KU KANSAS GEOLOGICAL SURVEY
The University of Kansas

Geohydrology Section
1930 Constant Avenue
Lawrence, KS 66047
August 12, 2009

Sarah Unruh, P. E.
Professional Engineering Consultants, P. A.
303 South Topeka
Wichita, KS 67202

Dear Ms. Unruh,

I am responding to your recent email and our phone conversation this morning concerning my recommendation to delay the Dodge City municipal waste treatment project. My comments were based primarily on my experience with the facility to the south of town. I agree that the northern project is substantially different in processing and disposal of treated waste water and the resulting sludge from the membrane filtration process.

As I stated in my previous letter, my major concern is that the soils in the area may have macropores which would permit rapid movement of treated water to the ground water. The concerns I mentioned are long term and will not show up in the near future. I recommended the use of lysimeters, soil cores, monitoring wells, and chemical testing of sludge and waste water as means to try to identify a problem before any contamination reaches the ground water. I did not mean these methods recommendations to cause a delay in the process of constructing the plant.

I think the overall plan for the plant is reasonable and a good methodology to address potential nutrient issues and should proceed. However, I would suggest that the engineering firm add some additional testing for soil permeability and deep soil cores (perhaps even to ground water) from both the city property and agricultural land that will receive either treated waste water or sludge to attempt to determine if macropore flow may be an issue that needs addressing.

Sincerely,

Margaret A. Townsend

Margaret A. Townsend
Hydrogeologist

Subject: [Spam] Environmental Review - Dodge City Water Reclamation Facility (PEC #08827-002-1009)
From: "Sarah Unruh" <Sarah.Unruh@pec1.com>
Date: Tue, 11 Aug 2009 16:33:21 -0500
To: <townsend@kgs.ku.edu>
CC: "Kevin Rood" <Kevin.Rood@pec1.com>

Ms. Townsend:

We received your project review letter dated July 2009 indicating your recommendation to delay clearance of the project until concerns regarding potential nitrate levels in the effluent are addressed. We would like to discuss this recommendation.

The concerns appear to be based on conditions experienced at the existing wastewater treatment facility south of the City. The proposed new water reclamation facility is vastly different from the existing facility in treatment design, goals, and quality of effluent as discussed below.

The existing facility is a lagoon system designed primarily for Biological Oxygen Demand (BOD) and Total Suspended Solids (TSS) removal, with the effluent treated to standards required for application to agricultural ground. Effluent from the existing facility is not treated to remove nutrients based on its end use, as nutrients are desirable on agricultural ground for crop growth.

The proposed north facility is a membrane filtration facility designed with a biological nutrient removal activated sludge process. This facility will produce effluent treated to the standards required for discharge to a receiving stream. Nutrients must be reduced to permit limits of 8 mg/L total nitrogen and 1.5 mg/L total phosphorous prior to discharge of the effluent.

Although specific details regarding what areas will be irrigated, quantity of water used, frequency of irrigation, etc. have not been finalized, it is known that the effluent will meet the permit limits of 8 mg/L total nitrogen and 1.5 mg/L total phosphorous as required.

Also, the existing wastewater treatment facility accepts industrial flow from National Beef in addition to domestic flow. In addition to the type of treatment used, the high nitrate levels in the existing facility effluent may be partially attributed to the presence of nitrogen compounds in the industrial flow. The proposed north treatment facility will only accept domestic flow, which typically has a low influent nitrate concentration.

Your letter also discusses a concern with pharmaceuticals in the treated effluent. The State of Kansas does not currently regulate levels of pharmaceuticals. Effluent monitoring for such constituents may be imposed at some point in the future, but what and when are not known. The membrane filtration system designed for the new facility is current cutting edge technology for wastewater treatment. We anticipate that if/when regulation of pharmaceuticals occurs, the membrane filtration system will be one of the tools used in their treatment/removal. With its current design, the proposed new facility will be poised to meet future regulations.

We appreciate your consideration of these points, and would be happy to discuss these issues with you further at your convenience.

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