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INNOVATIVE
AG SERVICES

Dias and Sons Dairy

2023 Annual Report

X	Report Form	NA	Attachment H
X	Attachment A	NA	Attachment I
X	Attachment B	NA	Attachment J
X	Attachment C	NA	Manure Tracking Manifests
X	Attachment D	NA	New or Revised Waste Water Agreements
X	Attachment E	X	Groundwater Monitoring Samples
X	Attachment F	NA	Monitoring Well Report
X	Attachment G	NA	Owner/Operator Change Form

Enclosed are the required documents to be submitted to the Regional Water Quality Control Board Central Valley Region in compliance with Order No. R5-2013-0122 Waste Discharge Requirements, General Order for Existing Milk Cow Dairies for July 1, 2024.

(See attached delivery confirmation)

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Annual Report

Dias and Sons Dairy 2023

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

Facility Information:

Name of Dairy	Dias and Sons Dairy
Facility Address	7594 Kent Avenue , Hanford CA 93230

Owner/Operator as of 12/31/2023

Operator Name	Ryan Dias
Operator Phone	(559) 318-6058
Owner Name	Ryan Dias
Owner Phone	(559) 318-6058

1. Beginning and end dates of the annual reporting period: crops harvested January 1, 2023 through December 31, 2023.

2. Maximum and average number and type of animals (see Attachment A).

3. Estimated amount of total manure and process wastewater generated by the facility (see Attachment A).

4. Estimated amount of total manure and process wastewater applied to each land application area (see Attachment B).

5. Quantified ratio of total nitrogen applied to land application areas and total nitrogen removed by crop harvest (see Attachment B).

6. Estimated amount of total manure and process wastewater transferred to other persons by the facility (see Attachment C).

7. Total number of acres and the Assessor Parcel Numbers for all land application areas that were not used for application of manure or process wastewater (see Attachment D).

8. Total number of acres and the Assessor Parcel Numbers for all land application areas that were used for land application of manure and process wastewater (see Attachment D).

9. Summary of manure and process wastewater discharges from the production area
Provide a summary of all manure and wastewater discharges from the production area to surface water or to land areas (land application areas or otherwise) when not in accordance with the facility's Nutrient Management Plan, that occurred during the annual reporting period, including the date, time, location, approximate volume, a map showing discharge and sample locations, rationale for sample locations, and method of measuring discharge flows:

X No discharges occurred during the reporting period.

__ Yes. ____ Number of discharges occurred (see Attachment H).

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Dias and Sons Dairy 2023

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
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10. Summary of storm water discharges from the production area
Provide a summary of all storm water discharges from the production area to surface water, that occurred during the annual reporting period, including the date, time, approximate volume, duration, location, a map showing discharge and sample locations, rationale for sample locations, and method of measuring discharge flows:

X No discharges occurred during the reporting period.

__ Yes. ____ Number of discharges occurred (see Attachment I).

11. Summary of discharges from the land application area
Provide a summary of all discharges from the land application area to surface water, that occurred during the annual reporting period, including the date, time, approximate volume, location, source of discharge (i.e. tailwater, wastewater or blended wastewater), a map showing discharge and sample locations, rationale for sample locations, and method of measuring discharge flows:

X No discharges occurred during the reporting period.

__ Yes. ____ Number of discharges occurred (see Attachment J).

12. Nutrient Management Plan update
Has the NMP been updated, and if so, was it updated by a Certified Nutrient Management Specialist?

__ No.

X Yes, the new NMP was developed and approved by a Certified Nutrient Management Specialist.

13. Manure/Process Wastewater Tracking Manifests
Did you sell, give away, or otherwise remove manure or process wastewater from your property?

X No.

__ Yes, see attached manifests.

14. Written Agreements
Any process wastewater transferred to a third party that receives process wastewater from your dairy for its own use must have a written agreement consistent with State requirements. Attach copies of revised and/or new agreements not submitted previously. Do not resubmit agreements submitted previously.

X Not applicable; no written agreements.

__ No changes in agreement(s).

__ Yes, a new or revised agreement is attached.

15. Laboratory Analyses for Discharges
If you answered Yes to items #9, 10, or 11 above, attach copies of all laboratory analyses for all discharges (manure, process wastewater or tailwater), surface water (upstream and downstream of a discharge), and storm water, including chain-of-custody forms and laboratory quality assurance/quality control results, as applicable. (Results for Manure and process wastewater, storm water, and/or storm water are provided).

X Not Applicable.

__ Yes, provided with Attachment H, I, or J for #9, 10 and 11, respectively.

16. Tabulated Nutrient Analytical Data
Attach tabulated analytical data for samples of manure, process wastewater, irrigation water, soil, and plant tissue. The data shall be tabulated to clearly show sample dates, constituents analyzed, constituent concentrations, and detection limits (see Attachment E).

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Dias and Sons Dairy 2023

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

17. Record-Keeping Results

Attach results of the Record-Keeping Requirements for the production and land application areas specified in Record-Keeping Requirements. These include:

* Records documenting any corrective actions taken to correct deficiencies noted as a result of the inspections required in the Monitoring Requirements. Deficiencies not corrected in 30 days must be accompanied by an explanation of the factors preventing immediate correction.
* Records of the date, time, and estimated volume of any overflow or bypass of the wastewater storage or conveyance structures.
* Expected and actual crop yields (see Attachment F).
* Identification of crop, acreage, and dates of planting and harvest for each field (see Attachment F).
* Dates, locations, and approximate weight and moisture content of manure applied to each field (see Attachment B).
* Dates, locations, and volume of process wastewater applied to each field (see Attachment B).
* Whether precipitation occurred, or standing water was present at the time of manure and process wastewater applications and for 24 hours prior to and following applications (see Attachment G).
* Total amount of nitrogen, phosphorus, and potassium actually applied to each field, including documentation of calculations for the total amount applied (see Attachment B).

