APPENDIX G RESPONSE TO WRITTEN COMMENTS

The Draft Second Five Year Review for the Former Lowry Air Force Base was issued to the members of the Lowry Cleanup Team (LCT) for review and comment on July 23, 2013. Two on-board reviews were held to interactively incorporate written and verbal comments received from the LCT members in order to streamline the document review process. The on-board reviews were held on August 28, 2013 and September 16, 2013 and were attended by representatives of the Air Force Civil Engineer Center (AFCEC), the Colorado Department of Public Health and Environment (CDPHE), U.S. Environmental Protection Agency Region 8 (EPA), and Lowry Assumption, LLC (LAC). Written comments were received from the EPA and the Lowry Economic Redevelopment Authority (LRA). In lieu of formal written comments, the CDPHE provided comprehensive verbal comments and suggested revisions during the two on-board reviews.

The written comments provided by the EPA and the LRA with the AFCEC responses are presented in the following pages. The AFCEC responses are included in *italics* following each comment.

EPA Comments on the Former Lowry AFB Second Five Year Review

Received August 21, 2013

- 1) Exec. Summary:
 - period of review is from the date of notification to the public to the sign date

Text modified

• 1st paragraph, last sentence—the AF is the lead because of executive Order 12580. I think the RCRA agreement between CDPHE and the AF specifies the AF agreed to do 5YRs. DOD in general is committed to performing 5YRs at places where they retain CERCLA 120 liability and where waste has been left in place.

Text modified

 Paragraph 2, 26 sites---the 5YR should be written in terms of OUs wherever possible. This would be x # of OUs, plus y # of locations outside of OUs.

Comment noted – content modified per discussions with AFCEC, CDPHE, EPA, and LAC at the on-board reviews.

• Every recommendation should be connected to an issue. OU2 had no issues. OU5 will have some.

Comment noted – content modified per discussions with AFCEC, CDPHE, EPA, and LAC at the on-board reviews.

- OU2 is protective, OU5 is protective in the short term
 Comment noted content modified per discussions with
 AFCEC, CDPHE, EPA, and LAC at the on-board reviews.
- 2) General: Since there is another famous Superfund site in metro Denver (Lowry Landfill) I recommend you use the name Lowry Air Force Base when referring to your BRAC site. Especially at the landfill.

Text modified

3) Table 1: not needed. This table is in the guidance to distinguish between policy and statutory reviews.

Deleted

- 4) Section 3.1, "achieved closure": closure and UU/UE are not the same. To make the stronger statement you make elsewhere, UU/UE is the threshold. Text modified
- 5) Section 3.2, 3rd paragraph: The CIP is getting pretty old. Contact names are out of date. You may want to mention when the next update will take place. They often happen concurrent with the 5YR.

LAC plans to update the Community Involvement Plan (CIP) in the later part of 2013.

6) Section 3.2, 4th paragraph, community involvement as defined in the Consent Agreement: This is phrased as if you're trying to keep them at arm's length. Instead---The plan identifies where to find information to stay informed about the progress on the clean-ups, and who to contact with concerns.

Text modified

7) Section 3.2, 5th paragraph, interviews with community members: Refer to the appendix if this means the regulator and operator interviews. The community member interviews should be summarized. The names can be redacted, or the responses can be summarized. Otherwise, it gives the impression only officials were interviewed. Don't ignore information from the interviews in the body of the report. See comment 22.

This paragraph refers to the public interviews conducted as part of the 2009 Revised Community Involvement Plan – the interview information is summarized in Paragraphs 5-7 of the Second Five Year Review and in the CIP which is included as Appendix B to the Second Five Year Review.

- 8) End of section 3.3, "cycle": probably a typo. Text corrected
- 9) Table 3, chronology: recommend this level of detail in a chronology be reserved for an appendix. A select chronology for the 5YR would be more applicable here. Significant 5YR dates: RODs/decisions, RA starts, sitewide, construction completion, LUCs in place, UU/UE's established, land transfers, decommissioning, deletion (for NPL sites).

Comment noted – content modified per discussions with AFCEC, CDPHE, EPA, and LAC at the on-board reviews. The Operable Unit 5 (OU5) chronology table was formatted to be a stand-alone table (Table 4).

10) Section 4.2:

• somewhere before the delineation of the plumes, and definitely by the time you get to the basis for taking action, it would be good to see the crosswalk with the RAOs and the remedies listed.

Comment noted – content modified per discussions with AFCEC, CDPHE, EPA, and LAC at the on-board reviews. A new Table 2 was created to address the comment.

 There are some acronyms which should be defined the first time they are used: BAHCS, SARS. Show these and the other remedies described (PRB, sub-slab systems), on a map.

Comment noted – content modified per discussions with AFCEC, CDPHE, EPA, and LAC at the on-board reviews.

