

September 23, 2001

Julie Roth

Julie,

I wish to provide DSCSOC with a summary of some of the issues discussed at the September 7 RPM meeting. This was a special RPM meeting devoted to defining data gaps in LHER Superfund site surface and ground water problem identification. As you know, these are areas that have been of great concern to DSCSOC since it first became active in June 1995. Year after year, we have pointed out significant deficiencies in the monitoring program being conducted in adequately defining the water quality problems associated with the LEHR site. There was little discussed at the last RPM meeting that has not been discussed repeatedly by DSCSOC over the last six years as deficiencies in the ground and surface water monitoring at the LEHR site. For essentially the first time in the six years that we have been active, I can begin to see the potential of having many of the issues that we have repeatedly raised start to be addressed as part of developing the RI/FS work plan. A brief summary of some of the issues discussed at the meeting is presented below.

Constituents of Concern

One of the most significant deficiencies in the LEHR site investigation is the very narrow range of Constituents of Concern, compared to the potential range of hazardous or otherwise deleterious chemicals that UCD could have deposited in its campus landfills at the LEHR site. In discussing this issue, as I have done a number of times in the past, I pointed out that the discrepancy between measured total organic carbon (TOC) and the total of the measured individual components is great at the LEHR site. While much of this difference can be due to natural organics, since the LEHR site also contains a wide variety of hazardous waste in its landfills and soils, there could readily be, within this TOC, hazardous and deleterious chemicals that are not now considered Constituents of Concern.

While at the RPM meeting UCD staff and consultants attempted to confuse the issue by claiming that TOC is composed of natural organics derived from the decay of plants and animals, they failed to demonstrate that hazardous constituents or constituents which could be adverse to the use of groundwaters for domestic water supply (including taste- and odor-producing compounds, etc.) could be present in the TOC that is elevated in groundwaters near waste disposal areas. While there were claims by UCD consultant staff that their approach toward investigating the arena of chemicals that could be present was comprehensive and reliable in ruling out other hazardous chemicals, the facts are that those are superficial claims that have little or no validity when considered in the context of the tens of thousands of chemicals that are present in UCD's wastes that were deposited in these landfills, which have the potential to migrate to groundwater and not be measured by any of the analytical methods that have been used thus far. It is important to understand that the analytical methods being used are targeting certain kinds of chemicals. There are many other analytical methods and biological response methods that could be used in the search for other hazardous and deleterious chemicals.

One of the issues that continues to be ignored, that I have brought up a number of times, is that the Central Valley Regional Water Quality Control Board's Basin Plan requires protection of

groundwaters from materials that, while not hazardous, can cause tastes and odors or other detrimental impacts on the use of the water for domestic water supply. This is clearly delineated in the Basin Plan and is an appropriate ARAR for the LEHR site. Thus far, this issue, even though it has been raised by DSCSOC, has been ignored by UCD and its consultants, evidently hoping that it will somehow go away. This issue will not go away. UCD will come up to finalization of the RI/FS for the site and will find that DSCSOC will vigorously oppose finalization until a proper evaluation of the deleterious chemicals that are present in the waste and groundwaters polluted by the waste that will need to be controlled is made.

One of the UCD consultant staff made the statement that those constituents which are missed on the initial assessment could be picked up in the periodic (five year) review that the US EPA is required to conduct of the adequacy of Superfund site investigation and remediation. The person making those comments, however, did not report on the situation with respect to the severe funding constraints that the US EPA faces, where, in many parts of the country, there has been no five-year followup on Superfund sites, even though "required" by CERCLA. I reminded the group that I had previously brought to their attention that the US Congress General Accounting Office wrote a special review on this issue, pointing out that the Agency is not carrying out the five-year review in accord with CERCLA requirements, because of inadequate funding. Since, unfortunately, the inadequate funding on Superfund sites could get worse, rather than better, it is mandatory that the initial review do the best possible job in defining constituents of concern, and clearly lay out the deficiencies that exist in how the process is being carried out.

I suggested that, from the DSCSOC/public's perspective, there should be a sincere effort to properly present and discuss these issues so that the public understands the deficiencies in a Superfund site investigation of this type, compared to the hazards that can exist where complex mixtures of wastes have been deposited at a site such as the LEHR Superfund site campus landfills. I also suggested that possibly a good start on this issue would be to review the lists of chemicals that the US EPA and the California Department of Health Services have developed as chemicals that are new threats to drinking water. I have previously provided information on this issue as part of expressing DSCSOC's concern about inadequate COC evaluation that is conducted at the LEHR site. As a followup, I am contacting both US EPA Region 9 (Dr. Bruce Macler) and the Department of Health Services staff (Bob Hultquist) who have repeatedly expressed concern about the unknown hazardous chemicals that are largely ignored in investigations of the impacts of complex mixtures of wastes on public health and the environment, to determine what they might recommend in the way of chemicals that should be evaluated with respect to their having been missed in the approach that has been used at the LEHR site in defining COCs.

