Anderson, Alan

From: Philip Massirer <phm@ftn-assoc.com>
Sent: Thursday, September 10, 2015 12:41 PM
To: Anderson, Alan
Cc: 'David Fitzgerald'; 'Wes Bramlett'
Subject: RE: Corrective Action Plan for City of Sheridan (AR0034347)
Attachments: Sheridan Corrective Action Plan 8-17-2015 with PE stamp.pdf

Follow Up Flag: Follow up
Flag Status: Flagged

Alan,

Per your request below, attached is the Sheridan CAP with a Professional Engineer stamp on page 6 of 6. Please let us know if we need to mail the original hard copy to you or if we need to anything else. Thanks.

Philip

From: Anderson, Alan [mailto:ANDERSON@adeq.state.ar.us]
Sent: Wednesday, September 09, 2015 10:09 AM
To: 'Philip Massirer'
Subject: RE: Corrective Action Plan for City of Sheridan (AR0034347)

Philip:

Would it be possible to have the Corrective Action Plan for Sheridan signed and stamped by you. I may have to do a CAO on Sheridan to give them a framework to operate while they are addressing the ammonia.

Thanks

Alan

From: Philip Massirer [mailto:phm@ftn-assoc.com]
Sent: Monday, August 17, 2015 2:38 PM
To: Anderson, Alan
Cc: 'David Fitzgerald'; 'Wes Bramlett'
Subject: Corrective Action Plan for City of Sheridan (AR0034347)

Alan,

Please find attached the Corrective Action Plan (CAP) that we are submitting on behalf of the City of Sheridan as required by ADEQ in a letter dated July 17, 2015. If there are any questions or concerns regarding this CAP, please do not hesitate to contact me at 501-225-7779 or David Fitzgerald at 870-942-6048.

Also, if you don't mind, please send a quick reply just to let us know that you received this. Thanks!

Philip Massirer, PE
FTN Associates, Ltd.
3 Innwood Circle, Suite 220

Little Rock, AR 72211
Phone: 501-225-7779
E-mail: phm@ftn-assoc.com

CORRECTIVE ACTION PLAN

City of Sheridan Wastewater Treatment System
NPDES No. AR0034347
August 17, 2015

1.0 INTRODUCTION

This Corrective Action Plan (CAP) is being submitted to the Arkansas Department of Environmental Quality (ADEQ) as required by a letter from ADEQ to the City of Sheridan (Sheridan) dated July 17, 2015. A copy of this letter is attached to this document for reference purposes.

2.0 AMMONIA NITROGEN

2.1 Cause(s) of the Violations

The ADEQ letter cited 10 violations for ammonia nitrogen. Nine of these violations occurred during the months of January, February, and March when water temperatures are cold. Sheridan's wastewater treatment system consists of large lagoons with long residence times, and does not include any mechanical treatment systems such as activated sludge, etc. The primary process of ammonia removal in lagoons is nitrification, which is a naturally occurring biological process that is inherently slower when water temperatures are cold. Therefore, the primary cause of the effluent violations for ammonia nitrogen was insufficient nitrification during cold weather.

2.2 Actions to be Taken

Sheridan has retained the services of FTN Associates, Ltd. (FTN) to assist with the identification of alternatives for achieving compliance with ammonia nitrogen. The first action to be taken will be to collect water quality data in the lagoons during the winter of 2015-2016. Measurements of temperature, dissolved oxygen, and ammonia nitrogen are needed at different locations throughout the treatment system and at different times during the winter in order to better understand how nitrification can be improved during cold weather conditions.

