State of Wisconsin
DEPARTMENT OF NATURAL RESOURCES
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December 27, 2016

PWS ID#: 12300750
Brooklyn Waterworks
Brooklyn, WI
MC - Green County

Linda Kuhlman, Village Clerk - Treasurer
210 Commercial Street
PO Box 189
Brooklyn, WI 53521

Subject: Sanitary Survey Report

Dear Linda Kuhlman:

The purpose of a sanitary survey is to evaluate the system's source, facilities, equipment, operation, maintenance, and management as they relate to providing safe drinking water. The sanitary survey is also an opportunity to update the Department's records, provide technical assistance, and identify potential risks that may adversely affect drinking water quality.

On December 21, 2016, Dave Barkhahn conducted a sanitary survey of your water system, Brooklyn Waterworks. During the sanitary survey Leif Spilde was present. At the completion of the survey, Leif was briefed on the preliminary findings. This report outlines the final findings, discusses problems that need to be addressed, and timelines for corrective action where appropriate.

System Summary

The Village of Brooklyn is located in northeastern Green County and southcentral Dane County, and is about 15 miles south of the City of Madison. The water system is owned by the Village and began operation in 1957. The present water system consists of two wells, a 200,000 gallon elevated tank, and a distribution system consisting of 38,336 feet of water mains. There is a 4 cylinder Continental gasoline engine at well 1 for use when there are power outages and a 100 KW natural gas engine/generator set was added at well 2 in 2014. Fluoridation of Brooklyn's water supply began on October 15, 1963. Fluoride is being added to the water for dental health protection. Other chemicals that have been approved for addition to the water are chlorine and a polyphosphate. Chlorine is added for disinfection purposes and the polyphosphate chemical is added to control corrosion.

Improvements since the last sanitary survey

- The elevated tank was inspected on April 21, 2015 and an inspection report was submitted. The tank was also pressure washed on the outside.
- A new sample tap was installed at the elevated tank.
- A natural gas engine/generator set was installed at well 2.
- Hydrant labels were installed on all hydrants to match the numbers on the distribution system map.
- The above ground gas tank at well 1 was removed and the gas tank was replaced with a portable tank.
- The Village plans to hire and train a new person to become fully certified in water.

Significant Deficiencies and Deficiencies

I am happy to report that during the course of the sanitary survey, no significant deficiencies and no deficiencies were identified. Significant deficiencies indicate noncompliance with one or more Wisconsin Administrative Codes and/or represent an immediate health risk to consumers. Deficiencies are problems in the drinking water system that have the potential to cause serious health risks or represent long-term health risks to consumers. Deficiencies may also indicate noncompliance with one or more Wisconsin Administrative Codes.

Recommendations

During the course of the sanitary survey, two recommendations were identified. Recommendations are problems in the water system that hinder your public water system from consistently providing safe drinking water to consumers.

Recommendation
1. Proper means for determining chemical usage are not adequate.
2. The system does not have a schedule/plan for capital improvements & infrastructure replacement.

Discussion of Recommendations:

- Chemical usages for all chemicals at both wells are currently determined by inaccurate scales. Digital scales that can measure to 0.1 pounds should be purchased and installed for each chemical. Connection of the scales to the SCADA system is also recommended. New scales can be purchased over several years to spread out the costs and help with budgeting.

- All water systems are encouraged to have a plan to replace aging infrastructure. Leif reports that 48% of the water mains in the distribution system are 64 years old. This information is also confirmed in the 2015 PSC report where it shows that 19,400 feet of 6-inch main was installed before 1960. The Village should have a plan to replace a number of these older mains every year.

Nonconforming Features

During the course of the sanitary survey, three nonconforming features were identified. Nonconforming features are things that existed in a water system before a code change became effective. These features were approved at the time of construction or installation but due to changes in the code, would not be approved for new installations. Correction of these features is not required until major changes or remodeling occurs or a health hazard is identified. The following items were identified as a nonconforming features.

Nonconforming Feature	Current Code Citations
1. There is not at least one adequately sized well vent installed through the well pump casing, well seal, or concrete pump base at well 1.	811.36(1)
2. Secondary containment of the chemicals is not provided.	811.39(3)(d)
3. A separate room is not provided for all chemicals.	811.40(1)(L), 811.51(1), and 811.51(2)(a)

Discussion of Nonconforming Features:

- Newly constructed wells are required to have vents with a minimum diameter of 2 inches. It appears the vent at well 1 is undersized.

