



MISSISSIPPI STATE DEPARTMENT OF HEALTH

REPORT OF INSPECTION OF DRINKING WATER SUPPLY

PWS: 0180008 Class: B

An inspection of the CITY OF HATTIESBURG water supply in FORREST county was made on 05/29/2019. Present at the time of inspection was PAUL J HOFFER, OPERATOR; WRITER. Official TOBY BARKER Address P O BOX 1898 HATTIESBURG MS 39403 W.W. Operator PAUL J HOFFER Address 900 JAMES STREET HATTIESBURG MS 39401 No. Connections 19000 No. Meters Population Served 46000 Field Chemical Analysis: pH ____ Cl2(free) ____ Cl2(total) ____ H2S N/A Iron ____ Fluoride ____ Point of Sampling DISTRIBUTION Water Rates ____ This inspection included a sanitary survey for compliance with the Ground Water Rule.

COMMENTS

Technical: 5 Managerial: 5 Financial: 5

OVERALL CAPACITY RATING: 5.0 / 5.0

1. At the time of inspection the system appeared to be operating properly and well maintained. This system is now performing triggered monitoring. The systems sanitary survey was performed and no significant deficiencies were identified.

The pH, chlorine, and Fe readings were as follows:

Plant #1:pH-8.0,Chlorine-1.4 mg/L free,Fe-0.22, Fluoride-0.2

Plant #2:pH-8.0,Chlorine-1.36 mg/L free, Fe-0.0mg/l,Fluoride-1.0 mg/L

Wesley Tank - pH- 8.2, Chlorine-1.06 mg/L free, Fe- 0.1, Fluoride-1.1

Forrest General- Chlorine - 1.97 mg/L free, Fluoride- 0.2

The system target pH for plant #1(180008-81) is 7.87, the target pH for plant #2(180008-80) is 7.98, and the target pH for Weathersby Rd (0180008-82) is 7.6. These pH residuals were calculated based on the finished water physical and chemical analysis. These pH levels should be maintained as closely as possible.

2. At the time of inspection, the system had recently discovered problems with the fluoride feeders at plant 1 and well #20. They were in the process of investigating the issue. We recommend that these feeders be repaired to ensure even fluoride residuals throughout the city.

3. Well #11 and #12 are used for backup purposes only. These wells should be exercised routinely to avoid stagnant water and ensure function of the necessary equipment.
4. Well #12, #19, & #23 was down due to electrical problems.
5. Based on the well sizes at the Weathersby Plant and #20 in conjunction with the size of the rotometer on the chlorinator, we recommend that a larger rotometer be installed to allow for adjustments if needed.
6. As a reminder, chlorine, ph, iron, and fluoride levels should be recorded a minimum of 5 times a week at each of the iron removal plants as per the minimum operator regulations.
7. We recommend that all steel tanks be inspected for paint coating failure, corrosion, rust, and structural integrity five years after being painted. After five years, the tank should be inspected annually. Please note this also includes pressure tanks and tanks located at booster stations. These inspections should always be documented.
8. At the time of the inspection, reports indicated water loss above 40% for this Public water supply over the past year. This level of water loss means that the water supply is losing additional funds due to increased electrical, chemical, and operation and maintenance costs. It is recommended that this water supply conduct a water audit to identify and locate water loss on the system.
9. Chlorine vent tubes should be screened to prevent insects and debris from clogging them.
10. The Security Vulnerability Self-Assessment and Emergency Response Plan must be updated annually. This will be checked and counted on the capacity assessment at the time of inspection next year.
11. Before any improvements are made on the water system, plans and specifications by a Registered Engineer MUST be approved by the Mississippi State Department of Health prior to construction.
12. When repairs are made on the water distribution system, all lines affected should be properly chlorinated and flushed before they are placed back in service.
13. All dead end water lines should be flushed on a routine schedule to clear the lines of sediment and stagnant water. Full scale flushing should be carefully planned and carried out, beginning at the well or water plant and going to the outer edges of the distribution system. This flushing should be done during periods of low usage.
14. Whenever system pressure is lost, even for brief periods of time, contaminants may be introduced to the system through back-siphonage and back flow. When this occurs, system officials should notify all customers in the affected area to boil their drinking water until clear bacteriological samples have been obtained.

