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MEETING NOTES

TO: Distribution

DATE: February 8, 1994

FROM: Philip Nixon

MEMO #: SP307:021094:01

PROJECT #: Solar Pond IM/IRA

ATTENDANCE:

Randy Ogg, EG&G
Phil Nixon, ES
Richard Henry, ES
Andy Ledford, EG&G
Dave Ericson, EG&G
Scott Surovchak, DOE
Peg Witherill, DOE
Ted Kearns, DOE/KMI
Steve Paris, EG&G
Lee Pivonka, G&M
Mark Austin, EG&G
Arturo Duran, EPA
Steve Howard, DOE/SMS
Frazer Lockhart, DOE
John Rampe, DOE
John Haasbeek, ERM
Shaleigh Whitsell, PRC

DISTRIBUTION:

Attendees
L. Benson, ES
A. Conklin, ES
P. Breen, ES
H. Heidkamp, ES
K. Cutter, ES
S. Stenseng, ES
A. Fricke, ES
T. Kuykendall, ES
T. Evans, ES
B. Cropper, ES
C. Montes, ES
R. McConn, ES
W. Edmonson, ES
B. Wallace EG&G (Admin. Record) (2)
S. Hughes, ES
K. London, EG&G
Martin McBride, DOE
Helen Belencan, DOE
Steve Cooke, EG&G
Joe Schieffelin, CDH
Steve Keith, EG&G
Dave Myers, ES
R. Wilkinson, ES
S. Winston, ES
Kim Ruger, EG&G
Michelle McKee, EG&G
Marcia Dibiasi, IGO
Rich Stegen, ES
Cindy Gee, ES
Alan MacGregor, ERM
Harlen Ainscough, CDH
Bob Siegrist, LATO
John Rampe, DOE
Kevin Loos, DOE

1) Review of Meeting Minutes

John Haasbeek pointed out that with respect to the post-closure groundwater monitoring, the initial sampling event will analyze for all the analytes listed on the OU4 RFI/RI workplan. This list will also be monitored once each year. Only constituents that have been detected in soil will be analyzed during the remaining quarterly sampling.

Arturo Duran indicated that the EPA is committed to ensuring that the DOE provides an effective closure that is also cost effective. EPA wants to review the IM/IRA decision document and the required supporting information in order to assess whether the proposed design meets their goals. Arturo indicated that he is looking forward to reviewing the roundtable review draft when all the information is compiled.

Andy Ledford stated that a key assumption which was made during the IAG dispute resolution centered around the EPA and CDH being involved throughout the feasibility study and conceptual design phase of the project so that IM/IRA approval would not be in jeopardy. The working team has successfully developed a consensus approach to solving the issues and strategizing the design. Andy pointed out that the design schedule does not include a lengthy period for re-design after the April submittal. **ES will provide a walk through review of the prior working sessions issues and decisions at the next team meeting.**

2) Vadose Zone/Ground Water Modeling

Leigh Benson discussed the results of the analysis that was performed to assess the impacts to groundwater that would occur if the ground water table elevation rose to a level where it contacted soils that had contaminant concentrations exceeding the PRGs. This analysis was performed to answer the question as to whether it was allowable to consolidate soils within the artificial vadose zone (under the subsurface drain) that had concentrations exceeding the PRGs. The VLEACH modeling results for unsaturated conditions indicated that these soils could be consolidated within the artificial vadose zone. However, Harlen Ainscough had requested an assessment of whether the leachate generated under saturated conditions was also protective of human health and the environment. Harlen had previously stated that it would only be appropriate to consolidate contaminated soils beneath the subsurface drain if under saturated conditions the leachate was protective of human health and the environment (meet drinking water standards).

Leigh Benson stated that ES generally believes that the Solar Evaporation Ponds have been a source of groundwater contamination for contaminants that are readily mobile. These contaminants such as nitrate and tritium are not detected in high concentrations in the soils because they have migrated. Conversely, the contaminants detected in soils have not moved much over time. These constituents may never be a major source of groundwater contamination because the soil's ion exchange capacity and the characteristics of the metals themselves renders many metals immobile in soil media. Leigh used the soil/liquid partition

coefficient (K_d) to preliminarily investigate as to whether metals may desorb in significant concentrations. This factor is defined as the ratio of the concentration of sorbed chemical per unit mass of soil (mg/kg) to the concentration of the chemical in water (mg/l). The units for K_d are therefore L/kg. Clean groundwater was defined as groundwater that does not contain contaminants at greater than background concentrations. A high K_d value indicates that a constituent sorbed well, whereas a low K_d indicates that a constituent is mobile. Leigh's calculations were overly conservative in that the most conservative K_d values were used from the EPA literature. All soils were assumed to be characterized by the 95 percent upper confidence limit contaminant (UCL) concentrations. The mass of soil available for potential saturation used in the calculations represented all soils beneath the engineered cover (not just those consolidated beneath the subsurface drainage layer). An estimate of the potential impact to ground water was computed assuming that all contaminants currently sorbed to soils desorbed into the ground water as described by the K_d relationship. Leigh also developed an upper bounding ground water impact estimate by assuming that the entire mass of contamination contained in the soils beneath the proposed cover instantaneously dissolved into the 14 feet of ground water underlying this area (using conservative estimate of liquid volume based on low porosity).

