

## **Comments on UCD/DOE LEHR Superfund Stormwater Runoff Water Quality Monitoring Program**

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Since the mid 1990s Dr. G. Fred Lee, technical advisor to DSCSOC for the UCD/DOE LEHR Superfund site has commented on the highly significant deficiencies in the stormwater runoff water quality monitoring program that UCD and DOE has conducted at the UCD/DOE LEHR Superfund site. The LEHR Superfund site inadequate monitoring of stormwater runoff and surface water impacts has been demonstrated by the fact that the CVRWQCB has fined UCD for excessive discharge of several pollutants in its campus wastewater discharges to Putah Creek. In a Sacramento Bee September 26, 2008 article, "UC Davis fined for Putah Creek pollution" at <http://www.sacbee.com/378/story/1267438.html> stated that UC Davis was fined \$78,000 for pollution of Putah Creek. According to UCD representatives cited in the article these violations were due to storm events overwhelming the campus treatment plant. The campus wastewaters contain some wastewater discharges and stormwater runoff from the LEHR Superfund site. This situation occurred from January 1, 2001 to March 31, 2008 yet none of these discharges which were in excess of the campus wastewater treatment NPDES permit allowed concentrations were not detected in any of the LEHR site monitoring of the Putah Creek during this period. This situation reflects the overall poor quality of the LEHR site stormwater runoff and surface water quality in adequately characterization of the pollutants in runoff and in Putah Creek near the LEHR the site.

Past comments on the deficiencies in LEHR site stormwater runoff monitoring are presented in Dr. Lee's reports to the DSCSOC which are located on the DSCSOC website, <http://www.gfredlee.com/dscsoc/doc.htm>. The most recent of these reports include,

Lee, G. F., "Comments on LEHR/SCDS Environmental Restoration Quarterly Monitoring Report, Winter 2006 Prepared for University of California, Davis, by Brown and Caldwell, August 2006," Report submitted to DSCSOC by Dr. G. Fred Lee, G. Fred Lee & Associates, El Macero, CA, January 24 (2007).  
<http://www.gfredlee.com/DSCSOC/2007/LEHRWinterQtr06MonRPT.pdf>

Lee, G. F., "Comments on the UCD Final 2007 Annual Water Monitoring Report, LEHR/SCDS Environmental Restoration Program, University of California, Davis, Dated April 2008," Comments Submitted to DSCSOC by G. Fred Lee & Associates, El Macero, CA, May 28 (2008).  
<http://www.gfredlee.com/DSCSOC/2008/Com2007MonitorRpt.pdf>

Lee, G.F., and Jones-Lee, A., "Appropriate Monitoring/Evaluation of Stormwater Runoff from Superfund Sites," Submitted for publication in the DOE "Risk Excellence Notes," available as Report of G. Fred Lee & Associates, El Macero, CA, May (2000). Available as HC001 from [gfredlee@aol.com](mailto:gfredlee@aol.com).

Lee, G. F., "Stormwater Runoff and Wastewater Discharge Monitoring Program for the UCD/DOE LEHR National Superfund Site," Report to DSCSOC September (1998). available as HC014 from gfredlee@aol.com.

Early in DSCSOCs review of LEHR site monitoring data, it was pointed out the monitoring of the UCD campus "treated" sewerage system discharge to Putah Creek showed that the effluent contained sufficient concentration of permitted constituents to violate the UCD wastewater discharge permit. UCDs approach to this issue was to stop monitoring the campus wastewater discharge to Putah Creek even though this discharge contained constituents from the LEHR Superfund site stormwater runoff. The above newspaper article on the chronic violations of its NPDES permit for its campus wastewater discharge shows that what DSCSOC found in the mid 1990s continued for many years. It is particularly important that the CVRWQCB found that the violations occurred during stormwater runoff where campus stormwater was added to the UCD campus sewerage system.

