, Steve, kbrown 05/19/2009 11:53 AM

Cc: aloney, Thomas Nash, LUANNE VANDERPOOL, Patrick Hamblin, matt.justice, Robert.Frank2

Hi. Attached is a corrected version of EPA's 5-11-09 letter (changing "2011" to "2010") and including Attachment 1 which was also provided to Adam Loney 5-14-09.

Adam - I added 4 more comments to Attachment 1 (48-51) that will also need to be addressed in the FS.

If you have any questions or would like to set up a conferece call or meeting to discuss the site, remaining field work, the schedule or the FS please let me know.

Thanks, Karen.

EPA Phase 2 GW WP Approval Letter 5-11-09 Resent 5-19-09.PDF

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

SENT VIA EMAIL
HARDCOPY TO FOLLOW US MAIL

May 11, 2009

Mr. Stephen Quigley, P.E.
Principal-in-Charge/Project Manager
Conestoga Rovers & Associates
651 Colby Drive
Waterlooo, Ontario, Canada N2V 1C2

RE: Phase 2 Groundwater Investigation Letter Work Plan and
Updated Remedial Investigation/Feasibility Study Submission Schedule
South Dayton Dump and Landfill Site, Moraine, Ohio
(Corrected Version of May 11, 2009 Letter Resent May 19, 2009)

Dear Mr. Quigley:

The United States Environmental Protection Agency (EPA) has reviewed Conestoga Rovers and Associates (CRA) Phase 2 Groundwater Investigation Letter Work Plan and updated Remedial Investigation/Feasibility Study (RI/FS) submission schedule for the South Dayton Dump and Landfill (SDDL) site in Moraine, Ohio.

In February, 2008 EPA agreed to give CRA time to collect additional data the SDDL Administrative Settlement and Order on Consent Respondents wanted to collect to complete the streamlined Feasibility Study (FS) for landfill contents and on-Site groundwater at the Site. EPA agreed to this time extension even though EPA believed CRA could move forward with a FS at that time (see EPA letter dated January 9, 2008). It was anticipated this work would take CRA one field season to conduct.

In the updated RI/FS schedule, CRA proposes to submit the FS Report to EPA on February 12, 2010, over ten months from now. This proposed submission date is significantly beyond the time frame EPA expected to receive the FS and EPA cannot agree to the proposed schedule.

EPA understands several field tasks took CRA longer than expected to complete. However, EPA does not agree that two rounds of groundwater sampling are "necessary" to complete the FS, or that it should take CRA five and a half months to install 14 groundwater monitoring wells and conduct two rounds of groundwater sampling.

CRA already has additional test trench/test pit information and groundwater data from existing wells and vertical aquifer sampling locations to use in developing and evaluating remedial alternatives for the Site indicated by EPA's 2008 Streamlined Risk Evaluation. CRA will also have at least one round of groundwater data from new wells this summer; and as of July 2009 CRA will have a full year of monthly groundwater elevation readings, in addition to several years of previous groundwater elevation readings and groundwater data, including data under high and low groundwater flow conditions. It is also not clear why CRA needs six weeks from EPA's approval of the Phase 2 Groundwater Investigation Letter Work Plan before CRA will start monitoring well installation.

In addition, EPA believes it is not necessary to wait until September 2009 to begin the landfill gas investigation, since this task is independent of the groundwater investigation. During our March 31, 2009 meeting, EPA understood the landfill gas investigation would be conducted concurrently with the Phase 2 Groundwater Investigation.

At this time EPA believes it should take CRA no more than 6 months to finish up any additional field work and submit the streamlined OU1 RI/FS Report outlined in EPA's January 9, 2008 letter (including a summary of CRA's additional field work and findings) to EPA. The streamlined OU1 RI/FS Report, including a summary of CRA's additional field work and findings is due to EPA on or before November 16, 2009. EPA also has a draft Unilateral Administrative Order (UAO) for access to the Dayton Power and Light (DPL) property which EPA expects to issue shortly, so CRA should be able to proceed with the DPL work as well.

Please notify EPA in writing by May 21, 2009 if CRA agrees to provide EPA with the streamlined OU1 RI/FS Report outlined in EPA's January 9, 2008 letter by November 16, 2009. The streamlined RI/FS should include a summary of CRA's additional field work and findings to support the FS. CRA will also need to provide EPA with an updated schedule for remaining field work so EPA can plan for field oversight.