- Secondary containment capable of holding the contents of all chemical tanks is needed for all new chemical storage rooms. This includes the solution tank being used and all containers being stored. Secondary containment containers were acquired but were not in use.

- Separate chemical rooms with proper ventilation for fluoride and chlorine are now required at new installations. The fluoride must be in a different room than electrical controls, and must be separate from the chlorine storage. All chemicals are in the pump room at well 1. Although the chemicals at well 2 are in a separate room, the chlorine and fluoride are still stored together.

Water Quality Monitoring and Reporting

Your system has an excellent record of compliance with monitoring and reporting requirements for the last five years. We appreciate your sampler's continued efforts in complying with these Safe Drinking Water Act requirements. **There are no current water quality concerns with the Brooklyn water system.**

A review of Department records shows a very good history of bacteriological sampling for the last 5-year period. Two samples are required from the distribution system each month and records show that these samples have been collected. The required numbers of quarterly raw water samples have also been submitted. All samples were submitted to certified labs for bacteriological analysis. No coliform positive samples were reported in the last five years. As required, the coliform bacteria samples from the distribution system are collected throughout each month and in the last year ten different locations were used throughout the system.

The fluoridation program for Brooklyn has a very good history for the last 12-month period. All monthly split samples were submitted to the State Lab of Hygiene. The average residual for the twelve monthly split samples submitted in the last year was 0.83 mg/L, which is slightly above the desirable range of 0.7-0.8 mg/L. The operators' fluoride split sampling results have compared favorably to those obtained by the State Lab of Hygiene. This indicates the operators are doing a good job when performing the fluoride residual tests and that the testing equipment used to run these analyses is functioning properly. The operators are encouraged to keep up the good work with the fluoridation program.

To satisfy 2017 monitoring requirements, monthly coliform bacteria and monthly fluoride split samples are required. In addition, samples for inorganics and synthetic organic chemicals are required from each entry point, a sample for volatile organic chemicals from the entry point for well 1, and a sample for radioactivity from the entry point to well 1 are required before September 30. At least 10 lead and copper samples are required between June 1 and September 30. Also, one sample for disinfection byproducts is required in the third quarter. All samples must be collected in the appropriate monitoring period and sent to certified labs for analyses. The labs must then report the results electronically to the Department, as has been done in the past.

Lead and Copper Monitoring

We have been informed that the US EPA will be revising the Lead and Copper Rule. Our recommendations are based on discussions with the US EPA. The Department is also stepping up state wide efforts to reduce consumer's exposure to any amount of lead coming from their drinking water. The Department is asking all water systems to review their lead and copper sites to ensure that all sites are appropriate locations (kitchen or bathroom sinks) and that sites meet the required Tier criteria. We have reviewed your water system's lead and copper monitoring history. It appears that no changes will be needed with the sampling locations, site IDs, and the tiers which the sites belong to. After you review your data, let us know if you want to make any changes.

Leif reports that there are no lead services in the Village. Lead services would be included if any part of the service is lead, including the gooseneck, the Utility portion, or the customer portion. If any lead service lines are found, home owners with lead service lines should be strongly encouraged to replace their portion of the line at the same time that the Utility portion is being replaced. If lead is detected at levels greater than 15 ug/L in a home, we are asking that the homeowners be notified within 24 hours, even if the current code requirement is 30 days.

Home owners should be advised to remove and clean the aerators on a regular basis, but not prior to collecting the lead and copper samples. Flushing of the lines six hours before sample collection is not allowed by the Lead and Copper Rule. Samples should be collected under typical conditions, after the water sits for at least six hours.

Required Reports, Records, and Utility Programs

Our records show that the Village has distributed the required Consumer Confidence reports. All reports were complete and it appears the reports were properly distributed. The certification forms were also sent to this office. The Consumer Confidence reports must continue to be distributed before July 1 of every year. Please continue to send me copies of the final reports and the completed certification forms. The 2015 Consumer Confidence Report was received on March 15, 2016.

