

Region 6 - Enforcement & Compliance Assurance Division
INSPECTION REPORT

Inspection Date(s):	03/27/2024	
Media Program:	Water	
Regulatory Program(s)	NPDES CAFO	
Company Name:	Riverland Dairy, LLC	
Facility Name:	Riverland Dairy	
Facility Physical Location:	6992 Hwy 78 (33.816020, -96.258687)	
(city, state, zip code)	Hendrix, OK 74741	
Mailing address:	1865 Private Road 1233	
(city, state, zip code)	Hico, TX 76457	
County/Parish:	Bryan	
Facility Phone Number		
Facility Contact:	Corey Mullin	Enviro-Ag Consultant
	cmullin@enviroag.com ; riverlanddairy@hotmail.com	
FRS Number:	110071669759	
Identification/Permit Number:	OKU002202	
Media Identifier Number:		
NAICS:	112120	
SIC:	0241	
Personnel participating in inspection:		
Corey Mullin	Enviro-Ag	Consultant
Mackenzie Horn	ODAFF	Inspector
Keith Smith	ODAFF	Inspector Supervisor
Juan Ibarra	EPA R6	Inspector
Heath Haedge	Owner of Riverland Dairy	Not Present During the Inspection
EPA Lead Inspector Signature/Date	<i>Juan Ibarra</i>	5/9/2024
	Juan Ibarra	Date
Supervisor Signature/Date	<i>Anthony Loston</i>	5/9/2024
	Anthony Loston	Date

Section I – INTRODUCTION

PURPOSE OF THE INSPECTION

EPA Region 6 inspector Juan Ibarra arrived at the Riverland Dairy at 0858 on 03/27/2024, for an announced inspection. The reason for the inspection announcement was due to the need to have the dairy's consultant present during the inspection. I was accompanied by the Oklahoma Department of Agriculture, Food, and Forestry (ODAFF) inspector supervisor Keith Smith and inspector Mackenzie Horn. We met with Riverland Dairy representative Corey Mullin/Enviro-Ag at the Opening Conference. I presented my credentials to Mr. Mullin and informed him that this was an EPA inspection to determine compliance with the facility's ODAFF CAFO License (No. 200206) and the Concentrated Animal Feeding Operations (CAFO) requirements as found in the Clean Water Act (CWA). The scope of the inspection was a full compliance evaluation and includes an evaluation of the facility's compliance with its ODAFF operating permit requirements and nutrient management plan (NMP).

The sequence for the inspection was an introductory overview conducted during the opening conference, followed by a review of the nutrient management plan (NMP) paperwork. Afterward, we toured the site in a new ODAFF vehicle (it was just received on 3/25/2024) and wore disposable plastic over-boots. Due to a very recent avian influenza outbreak at a dairy in the Texas Panhandle, the inspectors exercised extreme caution in the biosecurity protocols, leaving the EPA vehicle in the office parking area.

FACILITY DESCRIPTION

License and General Operation:

The annual ODAFF CAFO License was reissued to Riverland Dairy on 5/11/2023 and expires on 6/3/2024. The dairy is permitted for a maximum of 5300 milking cows, but currently has 3100 milking cows and 300 dry cows. The facility houses the cows within eight freestall barns which, along with the milking parlor's holding pen, are flushed with recycled water, while the cows are being milked. The freestalls are flushed twice a day and the milking parlor's holding pen is flushed three times per day to coincide with the three times per day milking schedule. The milking parlor is flushed with fresh ground water. Flush water is routed into two concrete manure solids settling basins located at the northwest and northeast corners of the production area. While the west flush pump is out of service, a vacuum truck is being used to clean the west freestalls. Each of the manure solids settling basins are followed by a manure screen.

After manure solids settling and screening, wastewater from the production area, including the milking parlor, enters the first of four in-series lagoons. The final lagoon in the series is Lagoon 4. This unit was completely rebuilt in 2021 and recertified on 1/12/2022. All four lagoons now have clay liners, as the previous synthetic liner in Lagoon 4 was replaced with a clay liner. Land application of wastewater takes place out of Lagoon 4.

