



MISSISSIPPI STATE DEPARTMENT OF HEALTH

REPORT OF INSPECTION OF DRINKING WATER SUPPLY

PWS: 0240001 **Class:** D

An inspection of the CITY OF BILOXI water supply in HARRISON county was made on 09/20/2016. Present at the time of inspection was TRACEY L FOREHAND, OPERATOR; BRENT HODGE, OPERATOR; WRITER. Official Address PO BOX 429 BILOXI MS 39533 W.W. Operator TRACEY L FOREHAND Address P O BOX 429 BILOXI MS 39533 No. Connections 9037 No. Meters Population Served 23496 Field Chemical Analysis: pH ___ Cl2(free) 0.3 Cl2(total) 0.4 H2S N/A Iron ___ Fluoride ___ Point of Sampling DISTRIBUTION Water Rates ___

COMMENTS

Technical: 5 Managerial: 5 Financial: 5

OVERALL CAPACITY RATING: 5.0 / 5.0

1. At the time of inspection, the water system appeared to be well maintained and operating properly.


**Mississippi Department of Health
Bureau of Public Water Supply**

STANDARD FORM

FY 2017 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#: 0240001 Class: D Survey Date: 09-20-2016 County: HARRISON
 Public Water System: CITY OF BILOXI Conn: 9037
 Certified Waterworks Operator: TRACEY L FOREHAND Pop: 23496

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 Wendy Ferrill, P.E. on 09/22/2016

Reviewed by Ralph Hayes, P.E. on 09/23/2016

Comments: _____

Technical Capacity Assessment	Point Scale	Point Award
[T1] Does the water system have any significant deficiencies? [<u>Y</u> <u>N</u>]	N - 1 pt. Y - 0 pt.	1
[T2] 1) Was the water treatment process functioning properly? [<u>Y</u> <u>N</u>] (i.e. Is pH, iron, free 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 and did it show that MSDH Minimum JOB Guidelines for W. W. Operators were being met? [<u>Y</u> <u>N</u>] 3) Was the water system properly maintained at the time of survey? [<u>Y</u> <u>N</u>] 4) Did operator 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 water loss records available for review by the regional engineer? [<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? <input checked="" type="radio"/> Y <input type="radio"/> N	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? <input checked="" type="radio"/> Y <input type="radio"/> N 2) Have all board members (in office more than 12 months) completed Board Member Training? <input type="radio"/> Y <input type="radio"/> N <input checked="" type="radio"/> NA 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) <input checked="" type="radio"/> Y <input type="radio"/> N <input checked="" type="radio"/> NA (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? <input type="radio"/> Y <input checked="" type="radio"/> N	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? <input checked="" type="radio"/> Y <input type="radio"/> N	Y - 1pt. N - 0pt.	1
[M5] 1) Does the water system have an effective cross connection control program in compliance with MSDH regulations? <input checked="" type="radio"/> Y <input type="radio"/> N 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? <input checked="" type="radio"/> Y <input type="radio"/> N (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? <input checked="" type="radio"/> Y <input type="radio"/> N (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? <input checked="" type="radio"/> Y <input type="radio"/> N	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.) clearly show that the water system effectively implements this cut-off policy? <input checked="" type="radio"/> Y <input type="radio"/> N	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? <input checked="" type="radio"/> Y <input type="radio"/> N	Y - 1pt. N - 0pt.	1
[F5 - Municipal Systems] 1) Is the municipality current in submitting audit reports to the State Auditor's Office? <input checked="" type="radio"/> Y <input type="radio"/> N 2) Was a copy of the latest audit report available for review at the time of the survey? <input checked="" type="radio"/> Y <input type="radio"/> N 3) Does this audit report clearly show that water and sewer fund account(s) are maintained separately from all other municipal accounts? <input checked="" type="radio"/> Y <input type="radio"/> N (NOTE: Yes answer to all questions required to receive point.)	All Y - 1 pt. Else - 0 pt.	1
[F5 - Rural Systems] 1) Has the rural water system filed the required financial reports with the State Auditor's Office and were these reports available for review? <input type="radio"/> Y <input type="radio"/> N 2) Does the latest financial report show that receipts exceeded expenditures? <input type="radio"/> Y <input type="radio"/> N (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 BILOXI**
ID: **0240001** Class: **D** County: **HARRISON**

Date Completed: **09/22/2016**
Connections - Actual: **9037** Equivalent: **11658**
Design Capacity: **22676** Percent Design Capacity: **11658/22676 = 51.4%**