15. During the next inspection, we will need to check the records that you maintain in accordance with the requirements of the Safe Drinking Water Act. These records should be organized in an orderly fashion and include the following
- Bacteriological sample results - 5 yrs.
 - Other water quality analysis (nitrates, inorganics, P-Chems, fluoride, radiological, VOC's) - 10 yrs.
 - Lead and Copper results - 12 yrs.
 - Inspection Reports - 10 yrs.
 - Annual Reports - 3 yrs.
 - Operator's Logbook - 5 yrs.
 - Actions taken by the system to correct violations - 3 yrs.
 - Records concerning a variance or exemption - 5 yrs.
 - All other MSDH correspondence - 3 yrs.

Completed by Melissa Caldwell on 05/30/2019.

Reviewed by Ralph Hayes, P.E. on 05/30/2019.

If you have any questions, please call (601)606-4817.

pc:

TOBY BARKER, OFFICIAL
PAUL J HOFFER, OPERATOR



Mississippi Department of Health Bureau of Public Water Supply

STANDARD FORM

FY 2019 Public Water System Capacity Assessment Form

NOTE: This form must be completed whenever a routine sanitary survey of a public water system is conducted by a regional engineer of the Bureau of Public Water Supply

PWS ID#: 0180008 Class: B Survey Date: 05-29-2019 County: FORREST
 Public Water System: CITY OF HATTIESBURG Conn: 19000
 Certified Waterworks Operator: PAUL J HOFFER Pop: 46000

CAPACITY RATING DETERMINATION

Technical (T) Capacity Rating: [5] Managerial (M) Capacity Rating [5] Financial (F) Capacity Rating [5]

$$\text{Capacity Rating} = \frac{T + M + F}{3} = \frac{15}{3} = 5$$

Overall Capacity Rating = 5.0

Completed by Melissa Caldwell on 05/30/2019

Reviewed by Ralph Hayes, P.E. on 05/30/2019

Comments: _____

Technical Capacity Assessment	Point Scale	Point Award
[T1] Does the water system have any significant deficiencies? [<u>Y</u> <u>N</u>]	N - 1pt. Y - 0pt.	1
[T2] 1) Was the water treatment process functioning properly? [<u>Y</u> <u>N</u>] (i.e. Is pH, iron, chlorine, fluoride, etc. within acceptable range?) 2) Was needed water system equipment in place and functioning properly at the time of survey? [<u>Y</u> <u>N</u>] (NOTE: Equipment deficiencies must be identified in survey report.) 3) Were records available to the regional engineer clearly showing that all water storage tanks have been inspected and cleaned or painted (if needed) within the past 5 years? [<u>Y</u> <u>N</u> <u>NA</u>] (NOTE: All YESs required to receive point)	All Y - 1 pt. Else - 0 pt.	1
[T3] 1) Was the certified waterworks operator or his/her authorized representative present for the survey? [<u>Y</u> <u>N</u>] 2) Was log book up to date and properly maintained? [<u>Y</u> <u>N</u>] (Are minimum days being met based on system classification) 3) Was the water system properly maintained at the time of survey? [<u>Y</u> <u>N</u>] 4) Did operator/system personnel satisfactorily demonstrate to the regional engineer that he/she could fully perform all water quality tests required to properly operate this water system? [<u>Y</u> <u>N</u>] (NOTE: All YESs required to receive point)	All Y - 1 pt. Else - 0 pt.	1
[T4] 1) Does water system routinely track water loss and were acceptable record available for review? [<u>Y</u> <u>N</u>] 2) Is water system overloaded? (i.e. serving customers in excess of MSDH approved design capacity)? [<u>Y</u> <u>N</u>] 3) Was there any indication that the water system is/has been experiencing pressure problems in any part(s) of the distribution system? [<u>Y</u> <u>N</u>] (based on operator information, customer complaints, MSDH records, other information) 4) Are well pumping tests performed routinely? [<u>Y</u> <u>N</u> <u>NA</u>] (NOTE: YES FOR #1 & YES OR N/A FOR #4 AND NOs FOR #2 & #3 required to receive point)	1) Y - pt. 2) N - pt. 3) N - pt. 4) Y - pt.	1
[T5] 1) Does the water system have the ability to provide water during power outages? (i.e. generator, emergency tie-ins, etc.) [<u>Y</u> <u>N</u>] 2) Does the water system have a usable backup source of water? [<u>Y</u> <u>N</u>] (NOTE: Must be documented on survey report)	All Y - 1 pt. Else - 0 pt.	1
TECHNICAL CAPACITY RATING = [<u>5</u>] (Total Points)		

