

October 20, 1994

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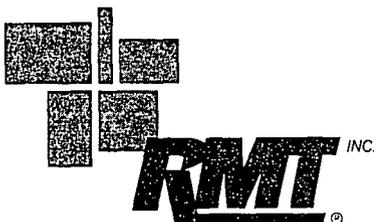
RE: Clean-up Goals for Soils Operable Unit #2
NIROP Fridley, Minnesota

Tom and David:

Along with responding to comments on the Alternatives Array Report, we have also been working on the Feasibility Study. One of the most significant issues in the FS is setting clean-up goals that will prevent further degradation of the groundwater below O.U.#2 soils due to soil leaching, and protect against unacceptable human health risks under the future residential land use assumptions. As agreed to following the TRC meeting on September 8, 1994, RMT has been evaluating both the risk-based soil clean-up goals and the soil clean-up goals developed using the MPCA Soil Leaching Model. The purpose of this letter report is to provide the agencies with the rationale and calculations that we used in developing proposed clean-up goals for O.U.#2 soils. We are requesting that you critically review and comment on this material at this time so that we can move forward on the FS knowing what clean-up levels the alternative technologies would need to meet. David Cabiness of the Navy has reviewed a draft of this letter and is in concurrence with its content.

A discussion of the MPCA Soil Leaching Model Results is presented in Attachment 1. Input parameters to the leaching model that differed from MPCA's initial analysis for NIROP included the biodegradation half-life and the contaminant center of mass. Results of RMT's analysis indicate VOCs in the unsaturated soil are not a continuing significant source of contaminants to the groundwater. The dissolved concentrations of trichloroethene (TCE) and other constituents of concern in groundwater are more likely a result of desorption of these compounds from soils below the water table and possibly from DNAPLs and/or unsaturated soils beneath the NIROP facility (O.U.#3).

A discussion of the Risk Assessment Clean-up Goal calculation is presented in Attachment 2. The risk assessment assumes future land use of the site is residential, and considers risks due to exposure from soil ingestion, dermal contact, soil inhalation, and soil pore gas inhalation. Target clean-up goals were back calculated from the conservative worst-case scenario of future residential land-use. Exposure pathways included soil ingestion, dermal contact, particulate inhalation, and soil pore gas inhalation. The risk assumptions used in the RI were applied to the back-calculations. In addition, the same data evaluation criteria utilized in the RI was applied to the metals and PAH concentrations as detailed in Attachment 2. There is a consistent lack of site related metals and PAHs at levels which exceed typical urban concentrations. Therefore, no clean-up goals have been proposed for these constituents and risk-based target levels were evaluated only for the site-specific VOC impacts.



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Page 2

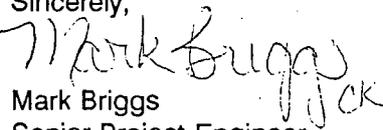
Specific risk-based goals were calculated utilizing threshold target risks of 1×10^{-5} for carcinogens and a hazard index of 1. Target compositional soil concentrations were calculated for the ingestion, inhalation of particulates, and dermal contact pathways. Only one sample was found to exceed these criteria. Therefore, compositional goals were not considered necessary at the site. Pore gas target goals were calculated based upon previously agreed to risk factors (see Attachment 2). The rates of mass transfer required to support these risk assumptions (i.e., rate of diffusion through basement walls, ground surface losses, etc.) were not included in the calculation. Based upon this conservative approach, the pore gas target clean-up goal were less than pore gas concentrations measured throughout Area A, and portions of Area D and E. Areas B and F contained essentially no pore gas concentrations above the target clean-up goals. Therefore, inhalation of soil pore gas containing VOCs poses the highest potential health risk in the future residential use scenario. The clean-up goals for the soil pore gas pathway were calculated to be 0.3 ppm trichloroethene (TCE) and 0.7 ppm tetrachloroethene (PCE) as pore gas. These values should not be confused with compositional soil concentrations. The pore gas concentration effects an analysis of the volatile constituents in the unsaturated zone and is a more accurate and direct measure of potential impacts on human receptors.

Comparing the results of the MPCA Soil Leaching Model with the VOC concentrations measured during the RI, indicates that none of the soils at NIROP contain concentrations of contaminants above levels that affect groundwater quality. However, since soil pore gas in Areas A, D, and E do contain TCE and PCE pore gas concentrations above levels that pose cancer risks greater than 10^{-5} , RMT is proposing, on behalf of the NAVY, that USEPA and MPCA consider target clean-up goals based on TCE and PCE in soil pore gas.

Protecting receptors against exposure to soil gas is consistent with application of soil vapor extraction as the presumptive remedy in the Fridley, NIROP site. This remedy directly controls the migration of soil vapor and controls potential health impacts. Of course, it is understood that operational constraints may limit or delay accomplishing these target clean-up goals. Typically, SVE clean-up criteria are based upon a performance based standard identified as the best available control technology. The ability of SVE to effectively remove VOCs from the unsaturated soils and the associated operating constraints will be addressed more completely in the full feasibility study (FS) report.

To maintain the schedule for the FS, which has been accelerated from that in the Federal Facilities Agreement for this site, we would like to set up a conference call among the agencies, the Navy, and RMT on Monday, October 31, 1994, at 9:00 a.m. C.D.T. to discuss and resolve any questions or concerns regarding the information presented in this letter and its attachment. I will call you early next week to confirm this day and time. Thank you for your timely consideration.

Sincerely,


Mark Briggs
Senior Project Engineer

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