ADEQ

A R K A N S A S
Department of Environmental Quality

March 13, 2017

Jerald Marberry, Mayor
City of Flippin
PO Box 40
Flippin, AR 72634

RE: City of Flippin POTW Inspections (Marion Co)
AFIN: 45-00021 Permit No.: AR0021717
AR0021717C

Dear Mayor Marberry:

On January 5, 2017, I performed a Compliance Evaluation Inspection, an SSO/Collection System Inspection, and a State WWTP Construction inspection of the above-referenced facility in accordance with the provisions of the Federal Clean Water Act, the Arkansas Water and Air Pollution Control Act, and the regulations promulgated thereunder. Copies of the inspection reports are enclosed for your records.

Please refer to the "Summary of Findings" section of each of the attached inspection reports and provide a written response for each violation that was noted. This response should be mailed to the attention of the Water Division Inspection Branch at the address at the bottom of this letter or e-mailed to Water-Inspection-Report@adeq.state.ar.us. This response should contain documentation describing the course of action taken to correct each item noted. This corrective action should be completed as soon as possible, and the written response with all necessary documentation (i.e., photos) is due by **March 27, 2017**.

If I can be of any assistance, please contact me at mccabe@adeq.state.ar.us or (501) 682-0642.

Sincerely,

Kerri McCabe

Kerri McCabe
Inspector Supervisor
Water Division

cc: Jerald Marberry, Mayor, City of Flippin, mayor@cityofflippin.com
JL Wagoner, Public Works Director, City of Flippin, cofmaintenance@hotmail.com

ADEQ
ARKANSAS
Department of Environmental Quality

WATER DIVISION INSPECTION REPORT

AFIN: **45-00021**	PERMIT #: **AR0021717**	DATE: **1/5/2017**
COUNTY: **45 Marion**	PDS #: **095796**	MEDIA: **WN**
GPS LAT:	LONG:	LOCATION: **Entrance**

FACILITY INFORMATION

NAME:
City of Flippin POTW
LOCATION:
East Industrial Drive
CITY:
Flippin, AR

RESPONSIBLE OFFICIAL

NAME: / TITLE
Jerald Marberry / Mayor
COMPANY:
City of Flippin
MAILING ADDRESS:
PO Box 40
CITY, STATE, ZIP:
Flippin AR 72634
PHONE & EXT: / FAX:
870-453-8300 /
EMAIL:
mayor@cityofflippin.com

CONTACTED DURING INSPECTION: **Yes**

INSPECTION INFORMATION

FACILITY TYPE:	INSPECTOR ID#:
1 - Municipal	**84022 S - State**

FACILITY EVALUATION RATING:	INSPECTION TYPE:
3 - Satisfactory	**Compliance Evaluation**

DATE(S):	ENTRY TIME:	EXIT TIME:	PERMIT EFFECTIVE DATE:
1/5/2017	**10:00**	**13:00**	**11/1/2012**
			PERMIT EXPIRATION DATE: **10/31/2017**

FAYETTEVILLE SHALE RELATED: **N**

FAYETTEVILLE SHALE VIOLATIONS: **N**

INSPECTION PARTICIPANTS

NAME/TITLE/PHONE/FAX/EMAIL/ETC.:
Jerald Marberry/Mayor/(870) 453-8300/mayor@cityofflippin.com
JL Wagoner (Lic# 010535)/Public Works Director/(870) 405-0600/cofmaintenance@hotmail.com
Scott Garrison (Lic# 008578)/WW Operator
Susan Poe/ARWA
District 2 Inspector Skyler Schlick

AREA EVALUATIONS

(S=Satisfactory, M=Marginal, U=Unsatisfactory, N=Not Applicable/Evaluated)

S	PERMIT	**S**	FLOW MEASUREMENT	**N**	STORMWATER
S	RECORDS/REPORTS	**S**	LABORATORY	**S**	FACILITY SITE REVIEW
M	OPERATION & MAINTENANCE	**S**	EFFLUENT/RECEIVING WATER	**S**	SELF-MONITORING PROGRAM
S	SAMPLING	**S**	SLUDGE HANDLING/DISPOSAL	**N**	PRETREATMENT
******	OTHER:				

SUMMARY OF FINDINGS

The following violations were noted during the inspection:

1.) At the time of the inspection, the facility did not have a licensed Class III operator. However, they were contracting a Class III operator from the City of Yellville to check on the plant twice/week. This is a violation of Part II, Condition #1 of the permit. Mr. JL Wagoner, Public Works Director for the City of Flippin, passed the Class III exam on Jan 27, 2017. No further response required for this item.

2.) The plant's two secondary clarifiers are undersized for the influent flow that comes into the plant during high rain events (design flow is 0.175 MGD). Solids are washing out of the second clarifier (ran in series) onto the intermittent sand filters. Additionally, the plant will not be able to handle additional hookups into the system, which limits the city's ability to economically grow. This is a violation of Part III, Section B, 1, A. of the permit. The city needs to investigate means of correcting the ongoing washout of solids onto the intermittent sand filters.

3.) Two of the sludge drying beds contain thick vegetation. This is a violation of Part III, Section B, 1, A. of the permit. Vegetation must be removed from the sludge drying beds.

4.) The following information is lacking or confusing on the contract lab's Chains of Custody (COC) and are violations of Part III, Section C, 3 of the permit:

- **The preservation coding for Ammonia (NH3-N) is confusing. Ammonia samples are to be cooled to ≤ 6°C and preserved with H_2SO_4 to pH_2 per 40 CFR 136. Ammonia is under a heading with "H2SO4." However, the lab analysis sheet makes the distinction of "samples iced at collection."**
- **There is no indication on the COC or lab analysis sheets that samples were received at the required temperature (i.e., sample temperature recorded once received).**
- **Duplicate results are not supplied with the contract lab's analysis sheets.**

5.) The contract lab's complete name and mailing address are not listed on the Discharge Monitoring Reports (DMR) reviewed (April, July, and Oct 2015). This is a violation of Part III, Section C, 5 of the permit. This information needs to be included when submitting DMR through NetDMR.

6.) Loading calculations for April and July 2015 cannot be duplicated with the data provided (see DMR Calculation Check sheets on Pages 8-9). Facility needs to contact the contract lab and determine what data are being used to generate values reported on DMR. Corrected DMR may need to be submitted to the Enforcement Branch.

Additional Information:

Please be advised a complete permit renewal application is due to the Department by May 1, 2017 (see Part III, Section D, 10 of the permit). For information regarding permit renewal, please contact the Office of Water Quality Permits Branch by phone at (501) 682-0623 or via website at https://www.adeq.state.ar.us/water/permits/npdes/individual/

GENERAL COMMENTS

On Thurs, Jan 5, 2017, an inspection was conducted of the City of Flippin POTW with the above-mentioned inspection participants. The inspection consisted of a site assessment and a records review.

Site assessment:

The city operators a traditional activated sludge plant. Treatment consists of vortex screen, EQ basin, oxidation ditch with rotors (surface aeration), two secondary clarifiers (ran in series), dosing tank, intermittent sand filters (4), UV disinfection, post-aeration, and discharge from Outfall 001 to the receiving stream. Wasted sludge from the secondary clarifiers is routed to an aerobic digester and then to drying beds (2 at 35'x21' and 2 at 21'x21') for dewatering prior to being hauled to IESI landfill in Cherokee Village (~ one container/month).

City personnel are reporting that high rain events (> 5 inches) increase the influent flow into the plant. The secondary clarifiers are under-designed to accommodate this increase in flow, and solids are wasting out onto the intermittent sand filters. The city supplied three years of influent flow data (influent flow is recorded daily). The design flow for the plant is 0.175 MGD; and of the 36 months of influent flow data reviewed, the plant exceeded design flow for 24 months. Even during historically dry weather, the plant was at maximum design flow. This puts limitations on the city's ability to acquire additional hookups, which can negatively impact the city's economic development.

Overall, the facility grounds and treatment plant components were well-maintained and clean. Facility continues to generate high quality effluent regardless of plant conditions.

Records review:

The facility maintains well-organized records for process control and final effluent parameter reporting. For in-house calibration records, the facility should have before/after columns for initial and final readings for the DO and pH meters. Additionally, slope should be recorded for the pH meter. The facility recently replaced the DO and pH meters, and records should reflect any changes in make/model/serial number of the new meters.

The contract lab's complete name and mailing address are not on DMR. Also, the contract lab is not reporting the duplicate results for analyzed samples. The preservation coding for NH3-N is confusing on the contract lab's Chain of Custody, and there is no information regarding the temperature in which samples were received.

INSPECTOR'S SIGNATURE: Kerri McCabe	**Kerri McCabe**	DATE: **3/8/2017**
SUPERVISOR'S SIGNATURE:	**Jason Bolenbaugh**	DATE: **3/10/2017**

SECTION A: PERMIT VERIFICATION

PERMIT SATISFACTORILY ADDRESSES OBSERVATIONS	☑S ☐M ☐U ☐NA ☐NE
DETAILS:	
1. CORRECT NAME AND MAILING ADDRESS OF PERMITTEE:	☑Y ☐N ☐NA ☐NE
2. NOTIFICATION GIVEN TO EPA/STATE OF NEW DIFFERENT OR INCREASED DISCHARGES:	☐Y ☐N ☑NA ☐NE
3. NUMBER AND LOCATION OF DISCHARGE POINTS AS DESCRIBED IN PERMIT:	☑Y ☐N ☐NA ☐NE
4. ALL DISCHARGES ARE PERMITTED:	☑Y ☐N ☐NA ☐NE

SECTION B: RECORDKEEPING AND REPORTING EVALUATION

RECORDS AND REPORTS MAINTAINED AS REQUIRED BY PERMIT	☑S ☐M ☐U ☐NA ☐NE
DETAILS: **Permittee samples flow, DO, and pH; contract lab samples other parameters.**	
1. ANALYTICAL RESULTS CONSISTENT WITH DATA REPORTED ON DMRS:	☑Y ☐N ☐NA ☐NE
2. SAMPLING AND ANALYSES DATA ADEQUATE AND INCLUDE:	☑S ☐M ☐U ☐NA ☐NE
a. DATES AND TIME(S) OF SAMPLING:	☑Y ☐N ☐NA ☐NE
b. EXACT LOCATION(S) OF SAMPLING:	☑Y ☐N ☐NA ☐NE
c. NAME OF INDIVIDUAL PERFORMING SAMPLING:	☑Y ☐N ☐NA ☐NE
d. ANALYTICAL METHODS AND TECHNIQUES:	☑Y ☐N ☐NA ☐NE
e. RESULTS OF CALIBRATIONS:	☑Y ☐N ☐NA ☐NE
f. RESULTS OF ANALYSES:	☑Y ☐N ☐NA ☐NE
g. DATES AND TIMES OF ANALYSES:	☑Y ☐N ☐NA ☐NE
h. NAME OF PERSON(S) PERFORMING ANALYSES:	☑Y ☐N ☐NA ☐NE
3. LABORATORY EQUIPMENT CALIBRATION AND MAINTENANCE RECORDS ADEQUATE:	☑S ☐M ☐U ☐NA ☐NE
4. PLANT RECORDS INCLUDE SCHEDULES, DATES OF EQUIPMENT MAINTENANCE AND REPAIR:	☐S ☐M ☐U ☐NA ☑NE
5. EFFLUENT LOADINGS CALCULATED USING DAILY EFFLUENT FLOW AND DAILY ANALYTICAL DATA: **Contract lab measured flow at sample collection (reported 218 gpm); daily totalized flow used for loading calculations.**	☑Y ☐N ☐NA ☐NE