Well Capacities are from pumping tests 12-2015

Design Capacity = Well Capacity + (Elevated Storage / 200)

Well Capacity = 735 + 346 + 1034 + 606 + 857 + 881 + 768 + 937 + 880 + 1010 + 969 + 1237
+ 1078

Well Capacity = 11,338 gpm

Elevated Storage = 1,000,000 + 1,000,000 + 750,000

Elevated Storage = 2,750,000 gallon

Design Capacity = 11,338 + (2,750,000 / 200)

Design Capacity = 11,338 + 13,750

Design Capacity = 25,088

Note: The design capacity is limited to twice (2X) the well capacity

Design Capacity = 11,338 x 2

Design Capacity = 22,676

From data provided on the high users:

The Average Commercial & Industrial Use = 67,876,000 / Month

Total Average Use = 116,893,000 / Month

(Information taken from top 500 users report for two system combined (MS0240001 and MS0240084.)

Ciu = Average Commercial & Industrial Use / Total Average Use

Ciu = 67,876,000 / 116,893,000

Ciu = 0.58

Equivalent Connections = # of Connections + (# of Connections x 0.5 Ciu)

Equivalent Connections = 9037 + [9037 x (0.5) (0.58)]

Equivalent Connections = 9037 + 2621

Equivalent Connections = 11,658

% of Design Capacity = (# of eq connections / design capacity) x 100

% of Design Capacity = (11,658 / 22,676) x 100

% of Design Capacity = 51.4

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

CITY OF BILOXI 09/22/2016

GROUNDWATER RULE CALCULATIONS:

Well #01: $T = 68F + 11 = 79F$
 $CT = 1.9\text{mg}\cdot\text{min}/\text{L}$

$C = 1.9\text{mg}\cdot\text{min}/\text{L} / ((10\text{ft}\cdot 5.9\text{gal}/\text{ft})/439\text{GPM} + (100\text{ft}\cdot 0.7\text{gal}/\text{ft})/220\text{GPM} + (75\text{ft}\cdot 2.6\text{gal}/\text{ft})/110\text{GPM})$

$C = 0.8\text{mg}/\text{L}$ *Therefore, the minimum residual of free chlorine at the first customer should be 0.8mg/L.

Well #04: $T = 68F + 14 = 82F$
 $CT = 1.7\text{mg}\cdot\text{min}/\text{L}$

$C = 1.7\text{mg}\cdot\text{min}/\text{L} / ((20\text{ft}\cdot 1.5\text{gal}/\text{ft})/465\text{GPM} + (200\text{ft}\cdot 1.5\text{gal}/\text{ft})/232\text{GPM})$

$C = 1.3\text{mg}/\text{L}$ *Therefore, the minimum residual of free chlorine at the first customer should be 1.3mg/L.

Well #05: $T = 68F + 8 = 76F$ **The water goes into tank before distribution.
 $CT = 2.1\text{mg}\cdot\text{min}/\text{L}$

$C = 2.1\text{mg}\cdot\text{min}/\text{L} / (1,000,000\text{gal}/859\text{GPM})$

$C = <0.2\text{mg}/\text{L}$ *Therefore, the minimum residual of free chlorine at the tank should be 0.2mg/L.

Well #07: $T = 68F + 8 = 76F$ **The water goes into tank before distribution.
 $CT = 2.1\text{mg}\cdot\text{min}/\text{L}$

$C = 2.1\text{mg}\cdot\text{min}/\text{L} / (1,000,000\text{gal}/901\text{GPM})$

$C = <0.2\text{mg}/\text{L}$ *Therefore, the minimum residual of free chlorine at the tank should be 0.2mg/L.

Well #09: $T = 68F + 7 = 75F$
 $CT = 2.2\text{mg}\cdot\text{min}/\text{L}$

$C = 2.2\text{mg}\cdot\text{min}/\text{L} / ((75\text{ft}\cdot 1.5\text{gal}/\text{ft})/434\text{GPM} + (10\text{ft}\cdot 1.5\text{gal}/\text{ft})/217\text{GPM})$

$C = 6.7\text{mg}/\text{L}$ *THIS RESIDUAL EXCEEDS THE MCL OF 4.0MG/L FOR CHLORINE. ADDITIONAL CONTACT TIME BEFORE THE FIRST CONNECTION MUST BE PROVIDED TO ACHIEVE 4-LOG.

