UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX

In the Matter of: LABORATORY FOR ENERGY RELATED HEALTH RESEARCH/OLD CAMPUS LANDFILL, DAVIS, CA SITE NUMBER CA2890190000 UNIVERSITY OF CALIFORNIA,RESPONDENT. Proceeding Under Sections 104, 106, 107, 120, 122(a) and 122(d)(3) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (42 U.S.C. §§9604, 9607, 9620, 9622(a) and 9622(d)(3)), as amended by the Superfund Amendments and Reauthorization Act of 1986	U.S. EPA Docket No. 99-16

ADMINISTRATIVE ORDER ON CONSENT FOR REMOVAL ACTION AND REMEDIAL INVESTIGATION/FEASIBILITY STUDY
(UNIVERSITY OF CALIFORNIA OPERABLE UNIT)

I. INTRODUCTION

1. This Administrative Order on Consent ("Consent Order" or "Order") is entered into voluntarily by the United States Environmental Protection Agency ("EPA"), and University of California,"Respondent". The work performed under this Consent Order shall constitute an operable unit for site work performed by the University of California (UCD) ("the UCD OU"). This Consent Order concerns the performance of removal actions and the performance and preparation of a remedial investigation and feasibility study (RI/FS) for the UCD OU for the former Laboratory for Energy Related Health Research(LEHR)/Old Campus

Landfill located in Davis, California. In addition to the work performed under this Consent Order, the Department of Energy ("DOE") will perform soil removal actions and other response activities pursuant to a Federal Facilities Agreement on those areas identified in Section VIII of this Order as the responsibility of DOE. The DOE areas are referred to as the DOE OU. Respondent will perform a Site wide risk assessment and integrate the information including any required risk assessments provided by DOE.

II. JURISDICTION

2. This Consent Order is issued under the authority vested in the President of the United States by sections 104, 106, 107, 120, 122(a) and 122(d)(3) of the Comprehensive Environmental Response, Compensation, and Liability Act, as amended ("CERCLA"), 42 U.S.C. §§9604, 9607, 9620, 9622(a) and 9622(d)(3). The authority under sections 104, 106 and 122 has been delegated by the President to the Administrator of EPA on January 23, 1987 by Executive Order 12580, 52 Fed. Reg. 2926 (1987). Some of the authority relevant to this Order has been further delegated to Regional Administrators on September 13, 1987 by EPA Delegation Nos. 14-8-A and 14-14-C. This authority has been redelegated to the Superfund Branch Chief, EPA Region IX, by Delegation 1290.43-A.

3. Respondent agrees to implement the Removal Actions and RI/FS as provided in the Scope of Work for Removal Actions ("SOWRA") attached as Appendix A and Scope of Work for RI/FS ("SOWRI\FS") attached as Appendix B in full accordance with the terms and schedules set forth in this Order and its Appendices

and to undertake all other actions required by the terms and conditions of this Consent Order. In any action by EPA to enforce the terms of this Consent Order, Respondent consents to and agrees not to contest the authority or jurisdiction of the Regional Administrator or other officials to issue or enforce this Consent Order, and agrees not to contest the validity of this Order or its terms.

III. PARTIES BOUND

4. This Consent Order shall apply to and be binding upon the United States, EPA, Respondent and its agents, successors, and assigns. No agent, officer, director, trustee, member or employee of Respondent, nor any person controlled by or controlling Respondent, nor any agent, successor, assign, officer, director, trustee or employee or any such controlling or controlled person shall violate this Order. The signatories to this Consent Order certify that they are authorized to execute and legally bind the parties they purport to represent. No change in the ownership or legal status of Respondent shall alter Respondent's obligations under this Consent Order.

5. Respondent shall provide a copy of this Consent Order to each person into which such Respondent is merged or consolidated and to any other person that succeeds to its rights or liabilities. Within 14 days after the effective date of this Consent Order or the date of contracting, whichever is later, Respondent shall provide a copy of this Consent Order to each person retained by Respondent to conduct any work pursuant hereto, including all contractors, subcontractors, laboratories

and consultants. Respondent shall condition any such contracts upon compliance with this Consent Order. Notwithstanding the terms of any contract, Respondent is responsible for compliance with this Consent Order and for ensuring that its subsidiaries, employees, contractors, consultants, subcontractors, agents and attorneys comply with this Consent Order.

IV. STATEMENT OF PURPOSE

6. In entering into this Consent Order, the objectives of EPA and the Respondent are: (a) to prevent or minimize potential threats to public health, welfare or the environment by preventing potential migration of hazardous substances by implementing Removal Actions as provided in Appendix A (b) to determine the nature and extent of contamination and any threat to the public health, welfare, or the environment caused by the release or threatened release of hazardous substances, pollutants or contaminants at or from the Laboratory for Energy related Health Research/Old Campus Landfill UCD OU, by conducting a remedial investigation ("RI") as provided in Appendix B of all areas identified in Section VIII as the responsibility of the Respondent ("UCD areas"); (c) to determine and evaluate alternatives for remedial action to prevent, mitigate or otherwise respond to or remedy any release or threatened release of hazardous substances, pollutants, or contaminants at or from the Laboratory for Energy Related Health Research/Old Campus Landfill UCD OU by conducting a feasibility study ("FS") of UCD areas as provided in Appendix B; and (d) to recover response and oversight costs, as provided in paragraph 81 of this Consent Order.

7. The activities conducted under this Consent Order

are subject to approval solely by EPA as set forth in this Order and shall result in the provision of all appropriate information for the removal and RI/FS, as well as all appropriate data for the Site wide risk assessment to be performed by Respondent, and for a Record of Decision ("ROD"), all of which shall be consistent with CERCLA and the National Contingency Plan ("NCP"), 40 C.F.R. Part 300. The activities conducted under this Consent Order shall be conducted in a manner consistent with all applicable guidance issued by EPA and all EPA policies and procedures.

V. DEFINITIONS AND EPA'S FINDINGS OF FACT

8. "Site" as used herein shall mean all portions of Laboratory for Energy Related Health Research/Old Campus Landfill (LEHR) facility, located in Davis, Solano County, California, as specified by the boundaries shown in Appendix C and any area onto or into which contaminants from such property have come to be located, and any other areas necessary for implementation of the response action. Nothing in this Order is intended (1) to modify or limit the definition of the LEHR Site for purposes of the National Priorities List, or (2) to modify or limit EPA's authority to perform, or direct any potentially responsible party to perform, any response actions at the LEHR Site, in addition to those response actions which are the subject of this Consent Order.

9. The LEHR Site was added to the National Priorities List on May 31, 1994 pursuant to section 105 of CERCLA.

10. Respondent conducted radiological studies on laboratory animals for the DOE beginning in the 1950s until the

mid 1980s. The initial studies, conducted for the U.S. Atomic Energy Commission (AEC, now DOE), involved the irradiation of beagles at the UC Davis main campus.

11. Respondent began experimenting with radioactive materials, including strontium-90 and radium-226, at LEHR in 1960. In general, waste handling for LEHR-generated waste was conducted onsite at the LEHR facility.

12. Portions of the LEHR Site had previously been used for UC Davis campus landfills. Two landfills are located within the fenceline of the former LEHR facility. Disposal in the landfill referred to as Landfill No. 1 began in the 1940's and ceased in the late 1950's to early 1960's. This area is now adjacent to the former Cobalt-60 field. The next oldest disposal area, Landfill No. 2, received wastes from 1956 to 1967 and lies partially under the easternmost of two sets of dog pens used for animal research at the LEHR Site. A third landfill disposal unit located approximately 600 feet east of the LEHR fence line, Landfill Unit No. 3, was used from 1963 to 1967. The combined total acreage for the three disposal areas is estimated at approximately six acres.

13. In the early 1970s, the outdoor Cobalt-60 Field was constructed at the LEHR Site to study the effects of chronic exposure to penetrating gamma ray irradiation on bone marrow cells of beagles. Outdoor research was terminated in 1985 and indoor irradiation was terminated in 1988; the cobalt-60 source was removed in January 1993.

14. In 1975, a program in basic aerosol science was initiated at the LEHR Site to link the evaluation of airborne materials and the laboratory study of these materials utilizing cellular and animal models. The DOE reported that research activities in this program

focused on the potential health effects of release to the atmosphere of combustion products from fossil fuel power plants with emphasis on coal flyash.

15. In 1983, construction of the Toxic Pollutant Health Research Laboratory (TPHRL) was completed at LEHR. This facility was designed for the study of highly toxic and carcinogenic agents, including both radioactive and chemical materials. Research at the TPHRL included studies of the effects of plutonium-241 and americium-241 on beagles and monkeys; radioactive and toxic gas-particle mechanistic aerosol studies; monodisperse aerosol inhalation deposition; intratracheal applications of carcinogen-coated particles; and an organic vapor uptake using beagles.

16. Groundwater quality has been assessed by previous investigations (Whaler Associates, 1988; Dames and Moore 1990-1991) and by a quarterly sampling program that began in November 1990. The quarterly sampling program currently includes 16 monitoring wells screened within the first hydrostatic unit ("HSU"), 16 wells screened within the second HSU, 3 wells screened within the fourth HSU, and one multi-port well screened in the first and second HSUs. The monitoring wells indicate that nitrate, total dissolved solids, total chromium, and hexavalent chromium are elevated beyond background levels in most downgradient wells. Nitrate and the chromium compounds consistently exceed drinking water standards in several HSU-1 wells. Volatile Organic Compounds ("VOCs"), primarily chloroform, are consistently reported in downgradient HSU-1 and HSU-2 wells. In addition, chlordane, arsenic, selenium, carbon 14, and tritium have been found in the groundwater.

17.Limited VOCs, including methylene chloride, have been detected in soil samples collected from the LEHR Site. In addition, LEHR Site soil samples in predominantly DOE areas reported the following results: frequent detections of gross alpha, gross beta, and tritium activity with the highest concentrations reported from samples collected from the southwest area of the LEHR Site. The highest reported detections of nitrate were reported for soil samples collected from the radium-226 area, and nitrate and chlordane were reported at elevated levels in samples collected from the dog pen areas. Hexavalent chromium was reported at levels higher than the maximum levels reported for samples collected off-site for both the radium-226 and strontium-90 areas. The highest levels of strontium-90 were reported for samples collected from the radium-226 area.

18. Some organic chemicals, metals, nitrate, and pesticides have been reported for surface water samples collected in the South Fork of Putah Creek both upstream and downstream of LEHR. Antimony, thallium, chromium, methylene chloride, heptachlor, and nitrate have been reported above state drinking water levels. Tritium, carbon-14 and strontium-90 have been detected sporadically in surface water samples at levels below the drinking water standards.

19. EPA has classified chloroform as a probable human carcinogens via ingestion. Chloroform is defined as a hazardous substance under CERCLA §101(14), 42 U.S.C. §9601(14).