SECTION C: OPERATIONS AND MAINTENANCE

TREATMENT FACILITY PROPERLY OPERATED AND MAINTAINED	☐S ☑M ☐U ☐NA ☐NE
DETAILS: **Traditional activated sludge plant.**	
1. TREATMENT UNITS PROPERLY OPERATED:	☑S ☐M ☐U ☐NA ☐NE
2. TREATMENT UNITS PROPERLY MAINTAINED: **Sludge drying beds contain vegetation; weirs at clarifiers and post-aeration should be cleaned.**	☑S ☐M ☐U ☐NA ☐NE
3. STANDBY POWER OR OTHER EQUIVALENT PROVIDED: **Onsite generator.**	☑S ☐M ☐U ☐NA ☐NE
4. ADEQUATE ALARM SYSTEM FOR POWER OR EQUIPMENT FAILURES AVAILABLE:	☑S ☐M ☐U ☐NA ☐NE
5. ALL NEEDED TREATMENT UNITS IN SERVICE:	☑S ☐M ☐U ☐NA ☐NE
6. ADEQUATE NUMBER OF QUALIFIED OPERATORS PROVIDED: **Class III (1), Class II (3), and Class I (1)**	☑S ☐M ☐U ☐NA ☐NE
7. SPARE PARTS AND SUPPLIES INVENTORY MAINTAINED:	☑S ☐M ☐U ☐NA ☐NE
8. OPERATION AND MAINTENANCE MANUAL AVAILABLE:	☐Y ☐N ☐NA ☑NE
9. STANDARD OPERATING PROCEDURES AND SCHEDULES ESTABLISHED:	☐Y ☐N ☐NA ☑NE
10. PROCEDURES FOR EMERGENCY TREATMENT CONTROL ESTABLISHED: **EQ basin available.**	☑Y ☐N ☐NA ☐NE
11. HAVE BYPASSES/OVERFLOWS OCCURRED AT THE PLANT OR IN THE COLLECTION SYSTEM IN THE LAST YEAR:	☐Y ☑N ☐NA ☐NE
12. IF SO, HAS THE REGULATORY AGENCY BEEN NOTIFIED:	☐Y ☐N ☑NA ☐NE
13. HAS CORRECTIVE ACTION BEEN TAKEN TO PREVENT ADDITIONAL BYPASSES/OVERFLOWS:	☐Y ☐N ☑NA ☐NE
14. HAVE ANY HYDRAULIC OVERLOADS OCCURRED AT THE TREATMENT PLANT: **Solids washed out at secondary clarifier.**	☑Y ☐N ☐NA ☐NE
15. IF SO, DID PERMIT VIOLATIONS OCCUR AS A RESULT:	☐Y ☑N ☐NA ☐NE

SECTION D: SAMPLING	
PERMITTEE SAMPLING MEETS PERMIT REQUIREMENTS	☑S ☐M ☐U ☐NA ☐NE
DETAILS: **Permittee samples flow, DO, and pH; contract lab samples other parameters.**	
1. SAMPLES TAKEN AT SITE(S) SPECIFIED IN PERMIT:	☑Y ☐N ☐NA ☐NE
2. LOCATIONS ADEQUATE FOR REPRESENTATIVE SAMPLES:	☑Y ☐N ☐NA ☐NE
3. FLOW PROPORTIONED SAMPLES OBTAINED WHEN REQUIRED BY PERMIT:	☐Y ☐N ☑NA ☐NE
4. SAMPLING AND ANALYSES COMPLETED ON PARAMETERS SPECIFIED IN PERMIT:	☑Y ☐N ☐NA ☐NE
5. SAMPLING AND ANALYSES PERFORMED AT FREQUENCY SPECIFIED IN PERMIT:	☑Y ☐N ☐NA ☐NE
6. SAMPLE COLLECTION PROCEDURES ADEQUATE:	☑Y ☐N ☐NA ☐NE
a. SAMPLES REFRIGERATED DURING COMPOSITING:	☐Y ☐N ☑NA ☐NE
b. PROPER PRESERVATION TECHNIQUES USED: **Preservation coding for NH3-N confusing on contract lab's COC.**	☑Y ☐N ☐NA ☐NE
c. CONTAINERS AND SAMPLE HOLDING TIMES CONFORM TO 40 CFR 136:	☑Y ☐N ☐NA ☐NE
7. IF MONITORING IS PERFORMED MORE OFTEN THAN REQUIRED ARE RESULTS REPORTED ON THE DMR:	☐Y ☐N ☑NA ☐NE

SECTION E: FLOW MEASUREMENT	
PERMITTEE FLOW MEASUREMENT MEETS PERMIT REQUIREMENTS	☑S ☐M ☐U ☐NA ☐NE
DETAILS:	
1. PRIMARY FLOW MEASUREMENT DEVICE PROPERLY INSTALLED AND MAINTAINED: **Yes** TYPE OF DEVICE: **6" open flow nozzle (parabolic)**	☑Y ☐N ☐NA ☐NE
2. FLOW MEASURED AT EACH OUTFALL AS REQUIRED:	☑Y ☐N ☐NA ☐NE
3. SECONDARY INSTRUMENTS (TOTALIZERS, RECORDERS, ETC.) PROPERLY OPERATED AND MAINTAINED: **ISCO 4230 Bubbler Flowmeter**	☑Y ☐N ☐NA ☐NE
4. CALIBRATION FREQUENCY ADEQUATE:	☐Y ☐N ☐NA ☑NE
5. RECORDS MAINTAINED OF CALIBRATION PROCEDURES:	☐Y ☐N ☐NA ☑NE
6. CALIBRATION CHECKS DONE TO ASSURE CONTINUED COMPLIANCE:	☑Y ☐N ☐NA ☐NE
7. FLOW ENTERING DEVICE WELL DISTRIBUTED ACROSS THE CHANNEL AND FREE OF TURBULENCE:	☑Y ☐N ☐NA ☐NE
8. FLOW MEASUREMENT EQUIPMENT ADEQUATE TO HANDLE EXPECTED RANGE OF FLOW RATES:	☑Y ☐N ☐NA ☐NE
9. HEAD MEASURED AT PROPER LOCATION:	☑Y ☐N ☐NA ☐NE

SECTION F: LABORATORY	
PERMITTEE LABORATORY PROCEDURES MEET PERMIT REQUIREMENTS	☑S ☐M ☐U ☐NA ☐NE
DETAILS: **Permittee samples flow, DO, and pH; contract lab samples other parameters.**	
1. EPA APPROVED ANALYTICAL PROCEDURES USED (40 CFR 136.3 FOR LIQUIDS, 503.8(B) FOR SLUDGES) :	☑Y ☐N ☐NA ☐NE
2. IF ALTERNATIVE ANALYTICAL PROCEDURES ARE USED, PROPER APPROVAL HAS BEEN OBTAINED:	☐Y ☐N ☑NA ☐NE
3. SATISFACTORY CALIBRATION AND MAINTENANCE OF INSTRUMENTS AND EQUIPMENT:	☑Y ☐N ☐NA ☐NE
4. QUALITY CONTROL PROCEDURES ADEQUATE:	☑Y ☐N ☐NA ☐NE
5. DUPLICATE SAMPLES ARE ANALYZED ≥10% OF THE TIME: **Duplicate results are not provided by contract lab.**	☑Y ☐N ☐NA ☐NE
6. SPIKED SAMPLES ARE ANALYZED ≥10% OF THE TIME:	☑Y ☐N ☐NA ☐NE
7. COMMERCIAL LABORATORY USED:	☑Y ☐N ☐NA ☐NE
a. LAB NAME: **Arkansas Testing Laboratories**	
b. LAB ADDRESS: **204 E Lincoln Drive, Searcy, AR 72143**	
c. PARAMETERS PERFORMED: **CBOD5, TSS, NH3-N, and FCB**	
8. BIOMONITORING PROCEDURES ADEQUATE:	☐Y ☐N ☑NA ☐NE
a. PROPER ORGANISMS USED:	☐Y ☐N ☑NA ☐NE
b. PROPER DILUTION SERIES FOLLOWED:	☐Y ☐N ☑NA ☐NE
c. PROPER TEST METHODS AND DURATION:	☐Y ☐N ☑NA ☐NE
d. RETESTS AND/OR TRE PERFORMED AS REQUIRED:	☐Y ☐N ☑NA ☐NE

SECTION G: EFFLUENT/RECEIVING WATERS OBSERVATIONS

BASED ON VISUAL OBSERVATIONS ONLY — ☑S ☐M ☐U ☐NA ☐NE

DETAILS: **Observed at Outfall 001 prior to entering receiving stream.**

OUTFALL #:	OIL SHEEN	GREASE	TURBIDITY	VISIBLE FOAM	FLOATING SOLIDS	COLOR	OTHER
001	NO	NO	NO	NO	NO	Clear	Algae buildup at post-aeration

SECTION H: SLUDGE DISPOSAL

SLUDGE DISPOSAL MEETS PERMIT REQUIREMENTS — ☑S ☐M ☐U ☐NA ☐NE

DETAILS: **Wasted sludge routed to aerobic digester then to sludge drying beds for dewatering prior to hauling to IESI landfill in Cherokee Village.**

1. SLUDGE MANAGEMENT ADEQUATE TO MAINTAIN EFFLUENT QUALITY: ☑S ☐M ☐U ☐NA ☐NE
2. SLUDGE RECORDS MAINTAINED AS REQUIRED BY 40 CFR 503: ☐S ☐M ☐U ☑NA ☐NE
3. FOR LAND APPLIED SLUDGE, TYPE OF LAND APPLIED TO: (E.G., FOREST, AGRICULTURAL, PUBLIC CONTACT SITE): **N/A**

SECTION I: SAMPLING INSPECTION PROCEDURES

SAMPLE RESULTS WITHIN PERMIT REQUIREMENTS — ☐S ☐M ☐U ☑NA ☐NE

DETAILS:

1. SAMPLES OBTAINED THIS INSPECTION: ☐Y ☐N ☑NA ☐NE
2. TYPE OF SAMPLE: ☐GRAB:__ ☐COMPOSITE:__ METHOD:__ FREQUENCY:
3. SAMPLES PRESERVED: ☐Y ☐N ☑NA ☐NE
4. FLOW PROPORTIONED SAMPLES OBTAINED: ☐Y ☐N ☑NA ☐NE
5. SAMPLE OBTAINED FROM FACILITY'S SAMPLING DEVICE: ☐Y ☐N ☑NA ☐NE
6. SAMPLE REPRESENTATIVE OF VOLUME AND NATURE OF DISCHARGE: ☐Y ☐N ☑NA ☐NE
7. SAMPLE SPLIT WITH PERMITTEE: ☐Y ☐N ☑NA ☐NE
8. CHAIN-OF-CUSTODY PROCEDURES EMPLOYED: ☐Y ☐N ☑NA ☐NE
9. SAMPLES COLLECTED IN ACCORDANCE WITH PERMIT: ☐Y ☐N ☑NA ☐NE

SECTION J: STORM WATER POLLUTION PREVENTION PLAN

STORM WATER MANAGEMENT MEETS PERMIT REQUIREMENTS — ☐S ☐M ☐U ☑NA ☐NE

DETAILS: **Part II, Condition #6 requires BMPs for stormwater protection; no issues noted during inspection.**