Managerial Capacity Assessment	Point Scale	Point Award
[M1] Were all SDWA required records maintained in a logical and orderly manner and available for review by the regional engineer during the survey? <u>(Y)N</u>	Y - 1pt. N - 0pt.	1
[M2] 1) Have acceptable written policies and procedures for operating this water system been formally adopted and were these policies available for review during the survey? <u>(Y)N</u> 2) Have all board members (in office more than 12 months) completed Board Member Training? <u>(Y)N NA</u> 3) Does the Board of Directors meet monthly and were minutes of Board meetings available for review during the survey? (NOTE: Quarterly meetings allowed if system has an officially designated full time manager) <u>(Y)N NA</u> (NOTE: ALL YESs or NAs required to receive point. NA - Not Applicable)	All Y - 1 pt. Else - 0 pt.	1
[M3] Has the water system had any SDWA violations since the last Capacity Assessment? <u>[Y]N</u>	N - 1pt. Y - 0pt.	1
[M4] Has the water system developed a long range improvements plan and was this plan available for review during the survey? <u>(Y)N</u>	Y - 1pt. N - 0pt.	1
[M5] 1) Does the water system have an effective cross connection control program in compliance with MSDH regulations? <u>(Y)N</u> 2) Was a copy of the MSDH approved bacti site plan and lead/copper site plan available for review during the survey and do the bacti results clearly show that this approved plan is being followed? <u>(Y)N</u> (NOTE: All YESs required to receive point)	All Y - 1 pt. Else - 0 pt.	1
MANAGERIAL CAPACITY RATING = [<u>5</u>] (Total Points)		

Financial Capacity Assessment	Point Scale	Point Award
[F1] Has the water system raised water rates in the past 5 years? <u>(Y)N</u> (NOTE: Point may be awarded if the water system provides acceptable financial documentation clearly showing that a rate increase is not needed, i.e. revenue has consistently exceeded expenditures by at least 10%, etc.)	Y - 1pt. N - 0pt.	1
[F2] Does the water system have an officially adopted policy requiring that water rates be routinely reviewed and adjusted as appropriate and was this policy available for review during the survey? <u>(Y)N</u>	Y - 1pt. N - 0pt.	1
[F3] Does the water system have an officially adopted cut-off policy for customers who do not pay their water bills, was a copy of this policy available for review by the regional engineer, and do system records (cut-off lists, etc.) <u>clearly</u> show that the water system effectively implements this cut-off policy? <u>(Y)N</u>	Y - 1pt. N - 0pt.	1
[F4] Was a copy of the water system's officially adopted annual budget available for review by the regional engineer and does the water system's financial accounting system clearly and accurately track the expenditure and receipt of funds? <u>(Y)N</u>	Y - 1pt. N - 0pt.	1
[F5 - Municipal Systems] 1) Was a copy of the latest audit report available for review at the time of the survey? <u>(Y)N</u> 2) Does this audit report clearly show that water and sewer fund account(s) are maintained separately from all other municipal accounts? <u>(Y)N</u> (NOTE: Yes answer to all questions required to receive point.)	All Y - 1 pt. Else - 0 pt.	1
[F5 - Rural Systems] 1) Was the latest financial report / audit report available for review? <u>[Y]N</u> 2) Does the latest financial report show that receipts exceeded expenditures? <u>[Y]N</u> (NOTE: Yes answer to both questions required to receive point)	All Y - 1 pt. Else - 0 pt.	
FINANCIAL CAPACITY RATING = [<u>5</u>] (Total Points)		

