

**Draft Current Conditions Report  
University of California, Richmond Field Station Site  
April 2, 2007**

**Draft Response to Comments  
Department of Toxic Substances Control, October 18, 2007**

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LN GC 1	General Comment		The CCR should include an up to date hydrogeological conceptual model that is supported by available site data including boring logs, cross sections, and maps illustrating geologic and hydrogeologic features. The distribution and extent of major contaminant types should be illustrated on maps and cross sections in addition to ground water elevation contours and flow directions in both the upper and lower horizons. Ground water occurrence, sample intervals and analytical results as well as surface features and potential source areas should be illustrated. These data and interpretations should be provided within the CCR or compiled as an appendix rather than as references. The same data will be needed to support the pending ground water monitoring program. If the data are not available to prepare the requested maps, cross sections, etc. the lack of information should be identified as a data gap.	The CCR will be revised to include a summary of existing hydrogeologic information. This information will be presented as a new section or appendix.  Additional hydrogeologic information will be collected during implementation of the upcoming Groundwater Monitoring Plan.
LN GC 2			The ground water flow direction and distribution/extent of contamination along the Zeneca boundary area should be determined and monitored in all contaminated intervals.	It is UC Berkeley's understanding that CSV and Zeneca continue to perform quarterly monitoring and reporting of groundwater quality and flow direction along the boundary of the RFS and the Campus Bay sites. In addition, CSV and Zeneca's consultant has recently performed investigations along this property boundary. Current data from these activities will be included in the revised CCR.
LN GC 3	1.1.2.2		The former tram line used by the California Cap Company needs to be described in more detail. If the tram line was constructed and maintained similar to railroad lines, they will need to be investigated and should be identified as a data gap.	UC Berkeley will assemble and review available historical information regarding the construction and maintenance of the former Cap Company tram lines and revise the CCR as appropriate.
LN GC 4	ES 5		Additional investigation of the Bulb Area is needed as the previous samples were primarily analyzed for metals. As the Bulb Area was used as a landfill, additional sampling needs to be conducted for a wider range of chemicals.	Section 3 of the draft CCR had identified the Bulb area as a data gap and further investigation of this area will be recommended in the Field Sampling Workplan.
LN GC 5			Groundwater total dissolved solid (TDS) concentrations need to be collected from future groundwater monitoring wells.	Groundwater sampling for TDS will be included in the scope of the upcoming Groundwater Monitoring Plan.

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LN GC 6			As volatile organic compounds (VOCs) have been detected in groundwater, soil gas sampling needs to be conducted at the site. If additional VOC contamination is detected additional soil gas sampling will need to be conducted.	It is UC Berkeley's understanding that groundwater conditions along the property boundary will be addressed by CSV and Zeneca as a part of the ongoing investigation and cleanup program
LN GC 7			A test pit associated with the California Cap Company was identified on the figures. Further investigation of this area should be proposed to determine whether unexploded munitions or explosive residues are present. The text also needs to clarify the types of shells manufactured by the former California Cap Company.	<p>Pyrite cinders and cinder-affected soils were excavated from the area of the test pit as part of the remedial activities performed in Area of Concern 2 during the site remediation activities performed in September 2004 and as described in Section 3.2.4 of the Phase 3 Implementation Report. Approximately 30 cubic yards of cinders and cinder-affected soil were excavated from an area of 10 feet wide by 10 feet deep as part of this activity. During the excavation, a wooden vault containing cinders to a depth of 6 feet was excavated within this area. The excavation was backfilled with clean soil.</p> <p>UC Berkeley will assemble and review available historical information regarding the types of shells manufactured at the California Cap Company, and revise the CCR as appropriate.</p>
LN GC 8			Building 482 was identified as being used for asphalt testing. An investigation of semi-volatile organic compounds (SVOCs) and metals should be conducted at this building.	The asphalt testing in Building 482 consisted of limited, small scale testing of asphalt cores within a closed building. This research was performed on a concrete pad and there are no indications from any other sources that a spill has occurred; therefore, no further investigation of Building 482 is warranted.
LN GC 9	1.1.4.5 or 2.1.1		Building 470 was identified as containing the Forest Products Research furnace. The uses of the furnace should be further discussed.	The CCR will be revised to state that the Forest Products Research furnace was part of a pyrolysis gasification laboratory apparatus used to experiment on converting wood products into ethanol.
LN GC 10	1.1.4.5		The chemicals associated with the match head manufacturing should be discussed.	UC Berkeley will assemble and review available historical information regarding chemicals associated with any match head manufacturing at the RFS site, and revise the CCR as appropriate.

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LN GC 11			Building 197 was identified as an area of concern in the 1989 Environmental Assessment (Ensco Environmental Services, Inc.). An area south of a fuel pump island contained 40 55-gallon drums and 5-gallon containers of waste oil. This area as well as the fuel pump island and any underground piping should be identified and investigated.	<p>As described in CCR Section 1.1.4.5, the fuel pump island and tank T-57 were excavated and removed under the supervision of the Contra Costa County Health Services Department inspector. During the excavation, soil samples were collected and analyzed. At this time, the 55-gallon drums, containing Tremco roofing material, were removed from the property by a contractor and disposed of in accordance with waste disposal regulations. None of the drums exhibited rusting or any deterioration, and no spills or staining were noted.</p> <p>There are no indications from any other sources that a spill has occurred; therefore, no further investigation is warranted.</p>
LN GC 12			The 1989 Environmental Assessment also states that improper storage of 55-gallon drums was observed outside of Buildings 118, 121 and 150. These areas need to be identified as a data gap and investigated.	The 1989 Environmental Assessment noted improper storage, but did not note any indication of spills or releases. There is no indications from any other source that a spill has occurred. Therefore, no further investigation of these areas is warranted.
LN GC 13			An area of disturbed soil is located west of the U.S. EPA laboratory, but is not discussed in the CCR and does not appear to have been previously investigated. The lack of soil, soil gas, and grab ground water sampling should be identified as a data gap.	The area of disturbed soil is excess soil excavated during construction of the EPA Laboratory. UC Berkeley will assemble and review available information regarding the origins of the disturbed pile and revise the CCR as appropriate. If the review indicates that no release has occurred or that the materials are not suspect, then further investigation of this area is not warranted.
LN SC 1	ES-1, 1.0		These sections should clarify that DTSC's Order did not include the "outboard" areas of the Richmond Field Station (RFS), and the acreage of the entire RFS and areas covered by the DTSC Order should be clarified.	<p>The CCR will be revised to clarify that the "outboard" areas are not included in the Order and to clarify the acreage of the entire RFS, and the acreage covered by the DTSC Order. Text will clarify the acreages of the Upland, Transition, Western Stege Marsh, and Outboard Marsh areas. Revised text will state:</p> <p>"The 152 acre property consists of 96 acres of uplands used for academic institutional activities, approximately 7.5 acres of tidal salt marsh, 5.5 acres marsh edge habitat and transition area, and approximately 43 acres south of the Bay Trail, known as the outboard area, and consisting of tidal mud flats, marsh, and open water."</p> <p>"This Current Conditions Report provides a comprehensive summary of current conditions at the RFS in accordance with the DTSC Order, including the 96 acres of upland and 13 acres of tidal marsh. The Order does not apply to the 43-acre outboard area."</p>

