

**Comments on the UCD 2008 Comprehensive Annual Water Monitoring Report
For the LEHR Superfund Site on the UCD Campus July 2009**

Comments submitted by

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Presented herein are our comments on the adequacy of the University of California Davis (UCD) 2008 LEHR Superfund site draft **Comprehensive Annual Water Monitoring Report** to properly characterize the current degree of pollution of the site groundwaters and surface water runoff. These comments also provide mention of the overall adequacy of the water quality monitoring to adequately characterize the degree of pollution of the LEHR site groundwaters and surface water runoff. As discussed in DSCSOC comments to the RPMs over the years, there are significant deficiencies in the monitoring program in several areas. This is especially important in the area of stormwater runoff from the LEHR site in that the currently allowed monitoring program is grossly deficient in reliably characterizing the pollution of Putah Creek by LEHR site derived pollutants. The comments presented herein focus on the adequacy of the 2008 report in presenting and discussing the data that was collected during 2008.

Since 1995 when DSCSOC first became involved at the UCD/DOE LEHR Superfund site comments have been submitted to the LEHR Superfund site RPMs on the significant deficiencies in the Annual Water Monitoring Reports in credibly presenting and discussing the data that has been presented in that year's report. These comments are presented on the DSCSOC website, <http://www.gfredlee.com/DSCSOC/DSCSOC.htm> in the "Documents" section located at, <http://www.gfredlee.com/dscsoc/doc.htm>.

It has been highly disconcerting that year after year the RPMs allowed the highly deficient annual monitoring report to stand as submitted without requiring the UCD correct the deficiencies in the report. This has resulted in a collection of annual water monitoring reports that are not reliable sources of information on the characteristics of the water quality monitoring program for the LEHR site. We find this draft annual water monitoring report is somewhat improved over past years reports. However this report does contain a number of presentation errors and most important a significant error in reporting on the water quality significance of UCD pollution of groundwaters by chloroform under and offsite of the LEHR Superfund site. Contrary to the information provided in this report, judging the water quality significance of chloroform in groundwater that is derived from past waste disposal practice should be based on a cancer risk assessment and not the trihalomethane drinking water MCL.

Specific Comments on 2008 Annual Water Monitoring Report

Throughout this draft report mention is made of monitoring of “stormwater.” For example on page 1-1 first paragraph and 2-1 first paragraph, etc. The proper terminology is monitoring “stormwater runoff water quality“ for this monitoring program. A comprehensive stormwater runoff monitoring program should include measurement of flow and the concentration of potential pollutants during the course of the runoff event to be able to report total flow and the total pollutant load associated with the runoff event.

Executive Summary

Page ES-1 last paragraph states that no water samples were collected in HSU-4 during 2008. As DSCSOC has mentioned in the past comments there is need to conduct a comprehensive review of the existing HSU-4 data and then develop a groundwater monitoring program that will evaluate the reliability of the existing data base to characterize the existing groundwater pollution in the aquifer and changes that are occurring in this pollution.

Page ES-2 first paragraph states that water level measurements were made in HSU-4 in 2008. At the time that water level measurements are made water samples should be collected and analyzed.

Page ES-3 fourth paragraph make reference to the RPM meeting 2009 minutes as source of additional information on an issue. At the last RPM meeting DSCSOC suggested that the RPM meeting minutes should be placed on a website and thereby be available to the public to review. If this has not been done it should be done so that reviewer of reports have a source of additional information on an issue.