**MISSISSIPPI DEPARTMENT OF HEALTH
BUREAU OF PUBLIC WATER SUPPLY
DESIGN CAPACITY SHEET**

System: **CITY OF HATTIESBURG**ID: **0180008** Class: **B** County: **FORREST**Date Completed: **05/30/2019**Connections - Actual: **19000** Equivalent: **24183**Design Capacity: **45998** Percent Design Capacity: **24183/45998 = 52.6%**

Plant # 1: well capacity = 1530 + 1325 + 1697 + 1559 + 1670 = 7,781 gpm (updated via pump test)

treatment capacity: aerator = 5500 gpm

filter = 5 MGD = 3470 gpm

service pump capacity = 4000 + 4000 + 2000 + 2000 = 12,000 gpm

Plant # 1 limiting factor = 3470 gpm (filters) $3470 \times 6 \times 60 = 1,249,920$ gallons (useable clear well capacity) $3470 + 1,249,920/200 = 9,722$ (useable service pump capacity)

Design Capacity Plant 1 = 9,722 gpm

Plant # 2: well capacity = 1069 + 1245 + 1325 = 3639 gpm (updated via pump test)

treatment capacity: aerator = (?)

filter = 5 MGD = 3470 gpm

service pump capacity = 1000 + 2000 + 2000 + 2100 = 7100 gpm

Plant # 2 limiting factor = 3470 gpm (filters) $3470 \times 6 \times 60 = 1,249,920$ gallons (useable clear well capacity) $3470 + 1,249,920/200 = 9,722$ (useable service pump capacity) > 7100

Design Capacity Plant 2 = 7100 gpm

Weathersby Plant

Well capacity = 3561 gpm (updated via pump test)

aerator capacity = 1500 gpm

filter capacity = 1416 (limiting factor)

clear well capacity = 42,850 gallons

service pump capacity = 1500 gpm

Design capacity for the plant = 1500 gpm

Wells #11, #12 (down due to repair), #20 pump directly into the system a total of 2676 gpm (updated via pump test)

Total capacity (wells & plants) = 9,722 + 7,100 + 1,500 + 2,676 = 20,998 gpm

Total elevated tank capacity = 5,000,000 gallons

(credit given for the tanks at USM, Weathersby, Lincoln Rd Extension, Forrest General, and Industrial park) NOTE: the other storage for the system is part of booster stations and are not calculated in this design. Excess elevated storage is allowed due to large distribution mains and the existing booster stations located throughout the system.

Design Capacity = $20,998 + 5,000,000/200 = 45,998$

Non metered City Buildings = 200

Equivalent Connections (apartments) = $6,696 \times 2/3 = 4,464$ (the number of meters serving the apartments were not available)Equivalent Connections = $\{863,388,000/3,323,566,048\} \times 20,664 \times 0.5 = 2,684$ connectionsEquivalent connections (schools) = $8343 \times 40 \text{ gpcd} / 400 \text{ gpd} = 835$ connections

of Connections adjusted for non residential high use and non metered units = 8,183

% Capacity = (Connections / Design Capacity) * 100

= $(24,183 / 45,998) \times 100$

= 53%

MISSISSIPPI STATE DEPARTMENT OF HEALTH
DIVISION OF WATER SUPPLY
PUBLIC WATER SUPPLY - MASTER DATA SHEET
PWS 180008 Class B

Name of Supply City of Hattiesburg **Owner** City
County Forrest **Master Meter** Some wells and pumps
Source: Purchase Surface Ground X **Number of Wells** 13

