WASTE MANAGEMENT

KETTLEMAN HILLS FACILITY
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March 3, 2009

CERTIFIED MAIL (7006 3450 0000 0424 9219)

Cheryl Nelson
U.S. ENVIRONMENTAL PROTECTION AGENCY - REGION IX
75 Hawthorne Street, WST-4
San Francisco, CA 94105-3901

RE: CHEMICAL WASTE MANAGEMENT, INC. - KETTLEMAN HILLS FACILITY
DRAFT DIOXIN-LIKE PCB CONGENERS STUDY WORKPLAN
REVISION 1

As you'll recall, in a letter titled Request for Additional Sampling of Air, Soil, and Biota/Vegetation for PCB Congeners (Request Letter), dated December 2, 2008, USEPA-IX requested that Chemical Waste Management, Inc. - Kettleman Hills Facility (KHF) "conduct additional sampling of air, soil, and biota/vegetation samples and analyze these samples for PCB congeners." Attached to that Request Letter was a framework with the objective to "collect sufficient data to assess the magnitude of potential human and ecological impact to off-site receptors from PCB disposal activities at the Kettleman Hills Facility".

On January 15, 2009, KHF submitted the Draft Dioxin-Like Polychlorinated Biphenyl (PCB) Congeners Study Workplan (Draft Workplan), dated January 2009, prepared by Wenck Associates, Inc. That Draft Workplan addressed the objectives outlined in the USEPA-IX Request Letter.

On February 12, 2009, KHF received an e-mail from USEPA-IX with an attached Memorandum titled Draft Dioxin-Like Polychlorinated Biphenyl (PCB) Congeners Study Workplan Technical Review, undated, prepared by the USEPA-IX Technical Support Team. That Memorandum contained "overarching", general, and specific comments on the KHF Draft Workplan. The gist of those comments were that the KHF Draft Workplan "does not contain the level of detail" that USEPA-IX expects in "projects of similar scope".

There had been no indication in the USEPA-IX Request Letter of December 2, 2008 to KHF, or in prior discussions with USEPA-IX, that this was the "level of detail" required. Now that we are aware of this requirement, additional detail has been added to the text to address those comments.

Attached is the Draft Dioxin-Like Polychlorinated Biphenyl (PCB) Congeners Study Workplan Revision 1 (Draft Workplan Revision 1), dated March 2009, prepared by Wenck Associates, Inc.

This Draft Workplan Revision 1 addresses the comments contained in the USEPA-IX February 12, 2009 Memorandum. KHF also e-mailed instructions on how to recover an electronic version of the Draft Workplan Revision 1 from a "ftp" website. Also attached are the KHF responses to comments on the USEPA-IX February 12, 2009 Memorandum.

KHF understands that this Draft Workplan Revision 1 must be approved by USEPA-IX before it may be fully implemented. However, please recall that in order to meet the USEPA-IX requirement that the air samples "be collected over a 1 year window of time", KHF began the collection of air samples on January 5, 2009, after hearing from the USEPA-IX Technical Support Team that the monitors, locations, and sampling/analytical method were acceptable.

It should also be noted that, if, as per the EPA-IX Request Letter of December 2, 2008, and subsequent discussions, EPA-IX requires sampling of green vegetation, the "window of opportunity" for sampling of green vegetation at KHF is small and closing. Recognizing that fact, during a conference call with the USEPA-IX Technical Support Team on February 23, 2009, Kevin Wong promised that this Draft Workplan Revision 1 would be reviewed ***within one week*** of submittal, which is **by March 10. 2009**. With that in mind, KHF is scheduling the collection of soil and green vegetation samples for the **week of March 23, 2009**.

If you have any questions regarding this matter, please contact me at (559) 386-6151.

Sincerely,
CHEMICAL WASTE MANAGEMENT, INC.

Paul Turek

Paul E Turek
Environmental Manager

Attachments

cc: Ruth Cayabyab, DTSC
Jim Dowdall, RWQCB
Kings County - Kettleman City Branch Library
Kings County - Avenal Branch Library
Kings County - Hanford Branch Library

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

MEMORANDUM

Subject: Draft Dioxin-Like Polychlorinated Biphenyl (PCB) Congeners Study Workplan Technical Review

From: Chemical Waste Management – Kettleman Hills Hazardous Waste Landfill Facility Technical Support Team
U.S. Environmental Protection Agency – Region IX

To: Kevin Wong, Project Manager
Waste Management Division
U.S. Environmental Protection Agency – Region IX

Thank you for the opportunity to review and provide comments on the Chemical Waste Management, Inc., Kettleman Hills Facility (KHF) Hazardous Waste Landfill "Draft Dioxin-like Polychlorinated Biphenyl (PCB) Congener Study Workplan". The Jan. 2009 document was prepared by Wenck Associates, Inc., and is designed to provide the general protocols for sampling and analysis of the co-planar or dioxin-like congeners of PCBs. Data obtained from this sampling and analysis effort will be used to support assessment of potential human health and ecological impacts from releases associated with PCB disposal operations at the facility. The workplan was generated to remain responsive to and incorporate many of the elements from U.S. EPA Region IX's "Kettleman Hills Facility – PCB Disposal Activity Impact Analysis" investigational framework.

