



STATE OF IOWA

TERRY E. BRANSTAD, GOVERNOR
KIM REYNOLDS, LT. GOVERNOR

DEPARTMENT OF NATURAL RESOURCES
CHUCK GIPP, DIRECTOR

August 17, 2016

City of Charter Oak
c/o Ms. Pam Tripp, City Clerk
453 Railroad Street
Charter Oak, Iowa 51439

Subject: Charter Oak Water Supply Survey Report
Public Water Supply ID # 2417018

ATTENTION: Honorable Mayor and Council

On August 10, 2016, I visited the aforementioned public water supply on behalf of the Iowa Department of Natural Resources (DNR) for a sanitary survey inspection.

We believe you will find the report self-explanatory and strongly encourage you to take action on the requirements and recommendations as described.

The cooperation and assistance of Bill Truitt in completing this survey was greatly appreciated.

If you have any questions about the inspection or report, please contact me at 712-243-1934 or by email at thad.nanfito@dnr.iowa.gov.

Sincerely,

A handwritten signature in black ink, appearing to read "Thad Nanfito", written over a horizontal line.

Thad Nanfito
Environmental Specialist
Field Services & Compliance Bureau

TN:tmn\ws\Charter Oak081016.ws.sanitary survey report.nanfito.doc

Enclosure: Report

CC: Jim Warren, Water Supply Operations, IDNR, 401 SW 7th St., Des Moines, Iowa 50309
Bill Truitt, 2661 Dane Ridge Rd., Dow City, IA 51528 (w/encl.)
Charter Oak Water Supply Facility File

**IOWA DEPARTMENT OF NATURAL RESOURCES
PUBLIC WATER SUPPLY SANITARY SURVEY**

PWSID #: 2417018

Page 1

FACILITY INFORMATION			
FACILITY	NAME: CHARTER OAK WATER SUPPLY		PWS CLASSIFICATION: CWS
	ADDRESS: 453 RAILROAD ST, CHARTER OAK, IA 51439		PHONE: 712-678-3580
	RESPONSIBLE AUTHORITY/OWNER: PAM TRIPP CITY CLERK, CITY OF CHARTER OAK		
	ADDRESS: 453 RAILROAD ST, CHARTER OAK, IA 51439		PHONE: 712-678-3580
	TREATMENT GRADE: WT 2	DISTRIBUTION GRADE: WD 2	WATER USE PERMIT #: 6233-R2
SOURCE/ ENTRY POINT	SDWIS NAME: WELLS #6 & #8 @ WATER PLANT		
	DESCRIPTION/PHYSICAL LOCATION: water plant sink		
RESPONSIBLE OPERATOR(S)	NAME: Bill Truitt	GRADE: WT 2/ D3	CERTIFICATION #: 5523

SURVEY INFORMATION				
SURVEY	DATE THIS SURVEY: 8/10/2016		DATE LAST SURVEY: 9/04/2013	
			PURPOSE: Sanitary Survey	
PERSONS INTERVIEWED	NAME: Bill Truitt		TITLE: Water Superintendent	
CONSUMPTION	PERIOD REVIEWED: 7/01/2015-6/30/2016	AVERAGE GPD (MGD): 0.053	MAXIMUM GPD (MGD): .109	PE @ 100 GPCD: 537
POPULATION SERVED	TOTAL NUMBER OF SERVICE CONNECTIONS: 315		NO. OF SERVICE CONNECTIONS OUTSIDE CORPORATE LIMITS: none	
	CENSUS POPULATION: 502		TOTAL POPULATION SERVED*: 502	
	MILES OF PIPE:			

*equals census pop. + population outside corp. limits (2.5 X # of service connections or actual pop.)

ASSESSMENTS	ORGANIC CHEMICAL PHYSICAL VULNERABILITY: No
	SURFACE WATER OR INFLUENCED GROUNDWATER: GW

AUTHENTICATION		
INSPECTOR	NAME/TITLE: Thad Nanfeto, Environmental Specialist 	DATE: 8/12/16
REVIEWER	NAME/TITLE: Keith Wilken, Environmental Specialist Senior 	DATE: 8/16/16

GENERAL DESCRIPTION:

This supply derives its water from two wells, number six and number eight. Treatment consists of aeration, the addition of potassium permanganate and liquid aluminum sulphate, upflow clarification, filtration, gas chlorination, fluoridation and polyphosphate addition. Plant storage is provided by a 30,000 gallon clearwell. Distribution pressure and storage are provided by an 80,000 gallon standpipe.