20. Actual and/or potential contaminant releases and migration pathways include direct inhalation and ingestion of contaminated soils and dust, and migration of contaminants in the soil to groundwater and drinking of contaminated groundwater. One irrigation well near the Site was contaminated and closed because it would have

ultimately interfered with the interim removal action. Another irrigation well located near the Site was taken out of service bacause it collapsed.

21. University of California is an owner and operator of the Site under CERCLA §107(a)(1) and was an owner and operator at the time of disposal under CERCLA §107(a)(2). University of California has been identified by EPA as potentially responsible as a generator of hazardous substances under CERCLA §107(a)(3).

VI. EPA'S CONCLUSIONS OF LAW AND DETERMINATIONS

22. The Site is a "facility" as defined in section 101(9) of CERCLA, 42 U.S.C. §9601(9).

23. The contaminants found at the Site, as identified in the findings of fact above include "hazardous substances" as defined by Section 101(14) of CERCLA 42 U.S.C.9601(14).

24. The presence of hazardous substances at the Site and/or the past, present or potential migration of hazardous substances currently located at or emanating from the Site constitute actual and/or threatened "releases" as defined in section 101(22) of CERCLA, 42 U.S.C. §9601(22).

25. Respondent is a "person" as defined in section 101(21) of CERCLA, 42 U.S.C. §9601(21).

26. Respondent has agreed to perform the actions required by this Order regardless of whether it is a responsible party under sections 104, 106, 107 and 122 of CERCLA, 42 U.S.C. §§9604, 9606, 9607 and 9622.

27. EPA has determined that the actions required by this Consent Order are necessary to protect the public health or welfare or the environment, are in the public interest, 42 U.S.C. §9622(a), are

consistent with CERCLA and the NCP, 42 U.S.C. §§9604(a)(1) and 9622(a), and will expedite effective remedial action and minimize litigation, 42 U.S.C. §9622(a).

VII. NOTICE

28. By providing a copy of this Consent Order to the State of California ("State"), EPA is notifying the State that this Order is being issued and that EPA is the lead agency for coordinating, overseeing and enforcing the actions required by the Order. State agencies: Department of Toxic Substances Control ("DTSC"); Central Valley Regional Water Quality Control Board ("CVRWQCB"); and Department of Health Services ("DHS") may continue oversight assistance as provided prior to this agreement.

VIII. DIVISION OF RESPONSIBILITY FOR THE SITE

29. Respondent assumes clean up responsibility for: The three landfills; disposal trenches located south and east of landfill two as depicted in Appendix C; 49 waste holes; the old waste water treatment plant, the groundwater impacted by the Site, and the surface water and storm water runoff impacted by the UCD OU. As documented in a Memorandum of agreement between DOE and Respondent, see Appendix D, and pursuant to an Interagency Agreement with US EPA, DOE has accepted clean up responsibility for: Radium-226 and strontium-90 leach fields and tanks; DOE buried disposal box; on Site domestic septic systems; DOE disposal trenches; the dog pens and decontamination and decommissioning of buildings used in the radiochemical experiments. Nothing in this Consent Order shall affect the liability of DOE or its response actions at the Site.

IX. WORK TO BE PERFORMED

30. All work performed by or on behalf of Respondent under this Consent Order shall be done by and under the supervision of personnel with experience and education sufficient to qualify them to perform properly and promptly the actions required hereby. Within 30 days of the effective date of this Order, Respondents shall notify EPA in writing of all names, titles and qualifications of any supervisory personnel, other contractors, subcontractors, consultants and laboratories, that have been retained to carry out such work. Within 14 days of EPA's receipt of the written notice, EPA shall have the opportunity to disapprove of the qualifications of these personnel or entities. If EPA disapproves in writing of any person's or entity's technical qualifications, Respondent shall, within 14 days of the written notice, notify EPA of the identity and qualifications of the replacement or indicate that no qualified replacement is available and explain in writing the reasons therefor. If EPA disapproves of the replacement, EPA reserves the right to terminate this Order and conduct a removal and a complete RI/FS, to seek reimbursement for costs and penalties from Respondent and/or to seek stipulated or statutory penalties. During the course of the removal and RI/FS, Respondent shall notify EPA in writing of any changes or additions in the supervisory personnel previously identified and not disapproved by EPA, or the personnel identified in Appendices A and B, providing their names, titles and qualifications. EPA shall have the same opportunity to disapprove changes and additions to personnel as it has hereunder regarding the initial notification.

31. It is hereby agreed to and ordered that Respondent shall conduct activities and submit deliverables as provided in Appendix A, the SOWRA and Appendix B, SOWRI/FS, ("the work"). All such work shall

be conducted in accordance with CERCLA, the NCP and, where applicable, shall be consistent with EPA guidance, including, but not limited to, "Guidance for Conducting Non-Time Critical Removal Actions Under CERCLA" (OSWER Directive #9360.0-32) the "Interim Final Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA" (OSWER Directive #9355.3-01), "Guidance for Data Useability in Risk Assessment" (OSWER Directive #9285.7-05), guidance referenced therein and guidance referenced in the SOWRI/FS, as they may be properly amended or modified by EPA. The general activities that Respondent is required to perform, deliverables that Respondent is to prepare, and tasks that Respondent must perform are described in Appendices A and B, which are incorporated by reference herein and are enforceable parts of this Order. All work performed by Respondent under this Consent Order shall be in accordance with the SOWRA and SOWRI/FS and in full accordance with the standards, specifications and other requirements of the work as initially approved or as modified by EPA. For purposes of this Order, time shall be calculated in the following manner, in accordance with Rule 6(a) of the Federal Rules of Civil Procedure. In computing any period of time, the day of the act, event, or default from which the designated period of time begins to run shall not be included. The last day of the period so computed shall be included, unless it is a Saturday, a Sunday, or a federal legal holiday, in which event the period runs until the end of the next day which is not one of the aforementioned days. When the period of time prescribed or allowed is less than 11 days, intermediate Saturdays, Sundays, and federal legal holidays shall be excluded in the computation. As used in this Order, "federal legal holiday" includes New Year's Day, Birthday of Martin Luther King, Jr., Washington's

Birthday, Memorial Day, Independence Day, Labor Day, Columbus Day, Veterans Day, Thanksgiving Day, Christmas Day, and any other day appointed as a holiday by the President or the Congress of the United States. In the event of any inconsistency between Appendices A or B and this Order, this Order shall prevail.

32. Appendices A and B of this Consent Order include lists of deliverables for the Removal and RI/FS. EPA shall, as indicated in Appendices A and B, review, comment upon, and approve or disapprove each report, document or other deliverable. At EPA's discretion, Respondent must fully correct all deficiencies and incorporate and integrate all information and comments supplied by EPA either in subsequent or resubmitted deliverables. In any notice of disapproval EPA shall state the reasons for its disapproval. EPA may, at its discretion, extend the deadline for submittal or resubmittal of any deliverable. If the Respondent disagrees with EPA's actions under this paragraph, it may invoke the dispute resolution procedures under Section XVIII of this Consent Order.

33. Respondent shall not proceed with any activities or tasks due to be performed after the due date of any of the deliverables, as set forth in Appendices A and B, until receiving EPA approval of such deliverable. While awaiting EPA approval of these deliverables, Respondent shall proceed with all other tasks and activities that may be conducted independently of these deliverables, in accordance with the schedule set forth in Appendices A and B.

34. Upon receipt of the feasibility study report, EPA will evaluate, as necessary, the estimates of the risk to the public and environment that are expected to remain after a particular remedial alternative has been completed.

35. EPA reserves the right to stop Respondent, where proper cause exists, from proceeding, either temporarily or permanently, on any task, activity or deliverable at any point during the Removal or RI/FS. EPA's order should allow Respondent to stabilize the work area to prevent any immediate risk to health, welfare, and the environment. While Respondent must follow EPA's order, Respondent may invoke the dispute resolution procedures under section XVIII of this Order. Pending the outcome of the dispute resolution process, the Respondent shall not proceed further with the task, activity or deliverable at issue.

36. EPA reserves the right to take over a portion or all of the Removal or RI/FS if EPA determines in a manner that is not arbitrary and capricious, that Respondent has failed to perform any substantial portion of the Removal or RI/FS or has performed any substantial portion thereof in such an inadequate or untimely manner that, in either of such circumstances, the successful, timely completion of the Removal or RI/FS is in jeopardy. If EPA does so, the Respondent shall pay to EPA a penalty equal to 100% of the cost incurred by EPA in performing the work taken over by EPA, not to exceed $100,000 for any single take over ("takeover of work penalty"). Payment of this penalty is in addition to the obligation to reimburse EPA for 100% of response and oversight costs.

37. The takeover of work penalty shall be paid within 30 days after EPA provides written notice of its decision to take over the Removal or RI/FS and to assess the takeover of work penalty unless Respondent invokes dispute resolution. If Respondent invokes dispute resolution and EPA prevails, Respondent shall pay, at the conclusion of the dispute resolution process, the takeover of work penalty, plus

interest as specified in 42 U.S.C. §9607.

38. In addition, if EPA takes over a portion or all of the Removal or RI/FS, Respondent shall reimburse EPA for the costs of doing the work EPA has taken over within 30 days of receipt of demand for payment of such costs. The other provisions of this Order concerning cost reimbursement shall apply to this reimbursement obligation.

39. The Respondent shall also be liable for any obligations (including to pay costs and stipulated penalties) that accrued to it prior to EPA's decision to take over work.

40. In the event EPA performs some tasks but does not perform the Removal or the RI/FS, Respondent shall incorporate and integrate information supplied by EPA into the final Removal or RI/FS report, and Respondent shall prepare the Removal, RI and FS reports according to the schedule in the Appendices A and B.

41. Neither failure of EPA to expressly approve or disapprove of Respondent's submissions within a specified time, nor the absence of comments, shall be construed as approval by EPA. No informal advice, guidance, suggestions or comments by EPA regarding reports, plans, specifications, schedules or other writings submitted by Respondent will be construed as relieving Respondent of its obligation to obtain such formal approval as may be required by this Order. No informal advice, guidance, suggestions, or comments by EPA shall be construed as disapproval unless specifically identified as such. Any deliverables required by this Consent Order are, upon approval by EPA, enforceable under this Order.

42. Respondent shall, prior to any off-Site shipment of hazardous substances from the Site to an out-of-state waste management facility, provide written notification to the appropriate state

environmental official in the receiving state and to EPA of such shipment. However, such notification is not required with regard to any such shipment if the volume does not exceed ten (10) cubic yards.

(a) The notification shall be in writing and shall include the following information: (1) the name and location of the facility to which the hazardous substances are to be shipped; (2) the type and estimated quantity of the hazardous substances to be shipped; (3) the expected schedule for the shipment of the hazardous substances; and (4) the method of transportation. Respondents shall notify the receiving state of major changes in the shipment plan, such as a decision to ship the hazardous substances to another facility in the same state or to a facility in another state.

