

Region 6 Compliance Assurance and Enforcement Division

INSPECTION REPORT

Inspection Date(s):	November 6 and 7, 2018		
Media:	Water (CWA)		
Regulatory Program(s)	NPDES – Brine		
Company Name:	Perdure Petroleum, LLC		
Facility Name:	NBU 51		
Facility Physical Location:	36.797208N, -96.711525W (Sect. 24, T 27N, R 5E)		
(city, state, zip code)	Shidler, Oklahoma 74652		
Mailing address:	700 Central Expressway S., Ste. 470		
(city, state, zip code)	Allen, Texas 75013		
County/Parish:	Osage		
Facility Contact:	Carl Thunem	Director Health, Safety and Environmental	
	832-300-8216		
FRS Number:	N/A		
Identification/Permit Number:	OKU000874		
Media Number:	N/A		
NAICS:	211111		
SIC:	1311		
Personnel participating in inspection:			
Kent W. Sanborn	EPA Region 6, 6EN-WR	Environmental Engineer	918-557-1615
EPA Lead Inspector Signature/Date			
	Kent W. Sanborn		Date
Supervisor Signature/Date			14 NOV 2018
	Guy Tidmore		Date

Section I – INTRODUCTION

PURPOSE OF THE INSPECTION

EPA Region 6 inspector Kent W. Sanborn arrived at the Perdure Petroleum NBU 51 lease on a property near Shidler, Oklahoma at about 4:30 pm on November 6, 2018 for an inspection. The inspection was initiated by a reported discharge of fluids into a nearby creek by Perdure Petroleum LLC. There were several company representatives at the site during the inspection. The discharge had reached a tributary of Hay Creek. Cleanup activities were active at the site during the inspection. The inspection was conducted under the authority of Section 308 of the CWA. The scope of the inspection was to determine if the facility was in compliance with the Clean Water Act (CWA), including Section 301, and to identify and document discharges of produced wastewater (brine) to waters of the United States. Mr. Sanborn also returned to the site on November 7, 2018 to observe the progress of cleanup at the tributary of Hay Creek and to further assess impacts to the tributary.

FACILITY DESCRIPTION

The origination point of discharge is a 5-inch steel injection well supply line that ruptured at a weak and corroded section in the line. The supply line carries brine to several wells in the area. I requested that Perdure Petroleum, LLC representatives provide pressure information and the number of injection wells that are serviced by the line, but that information has not been provided yet. The impacted tributary flows to Hay Creek, which flows south to Salt Creek, which enters the Arkansas River south of the area. The discharge was located north of the Webb City area and west of Shidler, Oklahoma.

Section II – OBSERVATIONS

I initially arrived at the Perdure Petroleum NBU 51 lease at about 4:30 pm, just before dark, on November 6, 2018 and returned on November 7, 2018 to complete the inspection. Latitude and longitude of locations of measurements and photographs are documented in the Photo Log. Photo 1 shows the steel line that leaked. There was a clamp installed over the hole on the line. Pressure from the leak gouged a hole in the ground under the line. The discharge flowed east down the hill (Photo 2). The brine flowed east along a pond dam (Photo 3) but did not enter the pond from the flow path. The discharge flowed further east and entered the tributary of Hay Creek at the location shown in Photos 4 and 5. The tributary was flowing slightly south. The tributary upstream of the discharge entry point was shown in Photo 6. A Total Dissolved Solids (TDS) measurement was taken with a calibrated YSI Pro 30 conductivity meter and measured at 675 milligrams per Liter (mg/L) upstream (Photo 7). The TDS at the point of entry of the brine to the tributary of Hay Creek measured 64,357 mg/L (Photo 8). The tributary was measured again at a county road bridge crossing south of the discharge site (Photo 9). The TDS at the bridge crossing was measured at 65,076 mg/L (Photo 10). I observed hundreds of dead fish in and around the bridge area along the tributary of Hay Creek (Photos 11,12, and 13) over both days of the inspection. South of the bridge (Photo 14) there were several larger pools in the tributary that I observed. The company was using a portable pump to flush contaminated fluids and soils south to a collection point within the tributary of Hay Creek to be pumped out by a truck. The TDS at the point shown in Photo 14 was 62,267 mg/L (Photo 15). Farther south in the tributary, one of five dams