The technical support team has provided a number of general and page-specific comments. The gravity of these comments will necessitate a response summary from Chemical Waste Management, and the technical support staff remains available to facilitate comment resolution by direct meetings with facility representatives, a series of conference calls, or by a review of a formal response to comments submittal. Should you have additional questions or concerns, please do not hesitate to contact any member of the technical support staff directly.

Overarching Comment:

EPA's national response and remediation programs frequently employ an overarching assessment strategy when attempting to characterize the impact of contaminant releases on proximate communities. This strategy involves the characterization of locations or receptors subject to maximal chemical impacts, and then arriving at a determination of the magnitude and scale of that impact. To the extent impacts at these Maximally Exposed Individual (MEI) or Maximally Exposed Location (MEL) are deemed "acceptable", then so to would be the impacts to those individuals or locations incurring lower-end exposures.

The investigational framework proposed by EPA for assessment of impacts from the current facility has attempted to incorporate several elements of this strategy. We believe several elements of the draft workplan have not adequately incorporated this overarching strategy. For instance, EPA anticipates that the enormous amount of air monitoring and meteorological data used in support of past ambient air and site-specific monitoring activities, can be effectively leveraged to support more precise site-specific

location analysis useful for the high-volume air sampling devices proposed for monitoring impacts from direct PCB disposal operations. The ability to consider landfill microclimate and air transport & dispersion characteristics unique to the PCB disposal surface offers the potential to provide critical information when assessing locations of maximal impact. Our review fully anticipated increased use of this level of data and analysis, and we believe significant efforts should be made to incorporate the facility's on-site meteorological data and the known patterns of air movement and transport to further inform the specific siting and location of the PCB congener sampling devices.

Response to comment above regarding the enormous amount of previous air monitoring and meteorological used to support the proposed locations of the proposed air sampling locations: *An extensive effort was made by CWM and their consultant to utilize all appropriate historic data to support the design and rationale of the proposed air sampling approach and monitoring locations. Section 2.6 of the Workplan discusses the two previous studies that that had an air monitoring component focused on PCBs. As discussed in this section of the Workplan, PCBs have never been detected in the air sampled at KHF. Appendix B of the Workplan presents eight years of meteorological data collected at the facility and compares that data to data collected at the nearby Fresno airport. This comparison was made to show that annual meteorological conditions (annual average wind direction) at the facility have not changed over time. This information supports the rationale behind the proposed air sampling locations in that UMS-1 is appropriately sited to reflect background (air upwind of KHF) and DMS-1 and MSP are appropriately sited to reflect air downwind (air impacted by KHF, specifically the B-18 landfill) at the facility.*

In studies such as these it is common to use air dispersion modeling data to help site air monitoring locations in areas anticipated to have the highest potential impacts from targeted source emissions. In this case, the targeted source is the B-18 landfill. Two previous air impact studies involved air dispersion modeling as a tool to predict impacts to ambient air at the fenceline and beyond from emissions at KHF. These were the 1) 1994 Topographical, Meteorological and Airborne Contaminant Characterization Study discussed in Section 2.6.1 of the Workplan, and 2) the project work to support the recently released Draft Subsequent Environmental Impact Report (SEIR) associated with the proposed expansion of the B-18 Landfill and future construction of a new hazardous waste landfill (B-20) at KHF. An exhaustive effort was made to obtain the raw modeling data from both of these projects to use as a tool to support the siting of the proposed monitoring locations for the PCB Congener Study. In the case of the 1994 Study, the raw modeling data was no longer available because the project was performed 14 years ago, and by a company that no longer exists. However, an isopleth figure from the 1994 Study (see attached) supports the basis that MSP and DMS-1 are located in the general area of maximum air impacts from KHF emissions. Though preparation of the Draft SEIR was performed more recently, it proved to be very difficult to obtain the modeling data used to predict air impacts as the modeler who performed the analysis has since joined a different firm and the company that performed the analysis could not obtain the data in time to prepare the Workplan. In the case of the Draft SEIR modeling, the data is really not comparable anyway to the types of emissions targeted in the PCB Congener Study.

KHF is located in the Kettleman Hills on the western edge of the San Joaquin Valley which, because of the topography, is classified as complex terrain. Complex terrain has its own unique micro scale meteorological conditions that result from winds channeling in valleys, and wind currents resulting from solar heating of hillsides and valleys. Though there are air dispersion models approved for use in complex terrain, localized property line impacts such as

those targeted in the PCB Congener Study Workplan, are subject to high levels of uncertainty when predicted using a statistical based model. For this reason, it is appropriate to use common sense, field observations, and site knowledge, to locate air monitors near specific emissions sources such as the B-18 landfill. This was the basis in logic for siting the proposed air monitoring locations. Another significant factor is also the availability of power needed for the high volume air samplers required to sample for trace level PCB congeners. While power availability cannot be a reason to avoid sampling in maximum impacts areas, it is certainly a factor that must be considered. However, power is available at DMS-1 and MSP, which as shown in the attached isopleth, are in the area of maximum impact from facility emissions.

