

Lawrence, Myrl

Subject: FW: City of Flippin Circuit Rider Assistance Program Compliance Plan
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From: Loston, Anthony [<mailto:Loston.Anthony@epa.gov>]

Sent: Wednesday, April 22, 2020 7:26 AM

To: cofmaintenance@hotmail.com

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Subject: City of Flippin Circuit Rider Assistance Program Compliance Plan

Mr. Wagoner,

Attached is the initial draft of the City's Compliance Plan developed under U.S. EPA's Circuit Rider Assistance Program. This document is a draft in progress and is based on discussions with City representatives and observations made during the initial site visit conducted in February 2020; it may be updated as necessary based on remote advising calls and/or additional site visits.

Danny O'Connell and Stephen Clark with PG Environmental will be coordinating with you directly to continue the technical assistance process. They intend to discuss the content of the Compliance Plan, answer any questions you may have, and clarify how the Circuit Rider Assistance Program will support the City in implementing improvement actions.

Sincerely,

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EPA Region VI Vessel General Permit Enforcement Coordinator
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City of Flippin, Arkansas Wastewater Treatment Plant (WWTP)

CIRCUIT RIDER ASSISTANCE PROGRAM COMPLIANCE PLAN

**Revision No. 0
April 21, 2020**

Technical assistance provided under contract from:

U.S. Environmental Protection Agency
Office of Compliance
1200 Pennsylvania Avenue
Washington, DC 20460



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I. INTRODUCTION

The United States Environmental Protection Agency (EPA) has developed and implemented two National Compliance Initiatives (NCIs) that focus on long standing non-compliance challenges at wastewater and drinking water facilities in small communities, including those in Indian Country. The “Reducing Significant Non-Compliance (SNC) with National Pollutant Discharge Elimination System (NPDES) Permits” NCI aims to reduce the number of NPDES-permitted facilities in SNC. Likewise, under the “Reducing Non-Compliance with Drinking Water Standards at Community Water Systems” NCI, EPA and state partners aim to help systems in small, often under-resourced, communities to achieve and maintain compliance.

To support these NCIs, EPA is providing compliance assistance via a circuit rider assistance program. Technical assistance providers will provide hands-on, face-to-face technical compliance assistance to operators of small wastewater and drinking water systems to help correct issues that may be causing or contributing to non-compliance. Technical assistance providers will develop a Compliance Plan for each system that includes a facility summary, list of site visit observations and areas of concern, and a prioritized list of activities to help achieve and/or maintain compliance.

On February 28, 2020, Danny O’Connell and Stephen Clark, EPA Contractors with PG Environmental (technical assistance providers) conducted an initial circuit rider site visit to understand the challenges that may be causing and contributing to noncompliance at the City of Flippin’s (City’s) Wastewater Treatment Plant (WWTP). The EPA Contractors were joined by representatives from EPA Region 6 and Arkansas Department of Environmental Quality (ADEQ); refer to [Appendix 1](#) for the site visit sign-in sheet. The site visit consisted of discussions with City representatives, document reviews, and a walk-through of the WWTP.

***Note:** This initial Compliance Plan is a draft in progress and is based on discussions with facility representatives and observations made during the initial site visit; it may be updated as necessary based on remote advising calls and/or WWTP revisits.*

II. FACILITY SUMMARY

Facility Summary	
Facility Name	City of Flippin WWTP
Permittee Name	City of Flippin, Arkansas
NPDES Permit No.	AR0021717
Permit Expiration Date	October 31, 2022
Location (Latitude, Longitude)	36.059232, -91.926130
Receiving Waterbody	Fallen Ash Creek
Design Flow	0.175 MGD
Treatment Type	Screening, oxidation ditch, final clarifiers, sand filter dosing tank, intermittent sand filter, ultraviolet (UV) light disinfection, and cascade post-aeration. Solids are wasted via a digester and drying beds.

Facility Summary	
Service Area and Population Served	The City's service area consists of primarily residential and commercial customers with a few light industrial users. The population served is approximately 3,500 people.
Compliance Status	At the time of the site visit, the facility was in SNC due to effluent violations of monthly average and weekly average ammonia-nitrogen. Fecal coliform violations have also occurred.

III. INITIAL SITE VISIT OBSERVATIONS AND AREAS OF CONCERN

This section summarizes the initial site visit observations and associated areas of concern, which are presented in Table 1. The technical assistance providers recognize that some areas of concern will require a capital improvement expenditure. Such improvement actions are beyond the scope of the circuit rider program. However, the technical assistance providers have identified "programmatic" improvements the City could undertake that will promote compliance; these actions fall within the scope of the circuit rider program. For each area of concern, Table 1 identifies the likely capital expenditures as well as the programmatic measures. Where a programmatic measure has been identified, Table 1 refers to the associated "Recommended Improvement Action" table presented in Section 4 of this compliance plan.