At this time, EPA is also approving the April 13, 2009 Phase 2 Groundwater Investigation Letter Work Plan with the modifications and comments noted in Attachment 1. Attachment 1 also includes comments on the December 11, 2008 Test Trench/Test Pit Investigation Memo and the March 2009 Phase 1 Groundwater Investigation Report that will need to be addressed in the final RI/FS Report. A resubmission of these reports is not needed.

If you have any questions or would like to discuss CRA's remaining field work at the site or the site schedule further, please feel free to contact me at 312-886-1843 or via email at cibulskis.karen@epa.gov.

Sincerely,

Karen Cibulskis

Karen Cibulskis
Remedial Project Manager

Cc (*via email*):

Ken Brown, ITW
Patrick Hamblin, SR-6J
Tom Nash, C-14J
Luanne Vanderpool, SRF-5J
Matt Justice, OEPA
Robert Franks, CH2M

ATTACHMENT 1
EPA MODIFICATIONS TO
CRA APRIL 13, 2009
PHASE 2 GROUNDWATER WORK PLAN AND
COMMENTS TO BE ADDRESSED IN FS REPORT

EPA is approving the April 13, 2009 Phase 2 Groundwater Letter Work Plan (Phase 2 Work Plan) with the following modifications. EPA is also including EPA's comments on the Phase 2 Work Plan. EPA is not requiring the ASAOC Respondents to make any changes to the Phase 2 Work Plan. However, the information discussed in EPA's comments must be included in the FS Report since these items may be data gaps.

1. **MODIFICATION: Phase 2 Work Plan, Page 1, Paragraph 1, Sentence 2:** Sentence 2 is revised to read: "This Phase 2 work will help address data gaps and provide information ~~necessary~~ the PRP Group would like to collect to complete ~~a~~ the Feasibility Study (FS)."

2. **MODIFICATION: Phase 2 Work Plan, Page 1, Phase 1, Sentence 2:** Sentence 2 is revised to read: "The results of the Phase 1 Groundwater Investigation were ~~documented~~ provided in the draft Phase 1 Groundwater Report (CRA, March 2009)."

3. **MODIFICATION: Phase 2 Work Plan, Page 2, Phase 2, Bullet 1:** Bullet 1 is revised to read: "further define subsurface stratigraphy, including identifying till-rich zone(s) and sand and gravel aquifer zone(s) at additional locations beneath the site..."

4. **MODIFICATION: Phase 2 Work Plan, Page 2, Phase 2, Bullet 2:** Bullet 2 is revised to read: "collect and analyze groundwater samples from additional VAS borings and permanent monitoring wells completed in select locations to assist in further characterizing groundwater impact at these locations;"

5. **MODIFICATION: Phase 2 Work Plan, Page 2, Phase 2, Bullet 6:** Bullet 6 is revised to read: "continue to collect groundwater and surface water measurements over time..."

6. **MODIFICATION: Phase 2 Work Plan, Page 2, Monitoring Well Installations, Paragraph 1, Sentence 3:** Sentence 3 is revised to read: "The draft Phase 1 Groundwater report provides ~~the~~ CRA's rationale for which existing monitoring wells..."

7. **COMMENT: Phase 2 Work Plan, Page 2, Monitoring Well Installations, Paragraph 2:** Since hydraulic testing has not been performed at the Site, and since all existing wells were redeveloped, slug tests should be performed in all existing wells, not just wells incorporated into the hydraulic monitoring program. Slug testing in all existing wells would provide an indication of any variations in hydraulic conductivity across the Site. EPA recognizes this work is not needed to complete the streamlined FS for

EPA's presumptive remedy for the Site. However, the FS must specifically indicate which wells were slug tested and which wells were not slug tested since this may be a data gap.

8. **MODIFICATION: Phase 2 Work Plan, Page 2, Monitoring Well Installations, Paragraph 3, Sentence 2:** Sentence 2 is revised to read: "The proposed location of four boreholes to ~~characterize~~ assist in characterizing the horizontal and vertical extent of non-aqueous phase liquid (NAPL) identified during the drilling of VAS-4..."

9. **COMMENT: Phase 2 Work Plan, Page 2, Monitoring Well Installations, Paragraph 3:** Since Figure 1 is crowded in the vicinity of VAS-4, please provide EPA with a written description of the 4 boreholes that will be drilled (e.g., 25 feet north, south, east and west of VAS-4 or whatever the distance/directions are). CRA does not have to update the Phase 2 Work Plan; a letter or email clarifying this is fine.

