LBNL Responses to RWQCB Comments

January 13, 2005

BERKELEY LAB
Environment, Health and Safety Division
Environmental Restoration Program

Dr. Waqar Ahmad
Facility Permitting Branch
Cal EPA-DTSC
700 Heinz Avenue, Suite 200
Berkeley, CA 94710-2737

January 13, 2005
ERP-3049

Subject: Responses to the January 3, 2005 DTSC letter containing RWQCB Comments dated December 23, 2004 on the *Draft* Corrective Measures Study, Lawrence Berkeley National Laboratory, Berkeley, California EPA ID No: CA4890008986

Dear Dr. Ahmad:

Enclosed are the Ernest Orlando Lawrence Berkeley National Laboratory (Berkeley Lab) Responses to the January 3, 2005 DTSC letter containing Regional Water Quality Control Board (RWQCB) Comments dated December 23, 2004 on the *Draft* Corrective Measures Study (CMS) Report (July 2004).

Please contact me at (510) 486-6106 if you have any questions.

Sincerely,

Iraj Javandel
Environmental Restoration Program

Encls.

Ernest Orlando Lawrence Berkeley National Laboratory
One Cyclotron Road | Berkeley, California 94720-8126 | Mail Stop 90R1116 | Tel: 510.486.6106 | Fax: 510.486.8694

LBNL Responses to Comments from *Michael Bessette Rochette* of RWQCB San Francisco Bay Region Groundwater Protection Division) dated December 23, 2004 to Salvatore Ciriello of Department of Toxic Substances Control
Subject: Draft RCRA Corrective Measures Study Report for Lawrence Berkeley National Laboratory, dated July 2004. Berkeley, Alameda County. File No. 2199.9026 (MBR)

Item	Page/Para	RWQCB Comment	LBNL Response
Comment 1		Overall, Water Board staff finds DOE's responses to our comments acceptable; however, two issues remain. The first issue is to maintain the designated potential beneficial use of a drinking water supply for all groundwater underlying Berkeley Lab but establish short-term and long-term Media Cleanup Standards (MCSs) for areas of low well yield.	Berkeley Lab will include the following text at the appropriate location(s) in the Corrective Measures Study Report. As noted by RWQCB, "groundwater conditions directly underlying specific areas may limit potential use as a municipal or domestic drinking water supply" (Appendix J). Therefore for those areas of groundwater contamination where well yields are less than 200 gpd, risk-based levels are considered applicable and are proposed as MCSs, at least for the short term. However, it is acknowledged that the RWQCB designates all groundwater potentially suitable for municipal or domestic supply unless it has been formally de-designated. Therefore, the long-term goal for these areas would be to restore groundwater quality to the maximum beneficial use (MCLs), if practicable. Once the short-term goal is achieved, the long-term approach would be natural degradation within the framework of a long-term monitoring program to document the status of natural degradation and that migration of contaminated groundwater is under control.

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Comment 2		The second issue is to revise the CMS to identify any collocated radionuclide and volatile organic compounds (VOCs) plumes.	RCRA only regulates hazardous materials/waste and not radiological contamination. In previous comments, DTSC has indicated that radionuclide information should not be included in RCRA corrective action process documents, and therefore it will not be included in the RCRA Corrective Measures Study Report. Areas of collocated radionuclide and chemical contamination were previously discussed in the report titled Summary of Radionuclide Investigations for Lawrence Berkeley National Laboratory (September 2003). The information regarding collocated radionuclide and volatile organic compounds (VOCs) plumes is provided below, and has been updated based on the most recent data available (July to September 2004). **COLLOCATED CHEMICAL AND RADIOLOGICAL CONTAMINATION** There are five relatively small locations, all in the Support Services Area, where collocated chemical (VOCs) and radiological (tritium) contamination is present in the groundwater (attached Figure 1). These locations correspond to the areas (or portions of areas) of VOC-contaminated groundwater included in the RCRA Facility Investigation (RFI) and listed in the following table. The last four of the listed areas are also included in the Corrective Measures Study (CMS) Report, since concentrations of VOCs are above MCLs. **Areas of Collocated Tritium and Chemical Contamination** **Area of Groundwater Contamination** / **VOCs Above MCLs** / **Tritium Above MCL** Building 75B Area of Groundwater Contamination / No / Yes Building 69A Area of Groundwater Contamination / Yes / No Building 75/75A Area of Groundwater Contamination / Yes / No Solvents in Groundwater South of Building 77 / Yes / No Benzene in Wells East of Building 75A / Yes / No