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LN SC 2	ES-4	3	"The area of the former California Cap Company's mercury fulminate manufacturing plant, known as AOC 7, contains elevated concentrations of mercury in soil and groundwater." The text should state that in addition to mercury, arsenic, cadmium, copper, lead and zinc were identified at elevated concentrations at the former mercury fulminate facility.	The CCR will be revised as follows:  "The soil in the area of the former California Cap Company's mercury fulminate manufacturing plant, known as Area of Concern 7, contains elevated concentrations of mercury, arsenic, cadmium, copper, lead, and zinc. One groundwater sample from monitoring well MW-1 installed in 1990 (since removed during previous remedial activities) showed no evidence of mercury contamination (detection limit 0.001 mg/L)."
LN SC 3	ES-4	4	"Former FPL Wood Treatment Laboratory (WTL): A small localized area of soil containing elevated concentrations of arsenic was identified during removal of surface equipment associated with the former WTL." The text should be revised to state that in addition to arsenic, chromium, copper, and pentachlorophenol were identified at elevated concentrations at the former WTL.	The CCR will be revised as follows:  "A small, localized area of soil containing elevated concentrations of arsenic, chromium, copper, and pentachlorophenol was identified during removal of surface equipment associated with the former WTL facility. UC Berkeley performed a Time Critical Removal Action in this area in October 2007 with the approval of and under the oversight of DTSC. Approximately 140 cubic yards (in situ volume) of affected soil were excavated and placed in covered bins and transported off site in November 2007 as non-hazardous waste. All confirmation sample results were below the cleanup levels. No further investigation is warranted in this area."
LN SC 4	ES-4	5	Please clarify that the pyrite cinders typically contain elevated concentrations of arsenic, cadmium, copper, lead, nickel and zinc.	The CCR will be revised to state that pyrite cinders typically contain elevated concentrations of arsenic, cadmium, copper, lead, mercury, nickel, and zinc.
LN SC 5	ES-5	1	Biologically Active Permeable Barrier (BAPB): "The BAPB was installed between the ground surface and a depth of 20 feet to treat any residual dissolved metals in groundwater that may be migrating to the marsh." The text should clarify that ground water at depths greater than about 20 feet bgs will not be treated by the BAPB, and that metals contaminated ground water occurs at depths greater than 20 feet bgs on adjacent property and potentially on the field station. The CCR should identify as a data gap that the horizontal and vertical distribution of metals contaminated ground water has not been determined.	The text will be revised to clarify that it is UC Berkeley's understanding that metals-contaminated groundwater occurs at depths of greater than 20 feet bgs on the adjacent property and potentially on the RFS, and that CSV and Zeneca have not yet fully delineated the horizontal and vertical distribution of metals contaminated groundwater or determined their source.  UC Berkeley believes that the hydrology of the RFS site may not be fully understood and will investigate the groundwater flow on the RFS portion of the site as a part of the upcoming Groundwater Monitoring Plan.

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LN SC 6	ES-5	1	"UC Berkeley has developed a groundwater monitoring program to monitor the effectiveness of the BAPB wall and to monitor the groundwater quality in the Transition Area. The groundwater monitoring plan will be implemented in 2007." Implementation of the monitoring program should not begin until DTSC has reviewed and concurred with the proposal.	The CCR will be revised to include the following text:  "The groundwater monitoring plan will be implemented after DTSC has reviewed and approved the plan."
LN SC 7	ES-5	2	The text states that "Elevated concentrations of several metals have been identified in the vicinity of this area." The specific metals that were identified at elevated concentrations should be added to the text.	The CCR will be revised as follows:  "Elevated concentrations of arsenic and lead have been identified in the vicinity of this area."
LN SC 8a	p.2, 1.1.1		"Between the late 1800s and 1948, several companies, including the California Cap Company, manufactured explosives at the RFS." Pages 6 and 7 and Page 9 report the onsite manufacturing of "blasting caps, shells, and explosives". Page 10 of the CCR refers to several explosions that occurred during controlled burns at the field station. Although the text includes this information, it does not appear that sampling for explosive compounds has been completed at the field station. According to Table 7, Summary Statistics for Upland Area Soil, only three samples were analyzed for explosives. An internet search located the following indications that munitions other than blasting caps were manufactured on the property. [Internet search results not included in this chart.] Based on the above information and lack of records, the University should identify the lack of soil and ground water sampling and analysis for explosives compounds and perchlorate as a data gap.	The Cap Co. did maintain a test pit, which was included in Area of Concern 2 and excavated during Phase 3 of the Remediation Action Plan.  The CCR will be revised to include updated information regarding a 1900's explosion near the Dry House (former Building 55) in the western upland area. The CCR will be revised to state that the area will be proposed for further evaluation in the upcoming Field Sampling Workplan. Perchlorates will also be included in the list of analytes for this site.  There is no indication from prior investigations or field observations of the presence of artillery or other ammunition shell casings or metal filings typical of munitions manufacturing.  It is UC Berkeley's understanding that mercury fulminate was a primary component of all detonation and explosive manufacturing. Therefore, mercury can be used as an indicator regarding possible releases from explosives. No current data suggests that there is widespread mercury contamination at RFS.
LN SC 8b	p.6, 1.1.2.1	3	Add the available names of companies known to have operated on the property.	The CCR will be revised to include any further available information about the names of companies known to have operated on the property.
LN SC 8c			Clarify to the extent possible what types of explosives and ordnance were manufactured at the former facilities in addition to blasting caps. The CCR mentions the manufacturing of "shells" on site but the types of shells are not described.	Please see UC Berkeley response to Specific Comment 8a.

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LN SC 8d	p.6, 1.1.2.1	4	Amend the CCR as possible to include discussion and comment on site activities for the period leading up to World War II through plant closure and purchase by the University.	UC Berkeley will assemble and review available historical information regarding site activities for the period leading up to World War II through plant closure, and revise the CCR as appropriate.
LN SC 9			Pages 3 and 4, Geology and Hydrogeology. The CCR needs to be amended to include maps and cross sections demonstrating the current understanding of geological and hydrogeological conditions at the field station. The figures should illustrate the subsurface conceptual model and provide support for locations of completed or future sampling and analysis. Refer to general comment, above.	The CCR will be revised to include a summary of existing hydrogeologic information. This information will be presented as a new section or appendix.  Additional hydrogeologic information will also be collected as a part of the upcoming Groundwater Monitoring Plan.
LN SC 10a	p.4, 1.1.1.2	1	Please discuss whether the artificial fill is located in specific areas of the RFS or over the entire site.	The CCR will be revised to note that artificial fill is present only in the Bulb and Transition Areas, in addition to road base and utility backfill.
LN SC 10b	p.4, 1.1.1.2	2	The 1950's wells should be identified as being used for research purposes and not for site characterization.	Section 1.1.1.2, Paragraph 4, second sentence of the CCR will be revised as follows:  "However, as part of a research project in the 1950s, 25 wells were installed in a deeper groundwater zone, to depths of approximately 90 to 100 feet bgs."
LN SC 10c	p.4, 1.1.1.2	4	Indicate which figure identifies the location of the temporary piezometers installed in 2002.	The CCR will be revised as follows:  "In 2002, UC Berkeley installed three additional temporary piezometers in the southeastern portion of the RFS to further evaluate shallow groundwater elevations and flow directions, as shown in Figure 45. These piezometers were removed in February 2006, with DTSC approval and under permit and inspection by the Contra Costa County Health Services Department. "
LN SC 10d	p.4, 1.1.1.2	6	Based on the information presented in this paragraph, it is unclear how groundwater flow direction was determined. Please discuss and provide the data that was used.	The CCR will be revised to clarify how the current groundwater flow direction was determined.  Additional information on site-specific groundwater flow directions will be collected as part of the planned Groundwater Monitoring Plan activities.
LN SC 11a	p. 7 1.1.2.2	1	Please clarify whether Union Pacific Railroad or Santa Fe Railroad constructed the railroad spur that is now part of the Bay Trail. Section 1.1.1.4 previously identified Santa Fe Railroad as constructors of the rail spur.	UC Berkeley will assemble and review available historical information regarding the identity of the company which constructed the former railroad spur, and revise the CCR as appropriate.

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LN SC 11b	p.8 1.1.2.2	1	This section states that fill material was placed to form the railroad spur. The appropriate railroad company should be contacted to determine if Information regarding the source of the fill material is known.	UC Berkeley will make inquiries to the appropriate railroad company to try and determine if information regarding the source of the fill material can be obtained.
LN SC 11c	p.8 1.1.2.2	2	It would be helpful to the reader if the location of the breakwater constructed prior to 1946 was specifically identified on one of the photographs provided in Appendix C. It may also be helpful to identify additional breakwater(s) that were constructed in the immediate area.	The CCR will be revised to identify the breakwater constructed prior to 1946 on the Appendix C photographs. If information is available concerning additional breakwaters in the immediate area, these will also be identified on photographs.
LN SC 12	p. 10 1.1.3	5	It is unclear from the description whether the Building 125 is referred to the original or current location.	The CCR will be revised to clarify the location of Building 125.
LN SC 13	p. 13 1.1.4.1	6, 8	The locations of Buildings 300 and 480 could not be found on a figure. Include the buildings on the appropriate figures.	The CCR will be revised to include available information regarding the locations of Buildings 300 and 480 on appropriate figures.
LN SC 14	p. 16 1.1.4.2	2	Engineering Geosciences Well Field: The lack of information regarding this well field should be identified as a data gap. Information should [sic; probably should be "such"] as boring logs, well construction details, pertinent hydrogeology information collected during the research studies, etc. should be provided.	The CCR will be revised to include a summary of available information regarding the Engineering Geosciences Well Field.
LN SC 15	p.17 1.1.4.3	1,2	Facilities Operations: This section identifies that a sewer line was routed from Building 490 to the former digester and oxidation ponds near Buildings 102 and 106. While the sewer line is no longer used, it is still in place. The line and backfill material should be evaluated to determine whether it may be a source or conduit for contamination.	The sewer line will be investigated will be investigated when the area is redeveloped or land uses change.
LN SC 16a	p. 18 1.1.4.3	4	This section needs to provide additional information regarding the types of equipment present and the activities that occurred at the facility. For example, are vehicle hydraulic lifts present, were solvents used to clean parts, were any oil/water separators present, etc.	The CCR will be revised to include details regarding facility maintenance equipment.