(b) The identity of the receiving facility and state will be determined by Respondent following the award of the contract for the Removal or RI/FS. Respondent shall provide to EPA the information described in paragraph 42(a) above, on the off-Site shipment, as soon as practical after the award of the contract and before the hazardous substances are shipped but not less than 45 days prior to shipment of said hazardous substances.

X. MODIFICATION OF THE REMOVAL OR RI/FS SOW

43. If, at any time during the Removal or RI/FS process, Respondent identifies a need for additional work to complete the Removal or RI/FS, a memorandum documenting the need for additional work and including a conceptual plan for completing the work shall be submitted to EPA for approval. Within 21 days after EPA approval of the memorandum, Respondent shall prepare an addendum to the Work Plan for EPA approval that addresses the additional work. Respondent shall complete the additional work in accordance with the standards,

specifications, requirements, and schedules approved by EPA in the addendum to the Work Plan.

44. In the event that Respondent discovers conditions posing an imminent and substantial endangerment to public health or welfare or the environment at the Site, Respondent shall notify EPA and appropriate state authorities immediately. In the event of unanticipated or changed circumstances at the Site that materially affect work being performed or to be performed hereunder, Respondent shall notify EPA and the State of California by telephone within two days of discovery of the unanticipated or changed circumstances. In the event that EPA determines that such threat or the unanticipated or changed circumstances warrant changes in the Removal or RI/FS SOW, EPA may modify or amend the Removal or RI/FS SOW. Respondent shall perform the Removal SOW or RI/FS SOW as modified or amended by EPA, or, alternatively, the Respondent may invoke the dispute resolution procedures under section XVIII of this Consent Order. The provisions of this Consent Order relating to stipulated penalties shall not apply to any additional work directed under this subparagraph until Respondent has failed to meet a deadline for work after either (i) Respondent has confirmed its willingness to perform the additional work, or (ii) additional work is required as a result of dispute resolution.

45. EPA may determine that additional work related to the conducting of a Removal or an RI/FS is necessary. In the event EPA determines that additional work related to the conducting of the Removal or RI/FS is necessary, EPA will provide the Respondent with written direction describing the additional work to be performed. Within seven days of receipt of EPA's written direction, Respondent

shall confirm in writing to EPA its willingness to perform the additional work or Respondent shall invoke the dispute resolution procedures under section XVII of this Consent Order. Within 21 days of (i) Respondent's confirmation of its willingness to perform the additional work or (ii) the completion of the dispute resolution process, Respondent shall prepare an addendum to the Removal SOW or RI/FS SOW which addresses the additional work. Respondent shall complete additional work in accordance with the standards, specifications, requirements, and schedules determined or approved by EPA in a written addendum to the Removal or RI/FS Work Plan. The provisions of this Consent Order relating to the assessment of stipulated penalties shall not apply to any additional work requested under this paragraph until Respondent has failed to meet a deadline for the work after either (i) Respondent has confirmed its willingness to perform the additional work, or (ii) additional work is required as a result of dispute resolution.

XI. QUALITY ASSURANCE

46. Respondent shall guarantee that work performed, samples taken and analyses conducted conform to the requirements of the Removal or RI/FS SOW and Quality Assurance guidance identified therein. Respondent shall guarantee that field personnel used by Respondent are properly trained in the use of field equipment and in chain of custody procedures.

XII. FINAL RI/FS, PROPOSED PLAN, PUBLIC COMMENT, RECORD OF DECISION, ADMINISTRATIVE RECORD

47. EPA retains responsibility for the release of the RI/FS report to the public. EPA retains responsibility for the preparation and release to the public of the proposed plan and record of decision

in accordance with CERCLA and the NCP.

48. EPA will provide the Respondent with a copy of the final proposed plan and record of decision.

49. EPA will prepare the administrative record for the selection of the remedial action. As provided in this Consent Order, Respondent must submit to EPA, subject to paragraphs 42 and 43 hereof, documents developed during the course of the RI/FS upon which selection of the response action may be based. Such documents shall include, but shall not be limited to, copies of plans, task memoranda including documentation of field modifications, recommendations for further action, quality assurance memoranda and audits, raw data, field notes, laboratory analytical reports and other reports. At EPA's request, Respondent must additionally submit any previous studies in their possession conducted under state, local or other federal authorities relating to selection of the response action, and all correspondence between Respondent and state, local or other federal authorities concerning selection of the response action.

XIII. PROGRESS MEETINGS

50. Respondent shall make presentations at, and participate in, progress meetings every month at the direction of EPA during the initiation, conduct, and completion of the Removal and RI/FS. If necessary, at EPA's discretion, meetings may be held more frequently than every month, and Respondent, or its designated representative, shall attend such meetings. In addition to discussion of the technical aspects of the Removal and RI/FS, topics will include anticipated problems or new issues. Meetings will be scheduled at EPA's discretion. Respondent shall designate one or more representatives to participate in the progress meetings. In addition, EPA will, at its

discretion, invite other federal, state and local government agencies and the public to designate representatives to the meetings.

XIV. SAMPLING, ACCESS AND DATA AVAILABILITY/ADMISSIBILITY

51. Progress Reports shall be submitted to EPA as provided in the SOW. If requested by EPA in writing, Respondent shall submit any results or data as requested by EPA in 7 days or less after receipt of the results or data by the Respondent. Any results or data submitted to EPA pursuant to the previous sentence shall be superseded by the data that has been validated and submitted by Respondent.

52. Respondent will orally notify EPA and the State of California at least 14 days prior to conducting field events as described in the Removal SOW, the RI/FS SOW or any other field work outside of this Order but related to the Site. At EPA's oral or written request or the request of EPA's authorized representative, Respondent shall provide split or duplicate samples to EPA and/or its authorized representatives of any samples collected by or on behalf of Respondent in implementing this Consent Order or of any samples collected outside of this Order but related to the Site.

53. Except in cases where EPA, the State of California, or their authorized representatives deem that an unannounced Site visit is warranted, EPA, the State of California and their authorized representatives shall use their best efforts to provide University representatives with reasonable advance notice before entering the Site or off-Site areas owned or controlled by Respondent. Respondent shall not interfere with EPA or the State of California or their authorized representatives' entering on and freely moving about, at all times, all areas at the Site and all off-Site areas. This shall include access to areas where work is being performed, for the purposes of inspecting

conditions, activities, the results of activities, records, operating logs and contracts at or related to the Site or the hazardous waste practices or actions of Respondent or its contractors or other agents; reviewing the progress of Respondent in carrying out the terms of this Consent Order; conducting tests as EPA or its authorized representatives deem necessary or appropriate; using a camera, sound recording device or other documentary type equipment; and verifying the data submitted to EPA by Respondent. Respondent shall allow EPA or its representatives to inspect and copy all records, files, photographs, documents, sampling and monitoring data and other writings or electronically stored information related to work undertaken in carrying out this Consent Order; provided that nothing in this Consent Order shall be interpreted as requiring Respondent to provide EPA with documents or communications protected by the attorney-client privilege, work-product rule, or any other protection available under law. In the event Respondent withholds any documents or communications on the grounds of the attorney-client privilege, work-product rule, or any other protection available under law, Respondent shall identify the documents or communications that are being withheld. Nothing herein shall be interpreted as limiting EPA's right of entry or inspection authority under federal or state law. All parties with access to the Site under this paragraph shall comply with the Site health and safety plans. The parties recognize that Respondent does not warrant that it presently maintains a right of access to all off-Site areas on which EPA, the State of California, or their authorized representatives may wish to enter. Notwithstanding any other provision of this Consent Order, Respondent does not indemnify or hold harmless EPA, the State of California, or their authorized representatives for any claims or

causes of action, including, but not limited to, personal injuries or property damage, related to their entry upon the Site or off-Site areas owned or controlled by Respondent.

54. Respondent may assert a claim of business confidentiality covering part or all of the information submitted to EPA pursuant to the terms of this Consent Order under 40 C.F.R. §2.203, provided such claim is allowed by section 104(e)(7) of CERCLA, 42 U.S.C. §9604(e)(7). This claim shall be asserted in the manner described by 40 C.F.R. §2.203(b) and substantiated at the time the claim is made. Information determined to be confidential by EPA will be given the protection specified in 40 C.F.R. Part 2. If no such claim accompanies the information when it is submitted to EPA, it may be made available to the public by EPA without further notice to the Respondent. Respondent shall not assert confidentiality claims with respect to any data related to Site conditions, sampling or monitoring.

55. For purposes of this Consent Order, Respondent waives any objections to any data gathered or generated by EPA or the State of California in the performance or oversight of the work that has been verified according to the quality assurance/quality control (QA/QC) procedures required by the Consent Order or any EPA-approved Removal or RI/FS SOW or sampling and analysis plans. Notwithstanding the foregoing, Respondent does not waive: (a) its right to comment upon the significance of such data or the manner in which such data should be evaluated; and (b) its right to object to such data in any subsequent litigation not involving the United States Department of Justice or EPA. If Respondent objects to any other data relating to the Removal or RI/FS, Respondent shall submit to EPA a report that identifies and explains its objections, describes the acceptable uses of the data, if

any, and identifies any limitations to the use of the data. The report must be submitted to EPA within 14 days of the due date of the progress report required to contain the data.

56. For any off-Site property that is to be used for access or otherwise for any work hereunder that is owned and controlled in whole or in part by persons other than Respondent, Respondent will use its best efforts to obtain the right to enter and use such property, including entering into agreements or easements permitting such access or other use from such person(s) within 90 days of (i) the effective date of this Consent Order and prior to scheduled field activities or (ii) if later, the date EPA determines a particular agreement or easement is necessary. Such agreements or easements or other rights as Respondent may obtain shall provide access for EPA and its authorized representatives and the State of California and its authorized representatives and shall specify that Respondent is not EPA's representative or agent with respect to liability associated with Site or off-Site activities. Copies of such agreements or easements shall be provided to EPA prior to Respondent's initiation of field activities related to such access. Respondents' best efforts shall include, where reasonably necessary, compensating the appropriate person for the agreement or easement by payment of reasonable compensation thereof to any such person. Immediately upon becoming aware that it will not be reasonably possible to obtain such access, Respondent shall notify EPA. EPA may take appropriate actions including, but not limited to, obtaining access for Respondent, performing those tasks or activities with EPA contractors, or terminating the Consent Order in the event that Respondent cannot obtain such access. Respondent shall not be obligated to pay a takeover of work penalty if EPA takes over work

pursuant to the preceding sentence and Respondent has complied with this paragraph to EPA's satisfaction. In the event that EPA performs those tasks or activities with contractors and does not terminate the Consent Order, Respondent shall perform all other activities not requiring access to that property and shall reimburse EPA for all costs incurred in connection with the tasks or activities which EPA performs. Respondent additionally shall integrate the results of any such tasks undertaken by EPA into its reports and deliverables. Furthermore, the Respondent agrees to indemnify the U.S. Government as specified in Section XXV of this Order. Respondent also shall reimburse EPA for all costs and attorneys fees incurred by EPA to obtain such access pursuant to this paragraph.