Full Extent of the Groundwater Pollution Plumes

An issue that DSCSOC has raised year after year for over five years is that, thus far, UCD has not adequately and reliably defined the full extent of groundwater pollution at the LEHR site. This time both the Central Valley Regional Water Quality Control Board (Susan Timm) and the US EPA (Kathy Sestian) indicated that UCD **must** define the extent of onsite and offsite pollution of groundwaters by waste-derived materials from the LEHR site.

One of the issues that came up a number of times in the discussions at this meeting was characterized as the erratic nature of groundwater contamination by several constituents. As I have pointed out previously, this so-called “erratic nature” may be due to the fact that the pollution of groundwaters by various waste management units at the LEHR site has a significant seasonal component, where during the wet season, water would penetrate through the waste and contribute a slug of waste materials that would eventually reach the water table. The groundwaters flowing underneath/past the waste management unit then would be contaminated for a period of time while this slug was entering the water table. Over time, however, during the dry season, when the moisture entering the landfills is low to zero, the amount of contamination of the groundwater system underlying the landfill would significantly decrease. This would give a wave-like character to the pollution in the groundwaters downgradient of the waste management unit, where at times the concentrations would be much higher than others. This could lead to the conclusion that the measurements of concentrations of some constituents are not being reliably assessed. In fact, they may be reliably assessed – it is just that the sampling program does not have sufficient frequency of monitoring to detect the wave function that exists in the contaminated groundwaters. Those familiar with groundwater hydrology and water quality modeling are well aware of these issues; however, thus far, they have not been adequately considered at the LEHR site, even though they have been previously raised by DSCSOC as a deficiency in how the groundwaters at the LEHR site are being monitored.

Another deficiency in the monitoring is the reliance on hydropunch. It is well known that hydropunch is not a reliable method for assessing groundwater pollution, especially significantly downgradient from the pollution source. Hydropunch often has significant problems penetrating into some aquifer systems. This problem has occurred at the LEHR site. Since the uppermost part of an aquifer does not necessarily reflect the full extent of pollution, due to the infiltration of clean water downgradient of the site, a hydropunch, which only penetrates the upper part of the aquifer, could have samples taken downgradient which show no pollution, yet the aquifer can be highly polluted. This is another of the significant deficiencies that has existed at the LEHR site that DSCSOC brought out years ago that still has not been adequately addressed. It is not possible to properly characterize groundwater pollution using hydropunch techniques at a LEHR site-type situation.

The Extent of Pollution of Groundwaters by the IRA Pilot System

An issue that I raised at the RPM meeting which was accepted by the RPMs as an issue that needs to be addressed is that UCD has not thus far defined the extent of groundwater pollution that has occurred because of the design of the IRA system, where chemical constituents that are not stripped from the polluted groundwaters that are pumped from the aquifer are reinjected up groundwater gradient into the aquifer. In the original modeling of the return plume generated by the reinjected groundwater, a significant part of the reinjected waters would, at times, pass by the extraction well and thereby pollute parts of the aquifer that are not polluted now by waste-derived constituents. As part of filling information gaps, UCD will be required by the RPMs to properly define the extent of additional aquifer pollution that is possible by the IRA because of the failure to recapture all of the reinjected water.

Inadequate Stormwater Runoff Monitoring

Again, we discussed the inadequate stormwater runoff monitoring that UCD and DOE have been conducting at the LEHR site. Again, B. Oatman attempted to distort the issues by claiming that LEHR site wastes would not have to be controlled, even though they were contributing to the excessive bioaccumulation of mercury and chlordane in Putah Creek fish. This is at least the fifth or sixth time that Oatman has made these statements, even though he has been informed several times that his statements are not in accord with regulatory requirements. If he would properly present the regulatory requirements for the stormwater permit that UCD has, he would soon find that the campus permit does not allow the discharge of constituents in the stormwater above the water quality standards/objectives from this type of facility. As you know, I have recently checked this with the head of the Central Valley Regional Water Quality Control Board Stormwater branch (Bill Marshall), who confirmed that the reported discharges of chlordane by UCD from the LEHR site violate the stormwater permit conditions, since these concentrations are in excess of the California Toxics Rule (CTR) criteria.

