GWOU ADMINISTRATIVE RECORD
SECTION TITLE:
GW-300-301-1.06

86669

MAR 27 2000

Mr. Dennis Grams
U.S. EPA
Region VII
901 North 5th Street
Kansas City, Kansas 66101

Dear Mr. Grams:

WELDON SPRING SITE REMEDIAL ACTION PROJECT – DGLS PROPOSAL FOR ADDITIONAL TESTING FOR THE GWOU

Reference: Letter from Dr. Jim Williams, Director of the Missouri Division of Geology and Land Survey, to Mr. Dennis Grams, Regional Administrator for the Environmental Protection Agency Region VII dated March 10, 2000

The De[illegible]ment of Energy has reviewed the referenced letter and detailed comments are attache[illegible]. We would like to state our appreciation for the extra time and effort that Dr. Williams and his staff put into this review. We have always had a great deal of respect for DGLS and their willingness to become involved in complex problems of this kind. Having said that, we do not believe that the DGLS has substantiated the state position that further field study of the feasibility of groundwater pump and treat operations are warranted. It was our understanding that DGLS would be much more specific regarding the scope of any further field studies and that they would recommend performance measures for determining the success of such studies. In our view, their recommendations fall short in this regard and would place the project in an indefinite remedial investigation/feasibility process with no reasonable expectation of success. The proposal also appears to recommend further investigation of groundwater pump and treat without artificial recharge. It was our belief that there was consensus at our January 27, 2000 meeting that pump and treat without artificial recharge was not a feasible remedial alternative.

Two other recommendations presented in the DGLS proposal are, in our view, problematic and unnecessary. First is proceeding with in-situ remediation of TCE as an early action. Absent of a Record of Decision we would be compelled to prepare a separate decision document, presumably as a removal action, in order to have authority to proceed. The time and expense of such an activity would be substantial. If instead, the authority to proceed were under a Record of Decision, which includes both pump and

treat field studies and TCE treatment, the work would have to be done sequentially and logic would suggest that the field studies should be done first.

Finally, regarding the recommendation to consider passive treatment of springs, the Department of Energy does not support this as being warranted. Source materials have been removed and risk assessments performed indicate that concentrations are protective of human health and the environment. In fact, recent data indicate that water discharging from Burgermeister Spring has nitrate and TCE levels averaging below their respective MCLs. Nitroaromatic levels are below State water quality standards.

Enclosed is our detailed response to these and other points. Subject to your review, we suggest that this be accepted as our final input to the informal dispute process begun in October of last year. In closing, I want to express my appreciation for the time and effort of all participants.

Sincerely,

ORIGINAL SIGNED BY
STEPHEN H. McCRACKEN

Stephen H. McCracken
Project Manager
Weldon Spring Site
Remedial Action Project

Enclosure:
As stated

cc w/enclosure:
Steve Mahfood, MDNR
Rod Nelson, EM-90
Rachel Blumenfeld, CC-10
Weldon Spring Citizens Commission
Mary Picel, ANL
Becky Cato, PMC
Steve Warren, PMC
Doug Steffen, PMC

EM-95:TPauling:x7051:emh:3/24/2000 (m:Response to DGLS)

CONCURRENCES/ REVIEWED BY:	
RTG SYMBOL	EM-95
INITIALS/SIG.	TPauling
DATE	3/24/2000
CONCURRENCE: RTG SYMBOL	EM-95
INITIALS/SIG.	SMcCracken
DATE	3/24/2000
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ATTACHMENT: Response to issues raised in the letter from Dr. Jim Williams to Mr. Dennis Grams dated March 10, 2000

Item 1

The letter states that the Department of Energy has not demonstrated that extraction of meaningful amounts of contaminated groundwater is infeasible. What the Department of Energy has stated is that is it not feasible to reduce contaminant concentrations at the chemical plant to or below ARAR and/or risk-based concentrations throughout the aquifer in a reasonable period of time. It is evident from the pilot pump test that contaminated groundwater can be removed from the area immediately south of raffinate pits 3 and 4. However, the hydrogeology of the aquifer limits the amount of groundwater that can be withdrawn. The stratigraphy and the structure of the weathered limestone have a significant influence on the permeability and direction of groundwater flow in the shallow aquifer beneath the chemical plant. Previous tests indicated a sustainable extraction rate of less than 1 gpm, which has been considered representative of the Burlington-Keokuk Limestone. Localized areas at the chemical plant exhibit bedrock lows characterized as highly weathered and fractured limestone. This greater degree of weathering and density of fractures allows for groundwater to flow more readily, if available, as determined by the results of the pumping test. The limitation in recharge to this more transmissive portion of the aquifer, which is limited in extent, is supported by incomplete recovery of the aquifer after completion of the pumping test.

Item 2

The letter states that the Department of Energy has not calculated the quantities of contaminants of concern present in the shallow groundwater system. A definitive determination cannot be made based on the uncertainty of the percentage of contaminants present in the fracture system versus the porous media matrix, as discussed in the DGLS letter. However, these quantities can be estimated applying the same parameters used to calculate the cleanup times associated with a pump and treat system and natural attenuation as provided in the *Supplemental Feasibility Study for the Groundwater Operable Unit*. This report contains a discussion of the contaminants of concern, their locations, their associated volumes, pore volumes of water needed to reduce concentrations to ARARs, and the cleanup times for groundwater extraction and natural attenuation for the 7 cleanup zones at the chemical plant.

Item 3

The letter suggests optimal locations for extraction and injection wells can be determined by careful monitoring and testing. Under homogeneous, isotropic conditions, this statement is correct; however, in a karst environment it may not be possible to ever determine favorable locations. At best, some quantity of contaminated groundwater can be extracted. The quantity cannot be directly calculated and it is not possible to remove all contaminants to ARAR concentrations within a reasonable time period.

It is also suggested that artificial recharge of the aquifer can be used to minimize the effects of aquifer dewatering, and that the potential benefits of operating a remedial system outweigh the possible concern of inducing further contaminant migration. Presently the levels discharging at Burgermeister Spring are protective of human health and environment. Also, the average concentrations are below the MCLs for nitrate and TCE and below Missouri drinking water standards for nitroaromatic compounds. Performing field studies could potentially result in increasing these concentrations. Also, due to the complex nature of karst aquifers, it is not possible to predict if conduits and fracture zones are connected until field testing. Due to the indeterminate degree of connectivity between conduits and fractures, only a portion of the injected water will be extracted, resulting in the possible mobilization of contaminated groundwater to areas outside the study area.