1. SWPPP UPDATED AS NEEDED:__ DATE OF LAST UPDATE: ☐Y ☐N ☑NA ☐NE
2. SITE MAP INCLUDING ALL DISCHARGES AND SURFACE WATERS: ☐Y ☐N ☑NA ☐NE
3. POLLUTION PREVENTION TEAM IDENTIFIED: ☐Y ☐N ☑NA ☐NE
4. POLLUTION PREVENTION TEAM PROPERLY TRAINED: ☐Y ☐N ☑NA ☐NE
5. LIST OF POTENTIAL POLLUTANT SOURCES: ☐Y ☐N ☑NA ☐NE
6. LIST OF POTENTIAL SOURCES AND PAST SPILLS AND LEAKS: ☐Y ☐N ☑NA ☐NE
7. ALL NON-STORM WATER DISCHARGES ARE AUTHORIZED: ☐Y ☐N ☑NA ☐NE
8. LIST OF STRUCTURAL BMPS: ☐Y ☐N ☑NA ☐NE
9. LIST OF NON-STRUCTURAL BMPS: ☐Y ☐N ☑NA ☐NE
10. BMPS PROPERLY OPERATED AND MAINTAINED: ☐Y ☐N ☑NA ☐NE
11. INSPECTIONS CONDUCTED AS REQUIRED: ☐Y ☐N ☑NA ☐NE

FLOW CALCULATION SHEET

Date: **Jan 5, 2017** Time: **10:53**

Head in Inches: **2 ¾"** Feet: **0.229'**

Type & Size of Primary Flow Measurement Device: **6" open flow nozzle (parabolic)**

Name & Model of Secondary Flow Measurement Device: **ISCO 4230 Bubbler flowmeter**

Date of last Calibration of Secondary Flow Device:

Recorded Flow at Date & Time Listed Above: **66 gpm** (Facility Flow Meter)

Calculated Flow at Date & Time Listed Above: **58.03 gpm**

(Flow is calculated using flow charts in: ISCO Open Channel Flow Measurement Handbook-5th Edition)

$$\% \text{ Error} = \frac{\text{Recorded Value} - \text{Calculated Value}}{\text{Calculated Value}} \times 100$$

$$\% \text{ Error} = \frac{66 - 58.03}{58.03} \times 100$$

$$\% \text{ Error} = \frac{7.97}{58.03} \times 100$$

% Error = 0.1373 X 100

% Error = **14** %

Comments: **City supplied manufacture's specifications for the nozzle; was not supplied formula for converting head (inches/feet) into flow (gpm/MGD). Calculation is an estimate only (based on Palmer-Bowlus flume).**

DMR Calculation Check

Reporting Period: From 2015 (Year) 04 (Month) 01 (Day) To 2015 (Year) 04 (Month) 30 (Day)

Parameter Checked: TSS

	Loading Mass (lbs/day) Mo. Avg.	Concentration (mg/l) Mo. Avg.	Concentration (mg/l) 7-Day Avg.
Reported Value:	1.0	<1.0	<1.0
Calculated Value:	2.3	1.0	1.0
Permit Value:	21.9	15	22.5

If calculated value does not equal reported value, explain:
(1 mg/l x 0.276 MGD x 8.34) = 2.302 lbs/day; values are NOT the same; used daily flow recorded by facility; contract lab is reporting 278 gpm or 0.400 MGD at time of sample collection. I cannot duplicate these results with the data provided: daily flow, contract lab's instantaneous flow, or monthly average flow do not equal value provided on DMR.

DMR Calculation Check

Reporting Period:	**From**	**2015** (Year)	**07** (Month)	**01** (Day)	**To**	**2015** (Year)	**07** (Month)	**31** (Day)

Parameter Checked: CBOD5

	Loading Mass (lbs/day) Mo. Avg.	Concentration (mg/l) Mo. Avg.	Concentration (mg/l) 7-Day Avg.
Reported Value:	2.0	<2.0	<2.0
Calculated Value:	3.8	2.0	2.0
Permit Value:	14.6	10	15

If calculated value does not equal reported value, explain:
(2 mg/l x 0.231 MGD x 8.34) = 3.853 lbs/day; values are NOT the same; used daily flow recorded by facility; contract lab is reporting 131 gpm or 0.189 MGD at time of sample collection. I cannot duplicate these results with the data provided: daily flow, contract lab's instantaneous flow, or monthly average flow do not equal value provided on DMR.

DMR Calculation Check

Reporting Period:	**From**	**2015** (Year)	**10** (Month)	**01** (Day)	**To**	**2015** (Year)	**10** (Month)	**31** (Day)

Parameter Checked: NH3-N (May-Oct)

	Loading Mass (lbs/day) Mo. Avg.	Concentration (mg/l) Mo. Avg.	Concentration (mg/l) 7-Day Avg.
Reported Value:	0.1	<0.1	<0.1
Calculated Value:	0.1	0.1	0.1
Permit Value:	2.9	2	3

If calculated value does not equal reported value, explain:
(0.1 mg/l x 0.115 MGD x 8.34) = 0.096 lbs/day; values are the same; used daily flow recorded by facility; contract lab is reporting 218 gpm or 0.314 MGD at time of sample collection.

Water Division Photographic Evidence Sheet					
Location:	**City of Flippin POTW**				
Photographer:	**Kerri McCabe**	Date:	**Jan 5, 2017**	Time:	**1033**
Witness:	**Skyler Schlick**			Photo #:	**1**
Description:	**Vortex screen waste dumping to hopper dumpster; solids to landfill.**				

Photographer:	**Kerri McCabe**	Date:	**Jan 5, 2017**	Time:	**1110**
Witness:	**Skyler Schlick**			Photo #:	**2**
Description:	**EQ basin**				

Water Division Photographic Evidence Sheet					
Location:	**City of Flippin POTW**				
Photographer:	**Kerri McCabe**	Date:	**Jan 5, 2017**	Time:	**1034**
Witness:	**Skyler Schlick**			Photo #:	**3**
Description:	**Oxidation ditch with rotors for surface aeration.**				

Photographer:	**Kerri McCabe**	Date:	**Jan 5, 2017**	Time:	**1037**
Witness:	**Skyler Schlick**			Photo #:	**4**
Description:	**First secondary clarifier (ran in series); note consistency of sludge.**				

Water Division Photographic Evidence Sheet					
Location:	**City of Flippin POTW**				
Photographer:	**Kerri McCabe**	Date:	**Jan 5, 2017**	Time:	**1041**
Witness:	**Skyler Schlick**			Photo #:	**5**
Description:	**Second secondary clarifier (ran in series); sludge blanket rising due to inflow.**				

Photographer:	**Kerri McCabe**	Date:	**Jan 5, 2017**	Time:	**1045**
Witness:	**Skyler Schlick**			Photo #:	**6**
Description:	**Dosing tank**				

Water Division Photographic Evidence Sheet					
Location:	**City of Flippin POTW**				
Photographer:	**Kerri McCabe**	Date:	**Jan 5, 2017**	Time:	**1046**
Witness:	**Skyler Schlick**			Photo #:	**7**
Description:	**Intermittent sand filters (4) after the dosing tank; note washed out solids.**				

Photographer:	**Kerri McCabe**	Date:	**Jan 5, 2017**	Time:	**1226**
Witness:	**Skyler Schlick**			Photo #:	**8**
Description:	**Washed out solids from the secondary clarifiers on media of sand filter.**				

Water Division Photographic Evidence Sheet					
Location:	**City of Flippin POTW**				
Photographer:	**Kerri McCabe**	Date:	**Jan 5, 2017**	Time:	**1049**
Witness:	**Skyler Schlick**			Photo #:	**9**
Description:	**UV disinfection**				

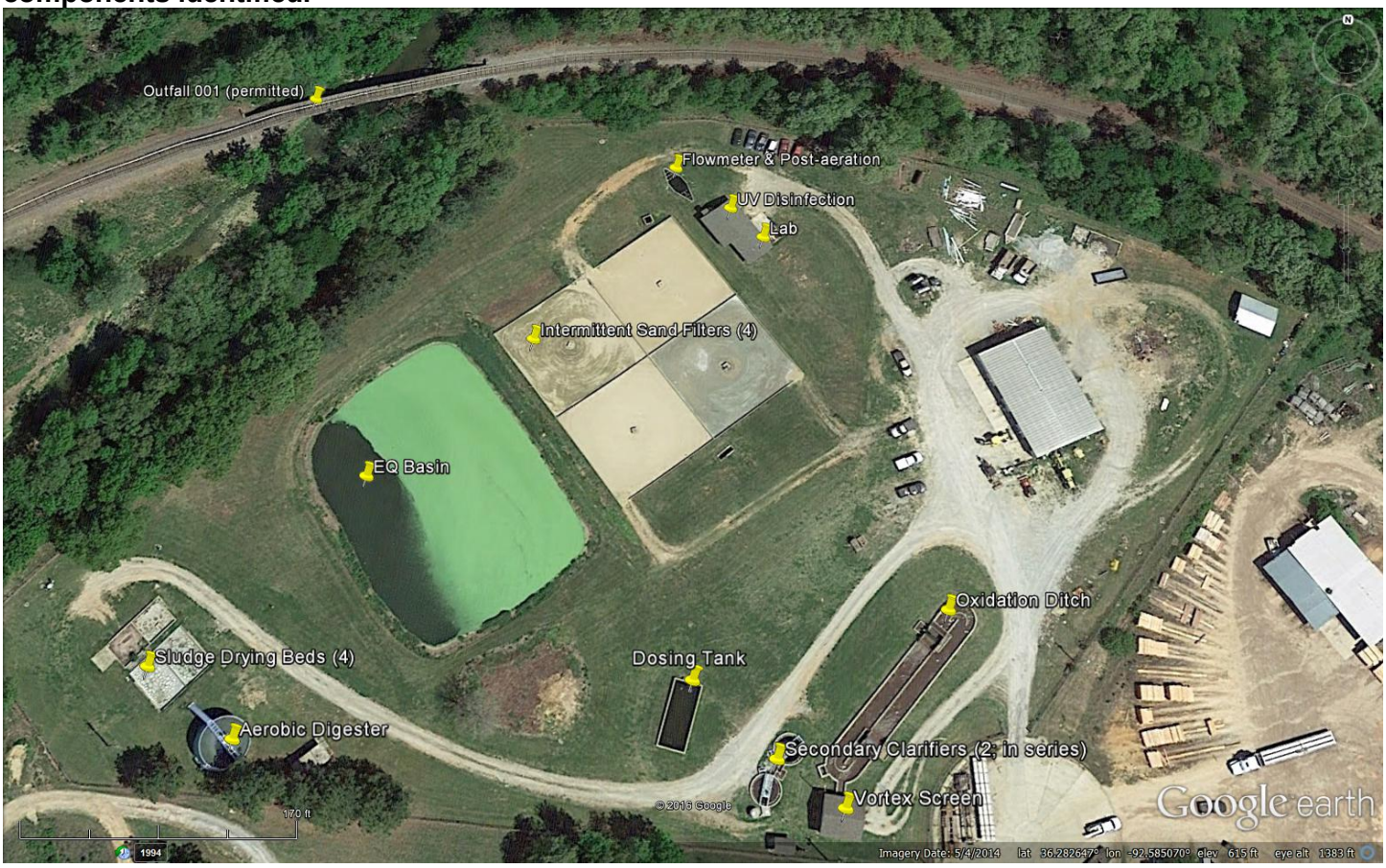
Photographer:	**Kerri McCabe**	Date:	**Jan 5, 2017**	Time:	**1052**
Witness:	**Skyler Schlick**			Photo #:	**10**
Description:	**Primary flowmeter (6” open nozzle) and post-aeration prior to Outfall 001.**				

Water Division Photographic Evidence Sheet					
Location:	**City of Flippin POTW**				
Photographer:	**Skyler Schlick**	Date:	**Jan 5, 2017**	Time:	**1117**
Witness:	**Kerri McCabe**			Photo #:	**11**
Description:	**Wasted sludge is routed to the aerobic digester.**				

Photographer:	**Kerri McCabe**	Date:	**Jan 5, 2017**	Time:	**1111**
Witness:	**Skyler Schlick**			Photo #:	**12**
Description:	**Sludge from digester on sludge drying beds (4).**				

Water Division Photographic Evidence Sheet					
Location:	**City of Flippin POTW**				
Photographer:	**Kerri McCabe**	Date:	**Jan 5, 2017**	Time:	**1112**
Witness:	**Skyler Schlick**			Photo #:	**13**
Description:	**Excessive vegetation in two sludge drying beds needs to be managed.**				

Figure 1. Google Earth image dated May 4, 2014 overviewing the City of Flippin's POTW and major components identified.