To avoid any question that the proposed monitoring sites are not appropriately located to satisfy the objectives of this study, KHF has agreed to also place a temporary PUF air sampler near the administration building (see response to Specific Comment #2 and revised Workplan), as well as conduct air dispersion modeling of particulate depositional impacts from the B-18 Landfill. KHF and its consultant will work with USEPA-IX to obtain an approved modeling protocol, perform the necessary modeling, and provide a report to USEPA-IX summarizing the modeling results as they relate to the appropriateness to the siting of the proposed monitoring locations. Based on discussions with USEPA-IX, it is anticipated that this information will be used, along with field observations and site knowledge, to verify that the proposed sampling locations are acceptably located to meet the study objectives.

General Comments:

1. Overall, this plan does not contain the level of detail which would customarily be found in an EPA lead or funded sampling event. Thus, it is imperative that EPA staff observe and document onsite procedures to ensure that sampling protocols are performed correctly and consistently.

Response: There was no indication in the EPA letter of December 2, 2008 to KHF that this was the "level of detail" required. Now that we are aware of this requirement, additional detail has been added to the text to address these subjects.

2. The overall approach – media to be sampled, number of samples, general location of samples, chemical analyses to be performed, etc., is conceptually sound.

Response: Comment noted.

3. The subject work plan provides considerably less detail than EPA ordinarily requires for many projects of similar scope. That absence of detail leaves room for shortcomings in the data or the utility of the data, e.g., detection limits might not support the necessary decisions, the types of vegetation that are food for key ecological receptors might not be included, or decontamination procedures might not be sufficient given the detection limits achieved in the chemical analyses.

Response: There was no indication in the EPA letter of December 2, 2008 to KHF that this was the "level of detail" required. Now that we are aware of this requirement, additional detail has been added to the text to address these subjects.

4. The work plan makes a number of statements regarding the purpose, expected outcomes and inferences, and bases for decisions, to which EPA does not directly speak in these comments but with which EPA does not necessarily concur. Similarly, this review does not address editorial issues except as they pertain to technical issues.

Response: Comment noted.

5. The work plan discusses a number of determinations and decisions that represent risk

management decisions that will be made by EPA, not Wenke *(Wenck)* Associates, Inc. or Chemical Waste Management. The work plan need not be revised to clarify this.

***Response**: Comment noted.*

6. The purpose of this sampling is the support of risk analyses to demonstrate that issuance of the permit will protect human health and the environment. If the target analyte PCBs are not detected, that risk analysis should demonstrate that the analyses would be able to detect contaminant at the levels necessary to make that demonstration.

***Response**: A data quality objective addressing the relationship between analytical detection limits and risk-based concentrations (USEPA Region 9 PRGs/RSLs) was added to the QAPP (see Worksheet #15 located in Appendix A of the QAPP which is found in Appendix E of the Workplan).*

7. The resolution of some of the specific comments will need to be reflected in multiple locations, including Figure 4, Proposed Soils and Vegetation Sampling Locations, and Figure 5, Conceptual Site Model.

***Response**: The entire Workplan, including Figures 4 & 5, has been updated to reflect all applicable comments.*

Specific Comments

1. **[Section 3.0, Data Acquisition]** The list of World Health Organization designated dioxin-like PCBs should include congener 77, 3,3',4,4'-Tetrachlorobiphenyl (CAS 32598-13-3) rather than congener 76. Please supplement the discussion in this section of the plan with an accurate listing of the relevant congeners and their U.S. EPA recommended toxicity equivalence values (TEFs).

   ***Response:** Section 3.0 has been corrected and updated with TEFs.*

2. **[Section 3.1.1, Sampling Locations (Air)]** This section notes that a newly proposed monitoring station is sited at the meteorological station pad. This location is preferable for monitoring particulate emissions from landfill B-18 that may be migrating towards Kettleman City. However the site is partially obstructed by the adjacent closed landfill. CWM has indicated that it is not feasible to locate this device at a nearby, unobstructed, location. Therefore, it is recommended that data be collected using the portable sampling platform for one or more sampling periods from an unobstructed location 100-500 feet to the south or southeast to demonstrate comparability of data.

   ***Response**: The statement that "CWM has indicated that it is not feasible to locate this device at a nearby, unobstructed, location" is not correct. EPA had suggested that the PUF air sampler be moved from monitoring point DMS2 to the roof of the administration building. However, that roof has no safe access, so for safety concerns was rejected by KHF. Instead, the PUF air sampler was relocated to the nearby meteorological station pad. After further discussion with USEPA-IX, and consultation with KHF maintenance staff regarding power availability, for a one-month sampling event KHF has agreed to place a fourth PUF air sampler near the administration building at a location suggested by USEPA-IX. Section 3.1.1 of the Workplan has been modified to address this.*

3. **[Section 3.1.3, Sampling and Analytical Methods (Air); Section 3.2.3, Sampling and Analytical Methods (soil); Section 3.3.3, Sampling and Analytical Methods (vegetation)]** These sections are very cursory and standard operating procedures (SOPs) for sampling and analysis have not been included in this work plan. More details of specific sampling procedures, especially for soil and vegetation should be added or attached to this plan. Additionally,

information on laboratory sample handling, preparation, and analysis should be included. If procedures from detailed guidance documents are to be followed, then those specific procedures and any related forms should be referenced and included as attachments to the work plan. Field sampling procedures should also address decontamination of equipment. Because a trace level analysis method will be used, the discussion of decontamination should also address how the cleanliness of equipment and solvents used will be ensured and documented prior to sampling.