Refer to [Appendix 2](#) for photographs that document the site visit and areas of concern, where applicable; some photographs are provided for general context only. Therefore, not all photographs highlight an area of concern.

Table 1. Areas of Concern, Observations, and Improvement Actions

Area of Concern	Observations	Improvement Actions
<p>Inflow and Infiltration (I/I) in the Collection System; Undersized Treatment System</p>	<ol style="list-style-type: none"> 1. The City’s collection system suffers from I/I that causes spikes in influent flow to the WWTP during wet weather, thereby impacting the treatment process. City representatives also explained that the WWTP is undersized for the City’s increasing population. The City recently entered into a Memorandum of Agreement (MOA) with the Arkansas Natural Resources Commission to secure funding through the Clean Water Revolving Loan Fund (CWRLF) for major collection system rehabilitation projects and WWTP improvements. The target construction start date in the MOA is January 2021. The MOA does not specify a target construction completion date. 2. Due to high influent flows attributed to I/I the City had been operating with the WWTP’s aerators turned off for approximately 3 months prior to the site visit. This operational decision was made to promote settling in the oxidation ditch in an attempt to help prevent the washout of solids. 3. The sand filters are bypassed when hydraulic loading rates exceed their design capacity. The City has to manually remove the solids that accumulate in the filters. 4. The WWTP’s outfall had heavy solids and gray residuals covering the spillway to the receiving stream. 5. High influent flows and the configuration of the two influent pumps (each pump has a 4-inch line that bottlenecks into a single 4-inch line to the headworks) contribute to frequent sanitary sewer overflows (SSOs) from the main trunk line upstream of the pump station. 	<ul style="list-style-type: none"> • The City should continue to implement CWRLF improvement activities. • The technical assistance providers intend to review findings from the I/I Analysis Study conducted as part of the collection system rehabilitation work to determine what programmatic or operational actions, if any, the City can perform to further reduce I/I in addition to recommended improvement projects. Any potential improvements will be communicated as part of future technical assistance activities. • The City must not make operational changes that bypass treatment processes and negatively impact the biomass in the secondary treatment process. • Programmatic improvements can be implemented to periodically inspect and clean the effluent spillway; See <u>Recommended Improvement Action No. 1 – Develop and Implement Standard Operating Procedures (SOPs) to Inspect and Clean the Outfall Spillway.</u>

Area of Concern	Observations	Improvement Actions
		<ul style="list-style-type: none"> It appeared the digester had additional capacity to process solids, although the technical assistance providers recognize that the WWTP's solids wasting capacity is limited by the sludge drying beds. The City should evaluate what operational measures, if any, the City can undertake to increase solids wasting rates or to warehouse solids, especially prior to wet weather; See <u>Recommended Improvement Action No. 2 – Develop and Implement a Process Control Plan.</u>
Lack of a Process Control Approach to WWTP Operations	<ol style="list-style-type: none"> The City had not developed and implemented a formal process control plan. The City was performing little to no process control sampling at the time of the site visit. Therefore, operational changes were being made based on operator intuition and institutional knowledge. 	<ul style="list-style-type: none"> Programmatic improvement. See <u>Recommended Improvement Action No. 2 – Develop and Implement a Process Control Plan.</u>
Lack of Operation and Maintenance (O&M) Documentation for the WWTP and Collection System	<ol style="list-style-type: none"> In addition to the lack of formalized protocols for process control, the City lacked documentation and tracking mechanisms for the O&M activities that were being performed at the WWTP and in the collection system. For example, the City was not maintaining a daily operations log and had not implemented a work order system. Scheduling and performing WWTP O&M relies primarily on the institutional knowledge of the operators and most maintenance is corrective and is performed in reaction to equipment failure, not preventive. 	<ul style="list-style-type: none"> Programmatic improvements can be implemented to help ensure that the City maximizes the useful life of new equipment once operational. See <u>Recommended Improvement Action No. 3 – Develop and Implement O&M Tools.</u>
Influent Pump Station Dry Well Safety	<ol style="list-style-type: none"> The influent pump station's dry well was not identified as or being operated as a confined space. <ol style="list-style-type: none"> The influent pump station's dry well is approximately 28 feet underground and accessed via a hatched access way and vertical ladder. 	<ul style="list-style-type: none"> Programmatic measures need to be taken to develop and implement safety protocols associated with the influent pump