Screened manure solids are either land applied via a manure spreader to the five land application fields totaling 321 acres (Field 1, Field 3, Field 5, Field 6 and Field 7), or are given to a third party (either Kelly Sod in Hendrix, OK or Griffin Farm). Most of the manure solids are given away as described below in Observations.

About a third of the dairy's wastewater is land applied onto four land application fields, each of which is equipped with a center pivot, totaling 217 acres (Pivot 1, Pivot 2, Pivot 3, and Off-site Pivot). About two-thirds of the wastewater is transferred off-site to Griffin Farms (a third party) as describe below in Observations. Griffin Farms reportedly has numerous center pivots and thousands of acres of land.

Commodities are stored within covered silage bunkers, with only the working end exposed, while other commodities are stored in a barn under roof. The farm grows silage for cattle feed where the land application sites are double cropped with either corn and winter wheat (triticale) silage using conventional disk methods, or a no-till Coastal Bermuda and winter wheat silage. Mortalities are composted within a covered compost bunker and land applied to select land application areas once fully composted. Also, the facility maintains the required records for land application of wastewater and manure solids, the phosphorus index, weekly lagoon levels, rainfall records, and annual soil, wastewater, and manure analysis.

The dairy has six monitoring wells (MWs) referenced in Appendix 2 Monitoring Well Historical Data Report from February 8, 2016. This report spans a period of time from 2007 to 2016 for MWs 2, 3, 5, and the Extraction Well, and from 2008-2016 for MWs 6 and 7. That report and more recent data from 2021 to 2023 show historically high nitrate levels (well above the maximum contaminate level (MCL) of 10 mg/L) in MW 5 and Extraction Well.

Section II – OBSERVATIONS

Four In-series Lagoons:

Wastewater and manure solids are collected, stored and land applied according to the facility's NMP that was revised on 3/26/2024. The plan includes information on the wastewater lagoon liner certifications, all of which had a tightness (percolation rate) of greater than 1×10^{-8} cm/sec, "As-Built" information showing the compaction of the 1.5' clay liners, and recent 5-year recertifications of the lagoons. Lagoons 1 and 2 were recertified on 5/28/2021, Lagoon 3 was recertified on 4/11/2022, and Lagoon 4 was recertified on 1/12/2022. All the lagoons are equipped with a pole marker, and Lagoon 4, which is 21' deep, has a pole marker showing the 25-yr/24-hr rain event mark at 15' of depth, which at the time of the inspection is holding 13' of wastewater.

There were three observed areas of concern at the lagoons. 1) There was significant settling or sluffing at the top of the embankment between Lagoons 3 and 4 (see Photo 3). 2) The northwest corner of Lagoon 2 has about 10' or eroded embankment at the point where the corrugated tin horn brings

influent to the lagoon from the Lagoon 1 overflow (see Photo 6). 3) A vacuum truck is being used to remove manure solids from the west-side freestalls because the west flush water pump is inoperative, and the normal manure settling and screening system on the west side is being bypassed. The vacuum truck is dumping these manure solids onto the south embankment of Lagoon 1. The flush pump needs to be repaired so that the normal method of manure solids settling and screening can be restored, rather than dumping it onto the Lagoon 1 embankment, which will cause increased solids to enter the Lagoon. The lagoon embankment does not constitute a solids separator.