constructed on the creek is shown (Photo 16). The TDS at the dam location was 30,213 mg/L (Photo 17). Additionally, more dead fish were observed at this location (Photos 18, 19, and 20). A large pump was located here to keep the contaminants in the tributary from flowing south. However, some of the brine had already flowed south of this location before the dam was built. The last dam constructed on the tributary south of the site shown in Photo 16 is shown in Photo 21. The TDS at this last dam was measured at 2,175 mg/L. In total, I observed over 500 dead fish, including minnows, sun fish, some catfish, and bass downstream from the point of entry of brine into the tributary of Hay Creek during the two days of this inspection. Flow continued around this dam south toward Hay Creek, which flows to Salt Creek.

Section III – AREAS OF CONCERN

There was ongoing remediation during the inspection, which included flushing operations. There were elevated levels of TDS in the tributary of Hay Creek, which have polluted large amounts of the tributary. The brine in the creek had a negative effect to aquatic life, including a fish kill of over 500 fish. There was contaminated soil from the point of discharge to the point of entry into the tributary. The representatives were uncertain during the inspection on the status of the flow line and whether it could be placed back into service.

Section IV – FOLLOW UP

A follow up inspection will be conducted as needed.

Section V – LIST OF APPENDICES

Appendix 1 – Photo Log – 22 photos taken November 6 and 7, 2018.

Appendix 1

Photographic Log (22 photos)



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Photograph Log

Photo No. 1

36.797208N, -96.711525W (Sect. 24, T 27N, R 5E)		
City: Shidler	County: Osage	State: Oklahoma



Photo File Name: Photo 1 (DSC_0010)

Orientation: North

Date of Photo: 11/07/2018

Time of Photo: 4:20 pm

Latitude: 36.797208N

Longitude: -96.711525W

Photographer: K.W. Sanborn

Description: The discharge of produced water, or brine, originated from this 5-inch injection line associated with the Perdure Petroleum, LLC (North Burbank Unit 51) facility.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Photograph Log

Photo No. 2

36.797208N, -96.711525W (Sect. 24, T 27N, R 5E)		
City: Shidler	County: Osage	State: Oklahoma



Photo File Name: Photo 2 (DSC_0008)

Orientation: North

Date of Photo: 11/7/2018

Time of Photo: 4:19 pm

Latitude: 36.797208N

Longitude: -96.711525W

Photographer: K.W. Sanborn

Description: The flow path from the leaking pipe toward the creek is shown here. The flow of brine did not enter the pond shown in this image.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Photograph Log

Photo No. 3

36.797208N, -96.711525W (Sect. 24, T 27N, R 5E)		
City: Shidler	County: Osage	State: Oklahoma



Photo File Name: Photo 3 (DSC_0012)

Orientation: East

Date of Photo: 11/7/2018

Time of Photo: 4:21 pm

Latitude: 36.800319N

Longitude: -96.716228W

Photographer: K.W. Sanborn

Description: The discharge of brine traveled east along the pond dam toward the tributary of Hay Creek.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Photograph Log

Photo No. 4

36.797208N, -96.711525W (Sect. 24, T 27N, R 5E)		
City: Shidler	County: Osage	State: Oklahoma



Photo File Name: Photo 4 (DSC_0073)

Orientation: Southwest

Date of Photo: 11/06/2018

Time of Photo: 6:33 pm

Latitude: 36.800073N

Longitude: -96.714118W

Photographer: K.W. Sanborn

Description: The brine that was discharged, shown here, was entering the tributary of Hay Creek from the west.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Photograph Log

Photo No. 5

36.797208N, -96.711525W (Sect. 24, T 27N, R 5E)		
City: Shidler	County: Osage	State: Oklahoma



Photo File Name: Photo 5 (DSC_0074)

Orientation: South

Date of Photo: 11/6/2018

Time of Photo: 6:33 pm

Latitude: 36.800073N

Longitude: -96.714118W

Photographer: K.W. Sanborn

Description: The discharge enters the tributary of Hay Creek here from the hill to the west (or to the right in this photo).