City of Flippin - Influent Flow Date
AR0021717
Design Flow = 0.175 MGD
Jan 1, 2014 thru Dec 31, 2016

January

	2014		2015		2016	
Day		Flow (MGD)		Flow (MGD)		Flow (MGD)
	1	0.188	1	0.145	1	0.537
	2	0.188	2	0.145	2	0.537
	3	0.199	3	0.360	3	0.537
	4	0.177	4	0.360	4	0.537
	5	0.177	5	0.360	5	0.485
	6	0.177	6	0.362	6	0.460
	7	0.221	7	0.353	7	0.422
	8	0.165	8	0.317	8	0.445
	9	0.204	9	0.307	9	0.432
	10	0.237	10	0.229	10	0.432
	11	0.499	11	0.229	11	0.432
	12	0.499	12	0.229	12	0.339
	13	0.499	13	0.231	13	0.354
	14	0.334	14	0.242	14	0.320
	15	0.271	15	0.206	15	0.328
	16	0.242	16	0.204	16	0.224
	17	0.217	17	0.192	17	0.224
	18	0.191	18	0.192	18	0.224
	19	0.191	19	0.192	19	0.224
	20	0.191	20	0.192	20	0.164
	21	0.191	21	0.191	21	0.206
	22	0.191	22	0.143	22	0.263
	23	0.191	23	0.118	23	0.217
	24	0.191	24	0.115	24	0.217
	25	0.148	25	0.115	25	0.217
	26	0.148	26	0.115	26	0.207
	27	0.148	27	0.128	27	0.204
	28	0.155	28	0.143	28	0.198
	29	0.162	29	0.136	29	0.201
	30	0.151	30	0.152	30	0.193
	31	0.106	31	0.151	31	0.193
Monthly Average		0.221		0.211		0.322
Daily Max		0.499		0.362		0.537
Days > Design		23		19		31

City of Flippin - Influent Flow Date
AR0021717
Design Flow = 0.175 MGD
Jan 1, 2014 thru Dec 31, 2016

February

	2014		2015		2016	
Day		Flow (MGD)	Day	Flow (MGD)	Day	Flow (MGD)
	1	0.129	1	0.151	1	0.193
	2	0.129	2	0.151	2	0.193
	3	0.129	3	0.161	3	0.241
	4	0.133	4	0.109	4	0.211
	5	0.162	5	0.154	5	0.208
	6	0.156	6	0.154	6	0.186
	7	0.156	7	0.137	7	0.186
	8	0.135	8	0.137	8	0.186
	9	0.135	9	0.137	9	0.193
	10	0.135	10	0.143	10	0.175
	11	0.164	11	0.132	11	0.187
	12	0.147	12	0.137	12	0.170
	13	0.130	13	0.135	13	0.171
	14	0.162	14	0.122	14	0.171
	15	0.132	15	0.122	15	0.171
	16	0.132	16	0.122	16	0.171
	17	0.132	17	0.122	17	0.165
	18	0.132	18	0.162	18	0.181
	19	0.136	19	0.179	19	0.151
	20	0.164	20	0.232	20	0.151
	21	0.164	21	0.232	21	0.151
	22	0.126	22	0.232	22	0.151
	23	0.126	23	0.232	23	0.171
	24	0.126	24	0.300	24	0.482
	25	0.144	25	0.310	25	0.555
	26	0.147	26	0.296	26	0.386
	27	0.146	27	0.261	27	0.296
	28	0.142	28	0.274	28	0.296
	29		29		29	0.296
	30		30		30	
	31		31		31	
Monthly Average		0.141		0.180		0.222
Daily Max		0.164		0.310		0.555
Days > Design		0		10		17

City of Flippin - Influent Flow Date
AR0021717
Design Flow = 0.175 MGD
Jan 1, 2014 thru Dec 31, 2016

March

	2014		2015		2016	
Day		Flow (MGD)	Day	Flow (MGD)	Day	Flow (MGD)
	1	0.119	1	0.274	1	0.282
	2	0.119	2	0.274	2	0.277
	3	0.119	3	0.349	3	0.254
	4	0.119	4	0.515	4	0.253
	5	0.164	5	0.523	5	0.207
	6	0.193	6	0.669	6	0.207
	7	0.268	7	0.378	7	0.207
	8	0.358	8	0.378	8	0.235
	9	0.358	9	0.378	9	0.563
	10	0.358	10	0.609	10	0.742
	11	0.338	11	0.733	11	0.751
	12	0.297	12	0.725	12	0.736
	13	0.313	13	0.522	13	0.736
	14	0.154	14	0.754	14	0.736
	15	0.355	15	0.754	15	0.740
	16	0.355	16	0.754	16	0.511
	17	0.355	17	0.731	17	0.437
	18	0.363	18	0.599	18	0.463
	19	0.711	19	0.701	19	0.269
	20	0.670	20	0.694	20	0.269
	21	0.670	21	0.499	21	0.269
	22	0.326	22	0.499	22	0.268
	23	0.326	23	0.499	23	0.257
	24	0.326	24	0.363	24	0.294
	25	0.303	25	0.369	25	0.246
	26	0.276	26	0.555	26	0.246
	27	0.255	27	0.758	27	0.246
	28	0.244	28	0.551	28	0.246
	29	0.254	29	0.551	29	0.210
	30	0.254	30	0.551	30	0.227
	31	0.254	31	0.498	31	0.663
Monthly Average		0.309		0.549		0.389
Daily Max		0.711		0.758		0.751
Days > Design		26		31		31

City of Flippin - Influent Flow Date
AR0021717
Design Flow = 0.175 MGD
Jan 1, 2014 thru Dec 31, 2016

April

	2014		2015		2016	
Day		Flow (MGD)	Day	Flow (MGD)	Day	Flow (MGD)
	1	0.252	1	0.587	1	0.707
	2	0.231	2	0.587	2	0.395
	3	0.239	3	0.725	3	0.395
	4	0.451	4	0.725	4	0.395
	5	0.493	5	0.725	5	0.313
	6	0.493	6	0.725	6	0.282
	7	0.493	7	0.580	7	0.276
	8	0.651	8	0.444	8	0.268
	9	0.541	9	0.444	9	0.216
	10	0.412	10	0.406	10	0.216
	11	0.373	11	0.267	11	0.216
	12	0.373	12	0.267	12	0.216
	13	0.373	13	0.267	13	0.211
	14	0.373	14	0.639	14	0.214
	15	0.550	15	0.628	15	0.200
	16	0.381	16	0.761	16	0.187
	17	0.315	17	0.693	17	0.187
	18	0.235	18	0.473	18	0.187
	19	0.235	19	0.473	19	0.211
	20	0.235	20	0.473	20	0.250
	21	0.235	21	0.435	21	0.098
	22	0.235	22	0.329	22	0.236
	23	0.228	23	0.308	23	0.199
	24	0.219	24	0.280	24	0.199
	25	0.191	25	0.287	25	0.199
	26	0.191	26	0.287	26	0.180
	27	0.191	27	0.287	27	0.197
	28	0.175	28	0.241	28	0.204
	29	0.173	29	0.205	29	0.191
	30	0.159	30	0.213	30	0.686
	31		31		31	
Monthly Average		0.323		0.459		0.264
Daily Max		0.651		0.761		0.707
Days > Design		27		30		29

City of Flippin - Influent Flow Date
AR0021717
Design Flow = 0.175 MGD
Jan 1, 2014 thru Dec 31, 2016

May

	2014		2015		2016	
Day		Flow (MGD)	Day	Flow (MGD)	Day	Flow (MGD)
	1	0.143	1	0.195	1	0.686
	2	0.149	2	0.158	2	0.686
	3	0.149	3	0.158	3	0.740
	4	0.149	4	0.158	4	0.619
	5	0.123	5	0.178	5	0.470
	6	0.140	6	0.164	6	0.407
	7	0.132	7	0.178	7	0.305
	8	0.129	8	0.151	8	0.305
	9	0.282	9	0.291	9	0.305
	10	0.157	10	0.291	10	0.668
	11	0.157	11	0.291	11	0.747
	12	0.157	12	0.655	12	0.762
	13	0.359	13	0.655	13	0.745
	14	0.309	14	0.655	14	0.378
	15	0.474	15	0.655	15	0.378
	16	0.322	16	0.609	16	0.378
	17	0.236	17	0.609	17	0.675
	18	0.236	18	0.609	18	0.546
	19	0.236	19	0.722	19	0.343
	20	0.192	20	0.722	20	0.343
	21	0.183	21	0.722	21	0.305
	22	0.183	22	0.617	22	0.305
	23	0.165	23	0.370	23	0.305
	24	0.132	24	0.370	24	0.388
	25	0.132	25	0.370	25	0.634
	26	0.132	26	0.370	26	0.795
	27	0.132	27	0.313	27	0.670
	28	0.140	28	0.240	28	0.453
	29	0.140	29	0.234	29	0.453
	30	0.144	30	0.285	30	0.453
	31	0.129	31	0.285	31	0.453
Monthly Average		0.188		0.396		0.506
Daily Max		0.474		0.722		0.795
Days > Design		11		26		31

City of Flippin - Influent Flow Date
AR0021717
Design Flow = 0.175 MGD
Jan 1, 2014 thru Dec 31, 2016

June

	2014		2015		2016	
Day	Flow (MGD)	Day	Flow (MGD)	Day	Flow (MGD)	
1	0.129	1	0.285	1	0.304	
2	0.129	2	0.203	2	0.275	
3	0.130	3	0.206	3	0.278	
4	0.126	4	0.181	4	0.403	
5	0.128	5	0.222	5	0.403	
6	0.304	6	0.171	6	0.403	
7	0.326	7	0.171	7	0.318	
8	0.326	8	0.171	8	0.293	
9	0.326	9	0.176	9	0.254	
10	0.434	10	0.174	10	0.251	
11	0.744	11	0.148	11	0.192	
12	0.580	12	0.146	12	0.192	
13	0.400	13	0.137	13	0.192	
14	0.261	14	0.137	14	0.204	
15	0.261	15	0.137	15	0.205	
16	0.261	16	0.195	16	0.185	
17	0.203	17	0.193	17	0.231	
18	0.184	18	0.236	18	0.287	
19	0.178	19	0.506	19	0.287	
20	0.178	20	0.266	20	0.287	
21	0.245	21	0.266	21	0.287	
22	0.245	22	0.266	22	0.201	
23	0.245	23	0.171	23	0.186	
24	0.245	24	0.171	24	0.177	
25	0.268	25	0.161	25	0.166	
26	0.382	26	0.161	26	0.166	
27	0.284	27	0.161	27	0.166	
28	0.171	28	0.161	28	0.196	
29	0.171	29	0.161	29	0.166	
30	0.171	30	0.145	30	0.166	
31		31		31		
Monthly Average	0.268		0.196		0.244	
Daily Max	0.744		0.506		0.403	
Days > Design	22		13		25	