XV. DESIGNATED PROJECT COORDINATORS

57. Documents, including reports, approvals, disapprovals, notices and other writings, that must be sent pursuant to this Consent Order shall be sent by first class or express mail or by hand to the following addressees and to any other addressees EPA may designate in writing:

(a) Documents to be submitted to EPA shall be sent to:

Kathy Setian
Remedial Project Manager SFD-8-1
Superfund Division
U.S. EPA, Region IX
75 Hawthorne Street
San Francisco, CA 94105
(415) 744-2224

Respondent shall provide an original and two copies of each deliverable required by this Consent Order to EPA's Project Manager, and Respondent shall provide as many additional copies of such documents as reasonably requested by EPA's Project Manager. All additional copies of a document requested in advance of submittal of that document to EPA

shall be provided with the original submittal. All other copies requested shall be provided within 10 days after EPA's request.

(b) Copies of all documents shall also be sent to the following State of California agencies for review and comment:

Department of Toxic Substances Control
10151 Croydon Way, Suite 3
Sacramento, California 95827-2106
Attention: Duncan Austin

Central Valley Regional Water Quality Control Board
3443 Routier Road, Suite A
Sacramento, California 95827
Attention: Susan Timm

Department of Health Services
Radiological Health Branch
P.O. Box 942732
Sacramento, California 94234-7320
Attention: Steve Hsu

(C) Documents to be submitted to the Respondent shall be sent to:

Brian Oatman
Environmental Health and Safety
University of California, Davis
Davis, California 95616-8648

EPA shall provide an original of each document which it submits to the Respondent under this Consent Order.

58. EPA's Project Manager will be the EPA staff person designated for receipt of documents. On or before the effective date of this Consent Order, Respondent shall designate a Project Coordinator. Respondent's Project Coordinator may assign a representative, including a contractor, to serve as Site representative for oversight of performance of daily operations during the Removal and RI/FS. The project coordinator shall be responsible for overseeing the

implementation of this Consent Order. To the maximum extent possible, communications between the Respondent and EPA shall be directed to the Project Manager and Coordinator by mail, with copies to such other persons as EPA, the State, and Respondent may respectively designate. Such communications include, but are not limited to, all documents, reports, approvals, and other correspondence submitted under this Consent Order.

59. EPA and the Respondent each may change their Project Manager and Coordinator. The other party must be notified in writing at least 10 days prior to the change.

60. EPA's Project Manager shall have the authority lawfully vested in or delegated to a Remedial Project Manager (RPM) and On-Scene Coordinator (OSC) by the NCP. In addition, EPA's Project Manager shall have the authority reserved to EPA in paragraph 28 hereof. The absence of the EPA Project Manager from the area under study or any other area shall not be cause for the stoppage or delay of work. The Respondent's Project Coordinator shall have the authority to halt work required by this Consent Order if he or she determines that conditions may present an immediate risk to health or welfare or the environment. After halting any work, the Respondent's Project Coordinator shall immediately confer with the EPA Project Manager to determine how to perform the work in a manner that is consistent with this Consent Order and that protects human health and the environment, and to determine whether any extension of the schedule of deliverables is warranted. If the EPA Project Manager and the Respondent's Project Coordinator are unable to reach agreement on whether the work which has been halted should be resumed, how such work should be performed, or whether any extension of the schedule of deliverables is warranted, Respondent may

invoke the dispute resolution procedures under Section XVIII of this Consent Order.

61. EPA may arrange for a qualified person not on EPA staff to assist in its oversight and review of the conduct of the Removal or RI/FS, as required by section 104(a) of CERCLA, 42 U.S.C. §9604(a). The assistant may observe work and make inquiries in the absence of EPA, but is not authorized to modify the Removal or RI/FS Work Plan or to take the actions specified in the preceding paragraph.

XVI. OTHER APPLICABLE LAWS

62. Respondent shall comply with all applicable laws and regulations when performing the Removal and RI/FS. Pursuant to CERCLA and the NCP, no local, state or federal permit shall be required for any portion of any action conducted on-Site, including studies, where such action is selected and carried out in compliance with section 121 of CERCLA.

XVII. RECORD PRESERVATION

63. The Respondent shall preserve and retain and shall instruct its contractors, subcontractors and anyone else acting on its behalf to preserve and retain all records and documents prepared in accordance with this Consent Order, for eight years after the completion of the final Record of Decision for the Site or termination of this Consent Order, whichever is later. Upon termination of the eight year period set forth in this paragraph, the Respondent shall notify EPA at least 90 calendar days before the documents are scheduled to be destroyed. If EPA requests that the documents be saved, the Respondent shall, at no cost to EPA, give EPA the documents or copies of the documents.

XVIII. DISPUTE RESOLUTION

64. Any disputes concerning activities or deliverables required under this Order for which dispute resolution has been expressly provided for, shall be resolved as follows: If the Respondent objects to any EPA notice of disapproval or requirement made pursuant to this Consent Order, Respondent shall notify EPA's Project Manager in writing of its objections within 14 days of receipt of the disapproval notice or requirement. Respondent's written objections shall define the dispute, state the basis of Respondent's objections, and be sent certified mail, return receipt requested. EPA and the Respondent then have an additional 14 days to reach agreement. If an agreement is not reached within 14 days, Respondent may request a determination by EPA Region IX's Director for Superfund. The Director's determination is EPA's final decision. The Director will make a good faith effort to make a determination within 21 days. If the Director requires more than 21 days to make a determination, stipulated penalties shall not accrue beyond 21 days while awaiting the Director's determination. Respondent shall proceed in accordance with EPA's final decision regarding the matter in dispute, regardless of whether Respondent agrees with the decision. Use of the dispute resolution provision will not relieve Respondent of its duty to complete the other tasks in a timely manner in accordance with the schedule. This dispute resolution provision or EPA's decision pursuant to this provision does not grant or imply jurisdiction to any court to review EPA's decisions pursuant to this Consent Order. Any correspondence relating to dispute resolutions under this paragraph shall become part of the administrative record, if such correspondence is relevant to remedy selection.

65. Respondent is not relieved of its obligations to perform

and conduct activities and submit deliverables on the schedule set forth in the Removal or RI/FS Work Plan while a matter is pending in dispute resolution. The invocation of dispute resolution does not stay the accrual of, or obligation to pay, stipulated penalties under this Order; provided, however, that if Repondent prevails upon resolution, no penalties shall be paid.

XIX. DELAY IN PERFORMANCE/STIPULATED PENALTIES

66. For each day that Respondent fails to meet a deadline or due date required by this Order or a Work Plan, or fails to produce a deliverable that demonstrates a substantial good faith effort to comply with the requirements of this Order, or otherwise fails to perform in accordance with the requirements of this Order, Respondent shall be liable for stipulated penalties in accordance with this Section. Penalties begin to accrue on the day that performance is due or a violation occurs, and extends through the period of correction but not past termination of this Order. Where a revised submission by Respondent is required, stipulated penalties shall continue to accrue until a satisfactory deliverable is produced. EPA will provide written notice for violations that are not based on timeliness; nevertheless, penalties shall accrue from the day a violation commences. Payment shall be due within 30 days of receipt of a demand letter from EPA. Dispute resolution shall not stay the accrual of these stipulated penalties.

67. Respondent shall pay interest on the unpaid balance of penalties due. Such interest shall begin to accrue at the end of the 30-day period established in the preceding paragraph at the rate established by the Department of Treasury pursuant to 30 U.S.C. §3717.

68. Respondent shall make all payments due under any

provision of this Order by forwarding a certified or cashier's check to:

U.S. Environmental Protection Agency
Region IX, Attn: Superfund Accounting
P.O. Box 360863M
Pittsburgh, PA 15251

All checks shall be made payable to "EPA-Hazardous Substance Superfund" and shall identify the name of the Site, the Site identification number, the account number and the title of this Order. A copy of the check and transmittal letter shall be forwarded to the EPA Project Manager.

69(a). For the following major deliverables stipulated penalties shall accrue in the following amounts for each late deliverable or other violation: $500 per day, per violation, for the first 7 days of non-compliance; $1000 per day, per violation, for the 8th through 14th day of noncompliance; $5,000 per day, per violation, for the 15th through 30th day of noncompliance; and $10,000 per day, per violation, for all violations lasting beyond 30 days:

1. Draft Removal Work Plan;
2. Final Removal Work Plan;
3. Draft RI/FS Work Plan;
4. Final RI/FS Work Plan ;
5. Draft RI/FS Report;
6. Final RI/FS Report;

(b) For all other deliverables or other performance required under this Consent Order, stipulated penalties, shall accrue in the following amounts for each late deliverable, missed due date, or other violation: $250 per day, per violation, for the first 7 days of non-compliance; $500 per day, per violation, for the 8th through 14th day of noncompliance; $1,000 per day, per violation, for the 15th through

30th day of noncompliance; and $2,000 per day, per violation, for all violations lasting beyond 30 days.

(c) Respondent may dispute EPA's right to the stated amount of penalties by invoking the dispute resolution procedures under Section XVIII of this Consent Order. Penalties shall accrue but need not be paid during the dispute resolution period. If Respondent does not prevail upon resolution, all penalties shall be due to EPA within 30 days of resolution of the dispute. If Respondent prevails upon resolution, no penalties shall be paid.

70. The stipulated penalties provisions do not preclude EPA from pursuing any other remedies or sanctions available to EPA because of the Respondent's failure to comply with this Consent Order, including but not limited to conduct of all or part of the Removal or RI/FS by EPA. Payment of stipulated penalties does not alter Respondent's obligations to complete its obligations under this Consent Order.

71. The schedule, due dates and specific time frames for Respondent's submission of deliverables to EPA pursuant to the Removal Work Plan and the RI/FS Work Plan are provided in Appendices B and C of this Consent Order. Other due dates for performance are also included elsewhere in this Order. All interim deliverables shall be approved by EPA unless EPA determines that approval is not required.

72. Respondent is liable for the payment of stipulated penalties accruing under this Consent Order.

XX. FORCE MAJEURE

73. "Force Majeure," for purposes of this Consent Order, is any event arising from causes beyond the control of Respondent and of Respondent's contractors, consultants and subcontractors, that delays

or prevents performance of any obligation under this Consent Order notwithstanding Respondent's best efforts to avoid the delay. The requirement that the Respondent exercise best efforts includes using best efforts to anticipate any potential force majeure event and best efforts to address the effects of any potential force majeure event (1) as it is occurring and (2) following the potential force majeure event, such that the delay is minimized to the extent practicable. Examples of events that are not force majeure events include, but are not limited to, increased costs or expenses of any work to be performed under this Order, or financial or business difficulties of Respondent.