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Photograph Log

Photo No. 6

36.797208N, -96.711525W (Sect. 24, T 27N, R 5E)		
City: Shidler	County: Osage	State: Oklahoma



Photo File Name: Photo 6 (DSC_0066)

Orientation: South

Date of Photo: 11/6/2018

Time of Photo: 6:14 pm

Latitude: 36.800150N

Longitude: -96.713861W

Photographer: K.W. Sanborn

Description: The tributary of Hay Creek upstream is shown here. I observed green live algae in this location.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Photograph Log

Photo No. 7

36.797208N, -96.711525W (Sect. 24, T 27N, R 5E)		
City: Shidler	County: Osage	State: Oklahoma



Photo File Name: Photo 7 (DSC_0064)

Orientation: South

Date of Photo: 11/6/2018

Time of Photo: 6:14 pm

Latitude: 36.800150N

Longitude: -96.713861W

Photographer: K.W. Sanborn

Description: A Total Dissolved Solids (TDS) reading was taken with a calibrated YSI Pro 30 Conductivity Meter of the unaffected tributary of Hay Creek upstream of the discharge point of entry into the tributary was 675 mg/L.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Photograph Log

Photo No. 8

36.797208N, -96.711525W (Sect. 24, T 27N, R 5E)		
City: Shidler	County: Osage	State: Oklahoma



Photo File Name: Photo 8 (DSC_0063)

Orientation: South

Date of Photo: 11/6/2018

Time of Photo: 6:04 pm

Latitude: 36.799909N

Longitude: -96.713985W

Photographer: K.W. Sanborn

Description: TDS at the point of entry of the discharge to the tributary of Hay Creek is 64,357 mg/L.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Photograph Log

Photo No. 9

36.797208N, -96.711525W (Sect. 24, T 27N, R 5E)		
City: Shidler	County: Osage	State: Oklahoma



Photo File Name: Photo 9 (DSC_0061)

Orientation: Northwest

Date of Photo: 11/6/2018

Time of Photo: 6:04 pm

Latitude: 36.796669N

Longitude: -96.711902W

Photographer: K.W. Sanborn

Description: The discharge flowed south under this county road (CR) bridge within the tributary of Hay Creek towards Hay Creek.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Photograph Log

Photo No. 10

36.797208N, -96.711525W (Sect. 24, T 27N, R 5E)		
City: Shidler	County: Osage	State: Oklahoma



Photo File Name: Photo 10 (DSC_0055)

Orientation: South

Date of Photo: 11/6/2018

Time of Photo: 6:01 pm

Latitude: 36.796669N

Longitude: -96.711902W

Photographer: K.W. Sanborn

Description: TDS of the tributary at the CR bridge was 65,076 mg/L.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Photograph Log

Photo No. 11

36.797208N, -96.711525W (Sect. 24, T 27N, R 5E)		
City: Shidler	County: Osage	State: Oklahoma



Photo File Name: Photo 11 (DSC_0051)

Orientation: East

Date of Photo: 11/6/2018

Time of Photo: 6:00 pm

Latitude: 36.796488N

Longitude: -96.711749W

Photographer: K.W. Sanborn

Description: Dead fish were observed in the tributary near the CR bridge.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Photograph Log

Photo No. 12

36.797208N, -96.711525W (Sect. 24, T 27N, R 5E)		
City: Shidler	County: Osage	State: Oklahoma



Photo File Name: Photo 12 (DSC_0049)

Orientation: East

Date of Photo: 11/6/2018

Time of Photo: 5:53 pm

Latitude: 36.796488N

Longitude: -96.711749W

Photographer: K.W. Sanborn

Description: There were hundreds of dead fish observed near the CR bridge crossing.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Photograph Log

Photo No. 13

36.797208N, -96.711525W (Sect. 24, T 27N, R 5E)		
City: Shidler	County: Osage	State: Oklahoma



Photo File Name: Photo 13 (DSC_0057)