Page ES-4 third paragraph, in accord with the suggestion made by DSCSOC at the last RPM meeting of discussing violation of water quality criteria, for the first time in an annual water monitoring report mentions the violations of the water quality criteria for mercury in the stormwater runoff from the LEHR site. This is a major step in the direction of developing a more credible presentation and discussion of the data in an annual water monitoring report. This is also a major step in addressing the error that was made last winter when David Cooper informed DSCSOC that it was inappropriate for Dr. Lee to be spending TAG time developing a report on the origin of mercury in LEHR site stormwater runoff since mercury was not a constituent of concern at the LEHR site. Mr. Cooper indicated that a former US EPA LEHR RPM and the agency consultant had informed him that mercury was not a COC at the LEHR site. As a follow up to this situation Dr. Lee developed,

Lee, G. F., “LEHR Superfund Site Constituents of Concern,” email to J. Roth, Executive Director DSCSOC, from G. Fred Lee & Associates, El Macero, CA, March 19 (2009).
<http://www.gfredlee.com/DSCSOC/2009/LEHRConstituentsConcern.pdf>

This error was corrected last spring when the US EPA approved the payment for the work that Dr. Lee did in developing the reports on LEHR site stormwater runoff mercury issues,

Lee, G. F., and Jones-Lee, A., "Runoff of Mercury from UCD/DOE LEHR Superfund Site – Putah Creek Mercury Issues,” Presented to UCD/DOE LEHR Superfund Site Group, November 18 (2008).
<http://www.gfredlee.com/DSCSOC/2008/PutahCrHgLEHRsli.pdf>

Lee, G. F., and Jones-Lee, A, "LEHR Superfund Stormwater Runoff and Putah Creek Mercury Issues," *Journal Remediation*, **19(2)**:123-134, Spring (2009).
<http://www.gfredlee.com/SJR-Delta/LEHRrunoffHgRemediation.pdf>

Main Body of Report

Page 2-1 under *scope* list the constituents monitored in the groundwater samples. As DSCSOC has repeatedly suggested, DOC and down borehole DO should also be measured on all samples. These parameters are needed to properly interpret the other monitoring data such as for chromium. If DSCSOC suggestion on monitoring these parameters had been adopted several years ago, the interpretation of the elevated chromium in some groundwater samples would have been more readily accomplished.

Page 2-5 under **2.4 Storm Water Monitoring** presents a summary of the stormwater runoff monitoring at the LEHR Site. As has been repeatedly discussed in DSCSOC comments to the RPM which are available on the DSCSOC at <http://www.gfredlee.com/DSCSOC/DSCSOC.htm> in the LEHR Documents section <http://www.gfredlee.com/dcsoc/doc.htm> the stormwater runoff monitoring program is grossly inadequate compared to the program needed to adequately characterize the runoff of pollutants such as mercury from the LEHR Superfund site on water quality in Putah Creek.

Page 2-6 first paragraph states "contained no chloroform above the reporting limit". Statements of this type should also present the reporting limit that is applicable to this situation.

Page 3-3 and elsewhere in this report information is presented on the groundwater gradient in ft/ft. It would be informative to the readers to also present an estimate on the velocity of groundwater, i.e., ft/day.

Page 3-6 footnote 2 mentions the US EPA MCL for chloroform in drinking water as 80 µg/L. A review of how this value was derived shows that it is not applicable to groundwaters that have been polluted with chloroform from waste disposal practices. The 80 µg/L value is a US EPA compromise between effective disinfection of drinking water by chlorination and the cancer risk of chloroform. DSCSOC raised this issue in the mid 1990s when UCD attempted to minimize the importance of chloroform pollution of LEHR and offsite groundwaters; it was resolved at that time. It is inappropriate for UCD to try again to inject the 80 µg/L value that is appropriate for evaluating the water quality significance of UCDs past disposal of waste chloroform at LEHR on groundwater quality. The proper evaluation of the significance of chloroform in LEHR Superfund site groundwater should be based on US EPA/OEHHA approaches as the concentration that is based on a cancer risk of 1×10^6 . Several years ago when this issue was first raised by DSCSOC, the Central Valley Regional Water Quality Control Board established a value of "non detect" which as I recall was about 1 µg/L as the cleanup objective for chloroform in LEHR site groundwaters as the then applicable "non detect" value. There is need to check with CVRWQCB and OEHHA for the latest information on this issue.

Page 3-7 first paragraph that the concentration of total chromium in UCD 2-056 may be anomalously high since it is only screened in the upper 15 feet of this unit. This suggestion is inappropriate in that a domestic well could be screened in this zone and thereby expose the user

of this well to excessive chromium. There is no need for the full depth of an aquifer to be polluted to be of significance to water quality.