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LN SC 16b	p. 18 1.1.4.3	5	Building 120 is described as the former location of an incinerator. The incinerator has been removed and the building is now called a solvent storage area. The solvent storage area is further discussed on Page 26. According to a 1989 environmental assessment by Ensco Environmental Services, Inc. 20 55-gallon drums containing thinner, kerosene, and other petroleum hydrocarbon products were inside the building and approximately 25 more 55-gallon drums were located outside the building. Spilled product and stained soil and concrete were noted in the report. Investigation of this area (soil, groundwater and soil gas) should be identified as a data gap.	The CCR will be revised to state that the Building 120 area will be proposed for further evaluation in the upcoming Field Sampling Workplan.
LN SC 17a	p. 19 1.1.4.3	4	Pyrite Cinders Management: This section should state that the site-specific target levels (SSTLs) were developed while working with the San Francisco Bay Regional Water Quality Control Board. DTSC will be re-evaluating these values.	The CCR will be revised as follows:  "The site-specific target levels (SSTLs) were developed under the auspices of the San Francisco Bay Regional Water Quality Control Board. DTSC has indicated that DTSC will be re-evaluating these values."
LN SC 17b	p. 19 1.1.4.3	3	Clarify that the Interim Soils Management Plan is applicable to utility and road maintenance construction projects only.	The CCR will be revised to provide additional detail on the scope of the Interim Soils Management Plan. Revised text will state:  "UC Berkeley has developed an interim Soils Management Plan (SMP) to provide protocols when workers disturb subsurface soils, such as during utility and road maintenance projects and landscaping projects in the Uplands and Transition Areas. The SMP provides a protocol to develop a site-specific sampling plan if excavation is required as part of a new building project. (Tetra Tech EM Inc. 2007a)."
LN SC 18	p. 19 1.1.4.4	5	Other Non-UC Tenants: This section states that releases from Stratacor are unlikely due to their small operation. If hazardous substances are used by this company, they should be identified along with the volumes used, storage methods, and method of disposal.	UC Berkeley will ask Stratacor and other tenants about its use of any hazardous substances, and revise the CCR as appropriate.
LN SC 19a	p. 23 1.1.4.5	2	Identify when the current aboveground storage tanks were installed and if they were replacement tanks. Also the condition of the tanks and the surrounding areas should be described (e.g., any staining, dead or stressed vegetation, etc.)	The CCR will be revised to include information regarding the current aboveground storage tanks and the condition of the surrounding areas.



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LN SC 19b	p. 23 1.1.4.5	3	Drums of hydraulic oil, motor oil, kerosene and waste oil are identified as being stored in Building 280. The figures identify a Building 280A and 2806. Please clarify which building(s) are used to store drums.	The CCR will be revised to clarify the locations of the drum storage.
LN SC 20	p. 25 1.1.4.5	5	Aboveground Storage Tanks and Drums: The year the tanks were installed should be identified as well as the condition of the tanks and the surrounding area (e.g., staining, dead or stressed vegetation, etc.).	The CCR will be revised to include information regarding aboveground storage tanks and the condition of the surrounding areas.
LN SC 21a	p. 26 1.1.4.5	2	PCB Transformers: This section identifies the removal for disposal or retrofitting, and stockpiling of PCB-bearing equipment. The text also states that capacitors were temporarily staged at Building 280, but does not identify the specific location where these activities occurred. These activities occurred during the late 1980's and early 1990's. No records indicate that spills occurred. The stockpiling location should be identified and provided on a figure.	The CCR will be revised to include available information regarding the specific locations where two transformers were temporarily stored.
LN SC 21b	p. 26 1.1.4.5	2	The lack of soil sampling and analysis for PCBs should be identified as a data gap at the stockpiling location.	Two transformers were temporarily placed on a concrete pad within Building 280B. There is no visible staining, and there is no information from any other source indicating that spills occurred in this area. As a result, UC Berkeley does not believe sampling for PCBs is warranted at this time. This area will be investigated when it is redeveloped or land uses change.
LN SC 21c	p. 26 1.1.4.5	2	The lack of soil sampling and analysis for PCBs should be identified as a data gap at the locations where transformers were retrofitted.	The transformers were either replaced in their entirety or refilled by a licensed contractor at the transformer locations. There is no indication from any source that any spills occurred during this process. Thus, UC Berkeley does not agree that sampling is warranted at this time in the areas where transformers were retrofitted. These areas will be investigated when they are redeveloped or land uses change.

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LN SC 22	p. 26 1.1.4.5	3	Storage of Chemicals and Hazardous Materials: Buildings 106, 111, 114, 120, 125, 138, 150, 175, 280, 470, 474, and 478 were identified as being used for storage of chemicals and chemical waste. As these areas have not been previously investigated, they should be identified as a data gap.	<p>UC Berkeley agrees that Building 120 warrants further evaluation, and it will be identified as a data gap in the revised CCR. Building 106 was demolished and removed prior to Phase 1 remediation (2002), and no contamination was detected in surveys for radioactive and hazardous materials at the time of the demolition. All soil from under Building 106 was excavated and removed during the Phase 2 remediation activities (2003).</p> <p>UC Berkeley does not agree that the other buildings listed should be identified as data gaps. As described in Section 1.1.4.5, Historical UC Berkeley Management of Chemicals and Radioactive Materials, oversight of hazardous and radiological materials management has been extensive. Such oversight has included scrutiny by the campus Office of Environment, Health &amp; Safety and by numerous regulatory agencies. In addition, numerous site assessments have been completed by independent environmental consultants since the 1980s.</p> <p>Because there is no indication from any source that there have ever been releases from UC Berkeley hazardous materials use and storage in these locations (that have not already been addressed), any assessment of these buildings can be conducted at the time of redevelopment or change in land use.</p>
LN SC 23	p. 28 1.1.4.5	2	Additional Sampling for Radiological Materials: The report states that the data results were within expected background levels. The method used to identify background levels should be described as well as the actual background levels.	The CCR will clarify the determination of background levels evaluated in the report.
LN SC 24	p. 33 1.1.5.1	1	Historical Releases in the Vicinity of the RFS: This section states that a pesticide release occurred near the front gate of the RFS. Additional information should be included, such as the date of the spill, whether a cleanup occurred, sample results, the specific pesticide involved, etc.	UC Berkeley will assemble and review available information regarding the pesticide spill, and revise the CCR as appropriate.
LN SC 25	p. 38 1.1.5.4	2	Liquid Gold: The Richmond Sanitary District should be contacted to verify the statements contained in this section with regards to the sanitary and storm drain lines.	UC Berkeley will contact the Richmond Sanitary District to verify the statements regarding the sanitary and storm drain lines, and revise the CCR as appropriate.