18. Groundwater Monitoring Section

X Groundwater monitoring results are attached.

__ Monitoring Well results are attached, if applicable.

A. All dischargers must attach groundwater information for supply wells and subsurface (tile) drainage systems including the location of sample collection and all field and laboratory data, including all laboratory analyses (including chain-of-custody forms and laboratory quality assurance/quality control results).

B. Dischargers who have monitoring well systems shall include all laboratory analyses (including chain-of-custody forms and laboratory quality assurance/quality control results) and tabular and graphical summaries of the monitoring data. Data shall be tabulated to clearly show the sample dates, constituents analyzed, constituent concentrations, detection limits, depth to groundwater and groundwater elevations. Graphical summaries of groundwater gradients and flow directions shall also be included. Each groundwater monitoring report shall include a summary data table for all historical and current groundwater elevations and analytical results. The groundwater monitoring results shall be certified by a California registered professional.

19. Storm Water Reporting Section

X No significant discharges of storm water occurred from the land application areas.

__ Yes, significant discharge(s) of storm water occurred from land application areas. The following information shall be submitted for those discharges.

__ It was not possible to collect any of the required samples or perform visual observations due to adverse climatic conditions.

20. Mortality Management Practices

* Dead cows are picked up and disposed of by rendering service.

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Dias and Sons Dairy 2023

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
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"I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment."

Same as owner	DocuSigned by: F716C7EE487E419...
Signature of Operator of Facility	Signature of Owner of Facility
Ryan Dias	Ryan Dias
Print Name	Print Name
	6/27/2024
Title and Date	Title and Date

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Dias and Sons Dairy 2023

Estimated Manure and Nutrients Generated (Attachment A)

Animal Type	Maximum No. of Head	Average No. of Head*	Housing Type	Weight	Total Manure Produced (tons/year)	NITROGEN Net (LB) Available for Land Application	PHOSPHORUS Net (LB) Available for Land Application	POTASSIUM Net (LB) Available for Land Application	SALTS Net (LB) Available for Land Application
Hol Milk Cows	840	420	Milk Freestall -	1,400	10,659.13	151,767.00	26,061.00	35,259.00	276,859.80
Hol Dry Cows	125	62	Dry Scrape	1,450	904.71	11,315.00	1,584.10	7,467.90	15,967.73
Hol Heifers(15-24)	400	200	Dry Scrape	1,000	2,087.71	27,740.00	4,380.00	13,140.00	51,508.80
Hol Heifers (7-14)	375	187	Dry Scrape	750	1,798.43	17,746.30	3,003.22	10,238.25	22,575.34
Hol Calves (4-6)	110	55	Dry Scrape	300	190.71	2,810.50	803.00	1,606.00	1,316.92
	1,850	**924**			**15,640.69**	**211,378.80**	**35,831.32**	**67,711.15**	**368,228.59**

* The Average No. of Head is used to calculate manure and nutrient production

Estimated Amount of Total Process Wastewater and Nutrients Generated

Total Gallons of Process Wastewater Generated***	Average TKN Concentration (mg/L)*	Average Total Phosphorus Concentration (mg/L)*	Average Potassium Concentration (mg/L)*	Average Total Dissolved Solids (mg/L)*	Total Nitrogen Generated (lb)**	Total Phosphorus Generated (lb)**	Total Potassium Generated (lb)**	Total Salt Generated (lb)**
10,508,714	395.00	63.92	650.25	4,790.00	34,577.35	5,595.84	56,921.32	419,305.05

* The average Total Kjeldahl Nitrogen, Total Phosphorus, Total Potassium, and Total Salt concentrations are based on an average of all process wastewater sample results for the year.
** The total pounds of Nitrogen, Phosphorus, Potassium and Total Dissolved Solids generated = Average Concentration (mg/L) X Total Gallons of Wastewater Generated X 8.33 X 0.000001.
*** The total gallons of process wastewater generated is calculated as the total gallons of process wastewater applied to all land application areas (Attachment B) plus the total gallons of process wastewater transferred offsite (Attachment C).

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Dias and Sons Dairy 2023

Nutrient Applications (Attachment B)

Field Name: 1

Wheat, 18 Acres Planted on 11/14/2022

Date	Event/Source	Amount Applied/Yield (per Acre)	Units	Lab Sample Data % Moist.	Nitrogen	Phos.	Potass.	Units	Manure Applied (Tons)	Wastewater Applied (Gallons)	Nitrogen Applied (Lbs)	Phosphorus Applied (Lbs)	Potassium Applied (Lbs)	Salt Applied (Lbs)	Nitrogen Extracted (Lbs)
10/22/2022	Ground Water: Well Avg	4.00	Acre Inches		8.00			mg/L			130	0	0	5,212	
10/22/2022	Waste Water: Main Lagoon	1.10	Acre Inches		332.00	39.10	452.00	mg/L		537,655	1,487	175	2,024	26,648	
01/01/2023	Atmospheric Deposit	14.00	Pounds		100.00			%			252				
04/03/2023	Ground Water: Well Avg	4.00	Acre Inches		9.95			mg/L			162	0	0	5,700	
04/03/2023	Waste Water: Main Lagoon	1.10	Acre Inches		552.00	78.40	603.00	mg/L		537,655	2,472	351	2,701	22,841	
05/05/2023	Harvest	20.22	Tons	64.40	1.60	0.30	1.09	%							4,146
	Acre Inches Applied:	**10.20**						**Totals:**		**1,075,310**	**4,504**	**526**	**4,725**	**60,401**	**4,146**
Season Nitrogen Ratio:	1.09							**Lbs Per Acre:**			**250**	**29**	**262**	**3,356**	**230**