Page 3-7 third paragraph in association with the mention of the regulatory limit for chromium mention should be made that this value is under review by OEHHA and will likely be lowered.

Page 3-7 under the discussion of nitrate the concentration units should always be listed as “as N or N.” There is no need to always state as nitrogen except when a numeric value is presented.

Page 3-13 presents a discussion of the stormwater runoff water quality monitoring. The statement in the last paragraph about there being no flow in LF-03 since 2005 is misleading in that this statement only applies to when UCD collected samples. DSCSOC has repeatedly observed runoff from this area during this period. There has been runoff in LF-03 during this period that was not sampled by UCD. This is a characteristic of the unreliable stormwater runoff monitoring program that UCD has been conducting at LEHR. The problem is that UCD stormwater runoff monitoring program is significantly deficient compared to the program that should be conducted at this site.

Page 3-14 third paragraph first sentence needs to have mercury added to the sentence to indicate what is being discussed.

Page 4-1 devoted to “Recommendations” needs to be discussed at a future RPM meeting. The situation that has occurred in the past where special meetings of the RPMs were held to discuss changes in the monitoring program in which DSCSOC was not invited should not occur again. Some of the changes that took place at these meetings are contrary to properly monitoring LEHR site waters.

Table 2 lists organic carbon, dissolved – the list of abbreviation should include DOC. Also Phosphorus total, does not show whether the results are presented as P or PO_4 , yet Phosphorus, orthophosphate (PO_4) is listed as PO_4 . The listing of the phosphorus species analysis should be consistent be presented as P.

Table 2 also lists “Mercury, low-level” with the US EPA 1631 and “Mercury” US EPA SW7470A as the analytical methods that will be used. As DSCSOC has commented year after year in its comments on the deficiencies in the UCD annual water monitoring report all of which are on the DSCSOC website, there have been chronic problems (see Table 18) with the analytical method detection limits that UCD has used to analyze for mercury in stormwater runoff at the LEHR site. UCD has repeatedly used mercury analytical methods for mercury that have detection limits of about 200 ng/L even though the California Toxic Rule criterion for mercury is 50 ng/L. When DSCSOC first pointed this problem out, S. Timm the CVRWQCB RPM required that UCD use low-level mercury analysis for stormwater runoff and Putah Creek samples. While UCD did conduct a round of mercury analysis using a low-level mercury analytical method, it reverted back to the inadequate analytical method for stormwater runoff.

DSCSOC has provided detailed comments to the RPMs that all stormwater runoff samples from LEHR should use analytical methods that have the ability to measure mercury in stormwater

runoff at about 5 ng/L for total recoverable mercury since concentrations above this amount can contribute to excessive mercury concentrations in edible fish tissue. The US EPA Region 9 staff member responsible for water quality criteria, P. Wood, has indicated that the CTR criterion for mercury was established by procedures that do not reflect what is known about the concentrations of mercury in water that can bioaccumulate in fish to excessive levels. That criterion was supposed to be corrected several years ago shortly after it was adopted. This correction still has not been made and the current information still stands that mercury in water above about 5 ng/L can bioaccumulate in fish to excessive levels. All future mercury analysis should be made with analytical methods with detection levels of about 5 ng/L.

Table 5 shows that the groundwater elevation for UCD-2-060 on October 6, 2008 was presented in bold text as “being outside historical range for the well.” This is somewhat confusing in that no historical previous data is shown for this well. Is this listing appropriate?

Table 6 lists SO_4 without the double minus charge, yet in Table 2 SO_4 is listed with double minus charge. The presentation of an abbreviation for a chemical should be consistent. The correct approach is to use the double minus charge.

Table 6 lists mercury in the CWTP as “prohibited.” The CWTP is presented as the limit at the discharge to the sanitary sewer of the campus wastewater treatment plant (UC Davis 2009). Since LEHR site stormwater is discharged to the campus sanitary sewer and since it contains mercury it appears that this prohibition is not being enforced.