Response: ***SOPs for air and soil/vegetation sampling have been included as Appendix F and Appendix G, respectively. SOPs for laboratory sample handling, preparation, and analysis have been submitted as Confidential Business Information (CBI) and not a part of any public record.***

4. **[Section 3.2.1, Sampling Locations (Soil)]** This section notes that the sample adjacent to the B-18 landfill will be used to evaluate impacts to ecological receptors inside the property boundary. While this is the primary objective of this sample, the data also represent a worst-case potential for air dispersion and erosion impacts to off-site drainages. This should be clarified in the plan.

   Response: ***Clarification has been provided in Section 3.2.1.***

5. **[Sample 3.2.1, Sampling Locations (Soil)]** The number of discrete samples composited into each analytical sample should be equal. While there is some value in having composite sample components evenly spaced, this is outweighed by potential inconsistencies in sample handling, interpretation of potential "hot spots," and possible differences between impacted and background soils and vegetation. In addition, the number of discrete samples that will make up each composite should be based on the potential for soil concentration variability across the site.

   Response: ***As discussed with John Beach (USEPA-IX) on February 11, 2009, the number discrete samples composited into one analytical sample will be equal (10) and the discrete samples will be evenly spaced. This will be accomplished as discussed in Section 3.2.1 and as shown in Figure 4.***

6. **[Section 3.2.2, Sampling Frequency (Soil)]** This section identifies "nine samples" to be used in the risk assessment. This should be changed to seven, as the duplicate and matrix spike samples are only collected for quality control purposes. This would also make this section consistent with Section 3.2.1 which identifies "a total of seven composite samples."

   Response: ***All references to the number of samples in Section 3.2.2 have been updated to eight to reflect the revised sampling approach.***

7. **[Section 3.3.1, Sample Locations (Vegetation); Section 3.2.1, Sample Locations (Soil)]** In addition to the use of a global position system (GPS), there should be a means to identify sample locations by measurements from a fixed point of reference. This would increase the accuracy with which a sampling point can be relocated if re-sampling is necessary. Additionally, the plan should identify how the location of vegetation samples collected in the first and second rounds of sampling will related to each other (e.g., offset by ___ feet to the ___).

   Response: ***Clarifications on final sampling locations and documentation are included in the Soil/Vegetation Standard Operating Procedures located in Appendix G.***

8. **[Section 3.4, Meteorology]** This section is only a brief description of the meteorological data collection program. Information of the specific sensors to be used, their operating ranges, their siting requirements, and general quality control of this data should be included in this section.

   Response: ***Additional details about the meteorological data collection program have been added to this section as well as the meteorological discussion in Appendix B. Copies of the most recent calibration and audit reports, prepared by AMEC Geomatrix, Inc., containing***

information on the specific sensors used, their operating ranges, siting, and general quality control have been added to Appendix B. AMEC Geomatrix conducts their calibrations in general accordance with US EPA Quality Assurance Handbook for Air Pollution Measurement Systems, Volume IV, Meteorological Methods. Section 3.4 of the Workplan and the QAPP have been updated to discuss this further.

9. **[Section 4.3, Data Validation]** This section should discuss the quality control information that should be provided by the laboratory, specific acceptance criteria, how data will be treated that does not meet these criteria, and who is responsible for data validation. There should also be a contingency to request raw data from the laboratory to help resolve any anomalous results.

   Response: ***The QAPP has been updated to include a full discussion of the data validation procedures that will be utilized for the project.***

10. **[Section 4.4, Data Reporting]** This section should clarify that wind roses will be provided that are temporally matched to each air sampling interval.

    Response: ***Section 4.4 has been updated to clarify that the wind roses will be temporally matched to each air sampling interval.***

11. **[QAPP, Section 2.0, CWMI Organizational Chart of Responsibility]** This section should include a description of the role and responsibility for each of the people identified in the chart. Additionally, there should be a description of USEPA Region 9's role in this monitoring project.

    Response: ***The organizational chart has been expanded. In addition Worksheet #7 in the revised QAPP presents individual's roles, responsibilities and qualifications.***

12. **[QAPP, Section 3.0, Data Quality Objectives]** This section does not outline a data quality objectives (DQO) process as defined in USEPA QA/G-4. Generally USEPA expects that monitoring events should be developed using a systematic planning process such as that discussed in QA/G-4. This process begins by identifying the potential issue which requires environmental measurements and the goals of the study, including specific decisions and decision processes, and continues to develop the sampling approach, methods, and quality control criteria needed to make a proper decision. For this study USEPA Region 9 has recommended the general parameters for data collection. However, information such as the number of composites, sampling strategy, analytical detection limits, and field data quality criteria were left to CWM to develop based on the quality needs of the project. The DQO process should reflect this thought process. Once action limits or criteria are defined, then measurement quality objectives that summarize the precision, accuracy, representativeness, completeness, comparability, and sensitivity criteria that will help ensure data of known quality will be generated to support project decisions can be specified. This summary should include criteria for duplicate samples (precision), matrix spikes and PUF (polyurethane filter) spike compounds (accuracy), completeness, blanks (sensitivity), and detection and reporting limits (sensitivity).