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Comment 2 (cont'd.)			As shown in the table, there are no locations where both tritium and VOCs are present in the groundwater at concentrations above MCLs. Concentrations of tritium detected in most wells have been decreasing since closure of the National Tritium Labelling Facility (NTLF). Tritium has been detected above the MCL in only a single well, MW75-97-5, which also monitors the Building 75B Area of Groundwater Contamination. Concentrations of tritium detected in the well have been decreasing with the current concentration (21,211 pCi/L) only slightly above the 20,000 pCi/L MCL. Only relatively low concentrations of VOCs have been detected in the well (1.2 µg/L 1,1-dichloroethane [DCA] and 2.1 µg/L of 1,1-dichloroethene [DCE] in August 2004). Benzene has been detected at concentrations above the MCL in several deep Orinda Formation wells, including two wells east of Building 75A in which tritium has also been detected. The benzene detected in these deep Orinda Formation wells may be naturally occurring. How the tritium plume will be managed in the future is outlined in the Summary of Radionuclide Investigations for Lawrence Berkeley National Laboratory (September 2003) submitted to the United States Department of Energy.

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Comment 3		The CMS presents hydrogeologic data identifying small specific areas where groundwater yield is less than 200 gpd and proposes that drinking water supply should not be a designated beneficial use for these areas. However "de-designation" of groundwater beneficial uses requires Water Board adoption of a Basin Plan amendment and typically takes place on a regional aquifer or sub-aquifer basis. The facility-wide data shows considerable variation of yield, above and below 200 gpd, and does not support drinking water supply de-designation of the regional aquifer or sub-aquifer scale. Based on presented data, Water Board staff concurs that groundwater conditions directly underlying specific area may limit potential use as a municipal or domestic drinking water supply but that hydrogeologic site-wide conditions do not support de-designation of the drinking water supply potential beneficial use for groundwater at Berkeley Lab.	Berkeley Lab agrees with the comment. The intent of the data presentation was to address community concerns by limiting the areal extent where groundwater would not be protected as a potential drinking water source. Short term well yield testing was therefore conducted only in those areas where the groundwater is contaminated. However, it should be noted that longer term sitewide testing would likely indicate that the major portion, if not all, of the site could not sustainably produce 200 gpd from individual wells, and therefore may represent a broad area where de-designation of municipal and domestic supply beneficial uses may be appropriate. The few areas at Berkeley Lab where short-term well yields exceed 200 gpd generally consist of isolated Moraga Formation landslide blocks. Due to their relatively small storage capacity, these blocks may become depleted during the dry season or during long-term yield tests, as indicated by the large magnitude of groundwater fluctuation observed in many Moraga Formation wells (greater than 12 feet) between the dry and rainy season.
Comment 4		To address these low yield areas, Water board staff recommend establishment of short-term and long-term Media Cleanup Standards (MCS) for areas where groundwater yield is less than 200 gpd. The short-term MCS would remain as currently proposed in the CMS but the long-term MCS would be protective of groundwater as drinking water supply, e.g., MCLs. The establishment of a long-term MCS for the areas with well yields less than 200 gpd does not appear to require any changes in the proposed corrective measures since the plumes in areas with groundwater yield less than 200 gpd are already required to be monitored to demonstrate long-term plume stability. The long-term MCS time frame should be proposed by Berkeley Lab based on attenuation rates for the contaminants of concern in each groundwater contaminate plume.	See Response to Comment #1. Also, Berkeley Lab will include the following text at the appropriate location(s) in the Corrective Measures Study Report. It is not possible to specify with a high level of confidence the timeframe when MCLs would be achieved in areas where the well yield is less than 200 gpd. Based on the very low rates of attenuation observed, it will likely take at least several decades to achieve MCLs in most of these areas. In the interim, groundwater will be monitored to document the status of natural degradation and assure that migration of contaminated groundwater is under control.

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Comment 5		The second issue is more a restatement of an earlier comment by Water Board staff requesting identification groundwater plumes with collocated radionuclide and non-radionuclide contamination. In our September 27, 1999, letter on the Request for No Further Investigation Status for Areas of Groundwater Contamination Designated as Areas of Concern, staff commented that, "DTSC has notified LBNL and RWQCB that they have no authority to regulate radionuclides and radioactive waste under RCRA. Additionally DTSC has proposed LBNL remove all radionuclide investigations from the RFI and include them as part of the Site Restoration program. RWQCB concurs with DTSC's proposal but requests notification of any collocated radionuclide contamination within each identified groundwater AOCs." The identification of any collocated radionuclide and non-radionuclide groundwater contamination should be continued as part of the CMS to insure that selected corrective measures for the VOC groundwater contamination are not influenced by or influencing any radionuclide groundwater contamination.	See Response to Comment #2. Selected corrective measures for VOC-contaminated groundwater will not be influenced by, or influence, any radionuclide groundwater contamination. The only corrective measure that is proposed in areas of collocated radionuclide (tritium) and chemical contamination is Monitored Natural Attenuation (MNA), which is planned only for the Building 69A Area of Groundwater Contamination. The presence of tritium in the groundwater in this area will have no effect on the proposed remedy and conversely, the proposed remedy will have no effect on the magnitude or extent of tritium contamination in the groundwater.