

Wastewater System Referrals from KDHE Keep KRWA More than Busy



The lagoon was repaired by the city; sludge was removed and the dikes were repaired and reshaped to like new.

The Kansas Department of Health and Environment (KDHE) has contracted with KRWA to provide technical assistance to wastewater systems by referral since 2011. KDHE has referred 207 systems to KRWA since the contract was established.

Of these referrals, 139 have either been returned to compliance or only could be resolved by Administrative Order due to no operational changes to meet permit limits. The present referral listing includes 68 wastewater systems. Many of the referrals require substantial time – often as much as a year or more involving numerous visits to ensure the operational changes are working correctly and discharge permit limits are being met. Other referrals can be addressed with only a few visits to make corrections. In cases only one visit is necessary to identify the problem and correct it and then a follow-up or two to make sure the

discharge permit limits are being met. The initial visit usually involves a review of the information provided by KDHE and the design plans for the system. Input by the operator(s) can be extremely helpful and in several cases, an immediate remedy to the problem can be determined.

The referrals include a variety of issues – from operator training, sludge profiles, collection system issues, and the most commonly referred issue is for failure of systems to discharge permit limits. KDHE's goal in referring these systems for technical assistance is to hopefully correct an operational problem versus having to issue an Administrative Order for Schedule of Compliance; that would require the system to hire an engineer. Of course, if we find there is no operational deficiency, then KRWA advises KDHE and the system that they should obtain professional engineering services. There has

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been no operational remedy for some systems that KRWA has worked with. Those systems either had excessive inflow and infiltration (I&I) and needed collection system repairs that were only affordable by obtain financing or the systems were overloaded so an expansion of the treatment or collection system repairs were needed.

Recently a wastewater operator called me for assistance due to failure of the system's permit limits. I visited the system and found they were short-circuiting due to no weir plate between two cells. There was also discharge from the upper discharge pipe of the cell. The discharge pipe and the effluent pipe in the structure were at the same level. A week after the system operator called, KDHE also issued the referral. The system operator had already made the corrections KRWA suggested; the system is now waiting for a few discharge reports to ensure the corrections are working.

Another example where technical assistance was beneficial was where the community had severe dike erosion and sludge accumulation. The system was referred for failed permit limits. Upon contact with the operator, it was decided to check the sludge to determine the depth of the sludge in the cells. A sludge profile was completed on the first two cells and as it started to storm with lightning, the operator and I decided not to check the sludge in Cell No. 3. While performing the sludge profile severe dike erosion was noted. This was pointed out in a report to the system



Assistance at this wastewater system involved raising the weir plant so the level of Cell No. 2 was increased before wastewater flowed to the final cell.



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The lower discharge pipe is now being used and a short extension to ensure five feet of operating depth.

and KDHE. I discussed options with the system operator. The question was if the community could make the repairs themselves? My answer was a very reserved “yes”; I was not familiar with the new operator and how they would



Severe dike erosion was noted when performing the sludge profile. After the cell was drained the erosion was more noticeable as shown in this photo.

complete the work. The city said they would hire local dirt contractor for most of the work and the city would do what it could to reduce cost. Bids were received for the repairs; it was determined that the city could afford to remove sludge and repair one dike per year. The first year went very smoothly; sludge was removed from Cell No. 3 and the erosion was repaired and rock rip rap for erosion control was added.

That city has now completed repairs to two of the three cells; they hope to finish the last cell late in 2018. Only two cells are now being used and there has been no discharge for almost a year. This system is in an area that has been receiving rain through most of the summer. I believe when this project is completed, the system may very well be able to obtain a non-discharging permit.

All problems not operational

Another recent referral I assisted was where I had completed a sludge profile in June 2017. The sludge was not excessive at less than ten percent in all of the three primary cells. Knowing the sludge was not excessive, I wondered how the system could fail permit limits. I did not check their past discharge monitoring reports or flow data when I checked the sludge a year earlier. When we get a referral from KDHE they provide us a copy of the system's permit, past KDHE inspection reports, a copy of the referral letter, and the system's discharge monitoring

Again, the goal of KRWA and KDHE is to return as many systems as possible to compliance by verifying correct operational practices.

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This photo shows the a second of lagoon dike that was repaired and after rip rap was added.

per day. The actual flow for 2017 was 145,000 gallons per day. Not only was the system overloaded by BOD, it had excessive flow. None of the excessive flow was due to I&I; this was determined by checking the city's water use report! My thought is that the city may have to add another cell to meet loading as well as flow rates. This is one system that will most likely receive an Administrative Order for Schedule of Compliance as there is nothing further operational KRWA can do to assist them.

Again, the goal of KRWA and KDHE is to return as many systems as possible to compliance by verifying correct operational practices. But as illustrated, that is not always possible. KRWA has several staff members who are proficient in training and technical assistance on wastewater utilities; don't hesitate to call KRWA any time with questions or to request help. By being proactive, that might also help ever being referred by KDHE.

reports. As many readers are aware, normal BOD averages to be in the 150 mg/l to 250 mg/l of BOD for wastewater. This system's average was 401 mg/l BOD. I calculated the pounds of BOD per acre to be 55 pounds per day. KDHE's maximum design loading rate is 34 pounds per day. The system was being overloaded. The system is now trying to reduce the BOD by some discharge to the system, but I do not believe it will be a long term solution. The system permit also specified a design daily flow of 108,900 gallons

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