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Dias and Sons Dairy 2023

Nutrient Applications (Attachment B)

Field Name: 1

Corn, 18 Acres Planted on 06/16/2023

Date	Event/Source	Amount Applied/Yield (per Acre)	Units	Lab Sample Data % Moist.	Nitrogen	Phos.	Potass.	Units	Manure Applied (Tons)	Wastewater Applied (Gallons)	Nitrogen Applied (Lbs)	Phosphorus Applied (Lbs)	Potassium Applied (Lbs)	Salt Applied (Lbs)	Nitrogen Extracted (Lbs)
05/12/2023	Corral Solids: Main Corral	8.00	Tons	27.80	1.28	0.72	1.43	%	144		2,662	1,503	2,973	0	
05/20/2023	Ground Water: Well Avg	4.90	Acre Inches		9.95			mg/L			199	0	0	6,983	
06/20/2023	Ground Water: Well Avg	5.00	Acre Inches		9.95			mg/L			202	0	0	7,125	
07/06/2023	Fertilize - UN32	10.00	Gallons		32.00	0.00	0.00	%			480	0	0	0	
07/06/2023	Ground Water: Well Avg	5.50	Acre Inches		9.95			mg/L			223	0	0	7,838	
08/04/2023	Ground Water: Well Avg	5.30	Acre Inches		9.95			mg/L			215	0	0	7,553	
08/21/2023	Ground Water: Well Avg	5.20	Acre Inches		9.95			mg/L			211	0	0	7,410	
09/06/2023	Ground Water: Well Avg	4.75	Acre Inches		9.95			mg/L			192	0	0	6,769	
09/14/2023	Harvest	29.74	Tons	63.10	0.85	0.24	0.76	%							3,358
	Acre Inches Applied:	**30.65**						**Totals:**	**144**		**4,383**	**1,503**	**2,973**	**43,677**	**3,358**
Season Nitrogen Ratio:	1.31							**Lbs Per Acre:**			**244**	**84**	**165**	**2,427**	**187**

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Dias and Sons Dairy 2023

Nutrient Applications (Attachment B)

Field Name: 2

Wheat, 10 Acres Planted on 11/15/2022

Date	Event/Source	Amount Applied/Yield (per Acre)	Units	Lab Sample Data % Moist.	Nitrogen	Phos.	Potass.	Units	Manure Applied (Tons)	Wastewater Applied (Gallons)	Nitrogen Applied (Lbs)	Phosphorus Applied (Lbs)	Potassium Applied (Lbs)	Salt Applied (Lbs)	Nitrogen Extracted (Lbs)
10/22/2022	Ground Water: Well Avg	4.00	Acre Inches		8.00			mg/L			72	0	0	2,895	
10/22/2022	Waste Water: Main Lagoon	1.10	Acre Inches		332.00	39.10	452.00	mg/L		298,697	826	97	1,125	14,804	
01/01/2023	Atmospheric Deposit	14.00	Pounds		100.00			%			140				
04/04/2023	Ground Water: Well Avg	5.00	Acre Inches		9.95			mg/L			112	0	0	3,958	
04/04/2023	Waste Water: Main Lagoon	1.20	Acre Inches		552.00	78.40	603.00	mg/L		325,852	1,498	213	1,637	13,843	
05/05/2023	Harvest	19.40	Tons	63.60	1.54	0.28	1.05	%							2,175
	Acre Inches Applied:	**11.30**						**Totals:**		**624,549**	**2,649**	**310**	**2,761**	**35,501**	**2,175**
Season Nitrogen Ratio:	1.22							**Lbs Per Acre:**			**265**	**31**	**276**	**3,550**	**218**

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Dias and Sons Dairy 2023

Nutrient Applications (Attachment B)

Field Name: 2

Corn, 10 Acres Planted on 06/16/2023

Date	Event/Source	Amount Applied/Yield (per Acre)	Units	Lab Sample Data % Moist.	Nitrogen	Phos.	Potass.	Units	Manure Applied (Tons)	Wastewater Applied (Gallons)	Nitrogen Applied (Lbs)	Phosphorus Applied (Lbs)	Potassium Applied (Lbs)	Salt Applied (Lbs)	Nitrogen Extracted (Lbs)
05/12/2023	Corral Solids: Main Corral	8.00	Tons	27.80	1.28	0.72	1.43	%	80		1,479	835	1,652	0	
05/23/2023	Ground Water: Well Avg	4.80	Acre Inches		9.95			mg/L			108	0	0	3,800	
06/23/2023	Ground Water: Well Avg	5.00	Acre Inches		9.95			mg/L			112	0	0	3,958	
07/09/2023	Fertilize - UN32	15.00	Gallons		32.00	0.00	0.00	%			400	0	0	0	
07/09/2023	Ground Water: Well Avg	5.50	Acre Inches		9.95			mg/L			124	0	0	4,354	
08/07/2023	Ground Water: Well Avg	5.40	Acre Inches		9.95			mg/L			122	0	0	4,275	
08/24/2023	Ground Water: Well Avg	5.30	Acre Inches		9.95			mg/L			119	0	0	4,196	
09/03/2023	Ground Water: Well Avg	5.20	Acre Inches		9.95			mg/L			117	0	0	4,117	
09/14/2023	Harvest	29.00	Tons	57.00	0.97	0.27	0.77	%							2,417
	Acre Inches Applied:	**31.20**						**Totals:**	**80**		**2,581**	**835**	**1,652**	**24,701**	**2,417**
Season Nitrogen Ratio:	1.07							**Lbs Per Acre:**			**258**	**84**	**165**	**2,470**	**242**