10. **COMMENT: Phase 2 Work Plan, Page 2, Monitoring Well Installations, Paragraph 3:** Please clarify what work CRA will be doing to characterize the vertical extent of the NAPL in the boreholes around VAS-4. For example, how deep will the boreholes go? CRA does not have to update the Phase 2 Work Plan; a letter or email explaining this is fine.

11. **COMMENT: Phase 2 Work Plan, Page 2, Monitoring Well Installations, Paragraph 3:** Since the soil and groundwater sample at VAS-4 did not contain many VOCs, a better approach to delineating the vertical extent of the NAPL would seem to be to collect soil samples from each boring at 2 foot intervals from the surface down to at least 2 feet below the water table and continuing until the dye test was negative. This would also help identify any NAPL smear zones from water table fluctuations. EPA recognizes this work is not needed to complete the streamlined FS for EPA's presumptive remedy for the Site. However, the FS must document that CRA did not follow this approach when discussing the results of this investigation since this may be a data gap.

12. **COMMENT: Phase 2 Work Plan, Page 2, Monitoring Well Installations, Paragraph 3:** Four borings an unclear distance around VAS-4 may not be sufficient to characterize the horizontal extent of NAPL identified in VAS-4. For example, if NAPL is identified in a boring, CRA should "step out" some additional distance to further characterize the extent of NAPL in that direction. Similarly, depending on the distance between VAS-4 and the borings, and the distance between borings, CRA may need to "step in" between borings or toward VAS-4 if NAPL is not identified in a boring. EPA recognizes this work is not needed to complete the streamlined FS for EPA's presumptive remedy for the Site. However, the FS must document the limitations of CRA's investigation since this may be a data gap.

13. **COMMENT: Phase 2 Work Plan, Page 2, Monitoring Well Installations, Paragraph 3:** CRA is not collecting any samples to assist in chemically characterizing

the NAPL. Groundwater samples collected from VAS-4 were only analyzed for VOCs, SVOCs, arsenic and lead. VAS-4 groundwater (only collected at the water table) contained fairly low levels of VOCs, but high arsenic (249 ug/L) and lead (811 ug/L). SVOCs were non-detect, but the detection limits were significantly elevated (e.g., 4 ug/L instead of 0.2 ug/L; 20 ug/L instead of 1 ug/L).

CRA also collected a soil sample right above the water table at VAS-4. The soil sample was not discussed in the draft Phase I Report but was analyzed for VOCs only. The soil sample only contained generally low levels of 1,2-dichlorobenzene (190 ug/Kg), 1,4-dichlorobenzene (45 ug/Kg) and methylcyclohexane (230 ug/Kg). So if the NAPL does not contain VOCs, what is in the NAPL? It seems like chemical data, including VOCs, SVOCs, PCBs/Pesticides, metals and RCRA parameters would be useful in evaluating NAPL treatment and disposal alternatives in the FS. It is also possible the NAPL is the waste Cargill dumped at the Site, and that this organic waste could generate methane. EPA recognizes this work is not necessary to complete the FS for EPA's presumptive remedy for the Site. However, the FS must document the limitations of CRA's investigation since this may be a data gap.

14. **MODIFICATION: Phase 2 Work Plan, Monitoring Well Installations, Page 3, Paragraph 2, Sentence 1:** Sentence 1 is modified to read: "The following table presents CRA's rationale for and proposed screened interval depth of proposed monitoring wells and piezometers."

15. **MODIFICATION: Phase 2 Work Plan, Page 3, Table, MW-210a:** The "Above/Below Till" column for MW-210a is modified to read: "Between upper/lower till".

16. **COMMENT: Phase 2 Work Plan, Monitoring Well Installations, Page 3, Table, MW-213:** One well in the maximum zone of contamination at VAS MW-213 may not be sufficient for long-term monitoring if there are shallow and deep plumes. The closest VAS locations to VAS MW-213, VAS-24 and VAS-25 (150 feet north and 200 feet south of MW-213) are not at all similar, and it is uncertain whether a well at the MW-213 location can take the place of wells at VAS-24 and VAS-25.

TCE was detected in VAS-24 about 150 feet north of MW-213 from 682 to 672 ft-msl at concentrations of 12 and 11 ug/L. There was no till in VAS-24 and VAS-24 stopped at 672 ft-msl.