    Response: ***The text in Section 3.0 of the QAPP has been revised.***

13. **[QAPP, Section 4.0, Site Selection/Sampling Procedures]** As noted in Concern 3, additional information on sampling and specific citations to the attached sampling references should be included here and in the work plan. Additionally, Section 4.0 of the QAPP provides no information on soil, vegetation, or meteorological sampling.

    Response: ***Complete SOPs for all field sampling activities are presented Appendices F and G of the Workplan. In addition, the revised QAPP lists further detail regarding site selection and sampling procedures as discussed in the response to Specific Comment No. 3.***

14. **[QAPP, Section 6.0, Calibrations and Frequency]** This section includes the necessary calibrations of the high volume air samples, but does not include the criteria for acceptance or the corrective action for a failed calibration. Calibration information for the laboratory analyses and for the meteorological measurements should be included in this section or provided in an attached laboratory QA Plan or appropriate SOPs.

Response: ***The air sampling SOP, found in Appendix F of the Workplan, describes the calibration procedures and frequency. In addition, the revised QAPP lists further detail regarding calibration of air sampling equipment, analytical instrumentation, and meteorological monitoring equipment. SOPs for laboratory sample handling, preparation, and analysis have been submitted as Confidential Business Information (CBI) and not a part of any public record. Appendix A of the QAPP contains Worksheet #24 which outlines the analytical instrumentation calibration requirements, and Worksheets #33-36 address the data validation and acceptance criteria.***

15. **[QAPP, Section 7.0, Analytical Procedures]** This section only references the laboratory that will be used for analysis. A summary of the analytical procedure that will be used by the laboratory should be included in this section. Additionally, in lieu of providing detailed information on the laboratory methods and criteria, CWM may provide Region 9 with a copy of laboratory SOPs used for sample handling, homogenization, preparation and analysis. These can be provided as Confidential Business Information (CBI), if necessary.

Response: ***SOPs for laboratory sample handling, preparation, and analysis have been submitted as Confidential Business Information (CBI) and not a part of any public record.***

16. **[QAPP, Section 9.0, Internal Quality Control (QC)]** This section should include or reference the criteria for acceptance of the quality control checks listed and discuss associated corrective action for failed QC checks. Additionally, this section should clarify if duplicates of the air samples will be collected every sampling period or at a less frequent rate that meets the 10% criterion, such as every three months.

Response: ***The air sampling SOP, found in Appendix F of the Workplan, describes the schedule for collecting duplicate samples, along with the QC requirements for the air sampling methodology. Appendices A & B in the revised QAPP fully describe the internal QC requirements for field sampling, analytical procedures, corrective actions for failed QC checks, and the data validation process.***

17. **[QAPP, General, Training and Qualifications]** The QAPP should include a section that discusses the training and qualifications required for the personnel involved in this sampling effort.

Response: ***The revised QAPP, specifically Worksheets #7 and #8 found in Appendix A of the QAPP, describe the training requirements and qualifications of sampling team, as well as the entire project team. The field staff consists of senior and mid level staff familiar with all aspects of sampling procedures and QC. As shown on the project organizational chart found in QAPP, the Field QA Manager is also a member of the sampling team.***

18. **[Section 3.2.1, paragraph 2]** The samples from the area immediately adjacent to the B-18 landfill are intended to address the potential for differential (elevated) concentration of PCBs in sediment in the runoff swale in that area. The increments for that sample should be collected from the low-lying areas in that swale and, to the extent feasible, comprise sediment that appears to have been deposited during stormwater runoff events. EPA would be amenable to combining the incremental samples described in the work plan with a similar number of increments from the swale into a single composite. This section and Figure 4 should be revised to reflect this

approach.

Response: ***Figure 4 has been updated to reflect changes to sampling approach. Section 3.2.1 has been updated to address runoff swale.***

19. **[Section 3.2.1, paragraph 4]** The citation of "Hathaway 2008" is inadequate to document the basis for the number of increments selected. Justification for the use of that method will require more substantial documentation of the underlying data, assumptions, their use in specific equations presented in the article, and the rationale for their selection. In the absence of such documentation, the citation should be deleted.

Response: ***The sampling approach has been revised in Section 3.2.1 and the citation has been removed.***

20. **[Section 3.2.1, paragraph 4]** I recommend using the same number increments for all of the composite samples to promote comparability among samples. Ten and twelve have been discussed internally as possible numbers of increments to be used for each composite sample.