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Dias and Sons Dairy 2023

Nutrient Applications (Attachment B)

Field Name: 3

Wheat, 82 Acres Planted on 11/14/2022

Date	Event/Source	Amount Applied/Yield (per Acre)	Units	Lab Sample Data % Moist.	Nitrogen	Phos.	Potass.	Units	Manure Applied (Tons)	Wastewater Applied (Gallons)	Nitrogen Applied (Lbs)	Phosphorus Applied (Lbs)	Potassium Applied (Lbs)	Salt Applied (Lbs)	Nitrogen Extracted (Lbs)
10/20/2022	Ground Water: Well Avg	4.50	Acre Inches		8.00			mg/L			667	0	0	26,709	
10/20/2022	Waste Water: Main Lagoon	1.00	Acre Inches		332.00	39.10	452.00	mg/L		2,226,653	6,158	725	8,384	110,361	
01/01/2023	Atmospheric Deposit	14.00	Pounds		100.00			%			1,148				
04/07/2023	Ground Water: Well Avg	5.00	Acre Inches		9.95			mg/L			922	0	0	32,459	
04/07/2023	Waste Water: Main Lagoon	1.10	Acre Inches		552.00	78.40	603.00	mg/L		2,449,318	11,263	1,600	12,303	104,055	
05/06/2023	Harvest	20.70	Tons	66.40	1.48	0.34	1.38	%							16,881
	Acre Inches Applied:	**11.60**						**Totals:**		**4,675,970**	**20,159**	**2,325**	**20,687**	**273,583**	**16,881**
Season Nitrogen Ratio:	1.19							**Lbs Per Acre:**			**246**	**28**	**252**	**3,336**	**206**

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Dias and Sons Dairy 2023

Nutrient Applications (Attachment B)

Field Name: 3

Corn, 82 Acres Planted on 06/17/2023

Date	Event/Source	Amount Applied/Yield (per Acre)	Units	Lab Sample Data % Moist.	Nitrogen	Phos.	Potass.	Units	Manure Applied (Tons)	Wastewater Applied (Gallons)	Nitrogen Applied (Lbs)	Phosphorus Applied (Lbs)	Potassium Applied (Lbs)	Salt Applied (Lbs)	Nitrogen Extracted (Lbs)
05/12/2023	Corral Solids: Main Corral	8.00	Tons	27.80	1.28	0.72	1.43	%	656		12,125	6,849	13,546	0	
05/21/2023	Ground Water: Well Avg	4.80	Acre Inches		9.95			mg/L			886	0	0	31,161	
06/21/2023	Ground Water: Well Avg	5.00	Acre Inches		9.95			mg/L			922	0	0	32,459	
07/07/2023	Fertilize - UN32	15.00	Gallons		32.00	0.00	0.00	%			3,278	0	0	0	
07/07/2023	Ground Water: Well Avg	5.60	Acre Inches		9.95			mg/L			1,033	0	0	36,354	
08/05/2023	Ground Water: Well Avg	5.50	Acre Inches		9.95			mg/L			1,015	0	0	35,705	
08/22/2023	Ground Water: Well Avg	5.30	Acre Inches		9.95			mg/L			978	0	0	34,406	
09/23/2023	Ground Water: Well Avg	5.20	Acre Inches		9.95			mg/L			959	0	0	33,758	
10/06/2023	Harvest	28.90	Tons	72.20	1.19	0.24	1.18	%							15,679
	Acre Inches Applied:	**31.40**						**Totals:**	**656**		**21,198**	**6,849**	**13,546**	**203,843**	**15,679**
Season Nitrogen Ratio:	1.35							**Lbs Per Acre:**			**259**	**84**	**165**	**2,486**	**191**

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Dias and Sons Dairy 2023

Nutrient Applications (Attachment B)

Field Name: AS1

Wheat, 61 Acres Planted on 11/16/2022

Date	Event/Source	Amount Applied/Yield (per Acre)	Units	Lab Sample Data % Moist.	Nitrogen	Phos.	Potass.	Units	Manure Applied (Tons)	Wastewater Applied (Gallons)	Nitrogen Applied (Lbs)	Phosphorus Applied (Lbs)	Potassium Applied (Lbs)	Salt Applied (Lbs)	Nitrogen Extracted (Lbs)
10/20/2022	Ground Water: Well Avg	4.60	Acre Inches		8.00			mg/L			508	0	0	20,311	
10/20/2022	Waste Water: Main Lagoon	1.10	Acre Inches		332.00	39.10	452.00	mg/L		1,822,054	5,039	594	6,860	90,307	
01/01/2023	Atmospheric Deposit	14.00	Pounds		100.00			%			854				
04/06/2023	Ground Water: Well Avg	4.90	Acre Inches		9.95			mg/L			673	0	0	23,663	
04/06/2023	Waste Water: Main Lagoon	1.20	Acre Inches		552.00	78.40	603.00	mg/L		1,987,695	9,140	1,298	9,984	84,444	
05/06/2023	Harvest	21.00	Tons	64.80	1.33	0.31	1.33	%							11,994
	Acre Inches Applied:	**11.80**						**Totals:**		**3,809,748**	**16,213**	**1,892**	**16,844**	**218,725**	**11,994**
Season Nitrogen Ratio:	1.35							**Lbs Per Acre:**			**266**	**31**	**276**	**3,586**	**197**

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Dias and Sons Dairy 2023

Nutrient Applications (Attachment B)