The Village has the required cross connection control ordinance and inspections are routinely made when meters are changed to enforce the ordinance. Records of each inspection are kept on a three part form. Public education materials are also distributed annually in the Village's newsletter. When a public education program is included, the low hazard portions of the residential and commercial services do not need to be inspected. Public education materials must be provided at least every three years and with every inspection. At least five percent of all residential and fifty percent of all commercial and industrial services must be inspected each year and permanent records must be kept of each inspection. To meet these goals, at least 28 residential 1 industrial, 11 commercial, 5 public authority, and 2 multifamily residential services need to be inspected each year for the Brooklyn water system. Cross connection inspections play a very important role in ensuring that the quality of the Village's water supply is maintained. In addition to these requirements, the Utility must also submit an annual report to the Department that tells how many inspections were made in the previous year. These reports are due every March 1. We received the report from Brooklyn for the 2015 inspections on January 15, 2016, and the report showed that inspections were made at 1 industrial and 28 residential services.

The Village also has the required private well abandonment ordinance. There are no known wells within the Village and there are well abandonment reports on file. As new wells are discovered or properties are annexed, the well owners must be made aware of the requirements in the private well abandonment ordinance. Current well operational permits or well abandonment reports must continue to be kept on file for periodic review by Department personnel.

The Utility has done an excellent job with the hydrant flushing and valve exercising programs. All of the system hydrants are typically flushed twice each year and dead-ends are flushed at least two times each year. All of the valves are also exercised each year. Maintenance information on each hydrant and each valve is recorded and placed on the system's computer records. Excellent records are kept of all such maintenance. Flushing of water mains removes sediments and biofilm that can accumulate in pipes over time, and can lead to taste and odor problems. The Village also typically replaces one or two old hydrants each year. A valve exercising and maintenance program helps guarantee that all valves work properly when needed, especially during an emergency. Exercising valves on a regular basis locates defective and leaking valves, helps prevent the accumulation of debris in valve seats, and helps prevent valves from sticking. The operators are encouraged to keep up with their excellent work with the hydrant and valve maintenance programs.

Our records show that the water storage facility is inspected at least once every five years, as required. The latest inspection was April 21, 2015. These types of detailed inspections are required at the storage facility at least once every five years and inspection reports must also continue to be completed by the inspector and submitted to the Department after each inspection. In addition to the 5-year interior inspections, the screens on the vents and overflow pipe, as well as the integrity of the gaskets on the hatches, must continue to be checked at least once per year.

The monthly pumpage reports must continue to be completely filled out and submitted to the Department on or before the tenth day of the following month. Our records show that all reports were submitted on time and all were filled out properly.

Certified Operator
Chapter NR 114, Wisconsin Administrative Code, specifies the requirements for certified waterworks operators. To be fully certified for the Brooklyn water system, the Village must employ at least one person that is a grade 1 operator in Groundwater (G), and Distribution (D). An operator in training is given a grade T status until proper experience is obtained and reported. The water system must also designate the operator in charge. To maintain their certification, all operators must attend continuing education classes and submit evidence of attendance when renewing their certificates.

Our records show that Leif Spilde is the current operator in charge. Leif has Grade 1 certification in G and D. Leif's certification is good until January 1, 2020 when he will need to renew with the proper number of continuing education credits. Mark Langer and Curt Golz also have Grade 1 certification in G and D. Curt's certification is good until May 1, 2017 and Mark's certification is good until June 1, 2018.

Water System Security
We recommend that you conduct a daily security check of your entire drinking water system to insure that doors are locked and that windows are secured.

System Summary Information
A water system summary is attached. Please review it for accuracy. If there are changes that need to be made, contact Dave Barkhahn at (608) 275-3311.

Capacity Development Evaluation
This sanitary survey serves as an evaluation of the capabilities of your water system. This system has been determined to have adequate technical, managerial, and financial capacity to provide safe drinking water. The ability to plan for, achieve, and maintain compliance with applicable drinking water standards has been demonstrated.

The next sanitary survey of your system is scheduled to take place in 2019. Typically, your staff will be contacted prior to the survey to schedule a date that is convenient.

Required Action
No required actions are due at this time, however please consider correcting the non-conforming features and recommendations discussed in this letter.

Thank you for your staff's assistance during the sanitary survey. If you have any questions, you can reach me by phone at (608) 275-3300, by fax at (608) 275-3338, by e-mail at dave.barkhahn@wisconsin.gov, or by postal mail at the address on this letterhead.

