

CITY COUNCIL STUDY SESSION MINUTES

January 5, 2010

The City Council of the City of Norman, Cleveland County, State of Oklahoma, met in Study Session in the Municipal Building Conference Room at 5:40 p.m. on the 5th day of January, 2010, and notice and agenda of the meeting were posted in the Municipal Building at 201 West Gray and the Norman Public Library at 225 North Webster 48 hours prior to the beginning of the meeting.

PRESENT: Councilmembers Atkins, Butler, Cubberley, Dillingham, Ezzell, Griffith, Kovach, Quinn, Mayor Rosenthal

ABSENT: None

DISCUSSION REGARDING RESULTS AND CONCLUSIONS FOR THE WELLHEAD ARSENIC REMOVAL DEMONSTRATION PROJECT.

Mr. Ken Komiske, Director of Utilities, introduced Mr. Chris Mattingly, Water Treatment Plant Superintendent, who provided the background for why the Arsenic Study was conducted. He said in 2006 the U.S. Environmental Project Agency (EPA) lowered the standard for arsenic from 50 parts per billion (ppb) to 10 ppb. He said the City knew the rule would be effective in 2006 and hired CH2M Hill to perform an Arsenic Study which was completed in June 2002. he said the report looked at various options for treating and provided five options:

- Plan A, a combination of well closures and purchasing water from Oklahoma City
- Plan B, closure of wells, blending, zonal isolation, and purchasing water from Oklahoma City
- Plan C, closure of wells, blending, zonal isolation, and new wells in the Garber Wellington
- Plan D, treatment
- Plan E, closure of wells, blending, zonal isolation, treatment, and new wells in the Garber Wellington

Mr. Mattingly said the City of Norman chose Plan C and combined efforts with EPA, U.S. Geological Survey (USGS), and Oklahoma State University School of Geology to implement an arsenic removal project. He said at the time, the cost of treatment was extremely high and staff began looking at the other methods included in Plan C. He said the EPA and USGS looked at zonal isolation, but it was not successful; however, staff was successful in reducing the arsenic level when blending wells. He said several new groundwater wells have been drilled in rural east Norman.

Mr. Mattingly said over the past few years, treatment costs have been reduced; therefore, Mr. Jerrod Smith, Hydrologist with USGS identified candidate wells for arsenic remediation. On February 27, 2007, the Norman Utilities Authority approved Contract No. K-0607-107 with Urban Contractors, Inc., for an Arsenic Removal Demonstration Project. He said this was a team effort from Urban Contractors, Garver Engineers, and Severn Trent.

Ms. Geri Wellborn, Laboratory Manager, provided the results and conclusions of the Well-Head Arsenic Removal Demonstration Project. She said in 2006 when EPA lowered the standards for arsenic the City of Norman lost 14 wells, which accounted for 50% of the City's well production. The City took a proactive approach to reclaim its existing capital assets and approved an arsenic removal demonstration project. The demonstration project was a granular ferric oxide process and was successful as the average arsenic level of water entering the removal system was 23 ppb and leaving it measured 4 ppb.

Ms. Wellborn said the arsenic is removed below the maximum contaminant level for the entire demonstration period. She said the arsenic concentration of the well decreased over time and extended the

life of the media and lessened the operating and maintenance costs. The pH adjustment is critical to arsenic removal and automatic controls shut down the system if pH rises above the pH set point. She said the system performed consistently and accurately once the controls were in place.

Mr. Michael Graves, Project Engineer, Garver Engineers, said the purpose of the demonstration project was to look at three main objectives; will it work, would there be bacteriological growth as a result of the treatment, and cost. The project was a success and no bacteriological growth was present. As a result, Oklahoma Department of Environmental Quality (ODEQ) reduced the number of times the water needed to be tested from twice a week to once a month. Once the additional testing costs are removed from the project, the ongoing operations and maintenance cost to treat the water is approximately \$1.11 per thousand gallons.