City of Flippin - Influent Flow Date
AR0021717
Design Flow = 0.175 MGD
Jan 1, 2014 thru Dec 31, 2016

July

	2014		2015		2016	
Day		Flow (MGD)	Day	Flow (MGD)	Day	Flow (MGD)
	1	0.132	1	0.180	1	0.269
	2	0.132	2	0.180	2	0.267
	3	0.140	3	0.322	3	0.267
	4	0.130	4	0.322	4	0.267
	5	0.130	5	0.322	5	0.267
	6	0.130	6	0.322	6	0.235
	7	0.130	7	0.208	7	0.211
	8	0.169	8	0.351	8	0.205
	9	0.153	9	0.632	9	0.431
	10	0.153	10	0.543	10	0.431
	11	0.163	11	0.347	11	0.431
	12	0.127	12	0.347	12	0.401
	13	0.127	13	0.347	13	0.335
	14	0.127	14	0.248	14	0.338
	15	0.127	15	0.224	15	0.402
	16	0.127	16	0.215	16	0.254
	17	0.123	17	0.174	17	0.254
	18	0.120	18	0.174	18	0.254
	19	0.120	19	0.174	19	0.216
	20	0.120	20	0.174	20	0.205
	21	0.120	21	0.164	21	0.205
	22	0.122	22	0.273	22	0.205
	23	0.122	23	0.245	23	0.138
	24	0.173	24	0.231	24	0.138
	25	0.165	25	0.184	25	0.138
	26	0.095	26	0.184	26	0.156
	27	0.095	27	0.184	27	0.249
	28	0.095	28	0.184	28	0.250
	29	0.131	29	0.184	29	0.151
	30	0.103	30	0.153	30	0.232
	31	0.202	31	0.164	31	0.232
Monthly Average		0.132		0.257		0.259
Daily Max		0.202		0.632		0.431
Days > Design		1		24		26

City of Flippin - Influent Flow Date
AR0021717
Design Flow = 0.175 MGD
Jan 1, 2014 thru Dec 31, 2016

August

	2014		2015		2016	
Day	Flow (MGD)	Day	Flow (MGD)	Day	Flow (MGD)	
1	0.145	1	0.131	1	0.232	
2	0.101	2	0.131	2	0.198	
3	0.101	3	0.131	3	0.181	
4	0.101	4	0.131	4	0.184	
5	0.108	5	0.213	5	0.176	
6	0.112	6	0.266	6	0.582	
7	0.111	7	0.142	7	0.582	
8	0.111	8	0.146	8	0.582	
9	0.111	9	0.146	9	0.770	
10	0.111	10	0.146	10	0.400	
11	0.111	11	0.153	11	0.400	
12	0.128	12	0.142	12	0.297	
13	0.112	13	0.133	13	0.359	
14	0.101	14	0.133	14	0.359	
15	0.122	15	0.133	15	0.359	
16	0.108	16	0.133	16	0.363	
17	0.108	17	0.133	17	0.363	
18	0.108	18	0.133	18	0.363	
19	0.104	19	0.145	19	0.367	
20	0.130	20	0.163	20	0.677	
21	0.130	21	0.163	21	0.677	
22	0.130	22	0.124	22	0.677	
23	0.111	23	0.124	23	0.677	
24	0.111	24	0.124	24	0.573	
25	0.111	25	0.147	25	0.451	
26	0.134	26	0.147	26	0.424	
27	0.122	27	0.134	27	0.353	
28	0.112	28	0.136	28	0.353	
29	0.114	29	0.143	29	0.353	
30	0.103	30	0.143	30	0.387	
31	0.103	31	0.143	31	0.303	
Monthly Average	0.114		0.146		0.420	
Daily Max	0.145		0.266		0.770	
Days > Design	0		2		31	

City of Flippin - Influent Flow Date
AR0021717
Design Flow = 0.175 MGD
Jan 1, 2014 thru Dec 31, 2016

September

	2014		2015		2016	
Day		Flow (MGD)	Day	Flow (MGD)	Day	Flow (MGD)
	1	0.103	1	0.136	1	0.275
	2	0.103	2	0.153	2	0.256
	3	0.133	3	0.130	3	0.221
	4	0.123	4	0.146	4	0.221
	5	0.112	5	0.114	5	0.221
	6	0.115	6	0.114	6	0.221
	7	0.115	7	0.114	7	0.205
	8	0.115	8	0.114	8	0.247
	9	0.141	9	0.365	9	0.229
	10	0.116	10	0.222	10	0.163
	11	0.225	11	0.222	11	0.163
	12	0.134	12	0.222	12	0.163
	13	0.094	13	0.222	13	0.184
	14	0.094	14	0.222	14	0.203
	15	0.094	15	0.222	15	0.189
	16	0.116	16	0.159	16	0.196
	17	0.123	17	0.169	17	0.285
	18	0.109	18	0.167	18	0.285
	19	0.122	19	0.144	19	0.285
	20	0.116	20	0.144	20	0.257
	21	0.116	21	0.144	21	0.257
	22	0.116	22	0.144	22	0.235
	23	0.117	23	0.140	23	0.216
	24	0.118	24	0.154	24	0.199
	25	0.137	25	0.154	25	0.199
	26	0.118	26	0.130	26	0.199
	27	0.102	27	0.130	27	0.203
	28	0.102	28	0.130	28	0.171
	29	0.102	29	0.154	29	0.165
	30	0.113	30	0.134	30	0.171
	31		31		31	
Monthly Average		0.118		0.164		0.216
Daily Max		0.225		0.365		0.285
Days > Design		1		7		24

City of Flippin - Influent Flow Date
AR0021717
Design Flow = 0.175 MGD
Jan 1, 2014 thru Dec 31, 2016

October

	2014		2015		2016	
Day		Flow (MGD)	Day	Flow (MGD)	Day	Flow (MGD)
	1	0.118	1	0.150	1	0.158
	2	0.129	2	0.142	2	0.158
	3	0.225	3	0.142	3	0.158
	4	0.090	4	0.142	4	0.214
	5	0.090	5	0.142	5	0.200
	6	0.090	6	0.117	6	0.319
	7	0.126	7	0.154	7	0.197
	8	0.128	8	0.146	8	0.154
	9	0.115	9	0.158	9	0.154
	10	0.159	10	0.163	10	0.154
	11	0.375	11	0.163	11	0.154
	12	0.375	12	0.163	12	0.173
	13	0.375	13	0.163	13	0.351
	14	0.375	14	0.166	14	0.349
	15	0.268	15	0.166	15	0.261
	16	0.207	16	0.180	16	0.261
	17	0.187	17	0.124	17	0.261
	18	0.146	18	0.124	18	0.231
	19	0.146	19	0.124	19	0.184
	20	0.146	20	0.124	20	0.278
	21	0.146	21	0.124	21	0.278
	22	0.128	22	0.139	22	0.229
	23	0.128	23	0.135	23	0.229
	24	0.140	24	0.135	24	0.229
	25	0.126	25	0.135	25	0.234
	26	0.126	26	0.135	26	0.234
	27	0.126	27	0.135	27	0.232
	28	0.128	28	0.162	28	0.161
	29	0.135	29	0.157	29	0.142
	30	0.135	30	0.127	30	0.142
	31	0.112	31	0.145	31	0.142
Monthly Average		0.171		0.145		0.214
Daily Max		0.375		0.180		0.351
Days > Design		7		1		19

City of Flippin - Influent Flow Date
AR0021717
Design Flow = 0.175 MGD
Jan 1, 2014 thru Dec 31, 2016

November

	2014		2015		2016	
Day		Flow (MGD)	Day	Flow (MGD)	Day	Flow (MGD)
	1	0.126	1	0.145	1	0.156
	2	0.126	2	0.145	2	0.168
	3	0.126	3	0.126	3	0.152
	4	0.122	4	0.136	4	0.152
	5	0.235	5	0.137	5	0.144
	6	0.142	6	0.692	6	0.144
	7	0.137	7	0.227	7	0.144
	8	0.119	8	0.227	8	0.111
	9	0.119	9	0.227	9	0.115
	10	0.119	10	0.227	10	0.134
	11	0.126	11	0.160	11	0.120
	12	0.126	12	0.160	12	0.120
	13	0.111	13	0.160	13	0.120
	14	0.111	14	0.160	14	0.120
	15	0.097	15	0.160	15	0.119
	16	0.097	16	0.160	16	0.114
	17	0.097	17	0.554	17	0.112
	18	0.126	18	0.745	18	0.119
	19	0.126	19	0.734	19	0.112
	20	0.126	20	0.606	20	0.112
	21	0.126	21	0.350	21	0.112
	22	0.114	22	0.350	22	0.104
	23	0.114	23	0.350	23	0.268
	24	0.114	24	0.271	24	0.134
	25	0.114	25	0.222	25	0.134
	26	0.114	26	0.483	26	0.134
	27	0.091	27	0.483	27	0.134
	28	0.091	28	0.483	28	0.134
	29	0.091	29	0.483	29	0.337
	30	0.091	30	0.483	30	0.209
	31		31		31	
Monthly Average		0.119		0.328		0.143
Daily Max		0.235		0.745		0.337
Days > Design		1		19		3

City of Flippin - Influent Flow Date
AR0021717
Design Flow = 0.175 MGD
Jan 1, 2014 thru Dec 31, 2016

December

	2014		2015		2016	
Day		Flow (MGD)	Day	Flow (MGD)	Day	Flow (MGD)
	1	0.091	1	0.744	1	0.200
	2	0.098	2	0.691	2	0.176
	3	0.092	3	0.578	3	0.161
	4	0.092	4	0.413	4	0.161
	5	0.102	5	0.338	5	0.161
	6	0.103	6	0.338	6	0.219
	7	0.103	7	0.338	7	0.215
	8	0.103	8	0.267	8	0.185
	9	0.133	9	0.230	9	0.196
	10	0.139	10	0.227	10	0.167
	11	0.137	11	0.215	11	0.167
	12	0.126	12	0.323	12	0.167
	13	0.148	13	0.323	13	0.174
	14	0.148	14	0.323	14	0.164
	15	0.148	15	0.728	15	0.165
	16	0.196	16	0.607	16	0.187
	17	0.176	17	0.513	17	0.158
	18	0.209	18	0.422	18	0.158
	19	0.139	19	0.320	19	0.158
	20	0.139	20	0.320	20	0.158
	21	0.139	21	0.320	21	0.142
	22	0.139	22	0.265	22	0.137
	23	0.139	23	0.300	23	0.153
	24	0.139	24	0.538	24	0.153
	25	0.139	25	0.538	25	0.153
	26	0.139	26	0.538	26	0.153
	27	0.139	27	0.538	27	0.153
	28	0.139	28	0.538	28	0.134
	29	0.139	29	0.728	29	0.126
	30	0.132	30	0.781	30	0.136
	31	0.132	31	0.709	31	0.136
Monthly Average		0.133		0.453		0.164
Daily Max		0.209		0.781		0.219
Days > Design		3		31		7

From: McCabe, Kerri
To: McConnell, Melissa
Subject: FW: Scan from City of Flippin
Date: Wednesday, April 19, 2017 7:17:56 AM
Attachments: Scan.pdf

Melissa,

Please attach this to WID 21778. Thank you.