• Clarify whether the PRB was removed. Locate the BAHCS on 11th Ave better with cross-streets in the text.

Text modified and Figure 1 modified to include location.

• HQ plume: see notes for figures and OU5 Tech Eval question B. This area may need an additional sentence here.

Text modified

- Sub-slab systems: buildings <u>overlie</u> the plume north of the base.
 Text corrected
- 11) Section 4.4.1: RAOs do not usually include preferred technologies and the bullet after it.

The Remedial Action Objectives (RAOs) from the Phase 2 Corrective Action Plan for Groundwater were inserted into the text in their entirety per discussions at the on-bard reviews. Table 2 was also created to include the complete listing of RAOs.

12) Section 4.3 indicates there are no known direct exposure pathways to ground water. This describes drinking water use, but excludes vapor

intrusion. Add vapor intrusion info. VI was handled with "aggressive active remediation" and vapor mitigation systems.

Text modified

13) Section 4.5, Fire Training zone bedrock table: there should be a similar table for alluvial detections, and an alluvial graph similar to Figure 5. ID wells WEFT11 and FT-13 following the table as bedrock or alluvial or multi-completion wells.

The Fire Training Zone (FTZ) TCE Plumes contamination is localized in 'bedrock' – there is no saturated alluvium in the identified plume areas

- 14) Section 4.8, Tech Evaluation Question A:
 - be aware addenda to the 5YR guidance have been issued for the following since the last 5YR: asbestos, VI and IC evaluations.
 Comment noted.
 - Text does not address the VI objective.
 Text modified
 - Refer to appropriate figures in the tech evaluation. *Text modified*
 - Text only discusses carbon tet and TCE results. Discuss detections of the breakdown products. Most detections are below MCLs. 1,1-DCE was detected above the MCL in the Jan '13 samples. Detections of breakdown products should be on a map.

The identified contaminants of concern (COCs) for OU5 are trichloroethene (TCE) and carbon tetrachloride (CT). As discussed during the on-board reviews, 1,1-dichloroethen (DCE) is a breakdown product of 1,1,1-trichloroethane (TCA) — one detection in January 2013 in excess of Colorado Basic Groundwater Standard (CBGWS) from well MWMF03D (26 microgram per liter [ug/l]) -a bedrock well in the Building 1432 source area.

 "functioning as intended" language: Figure 3 shows concentrations are asymptotic and above the MCL in the main plume, and Figure 4shows rising concentrations in the HQ plume. The objective is to attain standards. If VI is not a factor, this makes the remedy protective in the short term. Revise text.

Text modified per discussions with AFCEC, CDPHE, EPA, and LAC at the on-board reviews.

 ICs—the CDPHE reference doesn't relate to remedy performance, and can be omitted. There should be a map somewhere which shows the LUC area relative to the plume boundary. Of the ICs listed, mitigation systems and sub-slab systems are engineering controls, not ICs. The instruments that provide for no use of water are the actual IC. Restate.

Text modified – see Section 4.4.4 -the State Environmental Covenants set forth the requirements for mitigation systems and groundwater use restriction.

Figure 1 was modified to show the boundaries for the State Environmental Covenants at the Former Lowry Air Force Base. A copy of the State Environmental Covenant for OU5 is included in Appendix F.

 Add to the bullets: Construction oversight. Indicate what was observed during the site inspections/visits regarding how well the ICs are working. What will happen when the construction oversight phase is over?

Construction oversight is not part of OU5. Construction oversight is handled via a CDPHE-approved Soil Management Program that is exclusive of the identified OUs being evaluated in this Second Five Year Review

• 2nd to last bullet indicates injections are at the end of their usefulness. Refer to appropriate figures.

Text modified

 Asymptotic concentrations above the MCL would be an example of an early indicator. Rising concentrations in the HQ area are another. Text modified

- 15) Section 4.8, question B:
 - The MCL for 1,1-DCE is 7 ug/l and it is exceeded in some samples.
 Discuss in this section.

See note above in #14 re: 1,1-DCE

• The dioxin tox factors were finalized in the last year. I can't recall if they apply here.

Not applicable

• The indoor air logic was well done: the tox factor change was explained, then whether it affects protectiveness.

Comment noted

- Question C is not meant to repeat information from question B.

 Text modified per discussions with AFCEC, CDPHE, EPA, and LAC at the on-board reviews.
- 16) Section 4.8 tech assessment summary:
 - Make text change based on comments above.
 Text modified per discussions with AFCEC, CDPHE, EPA, and LAC at the on-board reviews.
 - The "no changes in land use" statement will need more support in Question A, particularly with respect to vapor intrusion.
 Text modified
- 17) Section 4.8.1, issues: new issue—continued treatment will not bring TCE below the GW standard. Possible additional issues with VI, extent of ICs, and breakdown products.