The significant problems with the LEHR Superfund site stormwater runoff water quality monitoring lead to the development of,

Lee, G. F. and Jones-Lee, A., "Stormwater Runoff Water Quality Evaluation and Management Program for Hazardous Chemical Sites: Development Issues," Superfund Risk Assessment in Soil Contamination Studies: Third Volume, ASTM STP 1338, American Society for Testing and Materials, pp. 84-98 (1998). <http://www.gfredlee.com/stmhzap.htm>

Recently Drs G. Fred Lee and Anne Jones-Lee have developed a comprehensive report on the excessive discharges of mercury in LEHR site stormwater. These reports have been made available at,

Lee, G. F., and Jones-Lee, A., "Summary of Slides – Putah Creek Mercury Water Quality Issues," Report of G. Fred Lee & Associates, El Macero, CA, Presented to Delta Tributaries Mercury Council, December 2 (2008). <http://www.gfredlee.com/SJR-Delta/PutahHgMineSummary.pdf>

Lee, G. F., and Jones-Lee, A., "Runoff of Mercury from UCD/DOE LEHR Superfund Site – Putah Creek Mercury Issues," PowerPoint Slides for Presentation to Delta Mercury Tributaries Council, Sacramento River Watershed Program [<http://www.sacriver.org/issues/mercury/dtmc/>], December 2 (2008). <http://www.gfredlee.com/SJR-Delta/PutahHgMinesli.pdf>

Additional information on stormwater runoff monitoring issues is available in Drs. Jones-Lee and G. Fred Lee website in the Surface Water section Urban Stormwater subsection located at, <http://gfredlee.com/pswqual2.htm#runoff>. The situation that has recently developed in assessing the magnitude, frequency of excessive mercury in LEHR site runoff as well as the LEHR site specific sources of mercury that leads to excessive mercury in the site runoff demonstrates the urgent need for a greatly improved LEHR site stormwater runoff monitoring program.

The LEHR stormwater runoff monitoring program needs to include continuous monitoring of flow and periodic sampling of the runoff for chemical analysis using low level mercury analysis and other parameters as discussed in the above referenced papers and reports. It is particularly important to adequately monitor first flush runoff after an extended dry period. During such periods changes in the form of potential pollutants can take place such as uptake by plants that can affect the mobility of the potential pollutants. Another significant problem with the RPM allowed stormwater runoff water quality monitoring at LEHR is that UCD is not required to monitor on weekends. For several years the first major storm of the fall has occurred on weekends.

In response to the CVRWQCB (Timm) request to implement control of mercury in LEHR site stormwater runoff at concentrations above the CTR criterion of 50 ng/L UCD/DOE have installed straw rolls in the flow path of stormwater runoff from the mid part of the LEHR site. Figure 1 shows this situation as taken on February 13, 2009. This photograph was taken the day after about one half in of rain had fallen the day before. Two days before then another about one half in of rain had fallen in the area with the result that the soil was saturated. While there was little runoff on the first rainfall event there was appreciable runoff on the second runoff event. At the time of taking the photograph there were small pools of water upstream of the straw rolls. The water in these pools including just downstream of the straw roll just upstream of the inlet to the pipe that allows stormwater to leave the site on its way to Putah Creek was turbid. This turbidity indicates that eroded soil from the LEHR site had passed through some/all the upstream straw rolls. This means that soil with its associated mercury from the LEHR site had been transported over/through the straw roll "BMP" and therefore was still likely polluting Putah Creek with mercury with concentrations above the CTR criterion.

A review of the potential effectiveness of straw rolls of the type that UCD had installed near one of the LEHR stormwater outlets will show that such rolls would not be expected to be effective in preventing finely divided soil particles to pass through them. Such rolls would be expected to be effective for trapping sand size particles not silt and smaller size particles.

A similar situation occurs with the silt fence on the western side of the former dog pens at the LEHR. Such a fence would not be expected to be effective in preventing finely divided soil and its associated mercury from being transported off site to Putah Creek.

UCD/DOE should be required to establish a reliable mercury monitoring program at each of the outlet for stormwater from the LEHR site. If mercury is found in this runoff at concentrations above the CTR criterion then more effective BMP should be installed to control mercury in stormwater runoff from LEHR.