VAS-25 is about 200 feet south of MW-213 and had about 15 feet of silty sand (till) from 694 to 679 ft-msl. Low TCE was detected in the interval above the till (3.8 ug/L) and below the till (0.33 ug/L) but not in any other interval. Vinyl chloride was detected in VAS-25 starting at about 662 ft-msl and continuing to the bottom of the boring at 634-629 ft-msl. The maximum concentration of vinyl chloride was 6.8 ug/L at the bottom of the boring. EPA recognizes that wells at VAS-24 and VAS-25, and more than one well at MW-213 is not necessary to complete the streamlined FS for EPA's presumptive remedy for the Site. However, the above information re: VAS-24 and VAS-15 must be

included in the FS, including that permanent wells were not installed at these locations, since this may be a data gap. The FS must also discuss VAS MW-213, including VAS results, VAS results in relation to nearby VAS borings (e.g., VAS-24, VAS-25 and VAS-21), and well installation in relation to VAS results, as well as potential data gaps.

17. **COMMENT: Phase 2 Work Plan, Monitoring Well Installations, Page 4, Table:** CRA is not installing monitoring wells at VAS-14 or VAS-15 along Dryden Road at the Site boundary where high levels of VOCs were detected (e.g., vinyl chloride as high as 120 ug/L in VAS-14; TCE as high as 18 ug/L and vinyl chloride as high as 30 ug/L in VAS-15). Also, VAS-14 and VAS-15 are not similar.

VAS-14 had about 5 feet of silty sand (till) from 677-672 ft-msl, with the highest cis-1,2-dichloroethene (390 ug/L) and vinyl chloride (120 ug/L) in the interval below the till. However, VAS-14 did not have any TCE above MCLs. Also, VAS-14 appears to have gone through the center of plume - high concentrations followed by several intervals of decreasing concentrations.

VAS-15 had a thinner (1.5 feet) shallower silty sand (till) layer from 691.5 to 693 ft-msl but not the deeper till seen in VAS-14. VAS-15 also appears to have upper and lower intervals of higher concentrations separated by a less contaminated interval. TCE was detected in VAS-15 above MCLs from 702 to 682 ft-msl (13 to 18 ug/L); then below MCLs from 682-642 ft-msl (1.6 to 3.5 ug/L); then above MCLs from 641 to 632 ft-msl (6.8 and 8.9 ug/L, with the 8.9 ug/L concentration at the bottom of the boring).

Cis-1,2-dichloroethene was detected in VAS-15 at lower concentrations (less than 10 ug/L) from 702 to 682 ft-msl; then higher (30 - 33 ug/L) from 682 to 672 ft-msl; then lower (9.9 - 13 ug/L) 672 to 652 ft-msl; then increasing to 28 to 150 ug/L from 652 to 632 ft-msl, with the 150 ug/L concentration at the bottom of the boring.
Similarly, vinyl chloride in VAS-15 was ND - 1.5 ug/L from 702-682 ft-msl; then higher (24-30 ug/L) from 682 to 662 ft-msl; then lower (15 - 16 ug/L 662 - 652 ft-msl); then higher (27 - 28 ug/L) 652 to 632 ft-msl. CRA not installing wells at VAS-14 and VAS-15; MW-208 and MW-202 not being installed at intervals corresponding to zones of maximum contamination at the nearest VAS locations; and CRA not conducting VAS at MW-216 will leave only 1 location along the Dryden Road boundary of the Site (where significant contaminants were detected in landfilled material and groundwater) where wells were appropriately sited along this 1,700 foot boundary - the MW-210 cluster. EPA recognizes this work is not necessary to complete the streamlined FS for EPA's presumptive remedy for the Site. However, the above information re: VAS-14 and VAS-15, including that permanent wells were not installed at these locations, and data gaps along the eastern boundary of the site (e.g., MW-202 and MW-208 not in maximum zones of contamination; no VAS at MW-216) must be included in the FS.

18. **COMMENT: Phase 2 Work Plan, Monitoring Well Installations, Pages 3-5 and Table:** CRA is not completing VAS down to 100 ft-bgs at VAS-4 or installing a groundwater monitoring well at VAS-4 (where NAPL was found) or any other location in

the northeastern area of the Site. The closest VAS locations to VAS-4 are VAS-5 about 450 feet southwest of VAS-4, and VAS-14, about 650 feet south of VAS-4 (where CRA is not installing any monitoring wells).