Response: ***Same as response to Comment 5. As discussed with John Beach (USEPA-IX) on February 11, 2009, the number discrete samples composited into one analytical sample will be equal (10) and the discrete samples will be evenly spaced. This will be accomplished as discussed in Section 3.2.1 and as shown in Figure 4.***

21. **[Figure 4]** The color scheme for symbols for the discrete increment locations make it difficult to differentiate between those comprising the southern half of the eastern property boundary and those comprising the southern property boundary.

Response: ***Figure 4 has been updated to reflect the revised sampling approach. Labels have been added to distinguish discrete increment locations.***

22. **[Section 3.2.3]** If EPA QA/G-4HW is to be cited in this context, a more precise citation, e.g., a section or subsection number, should be made. Additionally, EISOPQAM, presumed to be EPA Region 4's 2001 "Environmental Investigation Standard Operating Procedures and Quality Assurance Manual", is not readily available for our review.

Response: ***Where specific portions of these documents have been cited in the Workplan, specific reference to the section and page numbers have been identified.***

> ***U.S. Environmental Protection Agency (US EPA). November 2001. Environmental Investigations Standard Operating Procedures and Quality Assurance Manual (EISOPQAM). US EPA Region 4, Athens, GA***

was used as the cited reference. This document has been superseded by US EPA Science and Ecosystem Support Division (SESD) "Field Branches Quality System and Technical Procedures" available on US EPA Region 4's website. However, the updated procedures do not directly address soil sampling design as the EISOPQAM did. The updated procedures, where applicable (e.g., SESD Soil Sampling, Field Sampling Quality Control), were used and cited. Because the EISOPQAM and DQO Process for Hazardous Waste Site Investigations are referenced as part of the basis for the updated SESD documents and provide sound sampling guidance, the two documents are still referenced as the basis for sampling locations and approach.

23. **[Section 3.2.3]** The record of increment sampling locations should be more precise than GPS, e.g. using temporary markers such as metal wires with plastic flagging at each sampling location. This comment also applies to vegetation sampling.

Response: ***Metal wires with plastic flags are going to be placed at each sampling location.***

This is discussed in the soil and vegetation sampling SOP located in Appendix G of the Workplan.

24. **[Section 3.3.1]** Please provide additional information about how the vegetation sampling will be performed to obtain representative sample increments, avoid bias and provide consistency and comparability among samples. This would include, for example, grid dimensions, what vegetation types will be collected, what plant parts will be included and excluded, any cutting or chopping to be done in the field, any combining or mixing to be done in the field, and other field procedures.

Response: A soil/vegetation sampling SOP has been added to the Workplan and is found in Appendix G. Grid dimensions for soil and vegetation samples are one square meter. A variety of green vegetation (not woody material), seeds, and fruit found to be present at each sample location will be collected and combined in a sample container to provide a representation of the plant material on which herbivorous receptors in the area may feed.

25. **[Section 3.3.3]** Please specify how vegetation type will be selected, e.g., the protocol for determining "type" and how that will be used.

Response: Detail has been added to this Section as well as the soil/vegetation sampling SOP added to the Workplan and found in Appendix G.

26. **[Section 3.3.3]** Care should be exercised to assure that soil deposited on foliar surfaces is collected as part of the sample for analysis and not lost in the sample collection, handling, management, or preparation.

Response: This is addressed in the soil/vegetation sampling SOP found in Appendix G.

27. **[Section 3.3.3]** When EPA guidance is specified, on sample handling that will be followed for vegetation samples, the specific EPA document and, as appropriate, chapter, section, etc., should be identified.

Response: This is addressed in the soil/vegetation sampling SOP found in Appendix G. Care was taken to cite any specific reference used. However, specific sampling handling activities are not discussed in Section 3.3.3.

28. **[Section 5.1 paragraph 2]** The impacts analysis should address potential ecological impacts on-site as well as off-site.

Response: The text has been edited to clarify that the ERA will address on-site as well as off-site ecological risk.

29. **[Section 5.1, paragraph 3]** The terms "chemicals of concern" and "chemicals of potential concern" need to be defined.

Response: The terms have been defined in this paragraph.

30. **[Section 5.1, paragraph 4]** The future land use scenario should address reasonable maximum exposure using reasonably foreseeable potential future land uses.

Response: The text was edited to clarify that the future scenario will address the reasonably foreseeable potential land use.

31. **[Section 5.1, paragraph 5]** Receptors are hypothetical individuals that are used in the numerical analysis as reasonable surrogates for addressing the full range of potential impacts to the environment. Accordingly, receptor selection should not be restricted to species that demonstrably occur in the area. Sometimes reasonable surrogates are needed to adequately

address important ecological risk issues.

Response: ***Comment noted.***

32. **[Section 5.1, bullet describing "Section 4.0 of the RA report"]** This bullet should include an uncertainty analysis and cite the Ecological Risk Assessment Guidance for Superfund (EPA 540-R-97-006) to be followed for the ERA as a whole.

Response: ***Uncertainty analysis and the cited guidance were added to the bullet.***

33. **[Section 5.2.1, paragraph 1]** Generally, EPA recommends that analytical detection limits should be selected using the data quality objectives process and, to the extent feasible, reflect concentrations that, if used in the risk assessment, do not present unacceptable impacts to human health or the environment.