Text modified per discussions with AFCEC, CDPHE, EPA, and LAC at the on-board reviews.

18) Section 4.8.2, recommendations: no issues would normally mean no recommendations, but since there is at least one issue, the recommendation(s) should relate to it.

Text modified per discussions with AFCEC, CDPHE, EPA, and LAC at the on-board reviews.

19) Section 4.9, protectiveness statement: follow the format in the guidance. You are not expected to be, but already protective. "The remedy at OU5 is protective of human health and the environment. Potential exposure pathways have been limited through institutional controls and aggressive remediation of the ground water plumes. To be protective in the long term, . . . Post remediation monitoring in OU5 continues to evaluate contaminant concentrations and the effectiveness of the remedy."

Text modified per discussions with AFCEC, CDPHE, EPA, and LAC at the on-board reviews.

20) Section 5.2, paragraph 2: may want to bullet the items itemized in the final cover design.

Text modified

- 21) Section 5.8, Question A:
 - Look over the RAOs and add a sentence or two to appropriate bullets describing how the remedy is performing with respect to them. Or revise presentation so that performance with respect to RAOs is obvious.

Text modified

 ICs—a map showing the landfill boundary and the LUC boundary will be needed.

Figure 1 shows landfill boundary and has been modified to denote the boundary of the State Environmental Covenant for OU2. A copy of the State Environmental Covenant for OU2 is included in Appendix F.

 Opportunities for optimization: none Text modified

 Early indicators—the fence repairs are a good example. The burrowing example reads as if they take care of themselves. It would be better to say the O&M Plan provides for repairs to the cap and the drainage systems.

Text modified

 You've introduced things in the issues and recommendations tables which are better put in the technical evaluation

Text modified and tables deleted per discussions with AFCEC, CDPHE, EPA, and LAC at the on-board reviews.

22) Section 5.8, Question C: The text here repeats the protectiveness statement, and ignores the many interviews that indicated concern with the landfill redevelopment. You have to deal with that, and this is a good place.

Replace this text with a discussion of the landfill redevelopment plans in progress, what stage they are in, and what programs at the State will be worked with so that protectiveness will not be anticipated to change.

Text modified per discussions with AFCEC, CDPHE, EPA, and LAC at the on-board reviews.

23) Section 5.8, tech assessment summary: a little more description would help. The cap is effective in preventing exposures to human health and the environment, the vent system is successful in eliminating gas build-up, the O&M plan is effective in reducing trespass and maintaining the cap, the monitoring system confirms releases to ground water are not taking place, etc.

Text modified per discussions with AFCEC, CDPHE, EPA, and LAC at the on-board reviews.

- 24) Section 5.8.1 and 2, issues and recommendations:
 - the issues brought up here should be introduced in Question A or C.
 If they are covered under O&M, and they don't affect protectiveness,
 they should not be included here.

Deleted tables – these are covered under O&M and do not affect the protectiveness of the remedy. Text modified per discussions with AFCEC, CDPHE, EPA, and LAC at the on-board reviews.

• Clarify if the scheduled removal is expected to be completed before the 5YR is signed, or say when it is scheduled to take place.

The issues raised during the construction of the new Denver Fire Station near Alameda and Xenia is not associated with OU2.

- Locate the fire station on a map.
 See response above
- For Westerly Creek Dam, discuss in question C and locate on a map.
 Clarify if the vegetative cover is required for the cap.

Text modified per discussions with AFCEC, CDPHE, EPA, and LAC at the on-board reviews.

• Milestone dates need to be in mo/day/year format. This will apply to OU5.

Table 7 created to summarize recommendations *per discussions with AFCEC, CDPHE, EPA, and LAC at the on-board reviews. Date format consistent with comment.*

25) Section 5.9, protectiveness statement: use language from the guidance, and the Sept 2012 memo for writing the protectiveness statement: The remedy at OU2 is protective. Exposure pathways that could result in unacceptable risk are controlled through the use of the O&M plan and existing ICs.

Text modified per discussions with AFCEC, CDPHE, EPA, and LAC at the on-board reviews.

26) Section 6.0, sitewide protectiveness statement: replace with: Because the remedial actions at OU5 are protective in the short term, the sitewide protectiveness statement is protective in the short term. To be protective in the long term, . . .

Text modified per discussions with AFCEC, CDPHE, EPA, and LAC at the on-board reviews.

27) Section 7, next review:

- Due October 7, 2018,
- Instead of five years from the date of this review, it's ten years from the initial review. (per 2011 EPA policy memo, due dates are now pegged from an earlier due date).
- Specify Lowry AFB

Text modified per discussions with AFCEC, CDPHE, EPA, and LAC at the on-board reviews.

28) Table 2—

• OU identification is missing for the most part. Include. Parcel numbers may also be useful to some audiences. RAOs are missing, but can be handled in your table X.