Field Name: AS1

Corn, 61 Acres Planted on 06/17/2023

Date	Event/Source	Amount Applied/Yield (per Acre)	Units	Lab Sample Data % Moist.	Nitrogen	Phos.	Potass.	Units	Manure Applied (Tons)	Wastewater Applied (Gallons)	Nitrogen Applied (Lbs)	Phosphorus Applied (Lbs)	Potassium Applied (Lbs)	Salt Applied (Lbs)	Nitrogen Extracted (Lbs)
05/10/2023	Corral Solids: Main Corral	8.00	Tons	27.80	1.28	0.72	1.43	%	488		9,020	5,095	10,077	0	
05/19/2023	Ground Water: Well Avg	4.90	Acre Inches		9.95			mg/L			673	0	0	23,663	
06/22/2023	Ground Water: Well Avg	5.25	Acre Inches		9.95			mg/L			721	0	0	25,353	
07/05/2023	Fertilize - UN32	15.00	Gallons		32.00	0.00	0.00	%			2,439	0	0	0	
07/05/2023	Ground Water: Well Avg	5.50	Acre Inches		9.95			mg/L			755	0	0	26,561	
08/03/2023	Ground Water: Well Avg	5.40	Acre Inches		9.95			mg/L			741	0	0	26,078	
08/20/2023	Ground Water: Well Avg	5.30	Acre Inches		9.95			mg/L			728	0	0	25,595	
09/16/2023	Ground Water: Well Avg	5.25	Acre Inches		9.95			mg/L			721	0	0	25,353	
10/06/2023	Harvest	30.40	Tons	71.40	1.21	0.25	1.21	%							12,834
	Acre Inches Applied:	**31.60**						**Totals:**	**488**		**15,798**	**5,095**	**10,077**	**152,604**	**12,834**
Season Nitrogen Ratio:	1.23							**Lbs Per Acre:**			**259**	**84**	**165**	**2,502**	**210**

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Dias and Sons Dairy 2023

Nutrient Applications (Attachment B)

Field Name: AS2

Wheat, 34 Acres Planted on 11/17/2022

Date	Event/Source	Amount Applied/Yield (per Acre)	Units	Lab Sample Data % Moist.	Nitrogen	Phos.	Potass.	Units	Manure Applied (Tons)	Wastewater Applied (Gallons)	Nitrogen Applied (Lbs)	Phosphorus Applied (Lbs)	Potassium Applied (Lbs)	Salt Applied (Lbs)	Nitrogen Extracted (Lbs)
09/30/2022	Corral Solids: Main Corral	6.00	Tons	25.30	1.81	0.66	0.46	%	204		5,516	2,027	1,414	0	
10/22/2022	Ground Water: Well Avg	4.80	Acre Inches		8.00			mg/L			295	0	0	11,813	
01/01/2023	Atmospheric Deposit	14.00	Pounds		100.00			%			476				
04/07/2023	Ground Water: Well Avg	5.00	Acre Inches		9.95			mg/L			382	0	0	13,459	
04/07/2023	Waste Water: Main Lagoon	0.35	Acre Inches		552.00	78.40	603.00	mg/L		323,136	1,486	211	1,623	13,728	
05/06/2023	Harvest	20.90	Tons	66.00	1.31	0.33	1.29	%							6,330
	Acre Inches Applied:	**10.15**						**Totals:**	**204**	**323,136**	**8,156**	**2,238**	**3,037**	**38,999**	**6,330**
Season Nitrogen Ratio:	1.29							**Lbs Per Acre:**			**240**	**66**	**89**	**1,147**	**186**

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Dias and Sons Dairy 2023

Nutrient Applications (Attachment B)

Field Name: AS2

Corn, 34 Acres Planted on 06/18/2023

Date	Event/Source	Amount Applied/Yield (per Acre)	Units	Lab Sample Data % Moist.	Nitrogen	Phos.	Potass.	Units	Manure Applied (Tons)	Wastewater Applied (Gallons)	Nitrogen Applied (Lbs)	Phosphorus Applied (Lbs)	Potassium Applied (Lbs)	Salt Applied (Lbs)	Nitrogen Extracted (Lbs)
05/10/2023	Corral Solids: Main Corral	8.00	Tons	27.80	1.28	0.72	1.43	%	272		5,028	2,840	5,616	0	
05/22/2023	Ground Water: Well Avg	4.90	Acre Inches		9.95			mg/L			375	0	0	13,189	
06/22/2023	Ground Water: Well Avg	5.00	Acre Inches		9.95			mg/L			382	0	0	13,459	
07/08/2023	Fertilize - UN32	15.00	Gallons		32.00	0.00	0.00	%			1,359	0	0	0	
07/08/2023	Ground Water: Well Avg	5.50	Acre Inches		9.95			mg/L			421	0	0	14,805	
08/06/2023	Ground Water: Well Avg	5.25	Acre Inches		9.95			mg/L			402	0	0	14,131	
08/24/2023	Ground Water: Well Avg	5.30	Acre Inches		9.95			mg/L			406	0	0	14,266	
09/18/2023	Ground Water: Well Avg	5.60	Acre Inches		9.95			mg/L			428	0	0	15,074	
10/06/2023	Harvest	30.00	Tons	71.00	1.30	0.26	1.20	%							7,691
	Acre Inches Applied:	**31.55**						**Totals:**	**272**		**8,801**	**2,840**	**5,616**	**84,924**	**7,691**
Season Nitrogen Ratio:	1.14							**Lbs Per Acre:**			**259**	**84**	**165**	**2,498**	**226**

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Dias and Sons Dairy 2023

Nutrient Applications (Attachment B)