The second action to be taken is to identify and evaluate alternatives for achieving compliance for ammonia nitrogen, and then select a viable alternative to be implemented. The alternatives will be identified based upon factors such as water quality data collected in the lagoons, wastewater flow rates, the configuration and operation of the existing system, and other

available information. If treatment system upgrades are selected to improve nitrification during cold weather conditions, the water quality data will be necessary for the proper sizing and design of the system. Examples of treatment system upgrades that have been used to enhance nitrification in cold climates include aerated submerged rock beds (e.g. "SAGR" system by Nelson Environmental, Inc.), submerged attached growth plastic media systems, and attached growth systems external to the treatment ponds. Each of these systems provides additional surface area for bacteria that carry out the nitrification process. Sheridan may give consideration to one or more of these systems. Other treatment technologies may be considered as well. Other alternatives may also be investigated.

The third action to be taken is to implement the selected alternative. The details of this action are dependent on what alternative is selected. If treatment system upgrades are implemented, sufficient time will be required for design, permitting, and construction. In addition, a testing period may be required following installation to confirm proper functioning and to make any necessary refinements.

2.3 Milestone Schedule

The milestone schedule for ammonia nitrogen compliance is provided in Table 1.

Table 1. Milestone schedule for ammonia nitrogen compliance

Milestone	Completion Date
Submit Corrective Action Plan (this document)	August 18, 2015
Finish collecting water quality data in lagoons	March 31, 2016
Submit progress report to ADEQ describing the selected alternative and the anticipated date of final compliance	June 30, 2016
Apply for a construction permit (if needed)	July 29, 2016
Submit progress reports to ADEQ regarding implementation of the selected alternative	Every 6 months after the construction permit is issued (until the compliance milestone below is reached)
Finish implementing the selected alternative and achieve compliance for ammonia nitrogen	2 years after construction permit is issued*

*Potentially subject to change based on the alternatives evaluation

3.0 CARBONACEOUS BIOCHEMICAL OXYGEN DEMAND (CBOD)

3.1 Cause(s) of the Violations

The ADEQ letter specified two violations for CBOD, both of which occurred in September 2012. These CBOD violations are believed to be caused by excessive algae in the holding pond. The summer of 2012 was hot and very dry and wastewater could not be discharged for a long period of time due to lack of flow in Big Creek. Sheridan considers this violation to be an isolated excursion based on the facility's 97.5% compliance record for CBOD over the last 10 years. The only permit limit excursions for CBOD during the last 10 years (June 2005 – May 2015) were in March 2010, March 2012, and September 2012.

3.2 Actions to be Taken

No actions need to be taken to address these CBOD violations because it is considered to be an isolated incident almost three years ago and all CBOD data since that time have been in compliance with permit limits. Sheridan maximizes the use of their land application area so that more wastewater is applied to land and less wastewater is discharged to Big Creek during the summer and early fall when algae concentrations in the lagoons are naturally higher.

3.3 Milestone Schedule

No milestone schedule is needed for CBOD compliance because the facility is currently in compliance with CBOD limits and no further actions are needed.

4.0 DISSOLVED OXYGEN (DO)

4.1 Cause(s) of the Violation

The ADEQ letter cited one violation for DO during January 2014. The effluent DO was 6.3 mg/L and the permit requires an instantaneous minimum of 7.0 mg/L during January. The exact cause of this violation is not known. Sheridan considers this violation to be an isolated excursion based on the facility's 97.5% compliance record for DO over the last 10 years. The only permit limit excursions for DO during the last 10 years (June 2005 – May 2015) were in May 2008, March 2009, and January 2014.

4.2 Actions to be Taken

No actions need to be taken to address this DO violation because it is considered to be an isolated incident and all DO data since that time have been in compliance with permit limits.

4.3 Milestone Schedule

No milestone schedule is needed for DO compliance because the facility is currently in compliance with DO limits and no further actions are needed.

5.0 pH

5.1 Cause(s) of the Violation

The ADEQ letter cited one violation for pH during May 2012. The effluent pH was 10.2 su and the permit requires an instantaneous maximum of 10.0 su. The cause of this violation was an algae bloom. Sheridan considers this violation to be an isolated excursion based on the facility's 97.5% compliance record for pH over the last 10 years. The only permit limit excursions for pH during the last 10 years (June 2005 – May 2015) were in April 2006, July 2010, and May 2012.