Table modified (now Table 1) per discussions with AFCEC, CDPHE, EPA, and LAC at the on-board reviews. A new Table 2 includes the RAOs.

where is the northwest neighborhood in this?

Not applicable to the Five Year Review. The asbestos in soil issues were addressed under the Lowry Soil Management Program.

29) Figures

There should be a figure showing the locations from Table 2.
 The figures were modified per discussions with AFCEC, CDPHE, EPA, and LAC at the on-board reviews.

• Show BAHCS, SARS, fire house, and other features mentioned in the text on an appropriate map.

Figure 1 was modified per discussions with AFCEC, CDPHE, EPA, and LAC at the on-board reviews.

 There should be figures showing LUCs relative to plumes and the landfill.

Figure 1 was modified to illustrate the boundaries of the State Environmental Covenants relative to the OU5 plumes and OU2.

• Show flow direction on plume maps and the landfill GW monitoring map (figure 14). Add to legend.

The figures were modified to include an indication of alluvial groundwater flow direction.

• There should be a map showing breakdown products.

There are no mappable breakdown products for TCE when using chemical oxidation.

• Figure 4 begs attention for this area in the text.

Text modified per discussions with AFCEC, CDPHE, EPA, and LAC at the on-board reviews.

Figure 7: The side by side maps are great, but there are 2 legends o
this figure, confusing things. Stick to the original legend and scales.
Showing colors with different scales is deceiving. Wells should be
placed on these maps, indicating the degree of control. Dots without
names are sufficient on this general a map.

The map legend was corrected on Figure 7.

• Figure 8 shows well locations inside the plume, but not the control points which allow you to establish the outside of the plume. The map should make it clear that there are co-located or nested wells and identify deep vs. shallow designations in the legend. Here or on another figure, show the data as Figures 6, 9, and 11 do. Refer to these figures as needed in the HQ plume text areas.

The figure (now Figure 11) was modified per discussions with AFCEC, CDPHE, EPA, and LAC at the on-board reviews.

30) App B—community involvement plans are generally updated at the time of the 5YR or just before. At a minimum, the elected officials and other contacts need updating.

LAC anticipates updating the CIP in the later part of 2013. The LAC website (www.lowryafbcleanup.com) has recently been updated and is current with appropriate contact information.

31) App C—the last question in most of the interviews asks if anyone else should be interviewed. It doesn't look like the follow up interviews took place. The cities should also be asked if the ICs are working to their satisfaction. This can be outside the formal interviews.

Follow-up interviews and discussion were conducted if a response merited such action. Per Mr. Pivonka's recommendation, an additional questionnaire was sent to Ms. Christine O'Connor with Lowry United Neighborhood.

32) App E---the cover page should indicate the title and date of the report this is excerpted from. Even so, this is not the best way to demonstrate CURRENT risk conditions. Sample 5YR risk evaluation attached.

The title page has been updated. The Assessment of Risk included in the FOSET is appropriate for the intended use in this Second Five Year Review.

<u>LRA Comments on the Former Lowry AFB Second Five Year Review</u> Received August 28, 2013

ES-1 – Says "and the program continues today with investigations of sites identified during the Resource Conservation and Recovery Act (RCRA)
 Facility Assessment." - Should that say "was completed with investigations..." or similar (P. 3-1 says these investigations are all closed/NFA.)

Text modified

2. 2.0 - Site chronology – Suggest clarification as to whether Buckley Annex is included since it is mentioned in ES and 2nd paragraph (DFAS).

Text modified in the last paragraph on Page 2-1.

- 3. P. 2-1 Last paragraph should "LAC's obligations" under privatization include cleanup of AF legacy conditions?

 Text modified in the last paragraph on Page 2-1.
- 4. Page 3-5 (Editorial consistency) 5 yr or Five yr Review? Text modified throughout document for consistency.

5. P 4-10 – last sentence –Should that read "reduce concentrations below levels of concern"?— as remediation doesn't eliminate a pathway – it reduces exposure. (Same comment in the first ¶ of 4.4.1 – reduce/eliminate exposure, not pathway)

Text modified per discussions with AFCEC, CDPHE, EPA, and LAC at the on-board reviews.

6. Table 2 – Suggest rewording the red text. Does text mean that the ROD includes information on the "remedy minus the covenant" or LAC evaluated the "remedy" minus the covenant?

Table 2 has been changed to Table 1. Text modified for clarity. Note that Table 3 was created to summarize CDPHE issues raised with respect to several completed and ongoing response actions, including OU4.

7. Fig 11 – should it show KMnO4 injection area also? Or is KMnO4 in the borehole from injections elsewhere

The KMnO₄ present in well MWCT04 was from injections associated with the treatment of TCE in OU5 and was not associated with the treatment for carbon tetrachloride. Note that Figure 11 is now Figure 14.