Response: ***A data quality objective addressing the relationship between analytical detection limits and risk-based concentrations (USEPA Region 9 PRGs/RSLs) was added to the QAPP in Appendix E (see Worksheet #15 found in Appendix A of the QAPP). This paragraph has been edited accordingly.***

34. **[Section 5.2.2, step 2]** The data set should be evaluated as a whole before eliminating analytes from what is referred to as an "exposure group". The overall data set may infer that some other data treatment is more appropriate. For example, if congener A very toxic and is consistently detected at ¼ the concentration of the less-toxic congener B, but at location X, congener B is detected at low concentration and congener A is not detected, it would not reasonable to exclude congener B from the risk analysis for location X.

Response: ***Step 2, Eliminate non-detected analytes, has been deleted from the data evaluation process.***

35. **[Section 5.2.2, step 4]** I recommend using field duplicate data to confirm that the primary analysis is usable, and using only the primary analysis in the quantitative (risk) analysis

Response: ***Step 4, Evaluate duplicate samples, has been deleted from the data evaluation process.***

36. **[Section 5.3.2.2]** The indirect exposure pathway involving the ingestion of homegrown produce in support of the subsistence rancher exposure scenario is considered a potentially complete exposure pathway – nevertheless it has been proposed for exclusion in the current assessment of risk. Please provide additional detail to support the proposed exclusion, and further detail how this putative uncertainty will impact the resultant risk estimate.

Response: ***Additional discussion has been added to the text of Section 5.2.2.2 justifying exclusion of the homegrown produce ingestion pathway. The uncertainty associated with excluding this pathway will be addressed in the Uncertainty portion of the Risk Characterization in the HHRA.***

37. **[Section 5.4.2.2]** A more detailed discussion of trophic levels in the context of the food chain should be presented, including the potential for bioaccumulation and bioconcentration of PCBs as they pass through lower trophic levels to the high-trophic level consumers.

Response: ***The requested discussion has been added to this section.***

38. **[Section 5.4.2.2]** The conceptual site model and exposure pathway assessment discussion should also include: (1) deposition of dust to foliar surface leading to food chain exposures, (2) releases of PCB vapors from waste, (3) uptake of vapors into plants, leading to food chain exposures, (4)

more detail in the discussion of different trophic levels, including ecological receptors representing different trophic levels to be included in the evaluation, and (5) soil invertebrates as potential receptors and food chain components. Inclusion of soil invertebrates as potential receptors also requires selecting a TRV (or TRVs as appropriate) and HQ calculation methods. Exclusion of any of these pathways or receptors should be justified.

Response: ***The requested pathways and discussion have been added to the conceptual site model section and Figure 5.***

39. **[Section 5.4.2.3.3]** Concentrations in air (vapor and particle-bound), soil and plant material are the measurement endpoints, the modeled contaminant levels and TRVs are not.

Response: ***The text was edited to identify concentrations in soil and plant material as measurement endpoints (air concentrations will not be used in the ERA as discussed in Section 5.4.2.2).***

40. **[Section 5.4.3]** The number of samples available for statistical analysis does not appear to be adequate to support UCL calculations. Please justify the use of UCLs or present a different method to provide the basis for a conservative estimate of potential exposure.

Response: ***Based on the proposed sampling protocol, the text was edited to describe a different method for obtaining concentrations for use in estimating exposures -- the concentrations measured in the composite samples will be evaluated separately for each of the four ecological exposure areas in which the composites are collected.***

41. **[Section 5.4.4, paragraph 3]** A step in the proposed process appears to have been omitted. TECs and TRVs are not directly comparable because TECs are estimates of concentrations and TRVs are expressed as dose rates.

Response: ***The text was edited to include the step of using the TECs to estimate intakes, which then are compared to TRVs.***

42. **[Section 5.4.4, paragraph 7]** Please define "ESV".

Response: ***For simplicity, this acronym was replaced with "TRV."***

43. **[Section 5.4.4, paragraph 6]** For the development of the avian embryo TRVs, please consider the values in Table 2-2 of the cited document, in addition to Table 3-1. Final documentation of TRV selection will need to include rationale / justification for the selection of those values.

Response: Referencing the values in Table 2-2 was added as a potential source for avian embryo TRVs. The final risk assessment report will provide the rationale/justification for selection of referenced values.

44. **[Section 5.4.5, paragraph 1]** The text conflicts with the bullets; the bullets are correct. HQs are based on intake rate estimates and TRVs; TECs are concentrations and not directly comparable with the TRVs. The text needs to address the relationship between TEC, intake rate estimation, and TRVs, as appropriate.

Response: ***The text of this section was edited to clarify that TECs will be used to estimate intakes, which then will be used to calculate HQs.***

45. **[Section 5.4.5, text and bullets]** HQs for avian eggs will be calculated differently; that method should be presented in this section.

Response: ***Text was added to explain that avian embryo TRVs will be based on egg (embryo)***

concentrations, so avian TECs representing egg concentrations will be compared directly to these TRVs.