5.2 Actions to be Taken

No actions need to be taken to address this pH violation because it is considered to be an isolated incident more than three years ago and all pH data since that time have been in compliance with permit limits.

5.3 Milestone Schedule

No milestone schedule is needed for pH compliance because the facility is currently in compliance with pH limits and no further actions are needed.

6.0 DISCHARGE FLOW AS A PERCENTAGE OF UPSTREAM FLOW

6.1 Cause(s) of the Violations

The ADEQ letter specified two violations for discharge flow as a percentage of upstream flow. Both of these violations were due to mechanical issues with the discharge valve.

The May 2012 violation occurred because the operating nut broke off the discharge valve. In order to make the repair, the treated wastewater in the holding pond had to be discharged into the creek until the water level in the holding pond was low enough to access the valve. Because there was not enough upstream flow in the creek, the discharge flow as a percent of upstream flow exceeded the permit limit.

The November 2013 violation occurred because the discharge valve did not respond quickly enough to changes in stream flow. The stream flow was decreasing rapidly but the discharge valve was programmed to check the stream flow at time intervals that were too long. By the time the discharge valve adjusted the effluent flow, a permit violation had occurred for a short time period.

6.2 Actions to be Taken

When the May 2012 violation occurred, the operating nut was repaired using stainless steel hardware to minimize the chance of this situation occurring again. When the November 2013 violation occurred, the discharge valve was re-programmed to check the stream flow at shorter time intervals so that it will respond more quickly to decreasing stream flows.

These actions addressed the mechanical issues that caused these two violations. No other violations for discharge flow as a percent of upstream flow have occurred since then. No further actions are necessary.

6.3 Milestone Schedule

No milestone schedule is needed for compliance with discharge flow as a percent of upstream flow. The facility is currently in compliance with limits for this parameter and no further actions are needed.

7.0 UPSTREAM FLOW WHEN DISCHARGING

7.1 Cause(s) of the Violations

The ADEQ letter cited two violations of “Stream flow, mean daily”. Based on the DMR values and limits that are listed for these two violations in the ADEQ letter, these violations are actually for “Minimum upstream flow in Big Creek before discharge is allowed”. Both of these violations were due to mechanical issues with the discharge valve.

The May 2012 violation occurred because the operating nut broke off the discharge valve as discussed above (see Section 6.1). When the treated wastewater was discharged into the creek, the stream flow was less than the required minimum.

The September 2012 violation occurred because the discharge valve did not respond quickly enough to changes in stream flow. This situation was similar to the November 2013 violation for discharge as a percent of upstream flow (see Section 6.1)

7.2 Actions to be Taken

As discussed above, the May 2012 violation was addressed by repairing the operating nut using stainless steel hardware to minimize the chance of this situation occurring again (see Section 6.2). The September 2012 violation was addressed later when the discharge valve was re-programmed to check the stream flow at shorter time intervals so that it will respond more quickly to decreasing stream flows (see Section 6.2).

The mechanical issues that caused these two violations have been addressed by the actions already taken. Since then, no other violations have occurred for minimum upstream flow while discharging. No further actions are necessary.

7.3 Milestone Schedule

No milestone schedule is needed for compliance with minimum upstream flow while discharging. The facility is currently in compliance with limits for this parameter and no further actions are needed.

