PSC-96

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May 8, 1996

Mr. James Cochran, Manager
Environmental Health and Safety
Philips Semiconductors
9201 Pan American Freeway
Albuquerque, New Mexico 87113

Dear Mr. Cochran:

This letter responds to the issue of the appropriate screen length for detection monitoring wells at Solid Waste Management Unit (SWMU) No. 8 (the old Coronado Municipal Landfill), located at the Philips Semiconductors facility site. This issue was raised during our meeting with you, other Philips staff, and City of Albuquerque personnel on April 4, 1996.

The Hazardous and Radioactive Materials Bureau (HRMB) of the New Mexico Environment Department (NMED) has consistently required a maximum length of no more than 20 feet for these screens. After consulting with other NMED hydrogeologists and a low-flow pump manufacturer, and reviewing US Environmental Protection guidance, HRMB will continue to require that the maximum well screen length not exceed 20 feet. HRMB's review of this issue is discussed in an enclosure to this letter.

Please contact Stephanie Kruse of my staff at 827-1561 if you have any questions or comments on this issue.

Sincerely,

Barbara Hoditschek

Barbara Hoditschek, Manager
RCRA Permits Program

Enclosure

xc: Dale Conover, HRMB
Melanie McKinley, Philips
Douglas Earp, City of Albuquerque
Philips - HSWA file

NEW MEXICO ENVIRONMENT DEPARTMENT
Hazardous and Radioactive Materials Bureau

MEMORANDUM

DATE: May 3, 1996
TO: Ron Kern, Technical Compliance Program Manager, NMED-HRMB
cc: Philips Semi-Conductor File
Stephanie Kruse, RCRA Permits, NMED-HRMB

FROM: Dale E. Conover, Technical Compliance Program, NMED-HRMB Dale E. Conover

RE: PHILIPS SEMICONDUCTORS / CITY OF ALBUQUERQUE PROPOSED LOW-FLOW PUMP & MONITOR WELL SCREEN LENGTHS

The City of Albuquerque, NM has proposed using very long 2" diameter monitor well screens. The screens proposed are up to 40 ft. in length. They would sample groundwater through these screens with a low-flow volume well sampling pump. The main reason given by the City of Albuquerque for the long screens is to extend the useful life of monitoring wells installed at the former Coronado Landfill (the Philips Semi-Conductor Facility location). The groundwater levels are declining in the upper aquifer at this site at a rate of at least 6 in. per year.

The EPA's RCRA Ground-Water Monitoring Technical Enforcement Guidance Document (TEGD, September 1986) recommends 20 foot maximum screen lengths for wells screened across the water table, with fifteen feet of well screen below the water table and five feet of well screen above the water table. The recommended minimum length of service for monitoring wells in the TEGD is thirty years. With a water level drop of approximately 6 inches per year at Philips, the fifteen feet of screen in the saturated

favors the use of shorter, more discrete screened intervals in monitoring wells.

The contaminants of concern (COCs) identified at the Philips Site are 1,1,2,2 tetrachloroethane, with a specific gravity of 1.59 and a solubility of 0.29% in water and perchloroethylene (tetrachloroethylene) with a specific gravity of 1.63 and a solubility of 0.015% in water. NMED hydrogeologists recommend detection well screens of less than five feet in length for the detection of contaminants that are denser than water and of low miscibility.

To Summarize:

I. Monitor wells are for the purpose of contaminant detection and not long term monitoring, at this stage of the investigation.

II. It is difficult to determine the exact depth of samples from a well screened across more than one water bearing stratum.

III. The manufacturer recommends that low flow pumps be used with short screen lengths to maximize their effectiveness in sampling from a discrete zone of an aquifer (references below.)

IV. Groundwater professionals within the NMED who have experience in the Albuquerque area with the Santa Fe Alluvial aquifer, as found beneath the Philips site, recommend short (i.e. 15 feet or less) screen lengths for detection monitoring wells. Effects that are detrimental to obtaining a representative sample include potential cross-contamination, mixing of water from different hydrologic source zones, and dilution of a plume's contaminant concentration levels.

V. The COCs at the Philips site are denser than water and not readily miscible. The type of contaminants identified at the Philips Site have been found elsewhere to occur as thin, discrete layers within aquifers at a depth where further downward migration is retarded by a less permeable layer. These types of contaminants may be more readily detected along a narrow range of depths using a shorter screened interval.

QED Supplied References:

1) Puls, Robert and Barcelona, Michael (1995), "Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures", in EPA Groundwater Issue, December, 1995, 12 pgs.