Well Data:							Pump
Well #	Location	Yr Const.	Cap.	Pres.	Casing	Screen	Depth Test
180008-01	Old Plant 1, Well 2	1931	*****	Abandoned	*****		
-02	Old Plant 1, Well 5	1931	*****	Abandoned	*****		
-03	Pistol Range	1931	*****	Abandoned	*****		
-04	Old Plant 1, Well 1	1952	*****	Abandoned	*****		
-05	Plant 1, Well 3	1964	*****	Abandoned	*****		
-06	Old Plant 1, Well 4	1966	*****	Abandoned	*****		
-07	Plant 2, Well 1 (Out of Service)	1960	*****	Abandoned	*****		
-08	Plant 2, Well 2	1960	*****	Abandoned	*****		
-09	Plant 2, Well 3 (Out of Service)	1960	*****	Abandoned	*****		
-10	Plant 2, Well 4	1960	*****	Abandoned	*****		
* -11	USM Tank	1988	1250		20		715' 1439@55
* -12	4 th street	1988	750		20		804' down due to repair
-13	Plant 2, Well 5	1990	1000		20		592' 1069@20
-14	Plant 1, Well 4	1990	1500		20		355' 1530@40
-15	Plant 1, Well 5	1990	1500		20		600' 1325@45
* -16	Weathersby Rd.	1990	1500		20		794' 1736@15
-17	Lakeview Rd. (plant 1)	2000	2150		24	18	465' 1697@45
-18	Plant 1	2005	1500		16	10	1559@45
-19	Plant 2	2006	1200		16	10	690' down due to repair
-20	Forrest General	2007	1000		16	10	827 1237@65
-21	Plant 2 (back of plant)	2010	1200				1245@20
-22	Plant 2 (front of plant)	2010	1200				1325@20
-23	Plant 2	2013	1250		16	10	660 down due to repair
-24	Plant 1	2016	1500		16	12	640 1670@45
-25	Weathersby Rd.	2017	1500		16	12	820 1825@15

(Several wells were acquired from other systems and have been inactivated but have NOT been abandoned.

These wells are NOT IN SERVICE. The four systems were: Central - 180004; Hattiesburg Country Club - 180015; Hattiesburg North - 180019; Palmer's Crossing - 180010)

* Indicates that well pumps directly into distribution system (does NOT go through either plant)

Treatment: <u>Iron</u> <u>X</u> <u>Softening</u> <u>Corrosion</u> <u>X</u> <u>Chlorine</u> <u>X</u> <u>Fluoride</u> <u>X</u>						
	Location	No. of units	Type	Capacity		Remarks
Aerator	Plant 1	3	Induced draft	5500 gpm total		
	Plant 2	3	Coke tray			
	Well 16	1	Induced draft	1620 gpm		9'X9'
Flash Mix	Plant 1	1	Infilco			
	Plant 2	1	Infilco			
Gravity Filter	Plant 1	6	Gravity	5 MGD total		Media: anthrasite sand
	Plant 2	6	Gravity	2 gpm/ft ²		Media: anthrasite sand
Pressure Filter	Well 16	6	Info not yet received			
Chlorinator	Plant 1	1	Hydro	500 @ 150 ppd		
	Plant 2	1	Hydro	500 @ 200 ppd		
	Booster station # 1	1	Ecometrics Seriew 4000	10 ppd		@5 with S/O (not in use)
	Booster station # 2	1	Ecometrics Series 2000	100 ppd		@10 with S/O (not in use)
	Well # 11	1	Hydro 480 w/switchover	50 ppd		@ 35 ppd
	Well # 12	1	Ecometrics w/switchover	50 ppd		
	Well # 16	1	Superior w/switchover	100 ppd @55		
	Well #20	1		100 ppd @78		
	In-Line booster #2	1	Hydro S/O	100 ppd		(not in use)
Fluoridator	Plant 1:	1	W&T dry feeder for sodium silicoflouride			
	Plant 2:	1	W&T dry feeder for sodium silicoflouride			
	Well # 11	1	W&T			
	Well # 12	1	W&T			
	Well # 16	1	W&T			
Chemical Feeders	Plant 1:	1	W&T dry feeder for lime			
	Plant 2:	1	W&T dry feeder for lime			
	Well #16	1	Acrison dry lime feeder & 1 LMI B121-955			For Sequest