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LN SC 26	p. 45 1.2.1.5	3	Human Health and Ecological Tiered Risk Evaluation: This section states that for upland AOCs 1 through 6, the previous risk assessment recommended surface excavation or capping to eliminate potential exposure pathways. Please clarify whether capping was implemented as a remedy for any of the AOCs identified.	The text in Section 1.2.1.5 was provided as an historical summary of the results of the multi-tiered risk assessment performed by URS in 2001. Capping was not implemented as a remedy for any of the Areas of Concern identified in the text. All material has been excavated and disposed of at off-site locations. The CCR will be revised to include a sentence at the end of the paragraph which states: "Section 1.2.2 provides a summary of the remedial activities that have been performed at the RFS to date."
LN SC 27	p. 64 1.3.4.1	1	Metals, first paragraph: This paragraph states that the mechanism responsible for the elevated levels of metals in the eastern portion of the marsh is not fully understood and needs further investigation. The need for the investigation should be identified as a data gap.	The CCR will be revised to include the evaluation of metals in the eastern portion of the marsh as a data gap.
LN SC 28	p. 71 1.3.7.1	4	Extent of Chemicals in Shallow-Zone Groundwater, last paragraph: The groundwater sample locations identified in this paragraph are not identified on Figure 46. Please revise the figure or reference.	The CCR will be revised to eliminate reference to these sample results and locations as they do not represent current conditions.
LN SC 29	p. 75 1.3.7.1	3	Pesticides and PCBs in Shallow-Zone Groundwater: Please specify whether the samples were filtered or unfiltered.	The CCR will be revised as follows: "Four unfiltered samples were analyzed for pesticides and five unfiltered samples were analyzed for PCBs from the shallow-zone groundwater at RFS."
LN SC 30	p. 78 2.2.1	3	Potential Sources: The Richmond Sanitary District should be contacted to verify the historical descriptions provided regarding the sewer lines.	UC Berkeley will contact the Richmond Sanitary District to attempt to verify the historical descriptions provided regarding the sewer lines, and revise the CCR as appropriate.
LN SC 31	p. 82 2.2.1	3, 4	Metals, This section includes a discussion of the effects of acidic pH levels on metals in sediments. The discussion should also include the impact of elevated pH levels on metals, in particular arsenic.	The CCR will be revised to include available information regarding the impact of elevated pH levels on metals, and on arsenic in particular.
LN SC 32	p. 83 2.2.1.1	3	Mercury: Please state whether the mercury fulminate present at AOC 7 is an explosive hazard if subject to shock, impact, friction, spark or flame.	The CCR will be revised to include available information regarding the explosive hazards of the mercury fulminate present at Area of Concern 7.

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LN SC 33	p. 86 2.2.1.4	3	Lead: This section identifies potential sources of lead at the site, which includes manufacturing of shells and blasting caps and leaded paint. It does not appear that all manufacturing areas were evaluated to determine if elevated levels of lead are present in these areas. These areas should be identified as a data gap.	The CCR will clarify that leaded paint was not manufactured on site.  The comprehensive sampling data collected at RFS does not indicate that additional sampling for lead is warranted at this time. Therefore, UC Berkeley does not concur that these areas should be identified as a data gap. These areas will be investigated when they are redeveloped or land uses change.
LN SC 34	p. 92 2.4.1		Human Receptors and Exposure Pathways: It is unclear whether workers who are non-UC employees were considered as receptors.	The CCR will be amended to clarify that all workers present within the RFS facility are considered receptors, not solely UC Berkeley employees.
HERD GC A			The report notes that both a human health and ecological risk assessment was performed for the site in 2001. Hazard to ecological receptors was assessed for both West Stege Marsh and the uplands of the site. Unfortunately, the report discusses the ecological risk assessment only in general terms and does not describe which of the uplands were included in the ecological risk assessment. The locations of documented and suspected releases of chemicals of potential ecological concern (COPECs) are not uniform across the site, and this is reflected in the soil and sediment sampling locations shown on Figure 18. The HERD does not believe it can adequately assess the risk to ecological receptors in the uplands, because the extent and location of habitat is not specified.	UC Berkeley will assemble and review available information regarding (1) the portions of the upland areas included in the ecological risk assessment, and (2) the extent and location of habitat in the uplands. The CCR will be revised as appropriate.
HERD GC B			The HERD recommends the addition of a section under previous investigations or history describing any past significant re-grading efforts that may have changed the final grade in the upland area that will need to be considered in determining future soil sample depths to characterize releases from past activities.	UC Berkeley will assemble and review available information regarding past significant re-grading efforts and revise the CCR as appropriate.
HERD GC C			The following specific comments are divided into two parts. The first set of specific comments addresses ecological concerns of the HERD as they relate to the current conditions report. The second set addresses human health concerns associated with the current site characterization dataset.	

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EHSC 1	p. 2 1.1.1	5	<p>Site Description: The total acreage for the site would seem to be 11 1.5 acres (i.e., 96-acres of upland, 6.5-acres identified as the transitional area, and 9-acres consisting of West Stege Marsh). However, Appendix E (Technical Report: Summary of PCB Results, Richmond Field Station, University of California, Berkeley, Richmond, California) describes the total area as being 150-acres. The discrepancy is apparently accounted for by the inclusion of 60-acres of tidal mud flats, marsh and open water located south of the East Bay Regional Parks District's (EBRPD) Bay Trail. Aside from the reference contained in Appendix EI HERD did not find any other references to that portion of the property south of the bay trail in the Current Conditions Report. The report should include a description of this portion of the site and include a statement about past or current investigations in this area, even if the statement is to say that there have been no investigations.</p>	<p>The CCR will be revised to clarify that the "outboard" areas are not included in the Order and to clarify the acreage of the entire RFS, and the acreage covered by the DTSC Order. Revised text will state:</p> <p>"The 152 acre property consists of 96 acres of uplands used for academic institutional activities, approximately 7.5 acres of tidal salt marsh, 5.5 acres of marsh edge habitat and transition area, and approximately 43 acres south of the Bay Trail, known as the outboard area, and consisting of tidal mud flats, marsh, and open water."</p> <p>"This Current Conditions Report provides a comprehensive summary of current conditions at the RFS in accordance with the DTSC Order, including the 96 acres of upland and 13 acres of tidal marsh. The Order does not apply to the 43-acre outboard area."</p> <p>UC Berkeley does not propose to include further discussion of the outboard area within the CCR, since it is not within the scope of the CCR or DTSC Order.</p>
EHSC 2	p. 9 1.1.3	3	<p>California Cap Company History: It would help the readability of the report greatly if the location of buildings and associated structures would be referenced to a figure the first time they are mentioned in the text. For example, both the California Cap Company and the U.S. Briquette Company are mentioned but are not referenced to a figure. This is a global comment that should be applied throughout the report.</p>	<p>The CCR text will be revised to clarify where buildings may be found on figures.</p>
EHSC 3	p. 17 1.1.4.3	1	<p>Facilities Operations, Utilities, paragraph at top of page. The report should reference the former tile sewer line that runs under the California Cap Company facility and discharged to the San Francisco Bay to a figure in the report. The sewer line could have served as a preferential pathway for site related contaminants.</p>	<p>The CCR will be revised to clarify the figure on which the former sewer line can be found. Revised text will state:</p> <p>"At the time that UC Regents purchased the RFS property, the sewer lines were constructed of 8-inch tile piping, with the main line running through the center of the former California Cap Company facility (see Figure 5)."</p>

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EHSC 4	p. 43 1.2.1.2	5	Field Sampling and Analysis Plan and Tiered Risk Evaluation, fifth paragraph. The HERD does not agree with a 10 times dilution of groundwater samples when comparing them to ambient water quality criteria. Groundwater entering the bay or the marsh through marine sediments is considered to be undiluted until it enters the surface water. Therefore, benthic organisms living in the sediments are assumed to be exposed to the measured concentration. The dilution is not allowed in order to protect the benthic invertebrate community.	Comment noted. Revised ecological screening levels will be proposed for DTSC approval in the upcoming Field Sampling Workplan.
EHSC 5	p. 43 1.2.1.2	6	Field Sampling and Analysis Plan and Tiered Risk Evaluation, sixth paragraph. Please indicate if the additional site characterization for PCBs at the western storm drain was completed, and, if so, present the results.	PCBs at the western storm drain area were remediated during Phase 2 as area M1a, as presented in CCR Section 1.2.2.2.
EHSC 6a	p. 45 1.2.1.5	3	Human Health and Ecological Tiered Risk Evaluation: The discussion concerning areas of concern (AOCs) in the text for both the West Stege Marsh and the upland areas of the field station should be referenced to a figure. As far as the HERD could discern, there are no illustrations of the West Stege Marsh AOCs on any figure contained in the report. There are many figures showing Phase I and Phase II excavations of sediment from the marsh, but the locations of the AOCs relative to these excavations is lacking and needs to be rectified. The human health and ecological site-specific target levels (H-SSTLs and E-SSTLs) developed in the 2001 Human Health and Ecological Tiered Risk Assessment prepared by URS (Oakland, California) and were used to determine the location and extent of the remedial excavations should be presented in the report. The HERD has reviewed the E-SSTLs and believes that these values need to be reassessed in regards to their use in future risk assessments. Please see specific comment 13 below.	The areas identified in the 2001 report were generalized and do not reflect current understandings of areas of concern in the marsh.  The CCR will be revised to include available information regarding the criteria used to identify the upland and marsh areas of concern and a summary of the development of the human health and ecological screening criteria. This information will be presented as a new section or appendix to the CCR.