Summary of Nutrient Applications, Removal, and Balance

	Total N (Lbs)	Total P (Lbs)	Total K (Lbs)	Total Salts (Lbs)	Total Manure Applied	
Solid Manure	35,829.85	19,148.34	35,278.01	0.00	1,844.00	tons
Process Wastewater	39,369.22	5,263.87	46,640.35	481,031.13	10,508,714.10	gallons
Irrigation Water	18,416.64					
Fertilizer / Total Imports	7,956.14					
Atmospheric Deposition	2,870.00					
Total Nitrogen Applied	**104,441.85**					
Crop Nitrogen Removal	83,506.39					
Nitrogen Balance	**20,935.46**					
Nitrogen Ratio	**1.25**					

- **Nutrient applications shown in Attachment B are on a crop year basis.**
- **Lab sample data results for applications are based on the sample taken closest to the application date. Lab sample data results are shown on 100% dry basis for manure applications and harvest events.**
- **Well Avg: Irrigation source representing the average nutrient values of all irrigation wells sampled for the facility during the reporting year.**

**** Book Value: No sample data results were available. For manure applications and plant tissue harvests, the calculations were based off book values.**

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Dias and Sons Dairy 2023

Nutrient Applications (Attachment B)

FIELD NITROGEN RATIO Calculation:

"Field Nitrogen Ratio" = "Total Nitrogen Applied to Field" / "Total Nitrogen Extracted from Field at Harvest"

ATMOSHERIC DEPOSITION Applied (lbs) Calculation:

"Nitrogen Applied (Lbs)" = "14 Lbs (per year) * "Acres Planted"

HARVEST Nitrogen Extraction (Lbs) Calculation:

"Nitrogen Extracted (Lbs)" = ("Yield" (tons per acre) * 2000) * ((100 - "% Moisture") / 100 * "Lab Sample Data Nitrogen Value" / 100) * "Acres Planted"

IRRIGATION Nitrogen and Salts Applied (Lbs) Calculations:

"Nitrogen Applied (Lbs)" = "Lbs Applied per Acre" (see below) * ("Lab Sample Data Nitrogen Value" * 0.000001) * "Acres Planted"

"Salts Applied (Lbs)" = "Lbs Applied per Acre" (see below) * ("Lab Sample Data TDS Value" * 0.000001) * "Acres Planted"

PROCESS WASTEWATER Nitrogen, Phosphorus, Potassium and Salts Applied (Lbs) Calculations:

Nitrogen Applied (Lbs)" = "Lbs Applied per Acre" (see below) * ("Lab Sample Data Nitrogen Value" * 0.000001) * "Acres Planted"

Phosphorus Applied (Lbs)" = "Lbs Applied per Acre" (see below) * ("Lab Sample Data Phosphorus Value" * 0.000001) * "Acres Planted"

Potassium Applied (Lbs)" = "Lbs Applied per Acre" (see below) * ("Lab Sample Data Potassium Value" * 0.000001) * "Acres Planted"

Salt Applied (Lbs)" = "Lbs Applied per Acre" (see below) * ("Lab Sample Data TDS Value" * 0.000001) * "Acres Planted"

SOLID MANURE (Corral, Separator, or Compost) Nitrogen, Phosphorus, Potassium and Salts Applied (Lbs) Calculations:

Nitrogen Applied (Lbs)" = "Lbs Applied per Acre" (see below) * ((100 - "% Moisture")/100 * "Lab Sample Data Nitrogen Value"/100) * "Acres Planted"

Phosphorus Applied (Lbs)" = "Lbs Applied per Acre" (see below) * ((100 - "% Moisture")/100 * "Lab Sample Data Phosphorus Value"/100) * "Acres Planted"

Potassium Applied (Lbs)" = "Lbs Applied per Acre" (see below) * ((100 - "% Moisture")/100 * "Lab Sample Data Potassium Value"/100) * "Acres Planted"

Salt Applied (Lbs)" = "Lbs Applied per Acre" (see below) * ((100 - "% Moisture")/100 * "Lab Sample Data Ash Value"/100) * "Acres Planted"

"Lbs Applied per Acre" Calculations:

If "Application Units" = Tons, Then "Lbs Applied per Acre" = "Application Amount" (per Acre) * 2000

If "Application Units" = Acres Inches, Then "Lbs Applied per Acre" = "Application Amount" (per Acre) * 8.33 *27,154.3

If "Application Units" = Acre Feet, Then Lbs Applied per Acre" = "Application Amount" (per Acre) * 8.33 * 325,851

If "Application Units" = Gallons, Then "Lbs Applied per Acre" = "Application Amount' (per Acre) * 8.33

Dias and Sons Dairy 2023

Estimated Manure and Process Wastewater/Nutrients Transferred Off-Site (Attachment C)

A. ESTIMATED TOTAL MANURE TRANSFERRED OFFSITE

Total Manure Exported (tons)*	Total Nitrogen Exported (lbs)**	Total Phosphorus Exported (lbs)**	Total Potassium Exported (lbs)**	Total Salts Exported (lbs)**

* The Total Manure (tons) should be calculated as the sum of all manure transferred offsite as reported in all the Manure/Process Wastewater Tracking Manifests for the reporting period.
** Total (N, P, K, Salts) (lbs) = Sum of (N, P, K, Salts) for each manure export event based on (Manure(tons) x 2000lb/ton) x ((100-moisture%)/100) x (N, P, K, and Ash) Concentration (%, dry weight) / 100 using the samples closest in date to the export event.