Area of Concern	Observations	Improvement Actions
	<p>b. The exhaust fan in the dry well was not operational and the City’s operators lacked a multi-gas meter to monitor oxygen and critical gas levels in the well.</p> <p>c. The hatchway lacked fall protection or support structures to accommodate the use of a man-crane.</p> <p>2. After the technical assistance providers expressed their concerns to the City representatives (they concurred with their concerns), they stated that they thought they could coordinate with the City’s fire department to perform atmospheric monitoring and assist in confined space protocols.</p>	<p>station dry well. This asset should be identified as and operated as a confined space (potentially a permit-required confined space).</p> <ul style="list-style-type: none"> • To prevent threats to their health, and even to prevent death, operators need to be aware of proper safety protocols for confined spaces, such as adequate ventilation, atmospheric monitoring, personal protective equipment (PPE) protocols, and use of attendants.

IV. RECOMMENDED IMPROVEMENT ACTIONS

This section identifies possible improvement actions intended to help the City achieve and/or maintain compliance. Each improvement action has been identified in its own table on the following pages. Each table contains the following information:

- Recommended Improvement Action – The primary action to correct the area of concern.
- Area of Concern Addressed – The overall concern in need of corrective action.
- Improvement Goal – The incentive or explanation for why the action is being implemented.
- Recommended Approach – The major actions or steps to implement the recommended improvement action.
- Points of Interest/Variables to Consider – The critical points of interest and variables to be evaluated during the implementation process.
- Document Format – The anticipated format(s) of the data and documents that are expected to be generated during the process.
- Performance Indicators – The mechanisms by which compliance improvement will be measured.
- Potential Barriers to Implementation – The anticipated significant challenges to implementing the recommended improvement action.

The actions described in this section of the compliance plan are recommendations. It is ultimately up to the City, in consultation with ADEQ as appropriate, to decide on the actions necessary to achieve compliance with its NPDES permit requirements. The technical assistance providers will refer the City to appropriate reference and training documents and provide technical assistance where applicable to aid in the implementation of each recommended improvement action.

Note: Many of the issues contributing to noncompliance at the WWTP will be addressed through major collection system rehabilitation work and WWTP upgrades already being planned through the City's Capital Improvement Program. The recommended improvement actions described in this section are mostly programmatic and operational measures that can be taken to improve the overall O&M, management, and health and safety approaches at the WWTP.

Recommended Improvement Action No. 1	Develop and Implement SOPs for Inspecting and Cleaning the Outfall Spillway
Area of Concern Addressed	I/I in the Collection System; Undersized Treatment System
Improvement Goal	To ensure solids and debris are removed from the outfall spillway to minimize water quality and environmental impacts
Recommended Approach	<ul style="list-style-type: none"> • Develop and implement documentation format that ensures the operator has inspected the outfall and removed solids/debris as necessary • Conduct routine inspections of the outfall spillway, especially after wet weather events/periods when hydraulic flow rates exceed the WWTP's design capacity • Consult with ADEQ to determine if an NPDES permit modification is required to install a screening mechanism at the outfall • Consult with ADEQ to determine if the removal of accumulated sediments may require a Short-term Activity Authorization (STAA) with DEQ – OWQ prior to any clean-up. The activity occurs on a stream bank and can lead to additional water quality standard violations.
Points of Interest/Variables to Consider	<ul style="list-style-type: none"> • Monitoring of weather and hydraulic flow rates through the WWTP
Documentation Format	<ul style="list-style-type: none"> • Daily operations logbook • Daily operations round sheets <ul style="list-style-type: none"> ○ Outfall spillway inspected (yes/no) ○ Solids and debris removed (yes/no) ○ Receiving waterbody observations ○ Recent weather observations (duration and intensity of wet-weather events) • Photographs documenting before and after conditions
Performance Indicators	<ul style="list-style-type: none"> • All observations documented on operations round sheets • Photographs documenting improved conditions at the outfall spillway
Potential Barriers to Implementation	<ul style="list-style-type: none"> • Staff time to inspect and clean • An NPDES permit modification may be needed to install a screening mechanism at the outfall • The removal of accumulated sediments may require a Short-term Activity Authorization (STAA) with DEQ – OWQ prior to any clean-up as it occurs on a stream bank and can lead to additional water quality standard violations

