



P.O. Box 226 • Seneca, KS 66538 • 785/336-3760
FAX 785/336-2751 • <http://www.krwa.net>

July 21, 2010

Terry Urban
City Administrator, City of Valley Falls
421 Mary St.
Valley Falls, Kansas 66088

Re: Lagoon Engineering Study

Dear Terry,

I enjoyed meeting with Daryl Courter and you yesterday to discuss problems the city is having with your sewage collection and treatment systems and whether an engineering study is needed at this time. After our discussion and review of both the original plans of the lagoon and our site visit, I believe it is in the city's best interest to proceed with a study in order to document and prioritize those problems the city is currently experiencing. Such a study can be justified for several reasons including:

- The lagoon discharges on a more frequent basis than in the past. But more importantly, the city has needed to discharge outside of the November 1 – March 31 window allowed by your permit. KDHE restricts discharges at all other times of the year due to the possibility of body-contact recreation downstream in Perry Reservoir. During 2008 and 2010, the city had to sample and obtained KDHE approval for emergency discharges. Otherwise, wastewater would have been over the top of the bisecting dikes of your four cells. During 2009, the city was able to wait until November 1, but with very little remaining freeboard in any of the four cells. Up to now, KDHE has granted approval for emergency discharges. However that could change in the future and place the city in an undesirable predicament. The Corps of Engineers could also object to such discharging outside the permit window. Consequently, an engineering study would help to evaluate whether more lagoon capacity is needed and/or infiltration/inflow (I&I) sources need to be located and eliminated.
- The effluent limits in your permit could be lowered at some point in the future. Presently, EPA is in discussions with KDHE to lower effluent ammonia limits for all facilities, including lagoons. Presently, Valley Falls is only required to monitor for ammonia (no actual limits). But that could change in the future with more restrictive ammonia limits placed on all treatment plants in Kansas. Consequently, an engineering study could help determine if the lagoon has adequate detention time to meet such limits in the future.
- I suggest the scope of study be expanded to also include evaluating the condition of the city's sewage collection system. According to Daryl, the city has slip-lined a very small percentage of total sewer mains on the last couple of years. But I am sure you still have many areas prone to infiltration and

inflow. Smoke testing and/or televising of your sewers would help locate sources of extraneous water that does not require treatment. Examples include old cracked clay sewer mains, brick manholes missing mortar, unknown stormwater catch basins accidentally connected to the sanitary sewer, and low manholes near roadside ditches, etc. that are not at grade and potentially underwater during heavy rains. Additionally, I encourage the city to also look at private sources of I&I such as basement sump pumps, foundation drains, roof downspouts and uncapped cleanouts. All such sources of “clean” water should be directed away from the city’s collection system. Otherwise, problems can occur with basement backups and sewage bypasses (overflowing of manholes). If more lagoon capacity is needed, less may be required if some of these sources can be found and eliminated.

- I was also surprised to find out during our meeting that during very high flows, raw sewage must be directed to all four lagoon cells. Obviously this is not the mode of operation originally intended for this lagoon. Typically lagoons are operated in series if possible. Occasionally, raw flow is split between the first two cells (parallel operation) and these two cells then operate in series with Cells 3 and 4. But diverting raw flow to downstream cells (especially Cell 4) could present real problems should the city need to discharge shortly thereafter. Without sufficient detention time, effluent sampling could indicate levels in excess of the BOD, TSS and E. coli limits in your permit. In such cases, the city could be denied permit to discharge. Also, if the river is up, the city cannot discharge. In fact, the river can flow back into the lagoon if there is sufficient head and the discharge valve is open. The city may want to evaluate the options of more storage versus the ability to pump effluent to the lagoon.
- Finally, I would suggest the engineering study include measuring sludge depths in all four cells. The city has had this done in the past, but the information is now dated and sludge levels likely have increased. Excessive sludge accumulation can adversely affect treatment and reduce treatment capacity.

I am available to meet with you and the council to discuss this matter in more detail. I encourage the city to be proactive in dealing with these problems. Should you have any comments or questions regarding this matter, please feel free to call me at 913-850-8822 or by email at jeff@krwa.net.

Sincerely,

Jeff Lamfers
Consultant

c: Susan Grey, Mayor
Daryl Courter, Wastewater Superintendent
Helen Holm, KDHE, Lawrence