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EHSC 6b	p. 45 1.2.1.5	3	The ecological risk assessment limited its evaluation of upland environment to herbivorous mammals and carnivorous birds. Plants and invertebrates were not evaluated and neither were other vertebrate guilds that could have been evaluated quantitatively, including the larval stage of amphibians, herbivorous birds, invertivorous birds, invertivorous mammals or carnivorous mammals. The risk assessment notes that many of these receptors would not occur in managed (landscape) environments, but the Current Conditions Report clearly states that upland habitats consisting of terrestrial grassland, including rare native grassland, coastal scrub, meadows, and seeps (seasonal wetlands not dominated by grasses) exist on site. Therefore, a complete understanding of hazard to ecological receptors at the UC Field Station is not completely understood.	Ecological screening levels will be proposed for DTSC approval in the upcoming Field Sampling Workplan.
EHSC 7	p. 46 1.2.1.6	2	Additional Soil and Groundwater Investigations, Upland Areas, final paragraph of section. In the first two sentences, it is not clear if the report is referring to soil or groundwater. Since the HERD was not involved in the approval of the SSTLs, the HERD believes a discussion about the appropriateness of the SSTLs is warranted, especially if they are being used for site characterization purposes and delineation of the boundaries of the AOCs.	The CCR will be revised to clarify that the report refers to soil samples. Revised text will state:  "The results of the soil samples indicated that various metals exceeded both human and ecological SSTLs at numerous areas of concern in the Upland Area."  The CCR will be revised to include a discussion of the appropriateness of the SSTLs for the purposes of site characterization and delineating the boundaries of the areas of concern.
EHSC 8	p. 55 1.3	5	Summary of Existing Environmental Data, final paragraph of page. Sediment concentrations should be compared not only to the effects range-median (ER-M), but also to the effects range low (ER-L).	The CCR will be revised to include the comparison of sediment concentrations to the effects range low (ER-L).

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EHSC 9a	p. 95 2.4.2	5	Ecological Receptors and Exposure Pathways, second paragraph. The report acknowledges that "In the marsh area, several metals (such as arsenic, copper, and mercury) and PCBs remain in surface sediments at concentrations exceeding criteria protective of sediment-dwelling biota." The report does not offer information concerning remediation of these additional areas of the marsh. The report qualifies the impact to the benthic invertebrates by stating "However current concentrations of most constituents detected in sediments do not exceed the Tier 2 E-SSTL protective of the endangered California clapper rail, except for copper, mercury, and PCBs in localized areas." It is important to understand that benthic invertebrates are an essential component of the food-web and without a healthy invertebrate population, the goal of establishing a long-term, viable, productive habitat, for the California clapper rail, may be unattainable.	Comment noted. Ecological screening levels will be proposed for DTSC approval in the upcoming Field Sampling Workplan.



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EHSC 9b	p. 95 2.4.2	5	<p>The HERD does not believe the methodology for choosing E-SSTLs designed to be protective of the California clapper rail is correct and has doubts that the E-SSTLs are indeed health protective. Page 4-2 of the 2001 West Stege Marsh Ecological Risk Assessment indicates the E-STTLs are based on "LOAEL-based TRVs." A LOAEL is an acronym for lowest observed adverse effect level. The HERD believes that for clean-up purposes it is appropriate to back calculate clean-up numbers (i.e., identified as Tier E-STTLs in this report), but the values should be appropriate for the ecological receptors that the remediation is designed to protect. Impacts to endangered and threatened species, such as the California clapper rail (and the salt marsh harvest mouse), should be reduced to the no-effect level and not to the LOAEL. LOAEL-based toxicity reference values (TRVs) may be based on mid-range effects which may be a point on the dose-response curve where the loss of sensitive individuals of the population may occur. Also, at the lowest observable effect level, sensitive individuals may have reduced vigor and be susceptible to environmental stressors (or predators) that may lead to death. Doses below a LOAEL-based TRVs may be appropriate for protecting populations of non-special status species, where a loss of a few sensitive individuals may not significantly impact the population as a whole. On the other hand, the loss of a single individual from an endangered or threatened species may deleteriously impact that population. Areas of the marsh that have been cleaned up to a LOAEL- based TRV may not be providing sufficient protection for the California clapper rail, or the salt-marsh harvest mouse. Further assessment of those portions of the Marsh that have not been remediated may be indicated to ensure protection of these species.</p>	<p>Comment noted. Ecological screening levels will be proposed in the upcoming Field Sampling Workplan.</p>

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EHSC 10	p. 96 2.4.2	4	Ecological Receptors and Exposure Pathways, first paragraph. Although the report describes the occurrence of upland areas consisting of "terrestrial grassland, including coastal scrub, native grassland, meadows, and seeps (seasonal wetlands not dominated by grasses," the HERD could not locate any figure in the report that identified the features mentioned in Section 2.4.2. Upland habitat such as the coastal terrace prairie located between Buildings 280 and 300 should be discussed in the text and referenced to a figure that shows their location at the site. The report offers little insight concerning possible contamination of these habitat areas. Without visual reference, sampling activities for specific COPECs associated with historical operations cannot be related to the upland habitats. This is an ecological risk assessment data gap.	The CCR will be revised to include a summary of existing information describing the grassland. The location of the upland habitat will be added to a figure and referenced in the text.
EHSC 11	p. 100 2.4.2.3	2	Ecological Receptors, Upland Receptors, second paragraph. The 2001 ecological risk assessment evaluated the California ground squirrel as a representative mammalian receptor. The risk assessment would have benefited from the inclusion of an invertivorous mammal, i.e., a shrew. As a feeding guild, shrews are often the most sensitive vertebrate receptor to environmental contaminants. Future risk assessments of upland habitats should include additional feeding guilds and, in particular, a shrew as a receptor of concern.	Comment noted. Ecological receptors will be proposed for DTSC approval in the upcoming Field Sampling Workplan.
EHSC 12	p. 103 3.0	2	Data Gaps for Richmond Field Station, second paragraph. The HERD did not see any evaluation of VOC exposure of burrowing animals. Evaluation of VOCs should not be limited to human health issues. The HERD has mammalian TRVs available for several VOCs that could be used for comparison to soil gas in burrows.	Comment noted. Ecological receptors will be proposed for DTSC approval in the upcoming Field Sampling Workplan.
EHSC 13	Fig. 23		Fig. 23 – Copper Analytical Results in Soil and Sediment – [Discussion of forward calculation of dose for California ground squirrel.]	Comment noted.

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HHSC 1	Table 1		Table 1: Historical and Current Uses of Buildings; Figure 5 Location of current and former Facilities in the Central Portion of RFS; and Figure 18 Soil and Sediment Sampling Locations and Analytical Groups. Although Table 1 is a very informative table, it appears to be incomplete.	The CCR will be revised to include additional available information regarding current and former facilities.
HHSC 1a	Fig. 5		Figure 5 shows many historical buildings that are not identified in the table. The table should be revised to include the identification and historic use of all former buildings. Several of these historical buildings may have had releases of chemicals to the environment that could pose a potential hazard or risk to receptors.	Figure 5 will be revised to include any additional available information regarding the identification and historic use of all former buildings.
HHSC 1b	Fig. 5		Figure 5 should also be revised to show the location of the former U.S. Briquette Company in the southeastern corner of the site.	The CCR will be revised to include the former U.S. Briquette Company on Figure 5.
HHSC 1c	Fig. 5		The text states that several buildings have been moved over time. The past and current locations of such buildings should be placed on Figures 5 and 18.	Figure 5 shows current information available regarding past and present building locations.
HHSC 1d	Fig. 18		There are current buildings shown on Figure 18 that have not been identified. Please revise the figure and the table to identify all buildings currently on-site, as necessary.	Figure 18 will be revised to identify all buildings currently on site.
HHSC 2	Fig. 18		Figures 5 and 6 Location of Current and Former Facilities ..., and Figure 18 Soil and Sediment Sampling Locations and Analytical Groups. The locations of the former facilities, shown in Figures 5 and 6, should be added to Figure 18. Figure 18 superimposes currently existing sample locations and analytical groups tested for over current building locations. The revised figure will show that portions of the site have not at all been characterized with respect to past historical manufacturing activities, such as the former blasting cap and former explosive storage area. In addition, the revised figure will show that analytical groups that may be relevant to these historic activities have not been tested for in all the appropriate locations. Potential data gaps will be visually revealed by revising the figure in this manner.	The CCR will be revised to include on Figure 18 the former facilities currently shown on Figures 5 and 6.