CRA should conduct VAS down to at least 100 ft-bgs in the northeast area of the site and install at least one monitoring well to characterize the NAPL/underlying groundwater at VAS-4 for VOCs, SVOCs, PCBs/Pesticides and metals; and additional monitoring wells at this location if deeper groundwater contamination is detected based on the VAS. CRA should also install at least one or more VAS borings along Dryden Road between VAS-14 and VAS-4 to further characterize groundwater contamination along this 650 foot eastern boundary of the Site. EPA recognizes this work is not necessary to complete the streamlined FS for EPA's presumptive remedy for the Site. However, the above information must be included in the FS and may be a data gap.

19. **COMMENT: Phase 2 Work Plan, Monitoring Well Installations, Pages 3-5 and Table:** It is not clear how the well intervals for the new wells relate to maximum intervals of lead and arsenic at each VAS location. This must be discussed in the FS and may be a data gap.

20. **COMMENT: Phase 2 Work Plan, Monitoring Well Installations, Page 4, Table, MW-216 and Page 5, Paragraph 3:** Without VAS, it will be uncertain whether MW-216 is installed in the maximum zone(s) of contamination. MW-216 is about 225 feet from VAS-14 and about 250 feet from VAS-15. Also, VAS-14 and VAS-15 were not similar in stratigraphy or contaminant concentrations (see previous comments). EPA recognizes this work is not necessary to complete the streamlined FS for EPA's presumptive remedy for the Site. However, the above information must be included in the FS and may be a data gap.

21. **COMMENT: Phase 2 Work Plan, Monitoring Well Installations, Page 5, Paragraph 3:** From the Phase 1 and Phase 2 investigations, it may not be clear where the 150 ug/L of vinyl chloride in VAS-19 52-57 ft. bgs (elevation 660-655 ft-msl) is going. VAS-21 was deep enough (630.97 ft-msl) but may not be in the flow path. VAS-20 and VAS-22 could also be too shallow. VAS-20 stopped at 664.62 ft-msl and VAS-22 stopped at 666.84 ft-msl. CRA should conduct additional VAS "stepping out" from VAS-19 and/or along the south, southwestern and southeastern boundaries of the site where there are significant data gaps to appropriate depths to further evaluate these areas (e.g., 1,100 feet between 100 foot deep VAS-13 and VAS-23; 1,175 feet between 100 foot deep VAS-17 and VAS-23; and 1,425 feet between 100 foot deep VAS-23 and VAS-21; 850 feet between 100 foot deep VAS 13 and VAS-12). CRA should also investigate whether groundwater contaminants are discharging to the Quarry Pond. EPA recognizes this work is not necessary to complete the streamlined FS for EPA's presumptive remedy for the Site. However, this information must be included in the FS and may be a data gap.

22. **COMMENT: Phase 2 Work Plan, Monitoring Well Installations, Pages 3-5 and Table:** It is not clear how the well intervals for the new wells relate to maximum intervals of lead and arsenic at each VAS location. This must be discussed in the FS and may be a data gap.

23. **COMMENT: Phase 2 Work Plan, Page 6, Groundwater Sampling:** Please send EPA an email or letter clarifying whether the Phase 2 groundwater sampling will include sampling the Valley Asphalt wells since contaminants were detected in these wells, some above screening criteria. If not, this may be a data gap and must be discussed in the FS.

24. **COMMENT: Phase 2 Work Plan, Page 6, Reporting:** Since EPA is requesting the RI/FS documents by November 15, 2009, the information in the Phase 2 Report can be included in the FS and EPA does not need a separate submission. However, it would be helpful if CRA could provide EPA with flow maps, Phase 2 data, and cross-sections as they are generated so EPA can keep up with the results of the investigation/findings and be able to participate in any pre-FS meetings.

25. **COMMENT: Phase 2 Work Plan and Phase 1 Groundwater Report, Cross-Sections:** Some of the dashed lines in the cross-sections are a bit of a stretch and may be misleading. For example, cross section H-H" correlates a narrow lower till unit labeled ML at VAS-01 with a till unit 3-4 times thicker labeled SM at VAS-14. The two units are 20 feet apart vertically and the boreholes over 800 feet apart. This sort of correlation is much more speculative than the correlation in A-A' (between VAS-13 and VAS -03) where the units are at the same elevation and are labeled the same (ML) although separated by over 1200 feet. For the cross-sections in the FS, please develop cross-sections using three categories: 1) Solid lines for stratigraphy observed at, and adjacent to boreholes, 2) Dashed lines for inferred - but with a certain degree of confidence because of the distance between the boreholes, similar elevations, similar composition; and 3) A third category that is more speculative and is marked by either a question mark in lieu of, or superimposed on the dashed line.