74. If any event may occur or has occurred that may delay the performance of any obligation under this Order, whether or not caused by a force majeure, Respondent shall notify by telephone the EPA Project Manager or, in his or her absence, the Chief of the Superfund Air Force and DOE Section (SFD-8-1), EPA Region 9, within 2 days of when the Respondent knew that the event might cause a delay. Within 7 days thereafter, Respondent shall provide in writing the reasons for the delay; the anticipated duration of the delay; all actions taken or to be taken to prevent or minimize the delay; a schedule for implementation of any measures to be taken to mitigate the effect of the delay; and a statement as to whether, in the opinion of Respondent, such event may cause or contribute to an endangerment to public health, welfare or the environment. Respondent shall exercise best efforts to avoid or minimize any delay and any effects of a delay. Failure to comply substantially with the requirements of this paragraph shall preclude Respondent from asserting any claim of force majeure.

75. If EPA agrees that a delay or anticipated delay is attributable to force majeure, the time for performance of the

obligations under this Order that are affected by the force majeure event shall be extended by agreement between EPA's Project Manager and Respondent's representative for a period of time not to exceed the actual duration of the delay caused by the force majeure event. An extension of the time for performance of the obligation directly affected by the force majeure event shall not, of itself, extend the time for performance of any subsequent obligation, unless the subsequent obligation is dependent on the obligation directly affected by the force majeure event.

76. If EPA does not agree that the delay or anticipated delay has been or will be caused by a force majeure event, or does not agree with Respondent on the length of the extension, the issue shall be subject to the dispute resolution procedures set forth in Section XVII of this Order. In any such proceeding, to qualify for a force majeure defense, Respondent shall have the burden of demonstrating by a preponderance of the evidence that the delay or anticipated delay has been or will be caused by a force majeure event, that the duration of the delay was or will be warranted under the circumstances, that Respondent did exercise or are using their best efforts to avoid and mitigate the effects of the delay, and that Respondent complied with the requirements of this Section (Section XIX).

XXI. REIMBURSEMENT OF PAST COSTS

77. Respondent shall pay past response costs incurred by the United States in conjunction with the LEHR Site UCD area, in the amount of $75,000.00 within 45 days of the effective date of this Order, in full satisfaction of Respondent's alleged liability for the past costs. If this sum has not been paid within 45 days of the effective date of this Order, interest thereon shall begin to acrue on the 46th day after

the effective date of this Order and shall continue until payment has been made. The interest rate is the rate of interest on investments for the Hazardous Substances Superfund in section 107(a) of CERCLA.

78. The Respondent's payment shall be made by certified or cashier's check made payable to "EPA-Hazardous Substances Superfund." The check shall reference the Site name, address, and identification number, and the EPA docket number for this action and shall be sent by the Respondent to:

EPA Region 9
Attention: Superfund Accounting
P.O. Box 360863M
Pittsburgh, PA 15251

79. The Respondent shall simultaneously send a copy of its check to:

Kathy Setian, Remedial Project Manager
U.S. EPA Region 9, SFD-8-1
75 Hawthorne Street
San Francisco, CA 94105

80. All costs which will be incurred by the United States after the effective date of this Consent Order and which are related to the scope of this Consent Order, shall be included under Section XXII below of this Consent Order as Response and Oversight costs. Respondent agrees to pay all such costs which have been or will be incurred by the United States after the effective date of this Consent Order pursuant to the terms of section XXII below of this Consent Order.

XXII. REIMBURSEMENT OF RESPONSE AND OVERSIGHT COSTS

81. Following the effective date hereof, EPA may submit to

Respondent on a periodic or other basis, and will make a good faith effort to do so no less frequently than annually, payment demands containing documentation of response and oversight costs. "Response Costs" shall mean all costs incurred after August 30,1999, which are related to the UCD area, the Removal or the RI/FS and are within the scope of this Consent Order, including, but not limited to: (a) activities performed by EPA as part of the Removal and RI/FS and community relations, (b) costs incurred to obtain access, (c) all direct costs, including, but not limited to, time and travel costs of EPA personnel, cooperative agreement costs, contractor costs, compliance monitoring, including the collection and analysis of split samples, inspection of Removal and RI/FS activities, Site visits, discussions regarding disputes that may arise as a result of this Consent Order, costs of performing the baseline risk assessment, and review and approval or disapproval of reports and costs of redoing any of Respondents' tasks; (d) associated indirect or overhead costs. "Oversight Costs" shall mean costs incurred by EPA in overseeing Respondent's implementation of this Consent Order. In no event may EPA charge Respondent twice for the same activity. Cost summaries provided by EPA, including EPA's certified Agency Financial Management System summary data (SPUR Reports) or EPA's Cost Documentation Management System Report (CDMS), shall serve as sufficient basis for payment demands. Except as provided in the following paragraph, the Respondent shall, within 30 days of receipt of each such demand, remit or cause to be remitted a certified or cashier's check for the amount of those costs. Copies of the transmittal letter and check should be sent simultaneously to the EPA Project Manager. Interest shall accrue from 30 days after a payment of a specified amount is demanded in writing

and shall continue until the date of the payment. The interest rate is the rate of interest on investments for the Hazardous Substances Superfund in section 107(a) of CERCLA. Notwithstanding EPA's proposed Cost Recovery Rule (57 Fed. Reg. 34742-34755, August 6, 1992), or any other cost recovery rules proposed by EPA subsequent to the effective date of this Consent Order, which would, among other things, significantly increase the indirect costs charged by EPA, the indirect costs to be paid by the Respondent under this Consent Order shall be based upon the indirect cost allocation methodology in effect on January 1, 1993, and as based on the EPA's Superfund Indirect Cost Manual issued in July 1991.

82. Respondent agrees to limit any disputes concerning costs to accounting errors, cost inconsistent with the NCP, and the inclusion of costs outside the scope of this Consent Order. Respondent shall identify any disputed costs and the basis of their objection. All undisputed costs shall be remitted by Respondent in accordance with the schedule set forth above. If any costs are disputed and the dispute is resolved in EPA's favor, Respondent shall, at the conclusion of the dispute resolution process, remit or cause to be remitted a certified or cashier's check for the amount of the costs which have been determined to be due and owing, and any interest which has accrued thereon. Interest on disputed costs shall accrue in the same manner and at the same rate as provided above in paragraph 67 of this Consent Order. Respondent bears the burden of establishing an EPA accounting error or the inclusion of costs outside the scope of this Consent Order.

XXIII. RESERVATIONS OF RIGHTS AND REIMBURSEMENT OF OTHER COSTS

83. EPA reserves the right to bring an action against

Respondent under section 107 of CERCLA for recovery of any response costs, including Oversight Costs, incurred by the EPA at the Site that are not reimbursed by Respondent, any costs incurred in the event that EPA performs the Removal or RI/FS or any part thereof, and any other costs incurred by EPA in connection with response activities conducted under CERCLA or any other legal authority at the Site. Except as expressly provided in this Consent Order, Respondent reserves all rights it may have to oppose and defend against any action brought by EPA, and to assert any and all claims they may have against EPA, any person, and any government agency.

84. EPA reserves the right to bring an action against Respondent to collect stipulated penalties assessed pursuant to section XVIII of this Consent Order, to seek penalties pursuant to section 109 of CERCLA, 42 U.S.C. §9609, and to seek punitive damages pursuant to section 107(c)(3) of CERCLA, 42 U.S.C. §9607(c)(3). Except as expressly provided in this Consent Order, Respondent reserves all rights it may have to oppose and defend against any action brought by EPA, and to assert any and all claims it may have against EPA, any person, and any government agency.

85. Except as expressly provided in this Consent Order, each Party reserves all rights and defenses it may have. Nothing in this Consent Order shall affect EPA's removal authority or EPA's response or enforcement authorities including, but not limited to, the right to seek injunctive relief, stipulated penalties, statutory penalties, and/or punitive damages against Respondent or other persons.

86. Following satisfaction of the requirements of this Consent Order, Respondent shall have resolved its liability, if any, to EPA for the work performed by the Respondent pursuant to this Consent

Order. Respondent is not released from liability for any response actions taken beyond the scope of this Consent Order regarding removals, other operable units, remedial design/remedial action of this operable unit, or activities arising pursuant to section 121(c) of CERCLA.

87. With regard to claims for contribution against Respondent for matters addressed in this Consent Order, the parties hereto agree that the Respondent is entitled to such protection from contribution actions or claims as provided by CERCLA Section 113(f)(2), 42 U.S.C. §9613(f)(2). For purposes of this paragraph, "matters addressed" shall include liability pursuant to CERCLA, RCRA, and common law for removal work performed pursuant to this Consent Order, preperation of an RI\FS, Past Response and Oversight Costs, and Future Oversight Costs.

XXIV. OTHER CLAIMS

88. In entering into this Order, Respondent waives any right to seek reimbursement under section 106(b) of CERCLA. Respondent also waives any right to present a claim under section 111 or 112 of CERCLA. This Order does not constitute any decision on preauthorization of funds under section 111(a)(2) of CERCLA. Respondent further waives all other statutory and common law claims against EPA, including, but not limited to, contribution and counterclaims, relating to or arising out of conduct of the Removal or RI/FS.

89. Nothing in this Order shall constitute or be construed as a release from any claim, cause of action or demand in law or equity against any person, firm, partnership, subsidiary or corporation not a signatory to this Consent Order for any liability it may have arising out of or relating in any way to the generation, storage, treatment,

handling, transportation, release, or disposal of any hazardous substances, pollutants, or contaminants found at, taken to, or taken from the Site. Respondent reserves all rights it may have to recover from third parties its costs under this Consent Order and at the Site.

90. Respondent shall bear its own costs and attorneys fees.

XXV. DISCLAIMER

91. By signing this Consent Order and taking actions under this Consent Order, the Respondent does not necessarily agree with EPA's Findings of Fact and Conclusions of Law. Furthermore, the participation of the Respondent in this Consent Order shall not be considered an admission of liability and is not admissible in evidence against the Respondent in any judicial or administrative proceeding other than a proceeding by the United States Department of Justice, including EPA, to enforce this Consent Order or a judgment enforcing this Consent Order. Respondent retains its right to assert claims against other potentially responsible parties at the Site. However, the Respondent agrees not to contest the validity or terms of this Consent Order, or the procedures underlying or relating to it in any action brought by the United States, including EPA, to enforce its terms.

XXVI. FINANCIAL ASSURANCE, INSURANCE AND INDEMNIFICATION

92. Within 30 Days of entry of this Consent Order, the Respondent shall establish and maintain financial security in the amount of $750,000 through a demonstration that Respondent satisfies the requirements of 40 C.F.R. Part 264.143(f).

93. Respondent shall resubmit sworn statements conveying the information required by 40 C.F.R. Part 264.143(f) annually, on the anniversary of the effective date of this Consent Order. In the event

that EPA determines at any time that the financial assurances provided pursuant to this Section are inadequate, the Respondent shall, within 30 days of receipt of notice of EPA's determination, obtain and present to EPA for approval another form of financial assurance satisfactory to EPA. The Respondent's inability to demonstrate financial ability to complete the work and other obligations under this Consent Order shall not excuse performance of any activities required under this Consent Order.