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HHSC 3	p. 9 1.1.3		California Cap Company History. This section summarizes the manufacturing activities that took place at the site during the period before the University purchased the property. This section should be expanded to include a listing of the materials and chemicals used to manufacture blasting caps and shells and the waste that could have been generated during those processes. This section should also list the chemicals that could have been released at the explosive storage and test pit areas.	UC Berkeley will assemble and review available information regarding the manufacturing processes and associated chemicals at the California Cap Company, and revise the CCR as appropriate.
HHSC 4	p. 10 1.1.3	3, 4	California Cap Company History. A figure should be created that shows the locations of the past explosions described in the text, the sites where debris was dumped over the former seawall, and the areas where cinders were deposited for different purposes. These locations should be superimposed on Figures 5 and 6 - Locations of Current and Former Facilities and/or on the proposed revised Figure 18 - Soil and Sediment Sampling Locations and Analytical Groups.	UC Berkeley will assemble and review available information regarding the locations of past explosions, the sites where debris was dumped over the former seawall, and the areas where cinders were deposited for different purposes, and revise the noted figures as appropriate.
HHSC 5	p. 13 1.1.4.1		Historical Academic Research and Teaching Activities. The research activities listed in several of the bullet items, such as transportation research, soils and concrete research, and forest products research, may have resulted in the release of chemicals of potential concern to the environment. Therefore, soils around the buildings where hazardous chemicals may have been used in research should be analyzed for these chemicals.	<p>The research in these facilities was conducted in accordance with UC Berkeley Environmental Health and Safety protocols. There are no indications from any source that a spill has occurred; therefore, no further investigation is warranted at this time.</p> <p>These areas will be investigated when they are redeveloped or land uses change.</p>
HHSC 6	p. 14 1.1.4.1	1	Historical Academic Research and Teaching Activities - Groundwater transport research. The locations of the injection and observation wells are shown on Figure 8 -Site Features Map. This figure should be referenced in the text. If surface deposition from pumping groundwater to the surface could have occurred during the period when these wells were operating, soil samples should be taken in the area for possible contaminants from such releases.	<p>The CCR will be revised as follows to clarify the location of the well figure:</p> <p>“A total of 25 wells (2 recharge [injection] wells and 23 observation wells) were installed in the central portion of the RFS in the water-bearing zone between approximately 90 and 100 feet bgs and were sealed off from the overlying water-bearing zones (see Figure 8).”</p> <p>As described in the 2006 Stellar Environmental Solutions closure report, soil samples were collected and analyzed for several of the longer-lived radionuclides that had been injected into the wells; no contamination was found.</p> <p>UC Berkeley does not believe that further investigation is necessary.</p>

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HHSC 7	p. 15 1.1.4.2	5	Current Academic Research and Teaching Activities - Earthquake Resource Center. Hydraulic oil is needed to operate the earthquake shaker table. Used hydraulic oil may contain hazardous chemicals and metals. If there are records or evidence of spills or the potential for releases to the environment, soils around this center should be collected and analyzed for common contaminants in and for oil.	UC Berkeley will assemble and review available information about records or evidence of spills or the potential for releases to the environment, and revise the CCR as appropriate.
HHSC 8a	p. 16 1.1.4.2		Current Academic Research and Teaching Activities - Engineering Geosciences Well Field; Figure 8 Site Features Map; and, Figure 18 Soil and Sediment Sampling Locations and Analytical Groups. Figure 8, showing the locations of the wells in the well field, should be cited in this section. Records should be examined to determine what, if any, chemicals may have been injected into these wells as part of research efforts. The results of this examination should be included in this report.	The CCR will be updated to clarify the location of the well figure. Revised text will state: "The Engineering Geosciences well field is located in the eastern portion of the coastal terrace prairie, between Buildings 280 and 300 and to the south of the NRLF, as shown in Figure 8." UC Berkeley will assemble and review available information about what chemicals, if any, may have been injected into the wells, and revise the CCR as appropriate.
HHSC 8b	Fig. 18		All features shown on Figure 8 should also be placed on Figure 18. This will show the location of features for which no environmental data exist.	The CCR will be updated to show the features of Figure 8 on Figure 18.
HHSC 9	p. 16 1.1.4.3		Facilities Operations - Utilities, and Figure 5 Location of Current and Former Facilities in the Central Portion of RFS. See also Sections 1.1.5.1 Former Zeneca Site -Historical Releases in the Vicinity of the RFS and Section 1.1.5.5 Other Potential Off-Site Sources - Western Storm Drain Line for discussion on contaminants originating off-site flowing on-site through sewer and storm drains. Soil sampling should be performed along and beneath the wastewater and sewage lines and storm water drainage flow lines targeting locations where hazardous chemicals from past or current activities could have leaked into the surrounding soil. This comment also refers to any fuel, oil, and gas lines associated with the former California Cap Company, as shown on Figure 5. The lack of sample results along these utility lines represents a data gap.	The sewer line will be investigated when the area is redeveloped or land uses change. UC Berkeley does not concur that the utilities lines warrant further investigation at this time.

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HHSC 10			Page 16 Section 1.1.4 .3 Facilities Operations - Utilities, and Figure 8 Site Features Map. Figure 8 shows the location of several polychlorinated biphenyl (PCB)- containing transformers. Soils around these transformer locations should be sampled for PCBs.	There are no indications from any other sources that spills have occurred near the transformers; therefore, no further investigation is deemed necessary. Please see UC Berkeley response to DTSC Comment No. LN SC 21a, b, c.  These areas will be investigated when they are redeveloped or land uses change.
HHSC 11	p. 18 1.1.4.3	2	Page 18 Section 1. 1.4.3 Facilities Operations - Utilities. The soil around and downwind from Building 120 where a former incinerator was located should be sampled for dioxins/furans.	Building 120 will be proposed for further evaluation in the upcoming Field Sampling Workplan.
HHSC 12	p. 19 1.1.4.3	3	Facilities Operations - Pyrite Cinders Management; Figure 9 Known or Suspected Pyrite Cinder Locations in Upland and Transition Areas; and Figure 18 Soil and Sediment Sampling Locations and Analytical Groups. Known or suspected pyrite cinder locations that may still exist on-site should be shown on Figure 18 as a tool to identify data gaps in metals sampling.	The known areas of pyrite cinders are currently shown on Figure 9 and will be added to Figure 18 as requested.
HHSC 13	p. 23 1.1.4.5	2	RFS Chemical and Radioactive Materials Use – Chemical Use - Academic Research and Teaching Activities - Laboratory Aboveground Storage Tanks and Drums, and Figure 8 Site Features Map. Soil beneath above ground storage tanks should be sampled for the chemicals that have been stored in those tanks.	With exception of the Earthquake Research Center, there are no indications from any other sources that a spill has occurred in these areas; therefore, no further investigation is deemed necessary.  These areas will be investigated when they are redeveloped or land uses change.
HHSC 14	p. 24 1.1.4.5	1	RFS Chemical and Radioactive Materials Use – Chemical Use - Academic Research and Teaching Activities - Former Forest Products Laboratory Wood Treatment Laboratory. Please clarify if pentachlorophenol was analyzed for in any soil samples taken around the wood treatment laboratory facilities. If no such data exist, soil samples around the wood treatment laboratory facilities should be collected and tested for the toxic components of wood preservatives, including dioxins. Also, the approximate boundary of the proposed excavation area for the removal of soil containing elevated arsenic should be added to Figure 18.	Information regarding soil samples taken in the FPL WTL area can be found in Section 1.3.1.4. This area was excavated in October 2007 and disposed of off-site in November 2007 under a DTSC-approved Time Critical Removal Action. The CCR will be updated to reflect these changes in current conditions, including Figure 18. UC Berkeley does not believe that further investigations in this area are warranted.