26. **COMMENT: Phase 2 Work Plan and Phase 1 Groundwater Report, Cross-Sections:** The Stratigraphic Legend in the cross-sections is not correct. "ML" means "silt" not "clayey sands, sand-clay mixtures >12% fines". This is also consistent with the boring logs in the Phase 1 Report which describe these "ML" intervals as "silt" (e.g., VAS-1, VAS-3, VAS-7, etc.). Please review the cross-sections and make sure the stratigraphic presentation and legends in the FS are consistent with correct boring log descriptions.

27. **COMMENT: Phase 2 Work Plan and Phase 1 Groundwater Report, Cross-Sections and Boring Logs:** Using "ML" to indicate "silty sand" in the boring logs (e.g., for VAS-9, VAS-22) is not correct. The correct designation for "silty sand" is "SM". Please correct the boring logs (and cross-sections) to make sure correct soil

designations consistent with the Unified Soil Classification System are used at all locations.

28. **COMMENT: Phase 2 Work Plan and Phase 1 Groundwater Report, General:** The FS must document where deep VAS did not fully delineate the vertical extent of plume (e.g., 2 non-detect VOC intervals) - especially VAS-9, VAS-15, VAS-17, VAS-19, VAS-25, and other Phase 1 and Phase 2 VAS locations since these may be data gaps. The FS discussion should also differentiate between locations where the vertical extent was not fully delineated but it appears the VAS went through the center of the plume (e.g., VAS-8, VAS-14, etc.); and locations where it does not appear or is not clear whether the VAS went through the center of the plume (e.g., VAS-15, VAS-25, etc.).

29. **COMMENT: Phase 2 Work Plan and Phase 1 Groundwater Report, General:** The FS must document that MW103 and MW-201 are too shallow and not consistent with low TCE in VAS-3 since this may be a data gap.

30. **COMMENT: Phase 2 Work Plan and Phase 1 Groundwater Report, General:** The FS must discuss the variability between boring MW-210 and VAS-21 only 15 feet away (e.g., differences in upper till) since TCE concentrations above the till in MW-210 and VAS-21 were so different and could indicate preferential flow pathways (i.e., 260 ug/L in MW-210 where till is 5 feet lower compared to 15 ug/L in VAS-21 where till is 5 feet higher - unless VAS-21 concentration were significantly under-represented in this interval); and any similarity/differences between these borings and VAS MW-210B. plume (e.g., VAS-15, VAS-25, etc.).

31. **COMMENT: Phase 1 Groundwater Report, Groundwater Flow Maps:** The FS must include revised groundwater flow maps for each groundwater elevation monitoring event that more reasonably portray groundwater flow in the vicinity of the Quarry Pond consistent with EPA and CRA's 3/31/09 discussion concerning the use of appropriate control points.

32. **COMMENT: Phase 2 Work Plan and Phase 1 Groundwater Report, General:** The FS must include cross-sections showing Phase 1 and Phase 2 VAS stratigraphy, VAS analytical results, and all monitoring wells, including wells not included in Phase 2 monitoring. One set of cross-sections should show concentrations for TCE, vinyl chloride, benzene and, if possible cis-1,2-dichloroethene; and another set of cross-sections should show concentrations for arsenic and lead. Monitoring well concentrations for these chemicals should also be shown for comparison.

33. **COMMENT: Phase 1 Groundwater Report, General:** The FS must use the stratigraphic-contaminant concentration cross-sections requested in previous comments to discuss similarities/variabilities in stratigraphy and contaminant concentrations across the Site, and to discuss possible preferential flow pathways for contaminant fate and transport.

34. **COMMENT: Phase 1 Groundwater Report, Figure 11:** The Phase 1 Groundwater Report stated Figure 11 showed both the VAS locations originally proposed in the Letter Work Plan and the actual locations, in the case when the VAS location was moved (e.g., VAS-2, VAS-3, VAS-4, etc.). However, this was not shown on the figure. Please correct this in the FS.

35. **COMMENT: Phase 1 Groundwater Report, Section 3.1, Synoptic Water Level Measurements, Paragraph 3:** This section states P-211 is installed with the well screen straddling a separate water-bearing zone from the other existing wells. The FS must discuss P-211, as well as whether this separate water bearing zone has any implications for a potential remedy or as a data gap.