Well #10: $T = 68F + 9 = 77F$
 $CT = 2.0\text{mg}\cdot\text{min}/\text{L}$

$C = 2.0\text{mg}\cdot\text{min}/\text{L} / ((10\text{ft}\cdot 5.9\text{gal}/\text{ft})/805\text{GPM} + (50\text{ft}\cdot 5.9\text{GPM})/403\text{GPM} + (50\text{ft}\cdot 1.5\text{gal}/\text{ft})/201\text{GPM})$

$C = 1.7\text{mg}/\text{L}$ *Therefore, the minimum residual of free chlorine at the first customer should be 1.7mg/L.

Well #11: $T = 68F + 8 = 76F$
 $CT = 2.1\text{mg}\cdot\text{min}/\text{L}$

$C = 2.1\text{mg}\cdot\text{min}/\text{L} / ((30\text{ft}\cdot 5.9\text{gal}/\text{ft})/881\text{GPM} + (40\text{ft}\cdot 5.9\text{gal}/\text{ft})/441\text{GPM})$

$C = 2.9\text{mg}/\text{L}$ *Therefore, the minimum residual of free chlorine at the first customer should be 2.9mg/L.

Well #12: $T = 68F + 8 = 76F$
 $CT = 2.1\text{mg}\cdot\text{min}/\text{L}$

$C = 2.1\text{mg}\cdot\text{min}/\text{L} / ((150\text{ft}\cdot 5.9\text{gal}/\text{ft})/1016\text{GPM} + (120\text{ft}\cdot 5.9\text{gal}/\text{ft})/508\text{GPM})$

$C = 0.9\text{mg}/\text{L}$ *Therefore, the minimum residual of free chlorine at the first customer should be 0.9mg/L.

Well #13: $T = 68F + 9 = 77F$
 $CT = 2.0\text{mg}\cdot\text{min}/\text{L}$

$C = 2.0\text{mg}\cdot\text{min}/\text{L} / ((25\text{ft}\cdot 4.1\text{gal}/\text{ft})/882\text{GPM} + (15\text{ft}\cdot 10.4\text{gal}/\text{ft})/441\text{GPM})$

$C = 4.3\text{mg}/\text{L}$ *THIS RESIDUAL EXCEEDS THE MCL OF 4.0MG/L FOR CHLORINE. ADDITIONAL CONTACT TIME BEFORE THE FIRST CONNECTION MUST BE PROVIDED TO ACHIEVE 4-LOG.

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

CITY OF BILOXI 09/22/2016

Well #14: $T = 68F + 6 = 74F$
 $CT = 2.3\text{mg}\cdot\text{min}/\text{L}$
 $C = 2.3\text{mg}\cdot\text{min}/\text{L} / ((40\text{ft}\cdot 2.6\text{gal}/\text{ft})/901\text{GPM} + (25\text{ft}\cdot 1.5\text{gal}/\text{ft})/451\text{GPM})$
 $C = 11.6\text{mg}/\text{L}$ *THIS RESIDUAL EXCEEDS THE MCL OF 4.0MG/L FOR CHLORINE. ADDITIONAL CONTACT TIME BEFORE THE FIRST CONNECTION MUST BE PROVIDED TO ACHIEVE 4-LOG.

Well #15: $T = 68F + 7 = 75F$
 $CT = 2.2\text{mg}\cdot\text{min}/\text{L}$
 $C = 2.2\text{mg}\cdot\text{min}/\text{L} / ((20\text{ft}\cdot 4.1\text{gal}/\text{ft})/1150\text{GPM} + (15\text{ft}\cdot 4.1\text{gal}/\text{ft})/575\text{GPM})$
 $C = 12.3\text{mg}/\text{L}$ *THIS RESIDUAL EXCEEDS THE MCL OF 4.0MG/L FOR CHLORINE. ADDITIONAL CONTACT TIME BEFORE THE FIRST CONNECTION MUST BE PROVIDED TO ACHIEVE 4-LOG.

Well #16: $T = 68F + 7 = 75F$
 $CT = 2.2\text{mg}\cdot\text{min}/\text{L}$
 $C = 2.2\text{mg}\cdot\text{min}/\text{L} / ((100\text{ft}\cdot 2.6\text{gal}/\text{ft})/1050\text{GPM} + (500\text{ft}\cdot 4.1\text{gal}/\text{ft})/525\text{GPM} + (75\text{ft}\cdot 5.9\text{gal}/\text{ft})/263\text{GPM})$
 $C = 0.4\text{mg}/\text{L}$ *Therefore, the minimum residual of free chlorine at the first customer should be 0.4mg/L.