94(a). Prior to commencement of any work under this Order, Respondent shall demonstrate to EPA that Respondent's consultant has secured and shall maintain in force for the duration of this Order Comprehensive General Liability ("CGL") and automobile insurance, with limits of not less than $5 million combined single limit, naming as insured the United States. The CGL insurance shall include Contractual Liability Insurance in the amount of not less than $1 million per occurrence, and Umbrella Liability Insurance in the amount of not less than $2 million per occurrence. Prior to commencement of any work under this Order, and annually thereafter on the anniversary of the effective date of this Consent Order, Respondent shall provide to EPA certificates of such insurance and, if EPA so requests, a copy of the insurance policies.

(b) Respondent shall also demonstrate to EPA that Respondent's consultant has secured and shall maintain in force for the duration of this Order the following: Professional Errors and Omissions Insurance in the amount of not less than $1 million per occurrence. Prior to commencement of any work under this Consent Order, and annually thereafter on the effective date of this Consent Order, Respondent shall provide to EPA a certificate of such insurance and, if

EPA so requests, a copy of the insurance policy.

95. If Respondent's consultant is unable to satisfy the insurance requirements of Paragraph 79 of this Consent Order, the Respondent shall obtain the required insurance and shall comply with all of the provisions of Paragraph 79 of this Consent Order.

96. The Respondent agrees to indemnify and hold the United States Government, its agencies, departments, agents, and employees harmless from any and all claims or causes of action arising from or on account of acts or omissions of Respondent, its employees, agents, servants, receivers, successors, assignees, or contractors, in carrying out activities under this Consent Order, except to the extent that the act or omission was directed by EPA over the good faith objection of Respondent. The United States Government or any agency or authorized representative thereof shall not be held as a party to any contract entered into by Respondent in carrying out activities under this Consent Order.

XXVII. EFFECTIVE DATE AND MODIFICATION

97. The effective date of this Consent Order shall be the date it is signed by EPA.

98. Except as expressly provided for in this Consent Order, the Order may not be amended or modified except by written agreement of EPA and Respondent. Amendments shall be effective when signed by EPA after Respondent has signed. EPA Project Managers do not have the authority to sign amendments or modifications to the Consent Order, except for those amendments or modifications expressly provided for in this Order.

XXVIII. TERMINATION AND SATISFACTION

99. This Consent Order shall terminate when the Respondent

demonstrates in writing and certifies to the satisfaction of EPA that all activities required under this Consent Order, including any additional work, payment of response and oversight costs, and payment of any stipulated penalties due, have been performed and EPA has approved the certification. This termination shall not, however, affect Respondent's obligations under Sections XVI, XXII, XXIII, or paragraph 82 of this Consent Order.

100. The certification shall be signed by an authorized representative of the Respondent. Each representative shall make the following attestation: "I certify that the information contained in or accompanying this certification is true, accurate, and complete." For purposes of this Consent Order, an authorized representative is an official who is in charge of a principal function of the entity at issue.

XXIX. COUNTERPARTS

101. This Consent Order may be executed and delivered in any number of counterparts, each of which, when executed and delivered, shall be deemed to be an original, but such counterparts shall together constitute one and the same document.

IT IS SO AGREED:

UNIVERSITY OF CALIFORNIA

By: _____ DATE: 9/28/99
Name: Janet C. Hamilton
Title: Vice Chancellor--Administration

The above being agreed and consented to, IT IS SO ORDERED.

By: _____ DATE: 9/30/99
Keith Takata
Director, Superfund Division
Region 9

LIST OF APPENDICES

Appendix A: Statement of Work for Removal Actions
Appendix B: Statement of Work for RI/FS
Appendix C: Site map
Appendix D: Memorandum of Agreement between UC Davis and DOE

EACH COPY OF THIS CONSENT ORDER SHALL INCLUDE THE APPENDICES, WHICH ARE INCORPORATED BY REFERENCE IN THE ORDER AND ARE AN ENFORCEABLE PART THEREOF.

Table of Contents

Introduction	1
Jurisdiction	2
Parties Bound	3
Statement of Purpose	4
EPA's Findings of Facts	5
EPA's Conclusions of Law and Determinations	9
Notice	10
Division of Responsibility for the Site	10
Work to be Performed	10
Modification of the RI/FS Work Plan and Sampling and Analysis Plan	16
Quality Assurance	18
Final RI/FS, Proposed Plan, Public Comment, Record of Decision, Administrative Record	18
Progress Meetings	19
Sampling, Access and Data Availability/ Admissibility	20
Designated Project Coordinators	24
Other Applicable Laws	27
Record Preservation	27
Dispute Resolution	27
Delay in Performance/Stipulated Penalties	29
Force Majeure	31
Reimbursement of Past Costs	33

Reimbursement of Response and Oversight Costs	34
Reservations of Rights and Reimbursement of Other Costs	36
Other Claims	38
Disclaimer	39
Financial Assurance, Insurance and Indemnification	39
Effective Date and Modification	41
Termination and Satisfaction	41
Counterparts	42
List of Appendices	43

APPENDIX A

STATEMENT OF WORK FOR REMOVAL ACTIONS AND MITIGATION/REPAIR

A. OBJECTIVE

To plan and conduct appropriate and timely removal actions at the Site, in accordance with CERCLA and the NCP.

B. WORK TO BE PERFORMED

All deliverables contained in this Statement of Work (SOW) are to be submitted in draft for EPA review and comment. Comments from EPA shall be incorporated into draft final documents for regulatory approval before being finalized. Schedules for these documents are given in Section C.

Task 1: Groundwater Interim Removal Action (in progress)

Respondent shall continue operation of the groundwater interim removal action (IRA) as documented in respondent's EE/CA dated April 1997, EPA's Action Memorandum dated December 1, 1997, and the Treatment Performance Evaluation dated April 29, 1999. The IRA objectives are:

1) To prevent, minimize, or mitigate potential threat to public health and the environment.

2) To eliminate or substantially decrease potential offsite migration of constituents of concern in HSU-2 (the first transmissive water-bearing zone) at the Site through plume containment and without impacting potential site source areas.

3) To substantially reduce the overall mass of chloroform in HSU-2 groundwater.

4) To provide information on aquifer response and effects of long-term pumping.

5) To provide information on the quality of extracted groundwater.

6) To provide operational data which will aid in assessment of groundwater treatment effectiveness and the need for further groundwater remedial action.

7) To provide data on reinjection effectiveness.

Task 1.1: Monitoring

Respondent shall monitor system performance in order to evaluate the performance of extraction, capture, treatment, and reinjection components, and to evaluate the effectiveness of meeting the removal action objectives stated above. Reports shall be issued at least quarterly once the system

is operational and functional. An annual report will be issued by March 31 of the following year.

Task 1.2: Groundwater IRA Enhancement

Operation of the groundwater IRA for over one year has demonstrated that influent concentrations of total dissolved solids (TDS) and nitrate exceed water quality goals. Respondent shall prepare an IRA Enhancement Evaluation report that will analyze potential measures to mitigate TDS and nitrate and propose modifications to the groundwater IRA to enhance performance. Prior to construction, UC Davis shall make the Draft Final Enhancement Evaluation Report available for public review. If necessary, treatability studies will be performed subsequent to the Enhancement Evaluation Report and prior to the RI/FS for UC Davis soil areas and groundwater.

UC Davis has prepared a Groundwater Source Investigation Report, and addendum. Based on these documents, EPA may request an Enhancement Evaluation Report for additional source removal actions.

Task 2: Waste Burial Holes Removal Action

Forty-nine known discrete pits or burial holes have been used by Respondent to dispose of waste including low-level radioactive waste, organic chemicals and laboratory waste. Results of previous investigations indicate that the burial holes contain high activity levels of tritium, which is the probable source of groundwater tritium contamination. There are also VOCs in soil and soil gas. The objective of this removal action is to remove the waste and mitigate continued contributions to groundwater contamination. Respondent has prepared an EE/CA, dated August 22, 1999, a Removal Action Work Plan, dated August 17, 1999, and EPA has prepared an Action Memorandum, dated August 1999. The removal action was initiated on September 24, 1999.

Task 2.1: Weekly Reports

Respondent shall issue weekly reports via fax or e-mail to EPA during the period of construction, until the action is determined by EPA to have accomplished its objectives.

Task 2.2: Construction Inspection

Respondent shall schedule an opportunity for EPA to conduct a construction inspection once respondent proposes that the action is complete.

Task 2.3: Final Construction Report

Within 60 days of EPA concurrence that the action is complete, respondent shall submit a final construction report, referring to EPA guidance *Superfund Removal Procedures, Removal Response Reporting: POLREPs and OSC Reports*, OSWER Publication 9360.3-03, Section II (OSC Report). This report shall include:

Executive Summary
Summary of Events (as per guidance)
Analysis of the effectiveness of the removal action at achieving its objectives
Documentation of any Field modifications to the Removal Work Plan
Plan for Long-Term Inspections, Operation and Maintenance

Task 2.4: Characterization Sampling

Within 60 days of EPA acceptance of the Final Construction Report, respondent shall submit a Work Plan for additional characterization of the Waste Burial Holes area. This Work Plan will serve as an addendum to the Final Draft RI/FS Workplan that was prepared in 1994. The purpose of this work will be to characterize the soil beneath the waste burial holes and to determine the magnitude and extent of constituents of concern in affected soil. The Work Plan will include:

Proposed number and locations of soil borings and soil samples
List of analyses to be performed and analytical detection limits
Description of Sampling Procedures
Schedule for completing the characterization field work

Following approval of the Work Plan, respondent shall perform the characterization activities and prepare a report transmitting the results and any recommendations for additional actions.

C. Schedule of Deliverables

The following schedule gives Due Dates for submittal of draft documents. Draft Final revisions are due 15 days after Respondent receives EPA comments on the draft.

Task	Deliverable	Due Date
1.1	Monitoring Reports	Quarterly
1.1	Groundwater IRA Annual Report	March 31, every year
1.2	Groundwater IRA Enhancement Evaluation	January 30, 2000
1.2	Groundwater IRA Enhancement Design	90 days after approval of Evaluation Report
1.2	Groundwater IRA Enhancement Construction Report	30 days after EPA concurrence that construction is complete
2.1	Waste Burial Holes Weekly Reports	Ongoing during field work
2.3	Waste Burial Holes Final Construction Report	30 days after EPA concurrence that action is complete
2.4	Waste Burial Holes Characterization Sampling Work Plan	60 days after EPA acceptance of Final Construction report
2.4	Waste Burial Holes Characterization Sampling Results	90 days after completion of characterization field work activities

APPENDIX B

STATEMENT OF WORK FOR REMEDIAL INVESTIGATION/FEASIBILITY STUDY

A. OBJECTIVE

1) To identify residual contamination remaining onsite and summarize data regarding the UC Davis OUs and groundwater;

2) To evaluate the risk deriving from residual contamination present at the LEHR Superfund site as a whole, including stormwater, Putah Creek, and DOE areas ("site-wide");

3) To identify, analyze, and compare alternatives for remediating residual contamination present at the UC Davis OUs and groundwater.