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HHSC 15	p. 25 1.1.4.5	4	Chemical and Radioactive Materials Use – Chemical Use - Hazardous Materials Use - RFS Facilities' Support Activities – Underground Storage Tanks, and Figure 18 Soil and Sediment Sampling Locations. According to the text, soil samples were collected at the time that these underground storage tanks were removed. These sample locations should be placed on Figure 18, if these sample results represent soil still in place.	The CCR will be revised to show the sampling locations associated with the removal of underground storage tanks on Figure 18.
HHSC 16	p. 26 1.1.4.5	2	RFS Chemical and Radioactive Materials Use – Chemical Use - Hazardous Materials Use - RFS Facilities' Support Activities – PCB Transformers. According to the text, polychlorinated biphenyls (PCB)-containing electrical equipment was stored in Building 280. Therefore, PCBs should be tested for in the soil around Buildings 280A and 280B.	Two transformers were temporarily placed on a concrete pad within Building 280B. There is no visible staining, and there is no information from any other source indicating that spills occurred in this area. As a result, UC Berkeley does not believe sampling for PCBs is warranted at this time. This area will be investigated when it is redeveloped or land uses change.
HHSC 17	p. 26 1.1.4.5	5	RFS Chemical and Radioactive Materials Use – Chemical Use - Hazardous Materials Use - RFS Facilities' Support Activities - Storage of Chemicals and Hazardous Materials. Although the text states that transformers formerly stored in Building 120 did not contain PCBs, soil around this building should be collected and analyzed for PCBs.	Building 120 will be proposed for further evaluation in the upcoming Field Sampling Workplan
HHSC 18	p. 27- 29 1.1.4.5		RFS Chemical and Radioactive Materials Use - Radiological Materials Use - Academic Research and Teaching Activities; Figure 10 Radiological Sampling Locations; and Appendix G Radiological Survey. This section describes the use of and sampling for radiological materials, and the figure purportedly shows the locations of radiological sampling. However, Figure 10 shows only the locations of observation and recharge wells used for one experiment and does not show any of the locations of historic use of radioisotopes described in the text. A figure should be included in the main body of the text showing all soil areas that have been subjected to radiological testing and/or surveys superimposed on the locations of all former and current buildings and/or areas at the RFS where radiological materials have been used. This single figure should incorporate the information shown in Figure 10 as well as the information shown in the figures presented in Appendix G.	<p>The CCR will be revised to include existing radiological testing information on and existing or new figure.</p> <p>Please clarify the benefit of superimposing the locations of all former and current buildings and/or areas at the RFS where radiological materials have been used with sample locations. The possession and use of all radiological material is controlled pursuant to the Radiological Materials License for the UC Berkeley campus and is subject to regulatory oversight by the DTSC Radiological Health Branch, as described in CCR Section 1.1.4.5. Thus, UC Berkeley does not believe that such a figure would provide meaningful information.</p>

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HHSC 19	p. 32 1.1.5.1	6	Surrounding Off-Site Use History – Historical Releases in the Vicinity of the RFS. Storm water originating from the former Stauffer operations have reportedly flowed onto the RFS property. This release should be further investigated along with the sampling recommended in Specific Comment 9 above. The description in the text of infiltration of contaminated groundwater from the former Stauffer site into sewer lines provides further evidence that the paths of historic and current sewer lines should be investigated.	The relationship between groundwater and sewer line contamination originating from the former Zeneca site will be proposed for further evaluation in the upcoming Field Sampling Workplan and Groundwater Monitoring Plan.
HHSC 20a	p. 43 1.2.1.2	2-7	Field Sampling Workplan and Tiered Risk Evaluation: It would be informative to include a list of the chemicals analyzed for in soil samples collected in the upland area as part of the field sampling and analysis event performed in 1999. Similarly, a list of the target chemicals analyzed for in groundwater and sediment samples should be included.	The CCR will be revised to include a summary of the target chemicals of soil, sediment, and groundwater testing performed as a part of the Field Sampling Workplan and Tiered Risk Evaluation.
HHSC 20b	p.43 1.2.1.2		If any of the sample results from this event represent current conditions, this should be stated in the text.	The CCR will be revised to clarify the samples taken during this study that represent current conditions.
HHSC 21a	p. 45 1.2.1.5	3	Human Health and Ecological Tiered Risk Evaluation: This section should be revised to discuss the risk assessment criteria used to identify the upland and marsh Areas of Concern (AOCs).	The CCR will be revised to include available information regarding the criteria used to identify the upland and marsh areas of concern.
HHSC 21b	p. 45 1.2.1.5	3	Human Health and Ecological Tiered Risk Evaluation: A statement should be included in this section that relates the marsh AOCs 1 through 6 to the areas marked on the various figures in this report as Area 1, Area 2, M3, M1 and storm drain excavation. A figure providing this information should be included in this report.	The CCR will be revised to clarify the relationship between marsh areas of concern 1 through 6 and areas identified as Area 1, Area 2, M3, M1 and sanitary sewer excavation (as identified in the original Tier 1 report).



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HHSC 21c	p. 45 1.2.1.5	3	Human Health and Ecological Tiered Risk Evaluation: Site-specific target levels (SSTLs) for human and ecological receptors were developed in the risk evaluation performed by URS in 2001. Since these SSTLs are used as comparators in the summary tables depicting the concentrations of chemicals of potential concern, a brief description of how these SSTLs were developed should be included in this section or as an appendix to this report. A table listing the SSTLs and an accompanying table listing exposure scenarios, exposure parameters, and target risk and/or hazard index upon which the various SSTLs are based should also be included in this report.	The CCR will be revised to include a summary of the development of the SSTLs. This information will be presented as a new section or appendix.
HHSC 22	p. 49 1.2.2.2	3	Phase 2. If chemicals of potential concern have been analyzed for on the asphalt treatment pads and the concrete-lined treatment pad after their utilization in the treatment and storage of affected sediments, the results should be discussed in this section. If these treatment pads have not been so characterized, this represents a data gap.	The CCR will be revised to include the following information:  The two asphalt pads and a concrete-lined treatment pad were decontaminated at the completion of the remedial activities performed at the site between August 2003 and February 2004 by sweeping and pressure washing the surfaces. Confirmation rinsate samples were collected and analyzed for metals at the asphalt pads and for PCBs at the concrete pad. Rinsate samples were collected to evaluate potential total metals concentrations during a rainfall event. All results were non-detect and were presented in Table 10 of the Phase 2 Completion Report.
HHSC 23	p. 51 1.2.2.5	3	Western Stege Marsh Restoration Project Monitoring. This monitoring plan will assess the restoration efforts at the marsh. The HERD recommends that this plan be reviewed and coordinated with the monitoring plan for East Stege Marsh and revisions made, if necessary, to put in place a marsh-wide monitoring plan that would effectively assess its overall ecological health.	The Marsh Monitoring Plan provides the rationale and objectives for the restoration efforts in the Western Stege Marsh. The annual marsh monitoring reports provide a summary and assessment of the effectiveness of the restoration activities being performed in Western Stege Marsh. As the draft CCR notes, Eastern and Western Stege marshes are not hydrologically connected and each marsh is currently regulated under separate permits. Thus, UC Berkeley does not agree that the two marshes be monitored under a "marsh-wide monitoring plan".

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HHSC 24	p. 57 1.3.1.2	5	Pesticides. One surface soil sample for pesticide analysis in the upland area exists in the current conditions dataset. The text states that this is sufficient based on past activities on the site and data obtained in prior investigations. However, upland areas where pesticides may have been extensively used, stored, and/or studied (such as the former forests products laboratory) have not been identified or characterized. This represents a potential data gap.	UC Berkeley will assemble and review available information about where pesticides may have been used, stored, and/or studied, and revise the CCR as appropriate.
HHSC 25	p. 57 1.3.1.3	6	Polychlorinated Biphenyls; Figure 8 Site Features Map; and Figures 32 - 34 PCB Analytical Results in Soil and Sediment. As noted in comments above, PCB sampling of upland surface soil should take place in the areas around Buildings 280A, 280B, and 120 because of past use of these buildings as storage areas for electrical equipment. Currently existing PCB sample locations should be matched against the locations of former electrical transformers, as shown in Figure 8, in order to identify additional areas of investigation for this class of chemicals.	UC Berkeley agrees that additional evaluation of the Building 120 area is warranted and this area will be identified for further evaluation in the Field Sampling Workplan.  Electrical equipment was temporarily stored on concrete pads in Buildings 280A and 280B. There are no indications from any other sources that a spill has occurred; therefore, no further investigation is deemed necessary.  These areas will be investigated when they are redeveloped or land uses change.
HHSC 26	p. 58 1.3.1.4	3	Semivolatle Organic Compounds (SVOCs), and Figure 35 SVOC and PAH Analytical Results in Soil and Sediment. The site has limited soils data for polycyclic aromatic hydrocarbons (PAHs), despite the fact that there are onsite areas where explosives may have been tested and where explosions were known to have occurred. These areas should be tested for the presence of explosives and PAHs.	The CCR will be revised to include updated information regarding a 1900's explosion near the Dry House (former Building 55) in the western upland area. The CCR will be revised to state that the area will be proposed for further evaluation in the upcoming Field Sampling Workplan. PAHs will also be included in the list of analytes for this site.  In other areas, however, there is no information warranting investigation of explosive compounds or PAHs in the soil. Please see UC Berkeley response to DTSC Comment No. LN SC 8 a, b, c, d.
HHSC 27	p. 58 1.3.1.5	4	Volatile Organic Compounds (VOCs). Only two soil matrix samples for VOCs exist in the upland soils database. Building 120 was used for solvent storage, Building 117 was used as a maintenance shop, and Building 197 was used for drum storage. Any of these uses could have involved releases of VOCs to the environment and provide support for further investigation by performing soil gas sampling in those areas. Other past or current storage areas or maintenance shops should be identified for possible soil gas sampling as well.	This area will be proposed for further evaluation in the upcoming Field Sampling Workplan.