Sincerely,

David Barkhahn

David Barkhahn
Public Water Supply Engineer

Encl.

cc: Bureau of Drinking Water/Groundwater - DG/5
Leif Spilde, Utility Superintendent

Water System Summary Information
System ID: 12300750
System Name: BROOKLYN WATERWORKS
County: Green
Type: Municipal Community
Basin: Sugar River
Population: 1401
Service Connections: 0
Owner: LINDA KUHLMAN
210 COMMERCIAL ST
PO BOX 189
BROOKLYN, WI 53521
(608) 455-4201 Fax: (608) 455-1385 clerk@brooklynwi.gov
Date Security VA Complete:
Date ERP Complete:
Date ERP Last Exercised/Updated:
Emergency Phone: (608) 455-1842
Emergency Fax: (608) 455-1501
Emergency E-mail: spilde@brooklynwi.gov

Certified Operators

Name	Lic. #	Expires	Phone/Fax/E-mail	Certification
CURT GOLZ	32609	05/01/2017	(608) 455-1842	D-1, G-1
MARK LANGER	27196	06/01/2018	(608) 455-1842 6084551501 publicworks@brooklynwi.gov	D-1, G-1
LEIF SPILDE	23236	01/01/2020	(608) 455-1842 spilde@brooklynwi.gov	D-1, G-1; also OIC in D and G

Affiliations

Name	Affiliation	Start Date	End Date	Primary?	Phone
LEIF SPILDE	SAMPLER	12/16/2010		Y	608-455-1842
LINDA KUHLMAN	PLAN_CON	08/02/2016		Y	608-455-4201
LINDA KUHLMAN	OWNER	08/02/2016		Y	608-455-4201
LEIF SPILDE	EMERGENCY	12/16/2010		Y	608-455-1842
DAVE BARKHAHN	DNR_REP	07/05/2011		Y	608-275-3300

Entry Points and Sources of Water (Basic Data)

Source ID	Name	WUWN	Status	Type	Source	Depth	Cased	Grouted
1	Well #1	BF896	Active	ENTRY PT/SOURCE	Ground Water Source	616	300	75
2	Well #2	BF568	Active	ENTRY PT/SOURCE	Ground Water Source	670	283	285

Entry Points and Sources of Water (Misc. Data)

Source ID	Pump Cap.	Pump Type	Lube	Aux. Power?
1	250	Vertical_Turbine	Water	Yes
2	560	Vertical_Turbine	Water	Yes

Storage

ID/Location	Type	Vol. (gal)	Firm Pumping Capacity (gpm)	Height to Overflow (ft.)	Overflow Elev. (sea-level, ft.)	Aux. Power?	Mfg.	Model
Douglas Drive	ELEVATED TANK	200000	250	133.5	1117.9	Unknown	Phoenix Tank	Single pedestal spheroid

Booster Stations

ID/Location	Type	Firm Pumping Capacity (gpm)	Aux. Power?

None

System Interconnects

ID/Location	Type	Capacity (gpm)	Metered?	Chemical Injection Capable?

None

Treatment Summary Data

Source ID	Type	Description	Begin	End	Objective(s)	Pump Model	Cap.	Stroke %	Speed %	Sol. Tank Cap.	Dil. Ratio
1	380	Fluoridation	01/01/1960		Other	A171-150FS	10	30	50	7	0
1	421	Hypochlorination, Post	01/01/1960		Disinfection	A171-150H	10	40	30	10	0
1	447	Inhibitor, Polyphosphate	01/01/1960		Corrosion Control	A171-150S	10	40	30	7	0
2	380	Fluoridation	01/01/1960		Other	A171-150FS	10	40	40	7	0
2	421	Hypochlorination, Post	01/01/1960		Disinfection	P121-D50HI	10	60	50	7	0
2	447	Inhibitor, Polyphosphate	01/01/1960		Corrosion Control	A171-151SH	10	50	40	7	0

