CITY CORPORATION
Russellville Water and Sewer System
205 West 3rd Place PO Box 3186 Russellville, AR 72811-3186
Phone (479) 968-2105
FAX (479) 968-3265

June 4, 2013

Mr. Alan Anderson
Enforcement Analyst
Water Division/Enforcement Branch
Arkansas Department of Environmental Quality
5301 Northshore Dr
North Little Rock, Arkansas 72118

RE: Letter from ADEQ dated May 28, 2013 regarding violations
NPDES Permit No. AR0021768, AFIN 58-00105

Dear Mr. Anderson:

We have received your letter dated May 28, 2013 concerning the 29 violations at the Pollution Control Works during the twenty months from August 1, 2011 through March 31, 2013. This correspondence will provide a summary of the causes for these violations as well as what City Corporation staff has done and/or is currently doing to correct them.

We have previously submitted letters providing specific responses to each of the noted violations along with our monthly DMR's that included information including the cause and corrective actions. As indicated in these reports, most, if not all of these violations were the result of increased flows at the Pollution Control Works due to heavy rainfall events. It is during these times that our plant has difficulty meeting our permit limits as we must limit our process flows to prevent washout of our bacteriological processes. Such process modifications during these rainfall events can and have led to various permit violations as noted in your letter.

Based on information provided from a software package that modeled the treatment processes at our treatment plant, staff modified the operations of the plant to achieve greater performance related to nitrogen removal which proved to be very effective during periods of normal flow. We have realized during the recent heavy rainfall events in 2013, that these operational changes are not as effective during very high flows at the plant. The large number of violations in the first few months of 2013 are a result of poor sludge health caused by excess flows and abnormally cold temperatures. However, as the temperatures have warmed in the month of May, our sludge has greatly improved and we have not expecting any violations during the month, even during several heavy rainfall events. We expect the potential for violations during the summer months to be greatly reduced. However, because the current plant was not designed to remove nitrate and we are currently operating portions of the plant outside of its intended design parameters to

improve nitrogen removal, we cannot rule out future violations when experiencing abnormal weather conditions until the planned improvements are complete.

In general, all of the violations listed will be addressed through two major improvement projects currently underway at the Pollution Control Works that total over $12.5 million. Schedule I of these improvements includes the construction of dechlorination facilities that will permanently address violations related to total residual chlorine. We currently have temporary dechlorination facilities in place that are performing very well and will remain in place until the construction of the permanent facilities is complete, which is expected to be by July 31, 2013.

Schedule II is the larger of the two projects and will address specific treatment limitations and improve the hydraulic capacity of the wastewater plant. The contract was awarded in May of this year in the amount of $10.7 million and is expected to be completed in March, 2015. When complete, the plant is expected to achieve compliance with TSS, BOD and Nitrogen as mandated in the Consent Administrative Order (LIS No. 09-146) dated November, 2009. The other violations noted in your letter are also a result of the aforementioned treatment limitations and will be addressed through these improvements.

Following is a brief explanation of the cause and proposed remedy for each type of violation listed in your letter:

Nitrogen, nitrate total – violations occur as a result of limited assimilating nitrate reduction occurring when bacteria utilize the nitrogen within the nitrate for cell synthesis. This mode of removal is limited and is typically inadequate to meet permit limits with the current configuration of the Pollution Control Works (which was not originally designed for nitrate reduction). This will be addressed by installation of anoxic basins for denitrification designed as an anoxic bio-selector process, with soluble BOD serving as the substrate. This serves both to denitrify through the anoxic process but also to select for floc-forming bacteria with the use of a kinetics-based selector.

Nitrogen, ammonia total - violations occur as a result of ammonia not being fully converted or oxidized to nitrate and nitrite is oxidized to nitrate. Operational changes to the Pollution Control Works (which was not originally designed for ammonia reduction) have yielded positive results for ammonia reduction during dry weather flow, but short detention time associated with wet weather flows have resulted in diminished performance. Efforts to reduce nitrate nitrogen excursions will have a corresponding reduction in ammonia nitrogen excursions.

Solids, total suspended – violations occur as a result of wet weather flow scenarios when solids cannot be sustained in the secondary clarifiers. In order to reliably meet the permit limits for TSS, a third final clarifier will be installed, with rehab of the two existing secondary clarifiers. The redundancy afforded by the third clarifier will allow the existing clarifiers to be taken out of service, one at a time, for inspection and repair. Additionally, the nitrate removal process will improve sludge settleability, promoting better TSS removal and improving the hydraulics of the plant

BOD, carbonaceous - CBOD violations are associated with TSS violations, since particulate CBOD makes up a portion of the TSS. Violations occur as a result of

excessive washout of TSS in the secondary clarifiers due to high surface overflow rates. Efforts to reduce TSS excursions will have a corresponding reduction in CBOD excursions.

Coliform, fecal general – violations occur as a result of TSS and CBOD violations during wet weather reacting with the chlorine dose and leaving less residual available for microbial disinfection. Efforts to reduce CBOD and TRC will have a corresponding reduction in fecal coliform excursions, along with revisions to the chlorine dosing strategy.

Chlorine, total residual - violations occur as a result of residual chlorine in the wastewater effluent. Typically this is associated with wet weather flows resulting in short mixing time. This will be addressed by the installation of a dechlorination system, comprised of sulfur dioxide which is a strong reducing agent. The sulfur dioxide will dissolve in water, reduce all forms of chlorine to chloride and convert all sulfur to sulfate. Chlorides and sulfates occur naturally in most receiving waters.

Copper, total recoverable - violations occur as a result of copper being dissolved into the potable water distribution system. The distribution system has many areas with aged galvanized pipes and many water user's homes are filled with aged copper plumbing. In the summer of 2010, City Corporation switched from feeding a sequestering agent (zinc polyphosphate) to feeding a corrosion inhibitor (zinc orthophosphate) in an effort to mitigate the zinc and copper intrusion into the potable water. This will be addressed by re-verifying dosage of the sequestering agent with changing water quality from the water reservoir and treatment process. City Corporation also continues to budget funds to remove all remaining galvanized piping in the distribution system.

As stated earlier, we feel that we are progressing in the direction as outlined to you in the Corrective Action Report presented to you in response to the CAO and feel confident that completion of the improvements that are currently underway will prevent similar future violations for the reasons listed herein.

Should you have any questions or need additional information, please contact me at 479-968-2080 ext. 113, or Larry Collins, Operations Manager at 479-968-2080 ext 222.

Sincerely,

Steve Mallett, Jr.
General Manager, City Corporation

cc: Larry Collins
Randy Bradley
Ricky Biffle
Clint Bell, CWB Engineers
Andrew Pownall, CDM Smith
File