A West Central Iowa Rural Water District connection is used as a standby source.

1. SOURCE:

- Groundwater

As noted in previous inspections it is strongly recommended that all wells meet the separation distances listed in Subparagraph 567 IAC 43.3(7), Table A. According to Table A, shallow drinking water wells should be located at least 200 feet from areas in which chemical application to the ground surface occurs. Wells that do not meet the distances may be prone to contamination and may require additional monitoring and/or treatment.

Source water protection should focus on not only point source contaminants but also chronic sources of contamination such as the application of fertilizer, herbicides, pesticides, manure, etc.

Please note that wellhead protection programs are available which can pay increased rates for conservation practices. The city and adjacent landowner(s) should remain vigilant with regard to the land use. Therefore, every effort should be made to communicate the risks associated with this water source and work together to protect it. The city is encouraged to research opportunities available through the Crawford County NRCS for wellhead protection and discuss with the landowner.

- Wells - WELL # 6 (1967)

- Implementation of source water protection plans are encouraged for all wells and may result in fewer monitoring requirements in the future.
- The Department recommends the supply have some means to provide auxiliary power in the event of loss of normal power.
- It is recommended that the well be properly shock chlorinated annually.

- Wells - WELL # 7 (1988)

- Well number seven is physically disconnected from the water distribution system and has previously been used as a bulk water loading station at the Charter Oak Ag Supply Inc. facility however currently the facility has been

purchasing finished water. If there is no viability as a non-potable water source the department may consider the well "abandoned" and require proper closure. This will be evaluated during the next sanitary survey inspection.

- Wells - WELL # 8 (1996)
 - Implementation of source water protection plans are encouraged for all wells and may result in fewer monitoring requirements in the future. **During this survey the required minimum separation distance of 200' is not being maintained however the area immediately around the well did not appear to be sprayed as weeds were prolific through the soybean field.**
 - The Department recommends the supply have some means to provide auxiliary power in the event of loss of normal power.
 - It is recommended that the well be properly shock chlorinated annually.

2. TREATMENT:

- General - PLANT #1
 - Mr. Truitt stated that the clarifier and aerator continue to be cleaned at a 6 month interval.
 - It should be noted that the plant was again found to be extremely clean and well organized.
- Auxiliary Power
 - The Department recommends the supply have some means to provide auxiliary power in the event of loss of normal power. It was reported that the connection to rural water would provide an adequate supply of water to the tower if needed.

3. DISTRIBUTION SYSTEM:

- Maintenance
 - **As was noted in the two previous sanitary survey it is highly recommended that this system conduct an assessment to determine what percent of water produced by this system is reaching consumers.** If it is determined that there is a 10% or greater loss of water, a leak detection program should be immediately instituted.

The elimination of leaks not only reduces the cost of producing water, but also eliminates pathways for contaminants to enter the distribution system. In addition to a leak survey a thorough evaluation of all meters should be conducted, especially the plant meters and any other large meters in town.

- Mr. Truitt stated that mains are flushed twice annually as well as areas of town where older mains are found. **However, when asked about flushing at a residence that previously revealed high vinyl chloride results (during TTHM sampling at the maximum residence time site) it was noted that the hydrant for flushing has since been removed. It is recommended this hydrant be reinstalled to allow periodic flushing to this residence.**
- **As was noted in the previous sanitary survey the department recommends that distribution system valves be exercised twice yearly. As it was reported, the city has limited isolation capabilities given the condition of some of the valves. The city should consider the use of a professional valve exerciser to complete at least initial operation and subsequently report the condition of valves to the city.**
- Charter Oak Ag Supply service line has two separate backflow preventers (one for finished city water and one for the raw water /non-potable line from well # 7). **Backflow preventers must be tested annually by a registered backflow prevention assembly tester to ensure that the equipment is functional at all times. A copy of the test results should be submitted to the city every year.**
- Disinfection
 - New, cleaned and repaired water mains must be disinfected in accordance with AWWA Standard C651-99. In an emergency or unusual situation, the disinfection procedure must be discussed with IDNR.