All remedial activities will be conducted in accordance with CERCLA and the NCP.

B. WORK TO BE PERFORMED

All deliverables contained in this Statement of Work (SOW) are to be submitted in draft for EPA review and comment. Comments from EPA shall be incorporated into draft final documents for regulatory approval before being finalized. Schedules for these documents are given in Section C.

Task 1: RI/FS Work Plan

A Final Draft RI/FS Workplan was prepared in 1994, and amended with a Data Gaps Work Plan (1996), Offsite Hydropunch Investigation Work Plan (1996), Technical Memorandum/Work Plan for Pre-design Activities - Groundwater IRA (1996), Offsite Well Installation Work Plans (1996 and 1997) and IRA Removal Action Work Plan (1997).

At the conclusion of the Removal Actions and characterization work described in Appendix A, Respondent shall prepare a Data Summary and Data Gaps Report as an addendum to the RI/FS Workplan. This report shall include:

a) identification and brief summary of available data sources needed for the RI/FS, as described below; and

b) identification of gaps in data needed in order to complete the RI/FS; and

c) work plan for collecting data to fill data gaps;

d) schedule for RI/FS report.

Task 2: RI/FS Supporting Documents

Task 2.1: Sample and Analysis Plan - Quality Assurance Project Plan (QAPjP)
A draft revised QAPjP was submitted on Feb. 17 1998. Addenda shall be prepared as needed.

Task 2.2: Sample and Analysis Plan - Field Sampling Plan (FSP)
A Revised FSP was submitted on Dec. 12, 1998. Addenda shall be prepared as needed.

Task 2.3: Health and Safety Plan
A Health and Safety Plan was submitted as part of the RI/FS Workplan (1994). Addenda shall be prepared as needed.

Task 2.4: Data Management Plan
A Data Management Plan was included in the Revised FSP (section 7). Respondent shall submit an addendum giving plans for coordinating and accepting data from DOE in a consistent data format.

Task 3: Remedial Investigation

It is assumed that much of the information needed for a Remedial Investigation (RI) of the UCD areas and groundwater will have been collected by previous investigations and through confirmatory sampling to be conducted by UCD at the completion of the removal actions. It is also assumed that DOE will have transmitted a Risk Assessment Summary report containing data needed by UC Davis to complete a Site-Wide Risk Assessment (SWRA). UCD, in coordination with the EPA, shall determine what data gaps, if any, exist at the site, and shall conduct those investigations necessary to complete the characterization of the LEHR Site, as set forth in the following paragraphs:

A) Environmental Setting and Pathway Characterization - characterize the actual or potential contaminant migration pathways;

B) Source Characterization - define the source;

C) Contaminant Characterization - define the degree and extent of contamination; also specific contaminant fate and transport;

D) Receptor Identification and Risk Assessment - identify actual or potential receptors and conduct an assessment of risks posed to them.

The Study Area for the RI shall include the UC Davis OUs as defined in the AOC, including but not limited to the groundwater, and surface water affected by contaminant migration in the UCD OU areas, and all other areas necessary for an understanding of the actual or potential threats to human health or the environment from UCD activities. The study area for the SWRA shall additionally include the DOE OUs. While A) and D) above relate to the entire Study Area, it is expected that B) and C) will focus on the 3 landfills, the eastern and southern disposal trenches, groundwater, surface water, storm water, and any residual contamination in the waste burial

holes. The old wastewater treatment plant, located proximal to the UC Davis OUs, has been investigated and will be included in the RI report.

The investigations should result in data consistent with an EPA-approved Quality Assurance/Quality Control Plan and of sufficient technical quality to support the development and evaluation of the remedial action alternative or alternatives during the Feasibility Study. All sampling and analysis shall be conducted in accordance with an EPA-approved Sampling and Analysis Plan. All sampling locations shall be documented in a log and identified on detailed maps of appropriate scale.

Data shall be provided to EPA in an electronic format compatible with EPA data management systems. Monthly written progress reports (such as field memos) submitted to EPA shall be augmented by more frequent communication (such as RPM meetings and/or teleconferences) during periods of increased field activity, sampling and construction.

This outline presents a general checklist of scope items and may require modifications, as appropriate, as the work proceeds.

A. Environmental Setting and Pathway Characterization

Collect data as needed to supplement and verify existing information on the environmental setting and potential contaminant migration pathways in the Study Area. The investigation shall characterize the following:

1. Hydrogeology

Evaluate hydrogeologic conditions in the Study Area. This program shall provide the following information, as appropriate:

a. A description of the regional and local geologic and hydrogeologic characteristics affecting ground water flow beneath the LEHR Site, including:

i) Regional and local stratigraphy;

ii) Structural geology;

iii) Depositional history;

iv) Identification and characterization of areas and amounts of recharge and discharge;

v) Regional and local groundwater flow patterns;

vi) Characterization of seasonal variations in the groundwater flow regime;

vii) General meteorological data including, as applicable: annual and monthly

precipitation averages, monthly temperature averages, wind speed and direction, evaporation rates, and climatic extremes (including frequency of occurrence);

viii) Specific watershed characteristics.

b. An analysis of any topographic features that might influence the groundwater flow system.

c. Based on field data, tests, and cores, a representative and accurate classification and description of the hydrogeologic units which may be part of the migration pathways (including saturated and unsaturated units), including, as appropriate:

i) Hydraulic conductivity, porosity, effective porosity, pore water velocity, and Darcy velocity;

ii) Lithology, grain size, sorting, degree of cementation;

iii) An interpretation of the degree of interconnections between saturated zones;

iv) The contaminant solute attenuation capacity and mechanisms of the natural earth and wetland sediment materials.

d. Based on field studies and cores, structural geology and hydrogeological cross sections and fence diagrams showing the extent (depth, thickness, lateral extent) of hydrogeological units which may be part of the migration pathways identifying, as appropriate:

i) Sand and gravel layers in unconsolidated deposits;

ii) Zones of fracturing or channeling in consolidated or unconsolidated deposits;

iii) Zones of higher permeability or lower permeability that might direct and restrict the flow of contaminants;

iv) Geologic formation or group of formations that are capable of yielding a significant amount of groundwater to wells and springs;

v) Water bearing zones that may serve as a pathway for contaminant migration including perched zones of saturation.

e. Based on data obtained from groundwater monitoring wells and/or piezometers installed upgradient and downgradient from the potential contaminant sources, a representative description of water level or fluid pressure monitoring including, as appropriate:

i) Water level contour and/or potentiometric maps (displayed legibly, superimposed on maps of appropriate scale);

ii) Hydrologic cross sections showing vertical gradients;

iii) The flow system including the vertical and horizontal components of flow;

iv) Any seasonal or temporal changes in hydraulic gradients.

f. A description of manmade influences that may affect the hydrogeology in the vicinity of the LEHR Site including pipelines, drains, ditches and altered channels, seals, compacted fill, etc.

2. Soils

Conduct a program to characterize the soil and rock units above the water table in the vicinity of the UC Davis OUs. Such characterization shall include, as appropriate, but not be limited to, the following information:

a. SCS soil classification;
b. Surface soil distribution;
c. Hydraulic conductivity (saturated and unsaturated);
d. Bulk density;
e. Porosity;
f. Soil pH;
g. Particle size distribution;
h. Moisture content, specific capacity, infiltration rate;
i. Soil stratification effect on unsaturated flow;

3. Surface Water and Sediment

Conduct a program to characterize the surface water and storm water drainage in the Study Area. In coordination with DOE, Putah Creek should be characterized upstream of the LEHR site, near the LEHR site, and immediately downstream of the LEHR site. The surface water and sediment characterization program shall include, as appropriate, but not be limited to the following activities and information:

a. Description of the water bodies including:

i) For Putah Creek: location, elevation, flow, velocity, depth, width, seasonal fluctuations, and flooding tendencies (i.e. 10, 50, 100 and 500 year flood events, as appropriate); and

ii) Drainage patterns.

b. Description of the chemistry of the natural surface water and sediments. This

includes determining, as appropriate, the pH, total dissolved solids, total suspended solids, BOD, COD, alkalinity, conductivity, dissolved oxygen profiles, nutrients, total organic carbon, specific contaminant concentrations including federal priority pollutants, etc.

c. Description of the sediment characteristics including:

i) Deposition area (including distance downstream and flood plain/bank deposition);

ii) Thickness profile;

iii) Physical and chemical parameters including grain size, density, organic carbon content, pH.

B. Source Characterization

For the UCD OUs, collect analytical data as needed to supplement and verify existing data to completely characterize and designate the wastes and areas where wastes have been placed, collected or removed including: type; quantity; physical form; disposition; and other characteristics affecting release. This shall include quantification of the following specific characteristics at each source area:

1. Disposal or release area characteristics including: location, design features, operating practices, period of operation, age of area, and general physical conditions.

2. Waste characteristics

a. Type, quantity and chemical composition of wastes placed in the area, including degradation and reaction byproducts.

b. Physical and chemical characteristics of the waste.

c. Migration and dispersal characteristics of the waste including: sorption, biodegradability, hydrolysis rates and chemical transformations.

d. Bioavailability of the wastes.

C. Contamination Characterization

Collect analytical data as needed to supplement and verify existing data on background conditions and contamination in groundwater, soils, surface water, and sediment, in the Study Area. This data shall be sufficient to define the extent, origin, direction, phase, and rate of movement of contaminants. Data shall include time and location of sampling, media sampled, concentrations found, conditions during sampling, and the identity of the individuals performing the sampling and analysis. Address the following types of

contamination in the Study Area:

1. Groundwater contamination including: the horizontal and vertical extent of groundwater contamination, direction of hazardous substance (contaminant) movement, velocity of contaminant movement, horizontal and vertical concentration of the indicator parameters of all possible hazardous and dangerous waste constituents, identification and characterization of discharge pathways from groundwater to surface water, evaluation of factors affecting contaminant movement, and extrapolation of future contaminant movement.

2. Soil contamination including: vertical and horizontal extent of contamination, contaminant concentrations, velocity and direction of contaminant movement, a description of the contaminant and soil chemical properties and interaction, and potential impacts on other media such as groundwater.

3. Surface water and sediment contamination including: the horizontal and vertical extent of contamination, direction of contaminant movement, velocity of contaminant movement, horizontal and vertical concentration contaminants, evaluation of factors affecting contaminant movement, description of the chemistry of the contaminant and surface water or sediment properties and interaction, and extrapolation of future contaminant movement and fate through modeling.