Monitoring Well Nitrate Data:

Six MWs (including one Extraction Well) were noted during the site inspection. Following the inspection, I asked the dairy consultant, Corey Mullin/Enviro-Ag, for the last three years of MW data, which was received on 4/30/2024. This data is shown below. Additionally, depending on the wells, MW data from 2007 to 2016 or 2008 to 2016 was received from Corey Mullin on 5/2/2024, which is found in Appendix 2 - Monitoring Well Historical Data Report dated February 8, 2016. This report, along with the three years of data shown below, indicates that two of the six MWs (MW 5 and Extraction Well) had nitrate levels significantly higher than the EPA drinking water limit of 10 mg/L for the past three years and from the study dates of 2007 to 2016. These two wells are located on the west side of the lagoons, while the four lagoons located on the east side of the lagoons were all well below 10 mg/L nitrate.

The Extraction Well was installed to address high nitrate levels believed to have come from around an old plastic corrugated pipe (about 2' in diameter) that moves manure wastewater from the east solids concrete separator to Lagoon 1. These two wells that are high in nitrates are located between the east side manure solids/screening area and Lagoons 1 and 2 (see the attached site map in Appendix 2). A plan and schedule to address these high nitrate levels in MW5 and Extraction Well is required.

Riverland MW Analysis

MW2		MW3		MW5	
Year	Nitrate	Year	Nitrate	Year	Nitrate
2021	ND	2021	ND	2021	108
2022	ND	2022	ND	2022	25.8
2023	ND	2023	ND	2023	51.7

MW6		MW7		Extraction Well	
Year	Nitrate	Year	Nitrate	Year	Nitrate
2021	ND	2021	0.843	2021	20.6
2022	ND	2022	0.527	2022	69.1
2023	ND	2023	ND	2023	56.9

ND = Non-Detect

Nitrate Result Listed as PPM

Agronomic Rates of Nutrient Application:

I reviewed the NMP's nutrient calculations for land application to verify that the calculations were correct, and that the nutrients were applied at an agronomic rate suitable for the crops being grown. This included a review of the annual Oklahoma State University (OSU) soils report and compost analysis, as well as the recommended rates of application. For the application of compost nitrogen on Field 6, for the date of 12/22/2023, the calculations were correct, and for the total applied in 2023, the total nitrogen applied was correctly calculated at 27.07 lbs/acre. Additionally, I also conducted a review for the application of P2O5 on Field 6 for 2023 compost application, and it was correct for the total applied at 52.12 lbs/acre. Nitrogen and P2O5 were both applied below the OSU recommended rate for Field 6.

Wastewater and Manure Land Application:

The dairy utilizes both on-site and off-site (third party) wastewater effluent and manure solids land application. A review of the 2023 land application of wastewater and manure solids showed that most manure solids, 5,358 dry weight tons, were given to third party farmers, while 1,450 dry weight tons were land applied onto dairy owned fields. Of the wastewater generated by the dairy in 2023, approximately 33 million gallons were given to a third party (Griffin Farms), while approximately 17.9 million gallons were land applied onto the dairy's four center pivots.

Mortality Composting:

All mortalities are composted in the compost barn. The compost in the barn was holding an excessive amount of accumulated storm water making the compost too wet. There is a drain in the compost barn that takes compost runoff to lagoon 4 (see Photo 1). Storm water has been channeled by the canvas covered roof into the composting area (see Photo 1), making the compost too wet. The compost area is being mismanaged and had a lot of cow bones and parts sticking out of the piles. The piles of compost are not being turned, and temperatures are not being monitored. Compost temperatures will indicate if the compost is too wet or if additional wood chips maybe needed as a carbon source. The facility needs to do a better job of monitoring their mortality management composting barn.

Section III – AREAS OF CONCERN

Riverland Dairy has several areas of concern related to 1) lagoon maintenance, 2) poorly managed mortality composting, 3) problems stemming from an inoperable manure flush pump that has caused a bypass of the normal method of settling and screening on the west-side manure management system, and 4) two monitoring wells (one being an extraction well) with historically high nitrate levels above the maximum contaminant level (MCL).

1) Lagoon maintenance issues were related to erosion and settling or sloughing of the embankments at two locations:

- a) There was significant settling or sluffing at the top of the embankment between Lagoons 3 and 4 (Photo 3).
- b) The northwest corner of Lagoon 2 has about 10' or eroded embankment at the point where the corrugated tin horn brings influent to the lagoon from the Lagoon 1 overflow (Photo 6).