Kerri McCabe
Inspector Supervisor
ADEQ – Water Division
Field Services – Inspection Branch

Office – (501) 682-0642
Work Cell – (501) 352-5641
Fax – (501) 682-0880
5301 Northshore Drive
North Little Rock, AR 72118-5317

-----Original Message-----
From: scans@xerox.com [mailto:scans@xerox.com]
Sent: Monday, April 17, 2017 2:44 PM
To: McCabe, Kerri
Subject: Scan from City of Flippin

Please open the attached document.

Number of Images: 8
Attachment File Type: pdf, Multi-Page

City of Flippin
ARKANSAS
"A Place For All Seasons"

April 17th, 2017

Kerri McCabe
Inspector Supervisor, Water Division
Arkansas Department of Environmental Quality
5301 Northshore Drive
North Little Rock, AR 72118-5317

CC: Layne Pemberton

Re: Permit #AR0021717 City of Flippin Inspection Report

Dear Kerri,

In response to the Inspection Report performed on January 5th, 2017, the City has the following update and findings to report.

1). At the time of the inspection, the facility did not have a licensed operator.

I (J. L. Wagoner) completed my Class III Wastewater License at Lonoke in January shortly following the inspection and am now the Operator of Record for the plant.

2). The plant's two secondary clarifiers are undersized for the influent flow that comes into the plant during high rain events (design flow is 0.175 MGD). Solids were washing out of the second clarifier (ran in series) onto the intermittent sand filters. Additionally the plant will not be able to handle additional hookups into the system, which limits the city's ability to economically grow.

Since the inspection we have changed our process control on the clarifiers trying to slow down the settling process to reduce or eliminate the washing out of solids past the clarifier. We have stepped up our maintenance routine on the sand filters as much as possible to try to prevent plugging of the filters to keep the wastewater flowing and treated to the best of our ability. We are advertising this week for Requests for Qualifications for a qualified engineer to work with the City on a long term permanent solution, however we have also began smoke testing the collection system as of April 11th and found several customer issues and one manhole issue that was causing unnecessary groundwater to inflow into our system. Arkansas Rural Water (Susan Poe) will be returning as weather permits to continue smoke testing the collection system, with us making repairs as soon as possible within our means to reduce the amount of flow to the plant during rain events. We have already taken measures to repair what we are allowed to and notify our customers to make necessary repairs to hopefully see a significant decrease in what is already found. We have not given up on the idea of increasing our plant

capacity and increasing the size of our clarifiers, however we will continue to make strives to reduce anything we can coming in to help the process complete properly.

3). Two of the sludge drying beds contained thick vegetation.

We have removed the vegetation and are including photo's of the sludge drying beds that were in question. We will continue to maintain this on a regular basis as to not let them overgrow with vegetation in the future by pulling the vegetation and properly disposing of it.

4). The list of items concerning the contract lab have been taken care of by Arkansas Testing Lab and I am forwarding a email from them that I received on Friday, April 14th on the matter. Hopefully this clears up the matter of those violations. A corrected DMR is also attached from the lab.

Additional Information: At the time of the inspection our Permit Renewal was still pending. We have since submitted a completed application to ADEQ.

If we need to submit more information or you have any questions, please contact me at 870-405-0600 on my cell. Thank you for your consideration.

Sincerely,

J. L. Wagoner 4-17-2017

J. L. Wagoner
City of Flippin
General Manager

FW: Flippin

Susan Poe <arwasusan@att.net>

Mon 4/17/2017 7:04 AM

To:cofmaintenance@hotmail.com <cofmaintenance@hotmail.com>;

1 attachments (324 KB)

Flippin.pdf;

I didn't see where they sent you a copy of this. I will be in touch after while...have a great day. Susan

---

From: Arkansas Testing Laboratories, Inc [mailto:arkatl@sbcglobal.net]
Sent: Friday, April 14, 2017 9:20 AM
To: arwasusan@att.net
Subject: Flippin

Susan,
In reference to the Flippin inspection report,
Findings #4:
Ammonia samples are iced and preserved with H_2SO_4 upon collection. The samples arrive into the lab with ice still present in the cooler. At this rime, we are not recording the temperature. If this is a requirement, we can implement this procedure. Spike recovery and RPD are currently on the analysis report. We did not realize that the actual values of the parameter in question are required. This procedure can be implemented, also.
Findings #6:
The flow was not changed from a previous report resulting in incorrect loading. These reports have been corrected and are attached as a PDF.

Sorry, I didn't get this to you yesterday.

Thank you,

Pam Green
Office Manager
Arkansas Testing Laboratories
3301 Langley Drive
Searcy, AR 72143
arktestinglabs.com
501-268-6431
844-318-7030 fax

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3301 Langley Drive · Searcy, AR 72143 (501) 268-6431 f (844) 318-7030

NPDES Wastewater Monitoring
Water and Wastewater Analysis
Concrete, Asphalt, and Aggregate Testing
Geotechnical Testing
Industrial and Construction Quality Control

Flippin

Collection Date: April 8, 2015
Collection Time: 12:30 PM
Collected By: THS

Wastewater Analysis

Collection Place: Final Discharge Point

Parameter	Analysis Begin Date / Time	Analysis End Date / Time	Results	Unit	Loading lb/dy	Analyst	% Spike	Rel %	Sample Type	Ref #
Flow	04/08 12:30 PM	NA	0.400	MGD	NA	THS	NA	NA	INST	
CBOD	04/09 7:45 AM	04/14 9:00 AM	< 2.0	mg/l	6.7	EET/KLB	91.3	1.82	Grab	1
TSS	04/09 9:00 AM	NA	< 1.0	mg/l	3.3	EET	NA	0.00	Grab	2
Fecal Coliform	04/08 4:00 PM	04/09 4:00 PM	< 5	N/100mls	NA	THS/ EET	NA	15.39	Grab	3
Ammonia Nitrogen	04/10 8:00 AM	NA	< 0.1	mg/l	0.33	EET	89.5	0.00	Grab	4

Quality Assurance: All Parameters include 10% duplication studies by random selection. The following equipment is checked and calibrated daily: pH meter, balance, incubators, water baths, drying oven and sterilizing apparatus. Ammonia Nitrogen and Oil & Grease Analysis include duplication and spike studies at a rate of at least 10%.

Notes: Samples iced at collection. Preserved with H_2SO_4 to pH_2: Oil & Grease, Ammonia, COD

References:

Analysis complies with 40 CFR Part 136:

1. SM 5210 B-2001
2. SM 2540 D-1997
3. SM 9222 D-1997
4. SM 4500 NH3-G-1997

CORRECTED COPY

Neville Adams, Manager

Arkansas Testing Laboratories
3301 Langley Drive · Searcy, AR 72143 (501) 268-6431 f (844) 318-7030

NPDES Wastewater Monitoring
Water and Wastewater Analysis
Concrete, Asphalt, and Aggregate Testing
Geotechnical Testing
Industrial and Construction Quality Control

Flippin

Collection Date: July 8, 2015
Collection Time: 12:10 PM
Collected By: THS

Wastewater Analysis

Collection Place: Final Discharge Point

Parameter	Analysis Begin Date / Time	Analysis End Date / Time	Results	Unit	Loading lb/dy	Analyst	% Spike	Rel %	Sample Type	Ref #
Flow	07/08 12:10 PM	NA	**0.190**	MGD	NA	THS	NA	NA	INST	
CBOD	07/09 8:30 AM	07/14 8:45 AM	**< 2.0**	mg/l	3.2	KLB/EET	110.8	8.59	Grab	1
TSS	07/09 10:30 AM	NA	**6.0**	mg/l	9.5	EET	NA	1.46	Grab	2
Fecal Coliform	07/08 4:00 PM	07/09 4:15 PM	**< 2**	N/100mls	NA	THS/ KLB	NA	9.52	Grab	3
Ammonia Nitrogen	07/09 8:55 AM	NA	**1.9**	mg/l	3.01	EET	95.0	0.00	Grab	4

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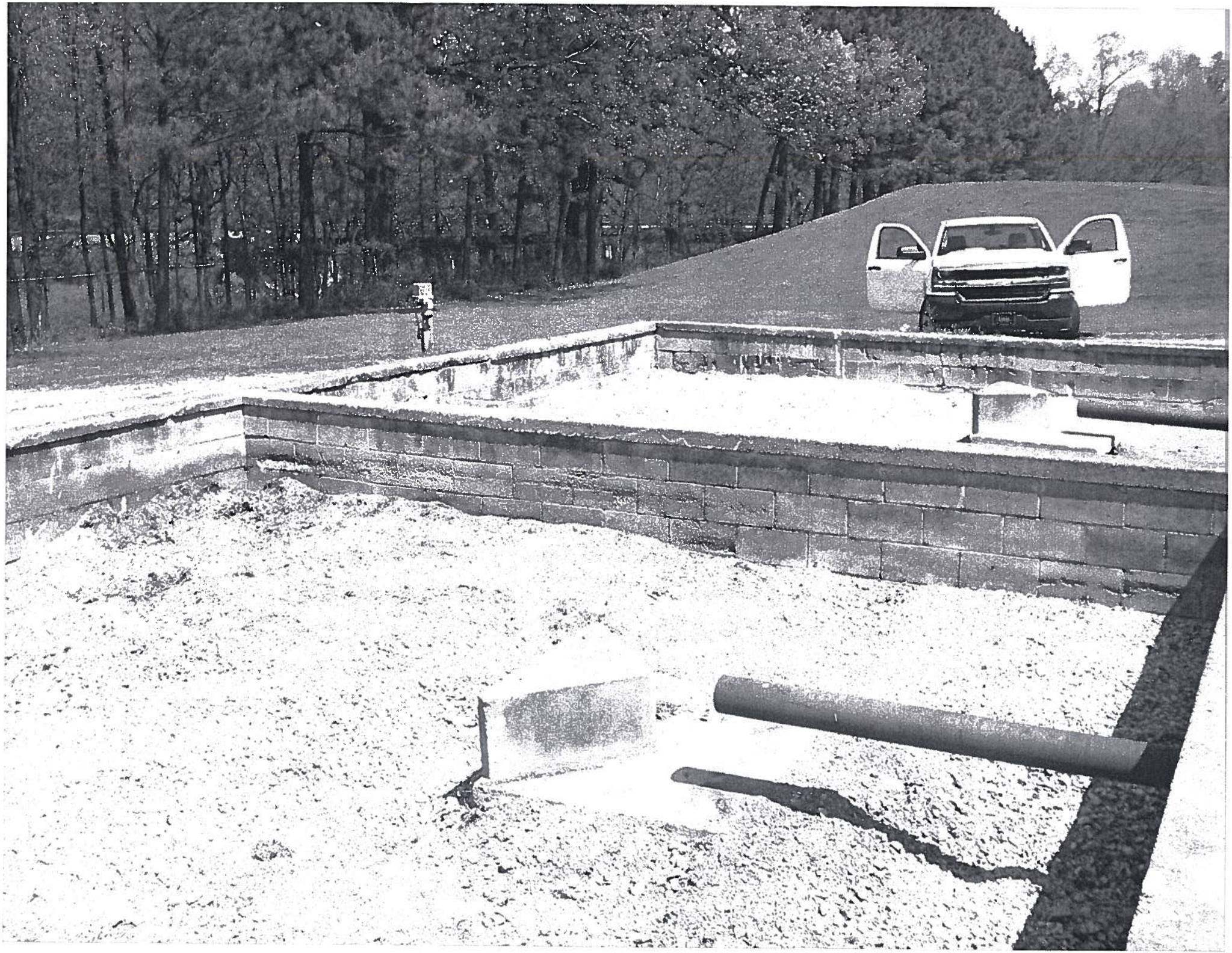