**MISSISSIPPI STATE DEPARTMENT OF HEALTH
DIVISION OF WATER SUPPLY
PUBLIC WATER SUPPLY - MASTER DATA SHEET**

PWS 180008 Class B

Name of Supply City of Hattiesburg Owner City

County Forrest Master Meter Some wells and pumps

Source: Purchase Surface Ground X Number of Wells 17

Storage:

<u>Type</u>	<u>Location</u>	<u>Material</u>	<u>Capacity</u>	<u>Remarks</u>
Backwash (2)	Plant 1 over filters	Concrete	50,000	Total backwash capacity for plant # 1
Ground	Plant 1	Concrete	5,000,000	Clear well for plant 1
Ground	Plant 2	Concrete	2,500,000	Clear well for plant 2
Ground	Richburg Hill booster st.	Pre-stress	2,500,000	Pumps from ground tank to elevated tank Insp-8/18
Elevated	Richburg Hill booster st.	Steel	150,000	125' to O.F. Insp-1/19
Elevated	USM	Steel	1,000,000	110' to O.F. Insp- 1/19
Elevated	Wethersby Rd.	Steel	1,000,000	170.5' to O.F. Insp-8/18
Elevated	Industrial Park	Steel	1,000,000	119' 2" to O.F. (Is also coll. tank for B.S. # 2) Insp-8/18
Elevated	Industrial Park	Steel	500,000	132.5' to O.F. (Storage tank for B.S. # 2) Insp-1/19
Elevated	Lincoln Rd. Extension	Steel	500,000	Insp-1/19
Elevated	Forrest General Hospital	Steel	750,000	Insp-1/19
Elevated	Hwy 98 E (behind Mcdonalds)	Steel	500,000	

Service Pumps:

<u>Location</u>	<u>No. of pumps</u>	<u>Capacity (gpm)</u>	<u>Head (ft)</u>	<u>Controls</u>
Plant 1	2	4,000 each	120	
Plant 1	2	2,000 each	120	
Plant 2	1	1,000 Variable		
Plant 2	1	2,000 Variable		
Plant 2	1	2,000 (runs continually to hold pressure at 75 to 80 psi)		Variable
Plant 2	1	2,100 Variable		
Plant 2	1	5,000 (backwash pump)		
Well 16	2	Info not received yet		

Booster Stations:

<u>No.</u>	<u>Location</u>	<u>Coll. Tank</u>	<u>Pumps</u>	<u>Storage Tank</u>
1	Richburg Hill	2,500,000	2-600 each	150,000
(Collector and storage tanks are the same ones listed above as ground and elevated tanks at Richburg Hill. The collector tank serves some customers as well as being used for a collector tank.)				
2	Tatum Blvd.	1,000,000	2 @ 1000 gpm each	500,000
(Collector and storage tanks are the same ones listed above as elevated storage tanks at Tatum Blvd. The collector tank serves some customers as well as being used for a collector tank.)				

Pumping Stations:

<u>No.</u>	<u>Location</u>	<u>Pumps</u>	<u>Head</u>	<u>Remarks</u>
1	28 th Avenue	2 @ 1500 gpm each	94'	Inline booster pumps that pump to ground tank on Richburg Hill. (Pump starts by a timer signal, stops by a water level signal from the ground tank.)
2	Lincoln Rd Extension	2		(Pumps to elevated tank on Lincoln Rd. Extension)
3	Ralston Road	250 gpm		pumps off 10 in. water (NOT IN USE)
				10,000 gallon pressure tank relocated to Classic Drive
5	Hwy 98	N/A		fills 500,000 gallon elevated tank on Hwy 98 E

Generators @ Plant 1, @Plant 2, @ Well # 20, #11, #12, #16