4. FINISHED WATER STORAGE:

- Standpipe
 - The standpipe is inspected via contract once every three years.
 - This system is reminded that coliform testing must be performed after painting, maintenance, inspection, or cleaning. Two or more successive sets of bacterial samples must be taken at 24-hour intervals and must be bacterially safe before the facility is placed back into operation. [Recommended Standards for Water Works 7.0.18]

5. PUMP, PUMP FACILITIES, AND CONTROLS:

- High Service Pumps
 - The high service pump room was clean and orderly.

6. MONITORING/REPORTING/DATA VERIFICATION:

- Disinfection Monitoring

DNR staff reviewed this system's Monthly Operation Reports (MORs) and historic sampling results. It was observed that reported free chlorine residuals are typically within 80% of this system's total chlorine residuals at the source entry point (SEP) and within the distribution system. Testing during the inspection was performed at the SEP. The sampling results are as follows:

Tests yielded a free chlorine residual of 0.58 mg/L and a total chlorine residual of 0.77 mg/L at the SEP. The free chlorine residual did not drift over time. It was noted that water should be from Well #8.

In summary, it appears that the City of Charter Oak is producing a free chlorine residual. For reference, a minimum free chlorine residual of 0.3 mg/L or a minimum total chlorine residual of 1.5 mg/L must be continuously maintained throughout the distribution system except for those points that terminate in dead ends or are very low use areas. Please note that some consecutive results (4 days) of low residuals were observed at the SEP in October 2015. It may be necessary to review chemical feed functionality, and at minimum this needs to be discussed with Mr. Truitt (certified operator for Charter Oak) as soon as possible to resolve any chemical feed issues and thereby communicate with the DNR.

- Reporting

Although main breaks, leaks, repairs, etc. are not unusual, water supplies must maintain the integrity of the system by not only repairing the break, but by taking precautions to inform the public and notify the department so that direction and assistance can be provided.

In certain cases public water supplies are required to notify the department of main breaks and pressure loss as soon as possible but no later than 24 hours. The purpose of reporting is to determine steps that can be taken to protect public health, which in most cases is to promote a boil advisory for customers served by your water supply as well as assist with re-establishing the integrity of the water system via bacteria sampling.

The after hours Emergency Response Hotline telephone number is (515)725-8694; or for when water supply field staff cannot immediately be reached.

Pressure monitoring should be conducted to ensure that contaminants have not entered the system. In some cases water supplies can repair leaks while keeping adequate pressure to the distribution system, in these instances a simple pressure gage can be attached to any outside spigot to ensure pressure is maintained.

7. WATER SYSTEM MANAGEMENT AND OPERATIONS:

- Management
 - Water system management should develop a formal planning process to schedule capital improvements and ensure adequate funding for improvements.
- Financial
 - Water system management should review the user fee, user charge, or rate system at least annually to ensure the financial viability of the system. If finances for the water system are less than adequate **a rate increase should be considered** if only to prepare for the inevitable unexpected. Long term improvements such as distribution system upgrades (aging pipes), alternate source installation and repair or installation of valves, hydrants etc., should be considered sooner rather than later. The City of Charter Oak should consult with the Iowa Association of Municipal Utilities (IAMU) or Iowa Rural Water Association to make an assessment of your water rates.

8. OPERATOR CERTIFICATION COMPLIANCE:

- Mr. Truitt continues to make improvements and keep a high maintenance standard. A well maintained water supply system is vital to the health and well-being of a community. Charter Oak is encouraged to continue on this path of improvements and consult with Mr. Truitt regarding the needs of the system to provide long term viability.

SUMMARY OF SIGNIFICANT DEFICIENCIES

No Significant Deficiencies Identified

SUMMARY OF MINOR DEFICIENCIES

No Minor Deficiencies Identified

SUMMARY OF RECOMMENDATIONS

Please refer to Sections 1, 2, 3, 4, 6, 7, and 8 for recommendations