4. Estimate of overall quantity of wastes and contaminants released over time.

D. Receptor Identification and Risk Assessments

1. Site-Wide Human Health Risk Assessment

Perform a site-wide human health baseline risk assessment in accordance with EPA's Risk Assessment Guidance for Superfund, Human Health Evaluation Manual (Interim Final, December, 1989, EPA 540-1-89-002) and with EPA's Risk Assessment Guidance for Superfund Part D: Standard Planning, Reporting, and Review of Superfund Risk Assessments (currently without an EPA document number, but available on the EPA homepage at http://www.epa.gov and scheduled for hard copy release by April 1998). In addition, the human health risk assessment should utilize the most current US EPA Region 9 Preliminary Remediation Goals (PRGs) (available on the Region 9 homepage at http://www.epa.gov/region9/ or by faxing Dr. Stan Smucker at 415-744-1916). The risk assessment should also make use of an EPA document now in public review, Community Participation in Superfund Risk Assessments Supplement to RAGS (available by faxing Dr. Sophia Serda at 415-744-1916). The work plans, Study Area conceptual model, list of contaminants of concern, list of potential receptors and sensitive populations, and all other components of the risk assessment should be approved by EPA in a phased approach. It is particularly critical that all field sampling plans for data to be used for human health risk assessment be approved by EPA prior to any mobilization in the field. The study will include a program to identify the potential exposure pathways in the surface waters, sediment and soils characterized above and in terrestrial areas potentially impacted by run-

off or sediment transport from the LEHR Site. The program shall include:

a. Gather and analyze relevant data and data quality from the entire LEHR site, including UC Davis and DOE OUs;

b. Identify potential chemicals of concern and bioavailable chemical species;

c. Collect qualitative and quantitative toxicity information for the chemicals of concern and specific species of the chemicals, particularly bioavailable forms;

d. Determine appropriate toxicity values;

e. Identify potential exposure pathways and exposed populations;

f. Estimate exposure concentrations and contaminant intakes for pathways;

g. Characterize potential for adverse health effects (cancer risks and non-cancer hazard quotients);

h. Evaluate uncertainty.

2. Site-Wide Ecological Risk Assessment

Perform a site-wide ecological risk assessment according to the Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments (Interim Final, June 1997, EPA 540-R-97-006). The work plans, Study Area conceptual model, list of contaminants of ecological concern and bioavailable forms of the chemicals, list of ecological receptors, and all other components of the ecological risk assessment should be approved by EPA in a phased approach. It is particularly critical that all field sampling plans be approved by EPA prior to any mobilization in the field. The ecological study will include a program to identify the potential biological receptors (including benthic and aquatic fauna and plants) in the surface waters characterized above (upstream of the LEHR Site in Putah Creek) and in terrestrial areas potentially impacted by run-off from the LEHR Site. The program shall include:

a. Identification of the species present, including species identified as threatened or endangered by Federal or State agencies, and of critical habitats such as wetlands;

b. Estimate of population of all threatened and endangered species;

c. Selection of ecological receptors;

d. Selection of assessment and measurement endpoints.

Task 4: Feasibility Study

Conduct a Feasibility Study (FS) and prepare a Remedial Investigation/Feasibility Study Report (either separate or combined).

The FS will serve to evaluate the feasibility and effectiveness of implementing alternative remedial actions. It shall include:

A. Detailed identification of contamination to be remediated and physical hazards to be removed;

B. Identification of remedial action alternatives that will protect human health and the environment by eliminating, reducing, or otherwise controlling risks posed though each exposure pathway and migration route. The number and types of alternatives to be evaluated shall take into account the characteristics and complexity of the facility. A phased approach for evaluation of alternatives may be required for certain facilities, including an initial screening of alternatives to reduce the number of potential remedies for the final detailed evaluation. The final evaluation of remedial action alternatives that pass the initial screening shall be evaluated for compliance with the requirements in (40 CFR 300.430[e][9]). The Feasibility Study should specifically evaluate the potential impact on the ecological receptors for each remedial alternative for contaminants in water, sediment and surface soils as the final task of the ecological risk assessment.

   Specifically each alternative must be assessed for:

   1. Overall protection of human health and the environment;

   2. Compliance with all applicable or relevant and appropriate federal, state and tribal laws and regulations;

   3. Long term effectiveness and permanence;

   4. Reduction of the toxicity, mobility, or volume through treatment;

   5. Short-term effectiveness;

   6. Implementability

   7. Cost;

   8. State acceptance;

   9. Community acceptance.

C. An evaluation of alternatives based on the nine criteria specified above;

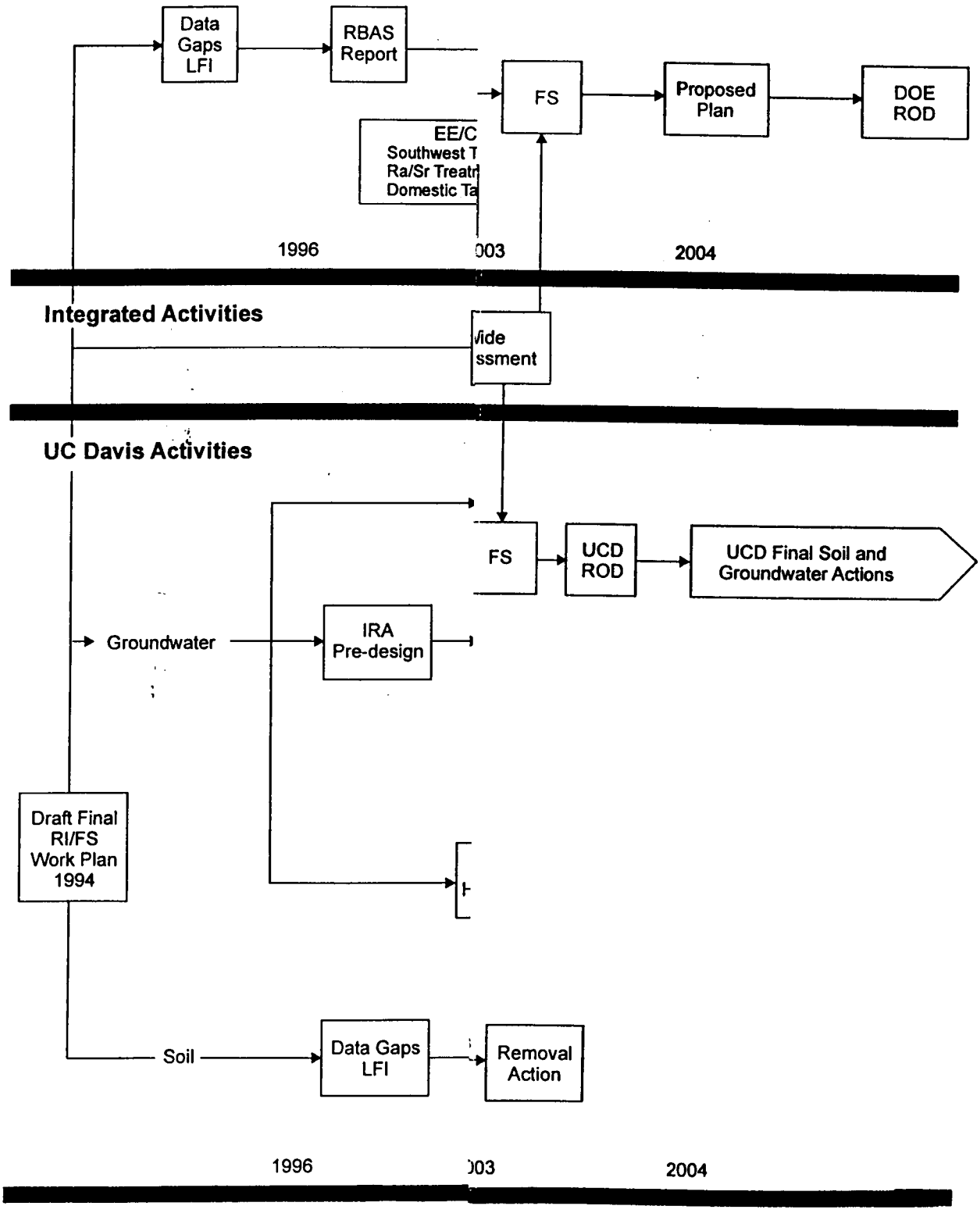
D. A comparison of the alternatives based on the nine criteria specified above.

C. Schedule of Deliverables

Although Respondent may issue the final RI and FS as a single report, interim deliverables shall be submitted in order to provide EPA an opportunity to review and comment on the work in progress.

Task	Deliverable	Due Date
1	Addendum to RI/FS Work Plan (Data Summary and Data Gaps Report)	90 days past EPA approval of UCD soil or groundwater investigation submittals (Appendix A).
2.4	Addendum to Data Management Plan (Data Integration Strategy Report)	October 30, 1999
3	RI Report for UC Davis OUs	According to schedule contained in Addendum to RI/FS Work Plan, as approved by EPA
3	Site-Wide Risk Assessment	90 days past receipt of DOE risk assessment summary currently scheduled for July 15, 2002.
4	FS Report for UC Davis OUs – screening of alternatives	90 days past EPA approval of final Site-Wide Risk Assessment.
4	FS Report for UC Davis OUs – detailed analysis and comparison of alternatives	60 days past EPA approval of final FS screening alternatives submittal.

PROPOSED LEHR/SCDS CERCLA PR



Draft - for discussion purposes only

Soil OUs include:

Waste Burial Holes
Eastern Trenches
Southern Trenches
Land Fill Units 1, 2, 3

EXPLANATION

1. Main building (H-213)
2. Cellular Biology Laboratory (H-294)
3. Co-60 Annex (H-290)
4. Co-60 Building (H-229)
5. Specimen storage (H-216)
6. Animal Hospital No. 1 (H-219)
7. Animal Hospital No. 2 (H-218)
8. Geriatrics Building No. 1 (H-292)
9. Geriatrics Building No. 2 (H-293)
10. Small Animal Housing (H-296)
11. Storage space (H-300)
12. Maintenance shop (H-212)
13. Toxic Pollutant Health Research Laboratory (H-299)
14. Reproductive Biology Laboratory (H-215)
15. Occupational and Environmental Medicine Building (H-289)
16. Inter-Regional Project No. 4 (H-217)
17. Western Dog pens
18. Eastern Dog pens
19. Southwest Trench Area
20. DOE Disposal Box (removed)
21. Location of former Imhoff building (H-214), strontium-90 and radium-226 leach fields and the radium-226 waste tanks, Imhoff storage tanks
22. Cobalt-60 irradiation field

DT-1 Septic Tanks

DOE Known or Suspected Contamination Area

UC Davis Known or Suspected Contamination Area

DT-1 DT-2 DT-3 DT-4 DT-5 DT-6 DT-7

LEHR FACILITY BOUNDARY

UCD Trench disposal area

UCD Landfill No. 2

UCD Landfill No. 1

UCD Landfill No. 3

UCD Trench Disposal Area

Raptor Center

Putah Creek

N

0 150 ft

Approximate scale

Appendix A. Known or Suspected Contamination Areas, LEHR/Old Campus Landfill, UC Davis, California

Weiss Associates

4004-002.ai