System Evaluation Summary

Inspector/Reviewer	Date	Report Date	Type	Agency	Response Due	Response Recd
BARKHAHN, DAVE	12/21/2016	12/30/2016	SURVEY	DNR	02/13/2017	
BARKHAHN, DAVE	01/16/2014	01/24/2014	SURVEY	DNR	03/07/2014	02/13/2014
Stunkard,Tom	01/27/2011	02/14/2011	SURVEY	DNR	03/31/2011	03/17/2011
BLASER, BRYCE	04/21/2008	06/27/2008	SURVEY	DNR	08/26/2008	04/24/2009
BLASER, BRYCE	04/29/2007	05/08/2007	ANNUAL	DNR		
BLASER, BRYCE	05/01/2006	05/11/2006	ANNUAL	DNR		
BLASER, BRYCE	04/06/2005	04/14/2005	ANNUAL	DNR		
BLASER, BRYCE	03/24/2004	04/09/2004	ANNUAL	DNR		
BLASER, BRYCE	04/22/2003	06/19/2003	SURVEY	DNR		
BLASER, BRYCE	05/14/2002	05/24/2002	ANNUAL	DNR		
BLASER, BRYCE	03/26/2001	04/09/2001	ANNUAL	DNR		
BLASER, BRYCE	03/31/2000	03/31/2000	ANNUAL	DNR		
BLASER, BRYCE	04/13/1999	06/01/1999	ANNUAL	DNR		
BLASER, BRYCE	04/07/1998	06/30/1998	SURVEY	DNR		
BLASER, BRYCE	12/03/1996	01/17/1997	ANNUAL	DNR		

Inspector/Reviewer	Date	Report Date	Type	Agency	Response Due	Response Recd
STUNKARD, TOM	11/29/1995	11/30/1995	ANNUAL	DNR		
STUNKARD, TOM	12/01/1994	12/02/1994	ANNUAL	DNR		
STUNKARD, TOM	11/11/1993	12/09/1993	SURVEY	DNR		
	11/10/1992		ANNUAL	DNR		

Bacteriological Sampling History

Year	Distribution Safe	Distribution Unsafe	Confirmed Unsafe	Missed Samples	Raw Safe	Raw Unsafe	Fecal Positive?
2016	24			0	8		N
2015	24			0	8		N
2014	24			0	9		N
2013	24			0	7		N
2012	24			0	8		N
2011	24			0	8		N
2010	24			0	8		N

Chemical Sampling History

Year	Sample Group	Source ID	Samples Taken	Missed Samples	MCL Violations
2016	NITRATE	1	1	0	0
2016	FLUORIDE		12	0	0
2016	DBP		1	0	0
2016	NITRATE	2	1	0	0
2015	NITRATE	1	1	0	0
2015	FLUORIDE		12	0	0
2015	DBP		1	0	0
2015	NITRATE	2	1	0	0
2014	VOC	2	1	0	0
2014	IOC	1	1	0	0
2014	FLUORIDE		12	0	0
2014	PBCU		10	0	0
2014	DBP		1	0	0
2014	VOC	1	1	0	0
2014	RAD	2	1	0	0
2014	IOC	2	1	0	0
2013	NITRATE	1	1	0	0
2013	FLUORIDE		13	0	0
2013	DBP		2	0	0
2013	NITRATE	2	1	0	0
2012	NITRATE	1	1	0	0
2012	FLUORIDE		12	0	0
2012	NITRATE	2	1	0	0
2011	VOC	2	1	0	0
2011	IOC	1	1	0	0
2011	FLUORIDE		13	0	0
2011	PBCU		10	0	0
2011	SOC	2	1	0	0
2011	VOC	1	1	0	0
2011	SOC	1	1	0	0
2011	IOC	2	1	0	0
2010	NITRATE	1	1	0	0

Year	Sample Group	Source ID	Samples Taken	Missed Samples	MCL Violations
2010	FLUORIDE		12	0	0
2010	DBP		2	0	0
2010	RAD	2	1	0	0
2010	RAD	1	1	0	0
2010	NITRATE	2	1	0	0

Sample Group	Last Sampled
BACTI	2016
FLUORIDE	2016
IOC	2014
RAD	2014
HAA5	2007
PBCU	2014
NITRATE	2016
SOC	2011
VOC	2014
TTHM	2007
DBP	2016

MCL Violations

Source ID	Contaminant	Concentration	MCL	Units	Viol. Start	Viol. End	Continuing Operation?

None

Definitions

MCL = Maximum Contaminant Limit (as set by the Environmental Protection Agency (EPA))
BACTI = Bacteriological Sample
IOC = Sample for Inorganic Compounds
NITRATE = Nitrate Sample
PBCU = Lead and Copper Sample
RAD = Sample for Radioactivity
SOC = Sample for Synthetic Organic Compounds
VOC = Sample for Volatile Organic Compounds
FLUORIDE = Fluoride from Fluoridation
TTHM = Total Trihalomethane Sample