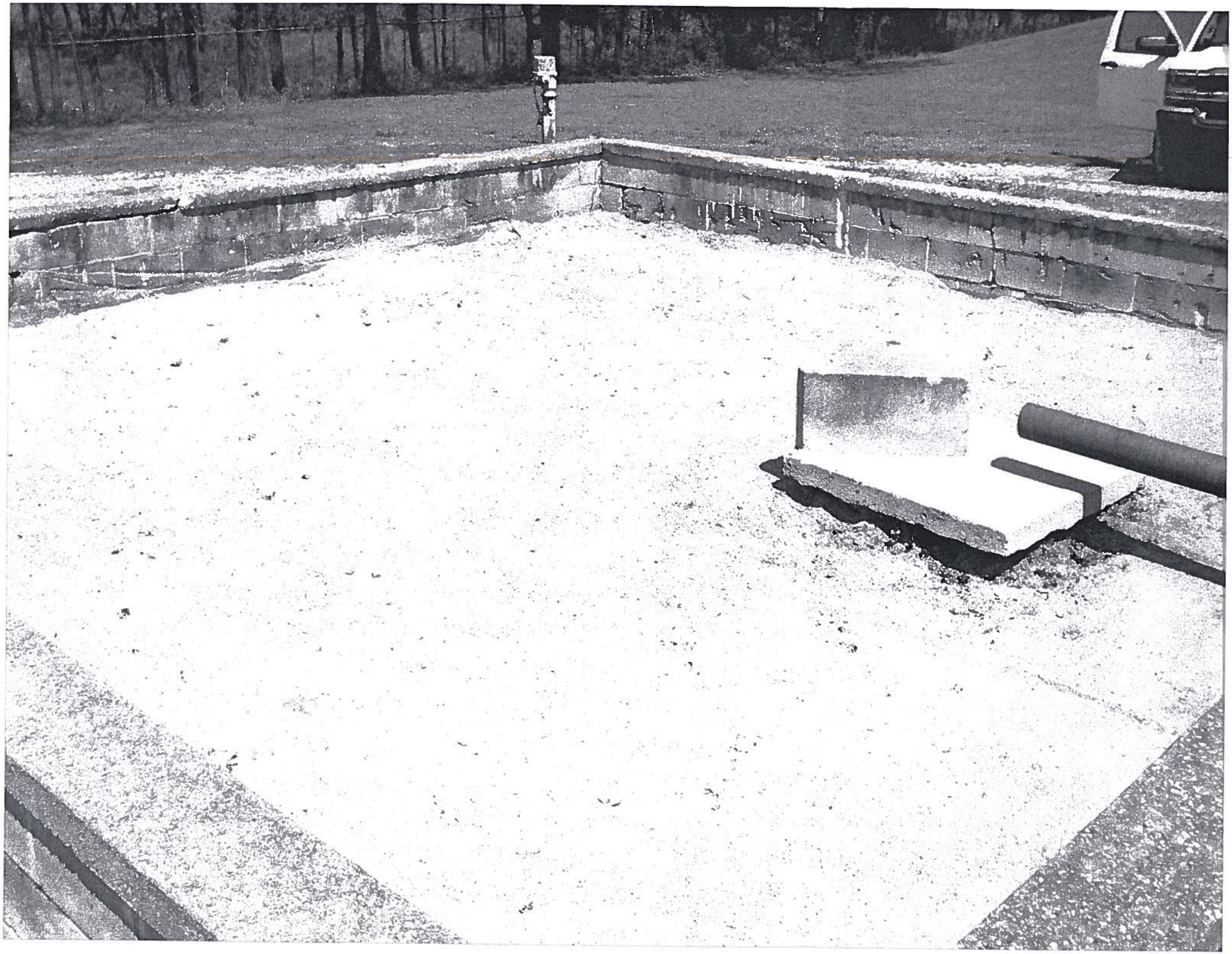

City of Flippin
ARKANSAS
"A Place For All Seasons"

April 17th, 2017

Kerri McCabe
Inspector Supervisor, Water Division
Arkansas Department of Environmental Quality
5301 Northshore Drive
North Little Rock, AR 72118-5317

CC: Layne Pemberton

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J. L. Wagoner 4-17-2017

J. L. Wagoner
City of Flippin
General Manager

FW: Flippin

Susan Poe <arwasusan@att.net>

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To:cofmaintenance@hotmail.com <cofmaintenance@hotmail.com>;

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NPDES Wastewater Monitoring
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Flippin

Collection Date: April 8, 2015
Collection Time: 12:30 PM
Collected By: THS

Wastewater Analysis

Collection Place: Final Discharge Point

Parameter	Analysis Begin Date / Time	Analysis End Date / Time	Results	Unit	Loading lb/dy	Analyst	% Spike	Rel %	Sample Type	Ref #
Flow	04/08 12:30 PM	NA	**0.400**	MGD	NA	THS	NA	NA	INST	
CBOD	04/09 7:45 AM	04/14 9:00 AM	**< 2.0**	mg/l	6.7	EET/KLB	91.3	1.82	Grab	1
TSS	04/09 9:00 AM	NA	**< 1.0**	mg/l	3.3	EET	NA	0.00	Grab	2
Fecal Coliform	04/08 4:00 PM	04/09 4:00 PM	< 5	N/100mls	NA	THS/ EET	NA	15.39	Grab	3
Ammonia Nitrogen	04/10 8:00 AM	NA	**< 0.1**	mg/l	0.33	EET	89.5	0.00	Grab	4

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CORRECTED COPY

Neville Adams, Manager

Arkansas Testing Laboratories
3301 Langley Drive · Searcy, AR 72143 (501) 268-6431 f (844) 318-7030

NPDES Wastewater Monitoring
Water and Wastewater Analysis
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Geotechnical Testing
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Flippin

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4. SM 4500 NH3-G-1997

CORRECTED COPY

Neville Adams, Manager

CORRECTIVE ACTION PLAN

APRIL 7, 2017

FLIPPIN

WASTEWATER TREATEMENT PLANT IMPROVEMENTS

PREPARED FOR:

CITY OF FLIPPIN, ARKANSAS
P.O. BOX 40
FLIPPIN, AR 72634

PREPARED BY:

CWB ENGINEERS, INC.
1915 HWY. 25 B
HEBER SPRINGS, AR 72543

CWB
Engineers, Inc.

CERTIFICATE OF AUTHORIZATION
CWB
ENGINEERS, INC.
No. 1716
ARKANSAS

STATE OF
ARKANSAS
REGISTERED
PROFESSIONAL
ENGINEER
No. 13831
KYLE BRECKENRIDGE

4-7-17

TABLE OF CONTENTS

Introduction

The City of Flippin, Arkansas received a request from the Arkansas Department of Environmental Quality (ADEQ) for a submission of a Corrective Action Plan (CAP) for the Flippin Wastewater Treatment Plant (WWTP), NPDES Permit # AR0021717. The request, dated February 21, 2017 outlines twelve (12) permit violations in the year 2016. The permit violations are summarized in the table below.

Date	Parameter	Sample Value	Permit Limit
4/30/16	NH_4^+ (MO AVG)	19.69	5.7
4/30/16	NH_4^+ (MO AVG)	11.83	3.9
4/30/16	NH_4^+ (7 DAY AVG)	14.8	3.9
5/31/16	TSS (MO AVG)	22	21.9
5/31/16	NH_4^+ (MO AVG)	10.4	2
5/31/16	NH_4^+ (7 DAY AVG)	10.4	3
6/30/16	NH_4^+ (MO AVG)	9.4	2
6/30/16	NH_4^+ (7 DAY AVG)	9.4	3
8/31/16	NH_4^+ (MO AVG)	7.4	2
8/31/16	NH_4^+ (7 DAY AVG)	7.4	3
9/30/16	NH_4^+ (MO AVG)	4.7	2
9/30/16	NH_4^+ (7 DAY AVG)	4.7	3

This CAP outlines the planned process required to bring the Flippin WWTP into compliance. The current WWTP staff was pursuing compliance and evaluating infrastructure rehabilitation needs prior to the request for a CAP. The staff in coordination with Arkansas Rural Water applied for funding of a CCTV inspection of the existing collection system and this will be followed with jetting equipment as needed. The City of Flippin has already scheduled smoke testing, which Arkansas Rural Water will begin in April to be completed by July 1, 2017. After completion of the inspection and testing, the City will repair areas of infiltration and inflow (I/I) as their operating budget allows. Customers will be notified of any problems with service lines and given 30 days to make those repairs. These actions should help to reduce the I/I and mitigate the associated hydraulic problems within the WWTP.

Existing Infrastructure Audit

Flow Data

The WWTP is only equipped with an effluent flow meter. Influent flows are estimated based upon pump run times at the influent pump station. While metered influent flow is desirable, for the purposes of this report the effluent flow was considered an accurate representation of process flow. The current design flow of the WWTP is 175,000 gallons per day (gpd). The table on the next page summarizes the WWTP flow data in millions of gallons per day (MGD) for the dates of violation.

Date	Flow (MGD)	Average Daily Flow for Month (MGD)	Maximum Daily Flow for Month (MGD)
4/30/16	0.686	0.264	0.707
4/30/16			
4/30/16			
5/31/16	0.453	0.506	0.795
5/31/16			
5/31/16			
6/30/16	0.166	0.244	0.403
6/30/16			
8/31/16	0.303	0.420	0.770
8/31/16			
9/30/16	0.171	0.216	0.285
9/30/16			

The maximum month flow (the largest monthly average of daily flows) for 2016 occurred in May for the year 2016 and came to 0.506 MGD. The maximum month flow is typically used for the design flow and adjusted upward based upon the expected growth for the planning period. With the current amount of infiltration and inflow the current WWTP design flow should be 0.5 MGD, which is well above the current treatment capacity.

Existing Loads

The Flippin WWTP influent raw wastewater is characterized as typical domestic sewage flow. The assumptions outlined in the table below were used for the calculations in this CAP. Adequate raw wastewater testing will be performed before the detailed design of the plant improvements begin.

Parameter	Assumed Concentration	Assumed Loading at Max. Month Flow
COD	500 mg/L	2,085 lb/day
BOD	250 mg/L	1,043 lb/day
$BOD_{soluble}$	100 mg/L	417 lb/day
$BOD_{particulate}$	150 mg/L	626 lb/day
TSS	250 mg/L	1,043 lb/day
VSS	168 mg/L ($^2/_3$ of TSS)	701 lb/day
NH_4^+	20 mg/L	84 lb/day
TKN	30 mg/L	125 lb/day

Existing WWTP Process

The existing influent pump station feeds the WWTP process beginning with raw water screening and grit classification, followed by a single track oxidation ditch (extended aeration activated sludge), final clarification, intermittent sand filters, UV disinfection, and post aeration via a cascade weir. Solids handling infrastructure includes aerobic digestion and sludge drying beds. Each process step is analyzed below.