Both issues must be addressed as required per ODAFF CAFO regulation 35:17-4-9 Pollution Prevention Plan, Section (h)(c)(v) which states "An erosion control plan shall be developed and approved by the Department detailing how the owner immediately stabilizes the embankment walls to prevent erosion and deterioration. The plan shall include a preventative maintenance section." Also, per 35:17-4-11 Criteria for Liners, Section (c) which states "Any mechanical or structural damage to the liner shall be evaluated by an environmental, agricultural, or other Department approved professional engineer registered in the state of Oklahoma within thirty (30) calendar days of the damage. Documentation of liner maintenance shall be kept with the pollution prevention plan."

2) The mortality compost barn is holding an excessive amount of accumulated storm water that has been channeled by the canvas covered roof into the compost area (Photo 1). The compost is too wet and suffers from lack of proper maintenance that would include temperature monitoring, adding carbon sources (i.e., woodchips), pile rotation and aeration. An inability to maintain proper temperature of the compost piles may indicate excessive moisture and/or inadequate carbon. Proper operation and management of mortality composting is required per NRCS Job Code 317 and per ODAFF CAFO regulation 35: 17-4-13 Carcass disposal, Section (a) and (c)(3).

3) The vacuum truck is dumping west-side freestall manure onto the south embankment of Lagoon 1. This has been done because the reuse water flush pump is inoperable, and therefore the normal manner of flushing, settling and screening the solids is being bypassed. The flush pump must be repaired so that this practice can be avoided or minimized, and excessive amounts of manure solids are not entrained or dumped into Lagoon 1. The proper operation and maintenance of the equipment required to pump, settle and screen the manure and wastewater is required per ODAFF CAFO regulation 35:17-4-12 Animal Waste Management Plans (AWMPs), Section (b)(3)(E) which states "Facilities including waste retention structures, waste storage sites, land application sites, ponds, pipes, ditches, pumps, and diversion and irrigation equipment shall be maintained to insure the ability to fully comply with the terms of these rules and the Pollution Prevention Plan.

4) Two of the six monitoring wells, MW 5 and Extraction Well, have had historically high nitrate levels that significantly exceeded 10 mg/L. For the past year, both wells tested just above 50 mg/l nitrate. The EPA limit for drinking water nitrate levels is 10 mg/L. A plan and schedule is required to address these ground water nitrate levels and monitor the trend over the coming years so that nearby fresh-water wells are not contaminated. Monitoring is appropriate as Lagoon 4 was rebuilt in 2021 and recertified in 1/12/2022, however, additional assessment of the east side concrete manure settling basin should be performed, along with an evaluation of the manure transfer lines coming into the settling basin and going into Lagoon 1.

Closing Conference:

EPA Region 6 and ODAFF inspectors (listed above in Purpose of the Inspection) conducted a closing conference at Riverland Dairy at 1500 on 3/27/2024. During the closing conference, I reviewed the first two of the Areas of Concern noted during the inspection related to the lagoon embankment erosion and settling/sloughing. The issues related to mortality compost mismanagement and the monitoring well high nitrate levels were not discussed during the closing conference. Following the inspection, these issues of the inoperable reuse water flush pump and its relationship to the dumping of solids onto the embankments of Lagoon 1, and high nitrates in two of the monitoring wells were discussed with the farm manager, Joe Lopez, and consultant Corey Mullin (via phone on 5/2/2024); however, these issues were not discussed during the on-site closing conference.

Section IV – FOLLOW UP

None

Section V – LIST OF APPENDICES

Appendix 1 – Photo Log – 6 photos taken 3/27/2024, and a DigitalGlobe aerial from 7/13/2022

Appendix 2 - Monitoring Well Historical Data Report from February 8, 2016