36. **COMMENT: Phase 1 Groundwater Report, Section 3.3.1, VAS Methodology, Page 10, Paragraph 1:** In the FS, please specify which VAS borings used 5-foot screens as opposed to the 10 foot screens CRA started to use beginning November 10, 2008. Also, please include more detail - e.g., two samples were collected from each 10 foot screen, and clarify where CRA set the pump intake for each of the 2 samples within the 10 foot screen.

37. **COMMENT: Phase 1 Groundwater Report, Section 3.3.1, VAS Methodology, Page 10, Paragraph 1:** In the FS, please clarify how many background radiation readings were collected, where each background reading was collected from, and what the background radiation readings were. For example, what were the radiation readings during VAS-24 and VAS-25 near the trailer park? Also, please discuss whether the radiation levels detected on-Site have any implications for a cleanup remedy. For example, how do the radiation levels detected on Site compare to levels that acceptable for residential and general industrial use?

38. **COMMENT: Phase 1 Groundwater Report, Section 3.3.2, VAS Scope of Work, Page 14, Bullet 1, Last 2 Sentences:** In the FS, please provide additional details to support the statement that shallow VAS locations were near other locations that were completed to 100 ft-bgs since CRA's VAS locations in general were spaced pretty far apart. Also, while EPA agreed CRA could reduce the depths of some of the VAS samples (because EPA agreed deep VAS borings were not needed at every location for the streamlined FS for EPA's presumptive remedy for the Site), EPA did not agree reducing the depths of the VAS was appropriate because "the impacts in the lower aquifer(s) appeared to be of a more diffuse and homogenous nature". What EPA spoke with CRA about when this field decision was made, was that based on the existing deep borings, CRA wanted to focus the rest of the investigation on determining whether there were any significant shallow source areas as the Site, e.g., similar to NAPL in VAS-4 and high VOCs in VAS-9. The FS must discuss the borings where VAS was not completed down to 100 feet since this may be a data gap.

39. **COMMENT: Phase 1 Groundwater Report, Section 5.1.2, Hydrogeology, Hydrostratigraphy, Page 28, Paragraph 2:** This section indicates 2 till layers were

identified at the Site. However, some VAS locations had 3 layers of till (e.g., VAS-1, VAS-5 and VAS-8). CRA's statement that there are 2 (or 3?) significant till layers observed during VAS seems to be indicating there is something common about these layers (in terms of contaminant fate and transport?), even though the actual soil classifications vary greatly. However, this is not clear. For example, how does CRA know that:

- In VAS-8, the SP sand from 52 to 58 ft-bgs and 62 to 66 ft-bgs (and at other locations) is not till, but the SP sand from 57 to 62 ft-bgs and from 76 to 77 ft-bgs (and at other locations) is till?
- In VAS-19, the SM silty sand from 25 to 28 ft-bgs (and at other locations) is not till, but the SM silty sand at 37 ft-bgs and from 66-67 ft-bgs (and at other locations) is till?
- In VAS-25, the SM silty sand from 35 to 50 ft-bgs (and at other locations) is till, but the SM silty sand from 62 to 68 ft-bgs and 75 to 79 ft-bgs (and at other locations) is not till?

Please make sure these issues are fully addressed in the FS.

40. **COMMENT: Phase 1 Groundwater Report, Section 5.1.2, Groundwater Flow Direction and Gradients, Page 29, Paragraph 3 and Table 6:** The numbers in Paragraph 3 (GMR surface water elevation varied up to 0.8 feet higher to 0.5 feet lower than groundwater elevations) do not appear to be consistent with the numbers in Table 6. Shouldn't the text read 5.59 feet higher to 0.82 feet lower? Also, the heading for Table 6 should read "Northwestern Monitoring Wells" instead of "Northeastern Monitoring Wells". Please provide the correct information in the FS.

41. **COMMENT: Phase 1 Groundwater Report, Page 29, Section 5.1.3, Hydrology, Paragraph 1:** In the FS Report, please revise the Hydrology Section to indicate that about 10 percent of the Site is in also in the 100 year floodway of the GMR. Also, in the FS, please discuss any implications the Site's location in the 100 year floodway and 100 year floodplain has for potential cleanup alternatives (i.e., for a cap, leachate and groundwater).

42. **COMMENT: Phase 1 Groundwater Report, Section 5.1.3, Hydrology, Page 30, Paragraphs 1 and 2:** In the FS, please provide tables supporting CRA's analysis of the Large and Small Ponds.