Orientation: Southeast

Date of Photo: 11/6/2018

Time of Photo: 6:03 pm

Latitude: 36.796488N

Longitude: -96.711988W

Photographer: K.W. Sanborn

Description: I continued to observe dead fish in the tributary, including several large catfish seen partially eaten by animals.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Photograph Log

Photo No. 14

36.797208N, -96.711525W (Sect. 24, T 27N, R 5E)		
City: Shidler	County: Osage	State: Oklahoma



Photo File Name: Photo 14 (DSC_0001)

Orientation: North

Date of Photo: 11/7/2018

Time of Photo: 3:54 pm

Latitude: 36.794052N

Longitude: -96.711988W

Photographer: K.W. Sanborn

Description: This is the tributary of Hay Creek south of the CR bridge crossing. The tributary was deeper in this location and had defined bank.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Photograph Log

Photo No. 15

36.797208N, -96.711525W (Sect. 24, T 27N, R 5E)		
City: Shidler	County: Osage	State: Oklahoma



Photo File Name: Photo 15 (DSC_0002)

Orientation: West

Date of Photo: 11/7/2018

Time of Photo: 3:54 pm

Latitude: 36.794052N

Longitude: -96.711988W

Photographer: K.W. Sanborn

Description: The TDS in the tributary of Hay Creek at the point shown in Photo 14 was 62,267 mg/L.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Photograph Log

Photo No. 16

36.797208N, -96.711525W (Sect. 24, T 27N, R 5E)		
City: Shidler	County: Osage	State: Oklahoma



Photo File Name: Photo 16 (DSC_0096)

Orientation: South

Date of Photo: 11/7/2018

Time of Photo: 3:07 pm

Latitude: 36.790469N

Longitude: -96.711485W

Photographer: K.W. Sanborn

Description: This is the tributary of Hay Creek farther south. There were five dams built like this one to prevent the brine from flowing further downstream.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Photograph Log

Photo No. 17

36.797208N, -96.711525W (Sect. 24, T 27N, R 5E)		
City: Shidler	County: Osage	State: Oklahoma