B. ESTIMATED TOTAL PROCESS WASTEWATER TRANSFERRED OFFSITE

Total Process Wastewater Exported (gal)*	Total Nitrogen Exported (lbs)**	Total Phosphorus Exported (lbs)**	Total Potassium Exported (lbs)**	Total TDS Exported (lbs)**

* The Total Manure (gals) should be calculated as the sum of all manure transferred offsite as reported in all the Manure/Process Wastewater Tracking Manifests for the reporting period.
** Total (Nitrogen, Phosphorus, Potassium, TDS) (lbs) = Sum of (Nitrogen, Phosphorus, Potassium, TDS) for each wastewater export event based on (Process Wastewater(gals) x 8.33lb/gal) x (N03-N or TKN, P, K, TDS) x 10-6 using the samples closest in date to the export event.

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Dias and Sons Dairy 2023

Land Application Area Description Technical Report (Attachment D)

Field Name	Assessor Parcel Number(s)	Acres	Type of Waste Applied
1	x028 x170 x036 x000	18	Both
2	x028 x170 x036 x000	10	Both
3	x028 x170 x042 x000	82	Both
AS1	x028 x170 x005 x000, x028 x170 x048 x000	61	Both
AS2	x028 x170 x005 x000, x028 x170 x048 x000	34	Both
		205	

Production Area APN(s): x028 x170 x036 x000, x028 x170 x042 x000

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Dias and Sons Dairy 2023

Lab Results Summary (Attachment E)

Process Wastewater

(mgl/ppm unless noted otherwise)

Sample Date:	TKN	TP	TK	EC (umhos/cm)	NH4N	NO3N	TDS	pH (units)	General Minerals CA	MG	NA	HCO3	CO3	SO4	CL
02/16/2023	385.00	83.10	569.00	5,860	268.00		3,890.00								
04/25/2023	552.00	78.40	603.00	7,680	487.00	0.00	5,100.00	7.47							
07/13/2023	395.00	48.10	515.00	7,730	377.00		5,130.00								
11/07/2023	248.00	46.10	914.00	7,590	240.00		5,040.00								
Averages:	395.00	63.92	650.25	7,215	343.00	0.00	4,790.00	7.47							

Manure - Corral Solids

(Dry Weight Basis)

Sample Date:	TN	TP	TK	Moisture	Ash	CA	MG	NA	S	CL
06/02/2023	1.28	0.72	1.43	27.80						%
11/07/2023	1.70	0.86	0.70	12.80						%
Averages:	1.49	0.79	1.07	20.30						

Plant Tissue

(Dry Weight Basis)

Field:	Crop #:	Crop	Sample Date:	TN (lbs/ton)	TP (lbs/ton)	TK (lbs/ton)	Moisture (%)	Ash (%)
1	1	Wheat	05/05/2023	32.00	5.92	21.80	64.40	7.70
1	2	Corn	09/14/2023	17.00	4.78	15.12	63.10	8.87

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Dias and Sons Dairy 2023

Lab Results Summary (Attachment E)

Plant Tissue

(Dry Weight Basis)

Field:	Crop #:	Crop	Sample Date:	TN (lbs/ton)	TP (lbs/ton)	TK (lbs/ton)	Moisture (%)	Ash (%)
2	1	Wheat	05/05/2023	30.80	5.60	21.00	63.60	7.26
2	2	Corn	09/14/2023	19.38	5.32	15.42	57.00	15.60
3	1	Wheat	05/06/2023	29.60	6.70	27.60	66.40	8.26
3	2	Corn	10/06/2023	23.80	4.70	23.60	72.20	5.70
AS1	1	Wheat	05/06/2023	26.60	6.24	26.60	64.80	7.70
AS1	2	Corn	10/06/2023	24.20	5.04	24.20	71.40	5.57
AS2	1	Wheat	05/06/2023	26.20	6.52	25.80	66.00	8.93
AS2	2	Corn	10/06/2023	26.00	5.24	24.00	71.00	5.41

Well / Irrigation Water

(mgl/ppm unless noted otherwise)

	Sample Date:	NO3N	TP	EC (umhos/cm)	NH4N *	TDS	TN	General Minerals CA	MG	NA	HCO3	CO3	SO4	CL
Dairy														
1D	04/05/2023	32.60		1,030		710.00		75.00	8.00	95.00	170.00	0.00	22.70	106.00
	Averages:	32.60		1,030		710.00		75.00	8.00	95.00	170.00	0.00	22.70	106.00

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Dias and Sons Dairy 2023

Lab Results Summary (Attachment E)

Well / Irrigation Water

(mgl/ppm unless noted otherwise)

							General Minerals						
	Sample Date:	**NO3N**	**TP**	**EC (umhos/cm)**	**NH4N ***	**TDS**	**TN**	**CA**	**MG**	**NA**	**HCO3**	**CO3**	**SO4**	**CL**
Domestic														
2D	08/23/2023	18.40		747		450.00	18.40	58.00	1.00	101.00	110.00	0.00	17.80	92.00
Domestic 2								Out of service						
Domestic								Out of service						
House Domestic								Out of service						
	Averages:	18.40		747		450.00	18.40	58.00	1.00	101.00	110.00	0.00	17.80	92.00
Irrigation														
1 IR	08/23/2023	17.80		806		510.00	17.90	62.00	1.00	98.00	110.00	0.00	19.50	111.00
IR	06/19/2023	2.10		305		190.00	2.10	8.00	0.00	49.00	70.00	0.00	10.90	29.00
	Averages:	9.95		556		350.00	10.00	35.00	0.50	73.50	90.00	0.00	15.20	70.00

* NH4N was non-detectable unless a value is shown

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Dias and Sons Dairy 2023

Planting and Harvest Information (Attachment F)