43. **COMMENT: Phase 1 Groundwater Report, Page 29, Section 5.1.3, Hydrology, Paragraph 1:** In the FS, please discuss whether the presence and hydrological characteristics of the Small Pond has any implications for potential cleanup alternatives (i.e., for a cap, leachate and possibly groundwater).

44. **COMMENT: Phase 1 Groundwater Report, Page 29, Section 5.1.3, Hydrology, Paragraph 2:** In the FS, please discuss whether the presence and

hydrological characteristics of the Large Pond has any implications for potential cleanup alternatives (i.e., for a cap, leachate and possibly groundwater).

45. **COMMENT: Phase 1 Groundwater Report, Page 29, Section 5.1.3, Hydrology, Paragraph 2:** The report states there are no immediately adjacent monitoring wells to conclusively comment on potential groundwater-surface water actions in the Large Pond. If this information is needed for the FS, it should be collected during Phase 2. Otherwise, the FS should indicate this is a data gap and explain ways in which potential cleanup alternatives (for a cap, leachate and possibly groundwater) could be affected under various Large Pond/Upper Aquifer Zone characterization scenarios.

46. **COMMENT: December 11, 2008 Results of Test Pit/Test Trench Investigation, Page 7, Test Pits, Paragraph 2 and Test Trenches Paragraph 2:** In the FS, please change "primarily arsenic" to "primarily arsenic and lead" (and any other metals if applicable).

47. **COMMENT: December 11, 2008 Results of Test Pit/Test Trench Investigation, Figures:** The figures in the report show soil concentrations in ug/L instead of ug/Kg for organic compounds and mg/Kg for inorganic compounds. Please correct this in the FS figures.

48. **COMMENT: Phase 2 Work Plan and Phase 1 Groundwater Report, General:** The FS must document that MW-218A and MW-218B may not be installed in contaminated intervals at the MW-218 location. MW-218A is to be installed 689-699 ft-msl and MW-218B is to be installed 644-649 ft-msl. However, in the nearest VAS location (VAS-13), low levels of benzene (0.23 ug/L) were detected 687-692 ft-msl, and low levels of cis-1,2-dichloroethene were detected 656-661 ft-msl (0.21 ug/L) and 627-632 ft-msl (0.24 ug/L). MW-218B is not consistent with the benzene or cis-1,2-dichloroethene detections. MW-218A may overlap with some of the benzene detected in VAS-13, however, the Phase 2 work plan also indicates MW-218 will be a water table well, and in VAS-13 during lower flow conditions the water table was about 705 ft-msl.

49. **COMMENT: Phase 2 Work Plan and Phase 1 Groundwater Report, VAS Figures:** For the FS, on all figures showing VAS locations horizontally, please use color coding or some other way to differentiate between VAS locations that went all the way down to 100 feet and VAS locations that stopped around 50 or 60 ft-bgs.

50. **COMMENT: Phase 2 Work Plan and General.** It appears the SDDL site has widespread coal combustion byproducts (CCBs, aka flyash) and other incinerator-generated materials. Unless Ra-226 medical or industrial wastes were incinerated on site, any Ra-226 on site should be naturally occurring and probably technically enhanced. Uranium, thorium, and their decay products (including Ra-226) naturally occur in coal in concentrations that vary. After complete coal combustion, volume reduction occurs and the relative concentration of uranium, thorium, and their long-lived

decay products (including Ra-226) typically increases by a factor of 10, so coal ash can exist in concentrations around 1 to 10 pCi/g, with a tendency towards 1 to 5 pCi/g, where higher concentrations occur with less likelihood. So it is possible that coal-ash concentrations at SDDL could exceed EPA risk-based cleanup levels (around 2pCi/g for 1E-4 risk), or the commonly used 40 CFR 192 total radium cleanup standard of 5pCi/g, where those cleanup levels consider a resident. Risk-based levels for industrial workers would have to be calculated.

Based on the radiation detected on site, EPA recommends analyzing Phase 2 groundwater samples for radium and total alpha and beta. However, EPA recognizes this work is not necessary to complete the streamlined FS for EPA's presumptive remedy for the Site. However, the lack of radium and alpha and beta groundwater data must be included in the FS and may be a data gap.

51. **COMMENT: General:** The FS must discuss any differences in groundwater flow conditions between the Phase 1 and Phase 2 VAS, and whether any of these differences could cause any uncertainty in comparing Phase 1 and Phase 2 VAS results (e.g., TCE concentrations in MW-210 seem to vary throughout the year).