Well #17: $T = 68F + 10 = 78F$
 $CT = 1.9\text{mg}\cdot\text{min}/\text{L}$
 $C = 1.9\text{mg}\cdot\text{min}/\text{L} / ((75\text{ft}\cdot 5.9\text{gal}/\text{ft})/1300\text{GPM})$
 $C = 5.6\text{mg}/\text{L}$ *THIS RESIDUAL EXCEEDS THE MCL OF 4.0MG/L FOR CHLORINE. ADDITIONAL CONTACT TIME BEFORE THE FIRST CONNECTION MUST BE PROVIDED TO ACHIEVE 4-LOG.

Well #18: $T = 68F + 10 = 78F$
 $CT = 1.9\text{mg}\cdot\text{min}/\text{L}$
 $C = 1.9\text{mg}\cdot\text{min}/\text{L} / ((10\text{ft}\cdot 2.6\text{gal}/\text{ft})/1300\text{GPM} + (40\text{ft}\cdot 1.5\text{gal}/\text{ft})/650\text{GPM} + (15\text{ft}\cdot 1.5\text{gal}/\text{ft})/325\text{GPM})$
 $C = 10.5\text{mg}/\text{L}$ *THIS RESIDUAL EXCEEDS THE MCL OF 4.0MG/L FOR CHLORINE. ADDITIONAL CONTACT TIME BEFORE THE FIRST CONNECTION MUST BE PROVIDED TO ACHIEVE 4-LOG.

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

Name of Supply: City of Biloxi Owner: City County: Harrison

PWS ID# 0240001 Class: D Date of Last Inspection: 09-20-2016 Master Meter: Yes

Actual Connections: 9037 Equivalent Connections: 11,658 Design Capacity: 22,676

% of Design Capacity: 51.4 GWR Status: Triggered Monitoring

Source Supply: Purchase Surface Ground Number of Wells: Fifteen

<u>Well ID</u>	<u>Location</u>	<u>Year Constructed</u>	<u>Capacity (gpm)</u>	<u>Pressure (psi)</u>	<u>Casing (in)</u>	<u>Screen (in)</u>	<u>Depth (ft)</u>	<u>Cl2 Setting</u>
0240001-01	Maple St.		439	60	12	10	1069	80
0240001-04	Bayview (Hospital)		465	60	18	14	1485	14
0240001-05	Greater Ave.		859	20	16	8	852	105
0240001-06	Irish Hill (Porter)		895	20	16	8	640	70
0240001-07	Pass Rd.		901	60	16	8	857	Abandoned
0240001-09	Bay Vista		434	60	8	6	700	Inactive
0240001-10	Bradford St.		805	60	16	10	926	80
0240001-11	Debuys Rd.		881	50	16	10	830	65
0240001-12	Kuhn St.		1016	60	18	14	845	95
0240001-13	Iberville		882	60	18	14	895	45
0240001-14	Park Dr.		901	60	18	14	649	50
0240001-15	Father Ryan Dr.	1996	1150		18	10	680	55
0240001-16	Pine St.	1996	1050		18	10	740	100
0240001-17	Tullis Manor	2000	1300		20	10	975	100
0240001-18	Lakeview	2004	1300		20	10	955	80

Treatment: Iron Softening Corrosion Chlorine Fluoride

<u>Treatment:</u>	<u>No</u>	<u>Location</u>	<u>Type</u>	<u>Capacity (max)</u>	<u>Settings</u>	<u>Remarks</u>
Chlorinator	1	Well #4	Advance 480	25 ppd		
	10		Advance 200	200 ppd		Ton Cylinders
	2	Wells #5 & 14	Advance 200	100 ppd		

<u>Storage:</u>	<u>Location</u>	<u>Year Constructed</u>	<u>Material</u>	<u>Capacity (gallons)</u>	<u>Remarks</u>	<u>Inspection Date</u>
Ground	Greater Ave.		Steel	1,000,000		06-12-2015
Ground	Porter Ave.		Steel	1,000,000		07-25-2013
Elevated	Kuhn St.		Steel	1,000,000	Not in Use	06-12-2015
Elevated	New Bay Vista		Steel	1,000,000	160' to OF	02-23-2016
Elevated	6 th Street		Steel	1,000,000	160' to OF	02-24-2016
Elevated	Broadwater	2016	Steel	750,000		

Generator: Type Location Rating Fuel Routine