Mr. Graves said the equipment used in the demonstration project was leased and if Council so desired the equipment could be purchased at a cost of \$125,000. Other costs to consider are construction costs related to the construction of a permanent structure to enclose the equipment. The City's Zoning Ordinance would require the equipment be housed in a building with a brick and mortar facade. The additional costs associated with construction of the facility would be \$403,000. He said the total capital and operation and maintenance cost result in a cost of \$1.62 per thousand gallons. He said that is very comparable with other water supply capital improvements whether it be additional raw water supply or expansion of the Water Treatment Plant. However, he said clustering bad wells could generate some economies of scale and the Highway 77 corridor is a possible location for further study to determine if that truly is cost effective. He said the single wellhead cost would come down if several wells were going to a single treatment plant. He said another cost benefit unique to the demonstration project is as of October 27, 2009, 73.6 million gallons of water had been treated and returned for potable water use, generating \$155,000 in revenue. He said approximately 50% of the demonstration project cost has already been refunded by returning the water into the system.

Mr. Graves said the arsenic removal project was successful and the bacterial impacts were minimal. The system is completely self-contained and no sewer or other infrastructure is required. He said this process is completely contained and does not have to have access to the sewer system to dispose of the waste which is good since many of the wells are located in rural east Norman where the City sewer system does not exist. He said the only waste generated from this process is the media itself and once the media is expired, it is considered a non-hazardous and can be safely disposed of in a solid waste landfill.

City Manager Steve Lewis asked Mr. Graves to characterize ODEQ's reaction to the demonstration project. Mr. Graves said they met frequently with ODEQ who reviewed the pilot plan. He said ODEQ encouraged them to make an engineering report with the forethought that this may one day be a permanent project and they would not have to come back and do the report at that time. He said the next phase with ODEQ would be to produce plans and specifications for construction and obtain a construction permit from ODEQ.

Items submitted for the record

1. PowerPoint presentation entitled, "Removing Arsenic from Drinking Water"
2. PowerPoint presentation entitled, "Results and Conclusions for the Wellhead Arsenic Removal Demonstration Project" dated January 5, 2010

Mr. Komiske introduced Mr. Robert Mullins from Mehlburger Brawley Engineering, who presented another arsenic removal process known as ion exchange. He said staff wants to make sure every option has been considered to determine the best solution for the City and ion exchange is something staff may consider. Mr. Mullins said the Ion Exchange Arsenic Removal System is a viable option if sewer is available and could be used on Wells 32 and 33. He said the system would be designed to reduce the

arsenic level from 37 micrograms per liter to less than eight micrograms per liter which complies with State and Federal levels for arsenic in drinking water. The system would be installed at the site of Well 32 and have a maximum capacity of treating 540 gallons per minute with redundancy as required by ODEQ.

The Ion Exchange System contains an on-site regeneration; waste rate of less than .25%; no pH adjustment is required; consistent water quality; and the waste will be sent to the City's sewer system. It is estimated the system will be treating 13 million gallons of water per month using two existing wells and cost is estimated to be approximately \$1,254,675. The proposed system will provide an economical option of \$1.34 per thousand gallons excluding capital cost. The ongoing operation and maintenance cost to produce drinking water is \$.78 per thousand gallons.

Councilmember Cubberley asked if there were other projects in Oklahoma and Mr. Mullins said not of this type.

Councilmember Atkins asked if this method was used and the waste was sent to the Wastewater Treatment Plant, would the arsenic have to be removed again if reuse became an option? Mr. Komiske said additional treatment would not be needed.

Councilmember Griffith asked how many wells could be clustered in one processing plant. Mr. Mullins said part of the process would be to determine just that.

Mayor Rosenthal and Councilmember Cubberley felt the City could benefit from the use of both arsenic removal systems. Mr. Mattingly said staff would recommend utilizing ion exchange in areas where the sewer system exists and the rural areas utilize the granular ferric oxide process.

Items submitted for the record

1. PowerPoint presentation entitled, "City of Norman, Oklahoma, Ion Exchange Arsenic Removal System" dated January 5, 2010

The meeting adjourned at 6:35 p.m.

ATTEST:

City Clerk

Mayor