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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

December 16, 1997

Mr. Douglas Zimmerman
Nevada Division of Environmental Protection
Capitol Complex
333 W. Nye Lane
Carson City, Nevada 89710

Dear Doug:

Thank you for providing us the opportunity to review the work plans submitted on November 3, 1997, by PEPCON and Kerr-McGee for characterization of the perchlorate contamination in Henderson, Nevada. We have informally discussed our comments on these plans with your staff by telephone and e-mail in November and at the meeting you hosted in Las Vegas on December 1. It is gratifying that both Kerr-McGee and PEPCON are proceeding with preliminary data-gathering tasks voluntarily. We understand that both work plans were produced rapidly and with an explicitly limited scope pending results from the preliminary tasks. In our discussions it became apparent that many of our concerns have been considered already, although not included in the work plans. Our comments are meant as recommendations for incorporation in subsequent documents rather than as revision of the existing preliminary documents. A generic Scope of Work for a RCRA facility investigation is enclosed.

Definition of Broad Objectives -
A statement of the general objectives should be included as a guide to the investigation. The objectives are, in a broad sense, 1) to effectively and rapidly stop inflow of perchlorate into the Las Vegas Wash, and 2) to ultimately remove perchlorate from the subsurface-groundwater-surface water systems for long-term protectiveness. For the existing Kerr-McGee facility, the workplan should include documentation of process, handling and disposal steps that ensure that any continuing releases of perchlorate are halted or minimized. Since it is evident that substantial amounts of perchlorate are already present in the subsurface from past releases, critical information is needed for groundwater near the Las Vegas Wash and at potential release sites or residual sources.

Overall Control Strategy -
Even at this early stage there should be some conceptualization of a strategy for attaining the cleanup objectives. Without committing to a specific action or technology type, a suggestion of possible physical barriers (e.g., slurry walls) or hydraulic containment (e.g., active pumping or trenching) would help identify data needs. Similarly, the thought of excavation or isolation of residual perchlorate not already dissolved would pose the need for particular types of data. Treatment technologies which could be considered also would have an effect on the water quality

and hydrogeological data that should be collected during the investigation.

Specific Hydrogeological Data Collection -
In light of the response objectives, the workplans should explicitly consider the need for quality hydrogeologic data (head elevation, thickness, transmissivity/conductivity) sufficient for a decision and possibly design of a remedial action. Anticipating any future modeling effort would help define the hydrogeologic data needs. Since the PEPCON plan indicates that measurements of groundwater elevation will be taken to the nearest hundredth of a foot, the plans should explain other steps to achieve such precision, such as the careful surveying of elevations of new wells, confirming accurate elevations of existing wells and coordinating such information between PEPCON and Kerr-McGee investigations. The workplans should include a discussion of efforts to accurately map the "paleo channels" which may be critical transport pathways.

Monitoring Schedule -
More thought is needed about the monitoring schedule (specified as quarterly in the PEPCON workplan). Although it may not be likely that water quality would fluctuate more rapidly than quarterly, water levels could change rapidly in response to episodic or seasonal recharge. Accurate measurements of water level and water quality in selected wells may require a more frequent schedule, perhaps monthly. For both water quality and water level sampling it is reasonable to acknowledge that adjustments in sampling frequency should be reviewed periodically, once we have confidence in our knowledge of the variability of particular measurements.

Unsaturated Zone Sampling Near Source Areas -
Sampling in the unsaturated zone for residual perchlorate is warranted for assessing the mass of perchlorate in the subsurface for eventual cleanup decisions. The future need for this information should be considered before additional wells are constructed. The vertical distribution of perchlorate should also be considered below the water table. We have been informed that some effort is being made to ensure that the deeper aquifer (below the Muddy Creek Formation) is unaffected. We recommend that this effort be including in the work plan and subsequent reports. Depth-specific groundwater sampling in the shallow aquifer may also be useful if the saturated thickness is greater than 20-40 feet.

Comprehensive Water Chemistry in Selected Wells -
Another factor that must be considered for remedial action is water chemistry other than perchlorate, pH and conductivity. For example, biological treatment (whether in situ or above-ground) is sensitive to dissolved oxygen and nitrate and to potentially toxic compounds. Any water that is extracted would need to be treated for hazardous chemicals that exceed the action levels for whatever final disposal option is considered. This water chemistry information could be gathered on selected wells during this stage.

Start Treatment Technology Considerations -
An initial consideration of potentially applicable treatment technologies would be appropriate. Kerr-McGee indicated informally that they are engaged in this now, both directly and indirectly through the Perchlorate Study Group. It would be worthwhile to begin consideration of the

feasibility of technologies to treat perchlorate at the concentrations expected in this cleanup work. This information would help focus the need for water quality and hydrogeologic data (e.g., the range of possible flow rates and concentrations). Kerr-McGee should now be investigating treatment options to remove perchlorate from the 40,000 gallon per day groundwater extraction system operating on their property to remove chromium. When this water is reinjected, it returns approximately 350 pounds of perchlorate to the subsurface each day. Treatment to remove perchlorate prior to reinjection provides some direct protection of the groundwater while taking advantage of an opportunity to test treatment options.

Overall Schedule -
A general schedule for the characterization work was presented in both PEPCON and Kerr-McGee workplans. A preliminary report is scheduled for submittal in mid-January, 1998. A more thorough workplan is expected then. It would be helpful if a schedule were included that would be useful in assessing both how realistic the schedule may be and how we might assist in compressing the schedule.

Decision Process and Public Participation -
NDEP, along with the Southern Nevada Water Authority, have committed to keeping the public informed of the progress of the perchlorate investigation. It is not too early to consider the process of deciding on a cleanup action with regard to thorough record-keeping, accurate cost-accounting and public participation. EPA feels strongly about the need to involve the public in the decision-making process and includes this as a factor in scheduling.

Thank you for your collaborative efforts in working toward a solution to perchlorate contamination of Las Vegas Wash and the Colorado River. Please feel free to contact Kevin Mayer at (415) 744-2248 or Mitch Kaplan at 744-2063.

Sincerely,

Kevin Mayer

Kevin Mayer
Superfund Division, SFD-7

Mitchell Kaplan

Mitch Kaplan
Waste Management Division, WST-5

Enclosure
cc: Brenda Pohlmann, NDEP