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HHSC 28a	p. 59 1.3.2	5	Extent of Chemicals in Soil and Sediment in RFS Transition Area, and Table 11 Comparison of Chemicals to Criteria for Transition Area Soil and Sediment Data: The western portion of the transition area, the area between the marsh and the upland area, has not been remediated. Although there are 96 data points for metals in the transition area, there are only two data points for pesticides, and 10 samples for PCBs, suggesting that the transition area may not be completely characterized with respect to the presence of pesticides or to the extent of PCB contamination in the old outfall area. The historical record should be examined to determine if the upland fill material used to create this transition zone could have contained hazardous chemicals, in addition to metals, that should be the subject of further investigation.	UC Berkeley will assemble and review available historical information about the upland fill material, and revise the CCR as appropriate.  Sampling for pesticides and PCBs within the Transition Area will be proposed for further evaluation in the upcoming Field Sampling Workplan.
HHSC 28b	p. 60, Table 11	1	Table 11 presents soil criteria for ecological and human receptors. As stated in a previous specific comment, an appendix should be added to the document describing how the ecological soil screening criteria were determined.	The CCR will be revised to include a summary of the development of the ecological soil screening criteria. This information will be presented as a new section or appendix.
HHSC 28c	p. 59 1.3.2	2	Whereas the current and future use of the upland and marsh area are clear, the HERD requests a discussion to be included in the report addressing the likely future use of the transition area. This would provide context for the appropriate application of human and ecological evaluation in risk management decisions for this area.	At the time of the preparation of the CCR, the future land use of the Transition Area has not been determined.
HHSC 29	p. 61 1.3.3.1	1	Off-Site Property North Area: This section summarizes offsite PCB analysis. Figure 32 PCB Analytical Results in Soil and Sediment, 0 to 1 Feet BGS should be cited in this section. The soil samples taken in this area should be further defined as surface or near-surface soil samples.	The CCR will be revised to clarify the characterization of the soil samples, and where to find the corresponding figure or appendices.

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HHSC 30	p. 61 1.3.3.2	3	Off-Site Property East Area. Eight soil and sediment samples represent current conditions at the boundary between the RFS and the former Zeneca site. However, Figure 19 appears incomplete, as only three of the sample locations are shown. The figure should be corrected to show all the sample locations discussed. Although the concentrations of metals measured in this area are compared to human-health risk criteria in the text, the concentrations measured in marsh sediments should be compared to the appropriate ecological-health risk criteria in the text as well (as depicted in Figures 20 to 27).	The CCR text will clarify and describe those areas where soil was excavated as part of remedial activities Phase 1 through 3 and why certain results do not appear on the figures.  These samples were collected in the upland area; therefore, it was not deemed appropriate to screen against the marsh ecological-health risk criteria.
HHSC 31a	p. 62 1.3.4	1	Extent of Chemicals in Sediment in Western Stege Marsh. The results of the extensive sampling indicate that the unremediated part of the marsh to the west remains contaminated with metals, PCBs and pesticides, particularly in the vicinity of Meeker Slough. Sediment and biological samples were collected in 2004. The results of these analyses should be included in this report to serve as a measure for assessing the general health of this area of the marsh.	The CCR database currently contains sediment analytical results from the 2004 sampling events. The database will be updated to include tissue data and bioaccumulation results. Section 1.2.1., Previous Investigations, will be revised to summarize the 2004 sampling activities.
HHSC 31b	p. 62 1.3.4	3	An assessment of the risks and benefits of remediation prior to restoration is needed for Meeker Slough.	Comment noted. Note that Meeker Slough is not on RFS property and is not within the scope of the DTSC Order. Also note that multiple surrounding areas contribute to surface and groundwater flow to the slough.
HHSC 32	p. 67 1.3.5.3	3	Fill Sources and Analysis by Phase. The text states that Phase 3 of the remediation activities included the removal of sediment containing mercury in the central portion of the marsh. However, this area is not identified in any figure. The figures should be revised to identify this remediation area.	The CCR will be revised to include this portion of the Phase 3 marsh remediation area on Figures 17 and 18.
HHSC 33	p. 69 1.3.5.3	3	Fill Sources and Analysis by Phase - Existing Stockpiles Soils. Any existing soil stockpiles that have not been tested and future candidate soil fill sources should be evaluated according to the current DTSC Clean Imported Fill Material Information Advisory, dated October 2001.	Comment noted. All existing soil stockpiles have been tested.

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HHSC 34	p. 74 1.3.7.1	4	Extent of Chemicals in Shallow-Zone Groundwater - Volatile Organic Compounds in Shallow-Zone Groundwater, and Figure 47 Volatile Organic Compounds in Groundwater. The nineteen shallow groundwater samples taken on-site are all at or near the boundary between the UCRFS and the former Zeneca site. 1,2-Dichloroethane, carbon tetrachloride, tetrachloroethylene (PCE), and trichloroethylene (TCE) were detected at levels above their respective Maximum Contaminant Levels (MCLs). The VOC plumes in groundwater must be delineated, as the shallow-most aquifer contaminated with VOCs can serve as a source of VOCs that could intrude indoors with subsequent potential exposure. As mentioned in a previous specific comment, there are other potential on-site sources of VOCs which must be investigated as well for the same reason.	UC Berkeley understands that groundwater conditions along the property boundary near the MW-25 Area are being addressed by CSV and Zeneca as a part of their investigation and cleanup program. UC Berkeley anticipates working cooperatively with CSV and Zeneca in regards to any other areas of concern.  Information regarding groundwater sampling for VOC concentrations will be included within the scope of the upcoming Groundwater Monitoring Plan.
HHSC 35	p. 75 1.3.7.1	4	Extent of Chemical in Intermediate-Zone Groundwater. The HERD is concerned whether it is possible to adequately characterize the intermediate zone at this site with only four groundwater samples.	Comment noted. Information regarding the characterization of the intermediate zone will be included within the scope of the upcoming Groundwater Monitoring Plan.
HHSC 36	p. 76 1.3.7.3	3	Page 76 Section 1.3.7.3 Extent of Chemicals in Deeper-Zone Groundwater. The locations of the wells used to collect deeper-zone groundwater samples should be included on Figure 45 - Groundwater Sampling Locations and Analytical Groups. The target analytes for this groundwater sampling event should be listed.	The CCR will be revised to include the locations of the groundwater sampling wells and a list of the target analytes on Figure 45.
HHSC 37a	p. 80 2.1.2	3	Migration Pathways. The discussion of migration of chemicals from soil to the atmosphere should be revised: The statement that VOCs have not been detected in soil at RFS should be deleted, since only two soil samples have been analyzed for VOCs in the upland area.	The CCR will be revised to address the comment as appropriate.
HHSC 37b	p. 80 2.1.2	3	It should be stated that, if VOCs are present in soil and groundwater, they may migrate through the soil and into indoor air. This could represent a significant potential exposure pathway for current and future indoor workers.	The CCR will be revised to clarify that if VOCs are present in soil and groundwater, they could migrate to indoor air.

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HHSC 38	p. 86 2.2.1.5	5	Bioavailability of Metals. Numerous metals have been detected in shallow groundwater. The shallow groundwater dataset should be examined to identify the filtered groundwater samples. If there are filtered groundwater samples in which metals were detected, this would suggest that at least a fraction of metals on-site may be bioavailable, that is, soluble in water.	Comment noted. Evaluation of the bioavailability or solubility of metals will be addressed as a part of the upcoming Groundwater Monitoring Plan.
HHSC 39	Table 7		Table 7 Summary Statistics for Upland Area Soil. For those chemicals that have never been detected, the detection limit or range of detection limits should be added for each target analyte. In addition, it would be informative to include the depth below ground surface at which the maximum concentrations were measured. This specific comment applies to all the tables of summary statistics.	The CCR will be revised to clarify ranges of detection limits known. UC Berkeley will evaluate the comment about including the depth below ground surface of the maximum concentrations for all the tables.