Influent Pump Station

The existing influent pump station was constructed with the original WWTP in the early 1980's. The station is wet well/dry well with two (2) 15 hp in-line sewage pumps. The station is operational but is in need of replacement. The firm capacity of the existing pump station is published at 365 gallons per minute (gpm), however, without an influent meter the true current capacity is unknown. 365 gpm or approximately 525,000 gpd should be close to the existing capacity. This firm capacity is inadequate for peak wet weather flows and with both pumps operating in parallel the system may still be forced to rely on line storage within the gravity collection system to attenuate the peak wet weather flows. While the treatment processes themselves are typically designed for the maximum monthly flow at the end of the 20 year design period, influent pump stations must be sized to accommodate the peak flows unless equalization is provided.

Raw Wastewater Screening and Grit Removal

The existing stacked unit incorporates the screen and grit classifier into one unit. The screen lacks mechanical cleaning and is; therefore, a constant maintenance item. The vortex grit removal system is adequate but is dated and part of the same unit as the manually cleaned screen. The Utility obtained a construction permit (AR0021717C) on November 1, 2016 to install an automatic bar screen with manual back-up. The bids received for the project came in over budget and the project was not awarded. The Utility requests that the construction permit be voided. A new construction permit including new headworks facilities and all of the planned WWTP improvements found to be required will be applied for at the appropriate time. The proposed headworks facility will be incorporated with the proposed influent pump station improvements if proven feasible during design.

Oxidation Ditch

The oxidation ditch volume is approximately 193,000 gallons. However, depending on the efficiency of the brush rotors at aeration and mixing, the aerated volume may be significantly lower than that. The table below assumes full aeration throughout the oxidation ditch and shows the calculated parameters key to the activated sludge process at the current design flow and at the 2016 maximum month flow. If we were to target a Solids Retention Time (SRT) of 25 days to return operation as an extended aeration plant for the sludge benefits (reduction in solids production due to endogenous decay and stable conditioned sludge), typical of oxidation ditches, a basin volume of 260,000 gallons would be required at 2,500 MLSS. During the PER phase an alternative SRT of 15 days (the calculated minimum for nitrification at 10°C) will be considered. The potential cost savings will be evaluated against the expected additional costs required for increased solids handling. The RAS/WAS values in the table on the next page are calculated assuming a solids concentration of 0.8% (8,000 mg/L) off the bottom of the secondary clarifier.

MLSS	Parameter	Calculated Value at Design Flow (0.175 MGD)	Calculated Value at Max. Month Flow (0.5 MGD)
2,500	SRT	18 days	6 days
	WAS Flow	3,132 gpd	9,427 gpd
1,500	SRT	11 days	4 days
	WAS Flow	3,071 gpd	8,422 gpd

The plant staff has no effective way to control the amount of RAS and WAS. A telescoping valve is located in the bottom of each clarifier scum box that directs sludge to the RAS/WAS pump station. This is the only control for RAS/WAS pumping. The only means of metering the flow is via pump run times assuming the theoretical pump flow rates. The RAS/WAS system is another weak link in the operational capability of the oxidation ditch.

Secondary Clarification

Two (2) existing secondary clarifier units of 18 ft. diameter follow the oxidation ditch. The units are peripheral feed, center discharge units and were installed with the oxidation ditch during the plant improvements in 1987. Apparently the clarifiers were designed to flow in series since one clarifier weir level is 10" below the other. The operators have tried to run the units in parallel utilizing manual adjustment of a stop log but have been unsuccessful in splitting the flow in this way. The table below summarizes the clarifier parameters at the design flow and at the 2016 maximum month flow. The standard parameters are Surface Overflow Rate (SOR), Weir Overflow Rate (WOR), and Solids Loading Rate (SLR), at an assumed 2,500 mg/L MLSS.

	Parameter	10 State Standards Recommendation	Calculated Value at Design Flow	Calculated Value at Max. Month Flow
Series	SOR	<1,000 gpd/sf	689 gpd/sf	1,969 gpd/sf
	WOR	<20,000 gpd/lf	7,000 gpd/lf	20,000 gpd/lf
	SLR	<35 lb/day/sf	18.5 lb/day/sf	45.1 lb/day/sf
Parallel	SOR	<1,000 gpd/sf	345 gpd/sf	984 gpd/sf
	WOR	<20,000 gpd/lf	3,500 gpd/lf	10,000 gpd/lf
	SLR	<35 lb/day/sf	9.3 lb/day/sf	22.6 lb/day/sf

The SLR in the table is based upon a theoretical MLSS of the aeration basin of 2,500 mg/L. Given the lack of operator control over wasting it is likely that the MLSS is higher at times and; therefore, the clarifier SLR may be much higher. Another reason why wasting may be inadequate is due to the inadequacy of the solids treatment train. At times, solids must be built-up within the oxidation ditch/clarifier system simply because the operator has nowhere to waste them. The solids treatment system is discussed further below. The clarifiers are undersized for the maximum month flow and significantly undersized for the maximum daily flow, especially when run in series. Solids are often washed over into the intermittent sand filters such that it might be the primary method of wasting sludge.

Intermittent Sand Filters

Following clarification the wastewater is directed into a dosing tank for Intermittent Sand Filter (ISF) dosing. The ISFs were added during the 1987 WWTP improvements. The filter media is 20 years old and is in need of replacement. The beds are dosed via a center fed pipe riser, and this does a poor job of evenly distributing flow over the entire bed. The area near the center feed is over-dosed while the periphery is under-dosed. This type of dosing system could not be considered intermittent because it takes an extended period for the flooded beds to dissipate. As discussed above, due to the inadequacies of the existing clarifiers, a large amount of solids are washed over onto the intermittent sand filters. While the ISFs are efficient at TSS removal, this method of solids handling is not efficient and the ISFs require constant operator attention to remove the solids build up.

U.V. Disinfection

The Ultra-violet disinfection facility is in good working order. It was constructed in the 1987 improvements and was upgraded in 2011. The 2011 upgrades allow for flows up to 0.7 MGD, and the channel will allow for additional bulb arrays in the future. This facility should need no improvements.

Post Aeration

A 5-step cascade weir is utilized for post aeration. The Nov. to Apr. instantaneous limit of 9.2 mg/L is only 0.9 mg/L below the saturation concentration at 15°C, which is a very likely water temperature to occur in November, March, and April. The facility often has to over-aerate in the oxidation ditch in order to carry over enough D.O. to meet the permit limit. The permit justification section references APCEC Regulation 2.505. The water quality standard shown there is 6.5 mg/L D.O. minimum.

Existing Solids Handling Infrastructure

The existing solids handling treatment train consists of an aerobic digester followed by sludge drying beds. The volume of the digester is approximately 88,000 gallons which allows for an approximate 21 day residence time at the design flow, assuming a total sludge yield of 1 dry ton per million gallons flow. This residence time is inadequate for acceptable volatile solids and pathogen reduction, necessitating landfill disposal. There are four (4) sludge drying beds with a total surface area of 2,265 sf. These beds are severely overloaded based upon the typical 20 lb/sf/year design value. A considerable amount of improvement is needed in the solids handling train of the WWTP. The lack of solids handling capability affects the ability to adequately waste solids and; therefore, also impacts the clarifier and oxidation ditch operations.

Causes of the Reported Violations

The reported 2016 violations are expected to primarily be a result of solids washout. High flows and inefficient clarification result in a loss of the nitrifying biomass which requires much longer residence time than the biomass responsible for BOD reduction. The treatment units are undersized and should be expanded. Another contributing factor may also be inefficient

aeration within the oxidation ditch. The ISFs have been effective at allowing the plant to meet the CBOD and TSS limits (however; very short SRTs are effective at BOD and TSS removal) but are not effective in preventing a pass-through of the soluble ammonia. ISFs can be an effective nitrifying treatment step but must be dosed intermittently and allowed to reaerate between doses. The aged filter media and inefficient dosing system are not conducive for the ISFs to act as a nitrifying treatment step.

With an effective oxidation ditch and clarification system the permit parameters should be achievable without ISFs, although polishing filters may be needed to ensure consistent permit compliance.

Proposed Action Plan

The preceding analysis has proven the inadequacy of some of the existing treatment units. Additional aeration volume, larger secondary clarifiers, and an expanded solids treatment train may be required to consistently meet the permit limits. Collection Systems improvements will also be evaluated to determine the cost of reducing I/I and wet weather flows. These improvements will be considered and analyzed for design development within a Preliminary Engineering Report (PER). The PER will serve as the initial design and cost estimating phase of the proposed improvements. A PER is required of USDA, ANRC, and other funding agencies. A proposed time to completion schedule of the process from the PER stage to estimated project commissioning is shown on the next page. While there could be some overlap between some of the steps, the schedule is intended to be read such that each step is completed before the consecutive step begins.

Action	Estimated Days to Completion Once Begun
RFQ Engineer Selection Process	30
Draft Preliminary Engineering Report	150
Final Preliminary Engineering Report	90
Flippin Sewer Rate Increase	90
90% Construction Documents Review	180
Final Construction Documents	90
Bidding	60
Begin Construction	60
Substantial Completion/Start-up	600
Full Compliance with Permit Limit	90
Total Consecutive Days to Permit Compliance	**1,440**

The City of Flippin has been working toward more immediate actions to facilitate plant operations and permit compliance. In addition to the I/I study, smoke testing, and CCTV inspection previously discussed in the ***Introduction***, the City is in the process of purchasing some additional testing equipment for the WWTP. They recently completed the purchase of a Hach HQDPH DO meter. They are currently looking to acquire ammonia and alkalinity testing

capabilities. The City has also been in discussion with the neighboring City of Mountain Home, AR about assistance with some WWTP testing (determining MLSS) to help with operational process control.

Conclusion

The Flippin WWTP staff and City officials understand that significant improvements are needed at the WWTP as well as within the collection system in order to reduce wet weather flows. The temporal nature of such construction projects is always longer than desired but it is required that all things be sufficiently evaluated to ensure a successful project. The schedule outline above gives estimated days for the project progress milestones, to which the City of Flippin and CWB Engineers, Inc. are devoted to meeting and, where possible, exceeding. ADEQ will be updated as the project progresses with appraisals of actions to date and projection of any potential changes to the estimated days required. The ADEQ requested date of full compliance by December 31, 2017 is not feasible given the current condition of the WWTP infrastructure and the amount of work required to ensure full compliance.

City of Flippin
"A Place For All Seasons"
Post Office Box 40
Flippin, Arkansas 72634

Kerri McCabe - ADEQ
ARKANSAS DEPT. OF ENVIROMENTAL QUALITY
5301 NORTHSHORE DRIVE
NORTH LITTLE ROCK AR. 72118-5317

ADEQ

A R K A N S A S
Department of Environmental Quality

June 19, 2017

Jerald Marberry, Mayor
City of Flippin
PO Box 40
Flippin, AR 72634

RE: City of Flippin - Response to Inspection (Marion Co)
AFIN: 45-00021 NPDES Permit No.: AR0021717

Dear Mayor Marberry:

I have reviewed the response pertaining to my January 5, 2017 inspection of the City of Flippin POTW. The information provided sufficiently addresses the violations referenced in my inspection report. At this time, the Department has no further comment concerning this particular inspection. Acceptance of this response by the Department does not preclude any future enforcement action deemed necessary at this site or any other site.

If we need further information concerning this matter, we will contact you. Thank you for your attention to this matter. Should you have any questions, feel free to contact me at (501) 682-0642 or you may e-mail me at mccabe@adeq.state.ar.us.

Sincerely,

Kerri McCabe
Inspector Supervisor
Compliance Branch
Office of Water Quality