ADEQ
ARKANSAS
Department of Environmental Quality

CERTIFIED: 91 7199 9991 7030 4938 3270

July 17, 2015

David Fitzgerald, Manager
City of Sheridan WWTP
P.O. Box 486
Sheridan, AR 72150

RE: NPDES Permit No. AR0034347, AFIN 42-00125, Request for Corrective Action

Dear Mr. Fitzgerald:

On July 17, 2015, ADEQ conducted a review of the certified Discharge Monitoring Reports submitted by the City of Sheridan from May 1, 2012 through May 31, 2015. ADEQ records indicate that eighteen (18) violations of the permitted effluent limits have been reported. A detailed list of the violations is included with this letter. As a result of this review, ADEQ requests that the facility submit a Corrective Action Plan to the ADEQ Water Division Enforcement Branch. At a minimum, the plan should include the following information:

- The cause(s) of the effluent violations.
- The actions to be taken to correct and prevent the recurrence of the effluent violations.
- A milestone schedule for final compliance with the permitted effluent limits.

Please submit the report the ADEQ Water Division Enforcement Branch no later than August 18, 2015. The report may also be e-mailed to anderson@adeq.state.ar.us. The complexity and duration of the corrective action will be considered in determining if formal enforcement action will be proposed.

Should you have any questions concerning the above referenced compliance issue, please feel free to contact me at 501-682-0635.

Alan Anderson
Enforcement Analyst
Water Division Enforcement Branch

DMR Effluent Violations Since 5/1/12

AR0034347 - SHERIDAN, CITY OF / Minor POTW - Effective: 1/1/15

DMR End Date	Disch-Desig	Parameter Desc	Reported DMR Value	Permit Limit	Vio %	Vio Code
09/30/2012	001-A	BOD, carbonaceous, 05 day, 20 C (DAILY MX, mg/L)	53.1	45	18%	Numeric Vio
09/30/2012	001-A	BOD, carbonaceous, 05 day, 20 C (MO AVG, mg/L)	39.5	30	32%	Numeric Vio
Total =2						
05/31/2012	001-A	Discharge flow as % of stream flow (MAXIMUM, %)	100	20	400%	Numeric Vio
11/30/2013	001-A	Discharge flow as % of stream flow (MAXIMUM, %)	21.4	20	7%	Numeric Vio
Total=2						
04/30/2013	001-A	Nitrogen, ammonia total [as N] (MO AVG, mg/L)	11.8	10	18%	Numeric Vio
01/31/2014	001-A	Nitrogen, ammonia total [as N] (MO AVG, mg/L)	12.1	12	1%	Numeric Vio
02/28/2014	001-A	Nitrogen, ammonia total [as N] (DAILY MX, mg/L)	21.9	18	22%	Numeric Vio
02/28/2014	001-A	Nitrogen, ammonia total [as N] (MO AVG, mg/L)	19.2	12	60%	Numeric Vio
03/31/2014	001-A	Nitrogen, ammonia total [as N] (DAILY MX, mg/L)	15.5	15	3%	Numeric Vio
03/31/2014	001-A	Nitrogen, ammonia total [as N] (MO AVG, mg/L)	15.2	10	52%	Numeric Vio
01/31/2015	001-A	Nitrogen, ammonia total [as N] (MO AVG, mg/L)	14.6	12	22%	Numeric Vio
02/28/2015	001-A	Nitrogen, ammonia total [as N] (MO AVG, mg/L)	15.7	12	31%	Numeric Vio
03/31/2015	001-A	Nitrogen, ammonia total [as N] (7 DA AVG, mg/L)	15.9	15	6%	Numeric Vio
03/31/2015	001-A	Nitrogen, ammonia total [as N] (MO AVG, mg/L)	15.9	10	59%	Numeric Vio
Total =10						
01/31/2014	001-A	Oxygen, dissolved [DO] (INST MIN, mg/L)	6.3	7	10%	Numeric Vio
Total=1						
05/31/2012	001-A	pH (MAXIMUM, SU)	10.2	10		Numeric Vio
Total=1						
05/31/2012	001-A	Stream flow, mean.daily (MINIMUM, MGD)	0	6.5	100%	Numeric Vio
09/30/2012	001-A	Stream flow, mean.daily (MINIMUM, MGD)	5.35	6.5	18%	Numeric Vio
Total=2						