Recommended Improvement Action No. 2	Develop and Implement a Process Control Plan
Area of Concern Addressed	Lack of a Process Control Approach to WWTP Operations
Improvement Goal	To ensure that operational decision making is informed by operational data
Recommended Approach	<ul style="list-style-type: none"> • Develop written SOPs and support tools • Collect and trend data • Determine desired operational ranges based on effluent quality
Points of Interest/Variables to Consider	<ul style="list-style-type: none"> • Incorporate the procedures contained in the Ohio EPA’s <i>Activated Sludge Process Control and Troubleshooting Chart Methodology</i> • Understand how to perform key tests and how process parameters relate to one another: <ul style="list-style-type: none"> ○ 30-minute Settleability ○ Dissolved Oxygen (DO) ○ pH ○ Centrifuge test ○ Mixed Liquor Suspended Solids (MLSS)/Mixed Liquor Volatile Suspended Solids (MLVSS) ○ Food to Microorganism Ratio (F:M) ○ Sludge Age (SA) / Mean Cell Residence Time (MCRT) ○ Sludge Volume Index (SVI) ○ Microscopic examination • Conduct hydraulic and organic loading analyses • Implement proper chemical dosing rates and procedures to evaluate dosing rates when they are not known • Implement sludge wasting rates based on operational data • Increase wasting rates or warehouse solids prior to wet weather events • Consider additional operator training
Documentation Format	<ul style="list-style-type: none"> • Written SOPs (sample collection procedures and frequencies, troubleshooting methodology, etc.) • Operations sheet for data collection and review • Electronic spreadsheet to track and trend process control data
Performance Indicators	<ul style="list-style-type: none"> • Development and implementation of a Process Control Plan, SOPs, and support tools • Increased quantity of data collected • Tracking and trending of process control data • Operational ranges have been determined based on desired effluent quality
Potential Barriers to Implementation	<ul style="list-style-type: none"> • Staffing (both time and technical expertise) required to collect and trend data and to perform diagnostic evaluations • Potential capital costs to purchase monitoring equipment needed to perform process control tests

Recommended Improvement Action No. 3	Develop and Implement O&M Tools
Area of Concern Addressed	Lack of O&M Documentation for the WWTP and Collection System
Improvement Goal	To ensure the operator has the necessary information, tools, and training to: <ul style="list-style-type: none"> • Prioritize work and refine maintenance frequencies to optimize staffing resources • Support diagnostic evaluations aimed to prevent future equipment failures • Support future decision making in regard to capital expenditures
Recommended Approach	<ul style="list-style-type: none"> • Identify and inventory critical processes and equipment • Evaluate maintenance requirements and ensure preventive maintenance activities are scheduled at the appropriate frequencies • Develop and implement documentation formats, scheduling and tracking tools
Points of Interest/Variables to Consider	<ul style="list-style-type: none"> • Review current and past maintenance performed • Review repeat corrective maintenance activities to help diagnose root-cause issues to move toward a more proactive maintenance approach
Documentation Format	<ul style="list-style-type: none"> • Formal asset inventory • Daily operations logbook • Daily operations round sheets • Work orders and associated scheduling and tracking mechanism
Performance Indicators	<ul style="list-style-type: none"> • Critical processes and equipment have been identified and inventoried • Creation of forms that are designed for operators (i.e., user-friendly while in the field)
Potential Barriers to Implementation	<ul style="list-style-type: none"> • Staffing resources to create forms and accomplish appropriate preventative maintenance schedules

Appendix 1
Initial Site Visit Sign-In Sheet

CIRCUIT RIDER SITE VISIT SIGN-IN SHEET

Facility: Flippin

Site Visit Date(s): February 28, 2020

Location: 222 Industrial Park Drive

Name	Affiliation	Phone	E-Mail
Stephen Clark	PG Environmental (EPA Contractor)	720-789-8046	stephen.clark@pgenv.com
Tony Lostau	EPA Region 6	214-665-3108	Lostau.Anthony@EPA.GOV
Susan Poe	Arkansas Rural Water	501-206-8200	arwasusan@att.net
Scott Garrison	City of Flippin	870-453-8300	
Jerald Marberry	Mayor Flippin	870-321-0278	jgmarberry@gmail.com
J. L. WAGONER	City of Flippin	870-453-8300	COPmaintenance@hotmail.com
Kerri McCabe	ADEQ-DWQ	501-682-0642	mccabe@adeq.state.ar.us
Danny O'Connell	Contractor to EPA PG Env.	720-789-8032	danny.oconnell@pgenv.com

Appendix 2
Photograph Log



Photograph 1. Influent pump station dry well access hatch and wet well manhole cover.



Photograph 2. Equalization basin.



Photograph 3. Oxidation ditch and first rotor. The rotor was not in operation at the time of the site visit.



Photograph 4. Oxidation ditch.



Photograph 5. Secondary clarifier No. 1.



Photograph 6. Secondary clarifier No. 2.



Photograph 7. Sand filters.



Photograph 8. Cascade post-aeration channel.



Photograph 9. Outfall and receiving waterbody.



Photograph 10. Sludge drying beds and digester (background).



Photograph 11. View inside digester.