Unfortunately, discussions of these issues became clouded by suggestions that what should be done is to investigate the sediments of Putah Creek to determine whether they contain chlordane, and therefore could be a source of chlordane for fish. I pointed out that that is not a relevant issue to the regulatory requirements for managing stormwater runoff from the UCD campus, including the LEHR site. As I discussed, the issue is not whether Putah Creek fish contain a significant amount of chlordane, which causes them to be considered a hazard for those who use them as food. While that is an important issue, it is a separate issue from the stormwater permit violation issues.

Another issue related to this which has not been adequately addressed (even though raised repeatedly by DSCSOC) is that, as of yet, we do not know whether fish in Putah Creek contain excessive organochlorine pesticides, PCBs, dioxins (OCIs) or other hazardous chemicals that are commonly found in fish in the Central Valley. Information on the excessive organochlorines in Putah Creek is needed to determine whether chlordane is present in the fish above those levels that are considered a human health threat to those who eat the fish. It is my understanding that the Central Valley Regional Water Quality Control Board has evidence that there are problems with excessive OCIs in Putah Creek, and that the next 303(d) listing will include Putah Creek as an "impaired" waterbody for which a TMDL will have to be developed to control excessive OCIs in Putah Creek fish.

I mentioned during the meeting that the Central Valley Regional Water Quality Control Board had selected me to do a TMDL for excessive bioaccumulation of organochlorine pesticides and PCBs in fish throughout the Central Valley. I have recently initiated a study of these issues in Smith Canal in the city of Stockton, where fish have been found to contain excessive PCBs, which we believe are derived from the sediments. We are conducting sediment bioaccumulation studies to determine if this is the case. I have also just applied to CALFED for a \$760,000/year three-year project to develop excessive bioaccumulation control programs for organochlorine pesticides and PCBs throughout the Central Valley. I know from my previous work that measurement of the chemical concentrations of organochlorine pesticides and PCBs in sediments is not a reliable approach to determining whether fish are deriving their excessive concentrations from this particular source.

Again, at the last RPM meeting, as has repeatedly occurred over the last half a dozen years, UCD consultants (Dames & Moore, now URS) have introduced erroneous information into the discussions regarding water quality criteria and their applicability to regulating discharges to Putah Creek. Contrary to the statements made by URS staff, the California Toxics Rule criteria are fully applicable to regulating discharges to Putah Creek. If anyone doubts this, they should call Jerry Bruns of the CVRWQCB, who is in charge of this area for the Board. Discharges from the LEHR site in stormwater runoff above a CTR criterion is a violation of UCD's stormwater permit, which requires control by UCD.

Sediment Toxicity/Bioaccumulation Issues

Again, as occurred in the mid-1990s and repeatedly since then, UCD's Dames & Moore/URS staff have stated that aquatic life toxicity measurements could be used as an assessment of the potential for bioaccumulation. Even though DSCSOC has pointed out the error in this statement a number of times, it is still being repeated by UCD consultants. Those with the most elementary knowledge of water quality know that aquatic life toxicity and excessive bioaccumulation are two distinctly different processes. Chemicals such as chlordane and mercury can be present in water at concentrations well below any toxicity to aquatic life, and yet bioaccumulate in fish tissue to levels hazardous to those who eat the fish.

Chromium Issues

Again, as has been discussed a number of times in the past, questions were raised about the elevated chromium that is being found in some of the wells at the LEHR site. There were discussions at this meeting, as there have been in the past, about how chromium-III could be oxidized in the presence of manganese and dissolved oxygen to chromium-VI. You may recall that, in the mid-1990s, UCD's L. Vanderhoef administration found some faculty who claimed that chromium discharged to Putah Creek by UCD would be reduced to chromium-III, even though the conditions in the water are oxidizing – i.e., in the direction of oxidation. This situation is another of the examples where UCD administration uses the science that it thinks is appropriate to support a preconceived position on issues. This is one of the primary reasons why UCD's L. Vanderhoef administration and its staff and consultants have no technical credibility with the public.

Unreliable Standard for Chloroform

As you and I know, DSCSOC has had to spend a considerable amount of the limited funds that are provided by the US EPA addressing the same issue once or twice a year for the last six years. This situation arises out of UCD's and its consultants' attempts to distort information presented to the RPMs and the public. An example of this, which has come up time after time, is UCD's attempts to claim that the standard for chloroform in Putah Creek is 100 µg/L. Even though UCD was told by the RPMs to stop making such claims, UCD at the last RPM meeting produced a consultant's report that included the same erroneous information. I feel that DSCSOC should start keeping track of the time that they have to spend repeatedly addressing issues of this type, and bill UCD staff, the president (L. Vanderhoef) and the consultants for this needless expenditure of US EPA-derived time/funds.

If there are questions about these comments, please contact me, G. Fred Lee