46. **[Section 5.4.5, paragraph 2]** The term "final COPEC" needs to be defined. Additionally, the overall discussion needs to reflect that identification of final COPECs, as used in this paragraph, is a risk management decision that will be made by EPA. Similarly, the decisions made at the SDMP 2 will be made by EPA.

Response: ***These clarifications were added to the text.***

47. **[Section 5.4.5, paragraph 3 and Section 5.4.6]** The analysis described in Section 5.4.5, paragraph 3 provides a good conceptual model for evaluating impacts. EPA will consider that analysis and other factors in a weight-of-evidence approach when making our decision at SMDP 2.

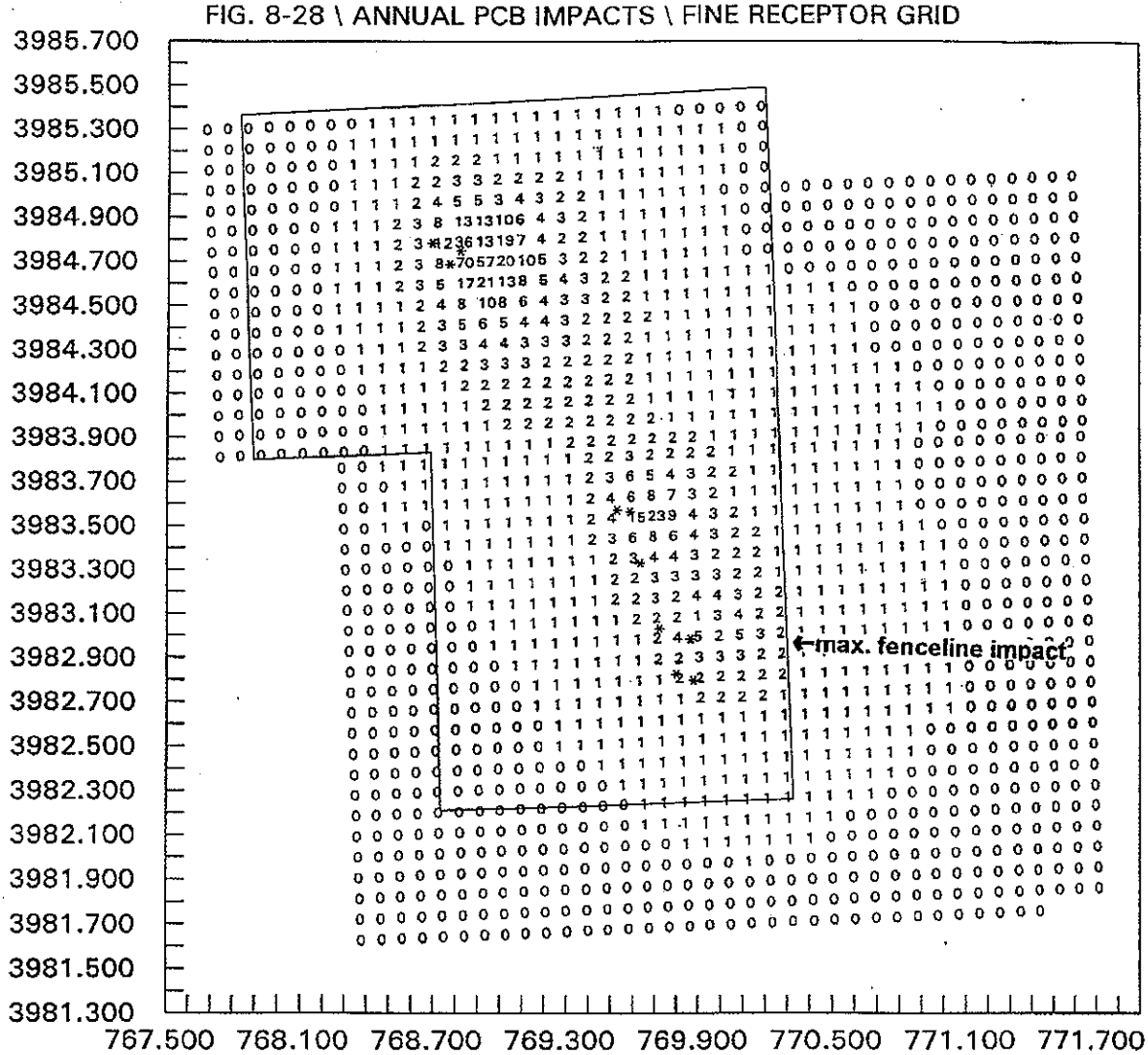
Response: ***Comment noted.***

48. **[Appendix E, Section 3, Data Quality Objectives]** This Appendix should be renamed. The section does not reflect the 8-step DQO process described in EPA QA/G4. The PARCC parameters discussed are criteria used to evaluate the usability of chemical analysis data for use in risk assessment and only tangentially applicable to DQOs.

Response: ***See response to Concern 12.***

CHEMICAL WASTE MGMT. - KETTLEMAN HILLS

FIG. 8-28 \ ANNUAL PCB IMPACTS \ FINE RECEPTOR GRID



Edge Markings in km

* - Source Location

Concentrations in ug/m**3 X 10E-7