The results of these conservative calculations indicated that there would be no significant impact from the organic constituents, but there would be an adverse impact from the radionuclides and metal constituents. These conservative approaches were attempted because they could be performed quickly and could be readily accepted if the results had been below the comparison criteria. It was agreed that the calculations would be re-run with realistic input data. The working group reassessed the need for the model and determined that the need for the data justifies the cost of further model development. The K_d values may be modified based on results of site specific geochemical analyses. The actual soil concentrations that will be consolidated in the artificial vadose zone will be used instead of the 95 percent UCL values, and the volume of soil available for leaching will be based on engineering estimates. **The results of the revised calculations will be presented at the next team meeting.**

Randy Ogg requested that ES include a statement in the IM/IRA-decision document specifying that the proposed closure design was in compliance with the Colorado Hazardous Waste Management regulations.

3) Definition of the Vadose Zone

Richard Henry stated that the RFI/RI team had completed their assessment of the ground water levels with respect to other geologic characteristics. The hydrogeologic complexity in the vicinity of SEP 207-C is expected to have an impact on the water level under this SEP. The northern area under SEP 207-C is underlain by a sandstone bedrock. A claystone layer above the sandstone in the southern portion of SEP 207-C impedes the downward migration of ground water. Therefore, the watertable elevation in the southern portion of SEP 207-C is approximately 4-8 feet from the surface. However, the claystone pinches out and the watertable elevation in the sandstone drops significantly to greater than 20 feet beneath the ground surface. The location of the transition between the high and low water table elevations is not known because there is not enough data in the expected transition region.

This could have an impact on the depth that might need to be excavated beneath SEP 207-C to achieve clean closure. It was pointed out that contaminants had not been detected at concentrations above vadose zone PRGs under any of the other SEPs at depths greater than 10 feet. Therefore, it is not likely that excavation to depths of 20 feet would be required. **ES will reconsider the assumed depth of excavation based on this information.**

It was agreed that ES will assess the mean of the seasonal high water table elevations as a replacement for the historic high water table elevation that was previously agreed upon as the maximum depth of excavation to achieve clean closure. This new level will be calculated and proposed at the next team meeting. If accepted clean closure would be achieved if all of the contaminated material were excavated down to the level of the mean seasonal high water table elevations.

4) Asphalt vs. Clay layers

Arturo Duran reported that it was his understanding that the CDH may be concerned with the potential for asphalt to crack/fracture, and that organic contaminants might leach from the asphalt materials. Phil Nixon indicated that the IM/IRA decision document was written to specify that natural materials were being selected due to there long term durability. Clay and asphalt were the most appropriate low permeability layers. Clay was not selected because of its potential to desiccate in semi-arid environments. Specialized polymeric asphaltic concrete is the state of the art low permeability layer employed at the Hanford site. The IM/IRA-decision document is being written to reference the research performed at Hanford to help justify its selection. **ES will investigate whether Hanford has any leach test results from the asphaltic material as well as any durability tests.** Lee Pivonka recommended that a comparative evaluation between asphalt and clay be included with the IM/IRA decision document.

5) Building 788

Andy Ledford specified that the new closure strategy did not require the removal of Building 788 and that EG&G was conducting a cost analysis to determine whether the building should be removed. Andy asked whether the removal of Building 788 could be deferred as a future action in a manner similar to the security fence and the industrial area of OU4. Arturo Duran specified that the EPA would keep an open mind and review this proposal, but stated that there is an advantage to removing the building in conjunction with the SEP closure with respect to debris disposal. Arturo specified that DOE would be required to present detailed justification for removing building 788 from the scope of the IAG. This would include a demonstration that there are no contaminants beneath the building that were contributed from the SEPs.

Arturo Duran Specified that the EPA expected documentation for the closure of Building 788 on April 14, 1994 as specified in the IAG dispute resolution.

6) Open Issues

John Haasbeek specified that ERM/G&M needed to freeze the engineered cover's footprint for their design. Phil Nixon indicated that the original footprint would not be likely to change much with the exception that the cover would be made higher to contain the additional soils. Therefore the ES and G&M drawings will be very similar. It was agreed that the concepts and strategies of the post-closure monitoring system were far more important at this point than the exact design. Therefore, the team agreed that ERM/G&M could freeze their conceptual design.

Philip Nixon, Project Manager