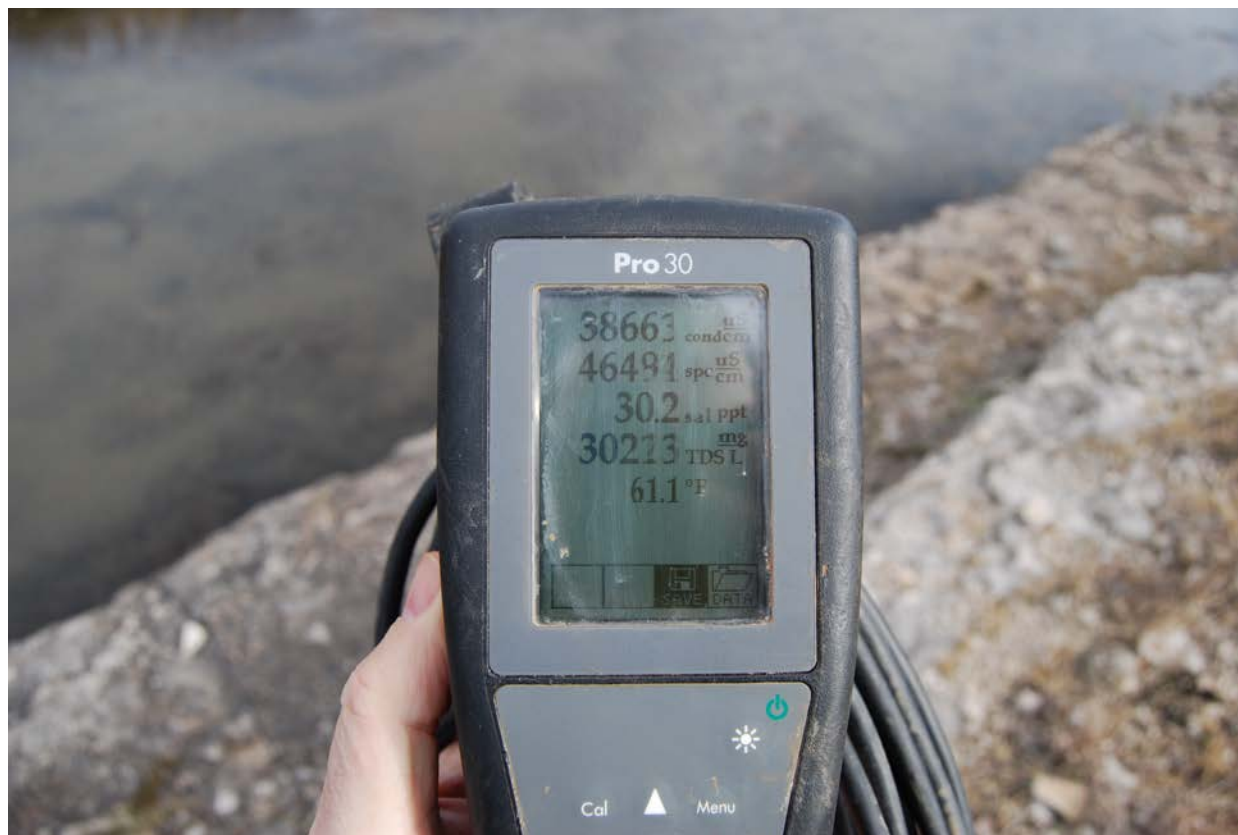


Photo File Name: Photo 17 (DSC_0090)

Orientation: East

Date of Photo: 11/7/2018

Time of Photo: 3:04 pm

Latitude: 36.790469N

Longitude: -96.711485W

Photographer: K.W. Sanborn

Description: TDS in the tributary shown in Photo 16 was 30,213 mg/L.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Photograph Log

Photo No. 18

36.797208N, -96.711525W (Sect. 24, T 27N, R 5E)		
City: Shidler	County: Osage	State: Oklahoma



Photo File Name: Photo 18 (DSC_0091)

Orientation: East

Date of Photo: 11/7/2018

Time of Photo: 3:04 pm

Latitude: 36.790783N

Longitude: -96.711613W

Photographer: K.W. Sanborn

Description: Pools in the tributary had more dead fish observed near the dam shown in Photo 16.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Photograph Log

Photo No. 19

36.797208N, -96.711525W (Sect. 24, T 27N, R 5E)		
City: Shidler	County: Osage	State: Oklahoma



Photo file Name: Photo 19 (DSC_0093)

Orientation: North

Date of Photo: 11/7/2018

Time of Photo: 3:05 pm

Latitude: 36.790783N

Longitude: -96.711613W

Photographer: K.W. Sanborn

Description: There were more dead fish observed in the tributary.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Photograph Log

Photo No. 20

36.797208N, -96.711525W (Sect. 24, T 27N, R 5E)		
City: Shidler	County: Osage	State: Oklahoma



Photo File Name: Photo 20 (DSC_0095)

Orientation: Southeast

Date of Photo: 11/7/2018

Time of Photo: 3:07 pm

Latitude: 36.790783N

Longitude: -96.711613W

Photographer: K.W. Sanborn

Description: A larger dead fish in the tributary was shown, in the same location as Photo 16.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Photograph Log

Photo No. 21

36.797208N, -96.711525W (Sect. 24, T 27N, R 5E)		
City: Shidler	County: Osage	State: Oklahoma



Photo File Name: Photo 21 (DSC_0084)

Orientation: North

Date of Photo: 11/7/2018

Time of Photo: 2:45 pm

Latitude: 36.78800N

Longitude: -96.710472W

Photographer: K. W. Sanborn

Description: The last dam in the tributary was constructed here.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Photograph Log

Photo No. 22

36.797208N, -96.711525W (Sect. 24, T 27N, R 5E)		
City: Shidler	County: Osage	State: Oklahoma



Photo File Name: Photo 22 (DSC_0085)

Orientation: Northeast

Date of Photo: 11/7/2018

Time of Photo: 2:46 pm

Latitude: 36.78800N

Longitude: -96.710472W

Photographer: K.W. Sanborn

Description: TDS flowing around the dam was 2,175 mg/L. There are no other dams south of this site. The creek was being pumped out north of this point.