	Crop #	Crop	Acres Planted	Plant Date	Harvest Date	Estimated Yield (tons)	Tons Harvested	Actual Yield
Field: 1								
	1	Wheat	18	11/14/2022	05/05/2023	21.0	364.0	20.2
	2	Corn	18	06/16/2023	09/14/2023	29.6	535.3	29.7
Field: 2								
	1	Wheat	10	11/15/2022	05/05/2023	19.8	194.0	19.4
	2	Corn	10	06/16/2023	09/14/2023	28.8	290.0	29.0
Field: 3								
	1	Wheat	82	11/14/2022	05/06/2023	20.3	1697.4	20.7
	2	Corn	82	06/17/2023	10/06/2023	28.8	2369.8	28.9
Field: AS1								
	1	Wheat	61	11/16/2022	05/06/2023	20.5	1281.0	21.0
	2	Corn	61	06/17/2023	10/06/2023	30.0	1854.4	30.4
Field: AS2								
	1	Wheat	34	11/17/2022	05/06/2023	20.3	710.6	20.9
	2	Corn	34	06/18/2023	10/06/2023	29.1	1020.0	30.0

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Dias and Sons Dairy 2023

Weather Data (Attachment G)

Day	January	February	March	April	May	June	July	August	September	October	November	December
1	Light	None	Light	None	None	None	None	None	None	None	None	None
2	Light	None	None	None	None	None	None	None	None	None	None	None
3	None	None	None	None	None	None	None	None	None	None	None	None
4	Light	None	None	None	Light	None	None	None	None	None	None	None
5	Heavy	Light	Light	None	None	None	None	None	None	None	None	None
6	None	None	None	None	None	None	None	None	None	None	None	None
7	None	None	None	None	None	SWP	None	None	None	None	None	None
8	None	None	None	None	None	None	None	None	None	None	None	None
9	SWP	None	Light	None	None	None	None	None	None	None	None	None
10	Light	None	SWP	None	None	None	None	None	None	None	None	None
11	None	None	None	None	None	None	None	None	None	None	None	None
12	None	None	None	None	None	None	None	None	None	None	None	None
13	None	None	None	None	None	None	None	None	None	None	None	None
14	Heavy	None	SWP	None	None	None	None	None	None	None	None	None
15	Light	None	Heavy	None	None	None	None	None	None	None	None	None
16	Heavy	None	None	None	None	None	None	None	None	None	None	None
17	None	None	None	None	None	None	None	None	None	None	None	None
18	None	None	None	None	None	None	None	None	None	None	None	None
19	None	None	Light	None	None	None	None	Light	None	None	None	None
20	None	None	None	None	None	None	None	SWP	None	None	None	None
21	None	None	SWP	None	None	None	None	None	None	None	None	None
22	None	Light	Light	None	None	None	None	None	None	None	None	None
23	None	None	None	None	None	None	None	None	None	Heavy	None	None
24	None	SWP	None	None	None	None	None	None	None	None	None	None
25	None	SWP	None	None	None	None	None	None	None	None	None	None
26	None	None	None	None	None	None	None	None	None	None	None	None
27	None	Light	None	None	None	None	None	None	None	None	None	None
28	None	Heavy	Light	None	None	None	None	None	None	None	None	None
29	Light		Heavy	None	None	None	None	None	None	None	None	None
30	None		Light	None	None	None	None	None	None	None	None	Light
31	None		None		None		None	None		None		None

*Note: SWP = Standing Water Present

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ENVIRONMENTAL AGRICULTURAL
Analytical Chemists

May 3, 2023

Innovative Ag Services, LLC
1201 Delta View Road Suite 5
Hanford, CA 93230

Lab No. : **VI 2342060**
Customer No. : **4018573**
Reference : **40362**

Laboratory Report

Introduction: This report package contains a total of 4 pages divided into 3 sections:

Case Narrative	(1 page)	: An overview of the work performed at FGL.
Sample Results	(1 page)	: Results for each sample submitted.
Quality Control	(2 pages)	: Supporting Quality Control (QC) results.

Case Narrative

This Case Narrative pertains to the following samples:

Sample Description	Date Sampled	Date Received	FGL Lab No.	Matrix
1D	04/05/2023	04/05/2023	VI 2342060-001	AGW

Sampling and Receipt Information:

The Sample was received in acceptable condition and within temperature requirements, unless noted on the Condition Upon Receipt (CUR) form. The Sample was received, prepared and analyzed within the method specified holding times except those as listed in the table below. All samples arrived on ice. All samples were checked for pH if acid or base preservation is required (except for VOAs). For details of sample receipt information, please see the associated Chain of Custody and Condition Upon Receipt Form.

Samples Over Hold Time

Lab No	Analyte Method	Maximum Hold Time	Actual Hold Time
VI 2342060-001	Nitrate Nitrogen	48 hours	337.6 hours

Quality Control: All samples were prepared and analyzed according to established quality control criteria. Any exceptions are noted in the Quality Control Section of this report.

Test Summary	
EPA 200.7	Preparation and analysis performed by FGL-Santa Paula (FGL-SP ELAP# 1573)
EPA 300.0	Preparation and analysis performed by FGL-Santa Paula (FGL-SP ELAP# 1573)
SM 2540 C	Preparation and analysis performed by FGL-Santa Paula (FGL-SP ELAP# 1573)
SM 4500-H+B	Preparation and analysis performed by FGL-Santa Paula (FGL-SP ELAP# 1573)

Certification: I certify that this data package is in compliance with ELAP standards, both technically and for completeness, except for any conditions listed above and in the QC Section. Release of the data contained in this data package is authorized by the Laboratory Director or his designee, as verified by the following electronic signature. This report shall not be reproduced except in full, without the written approval of the laboratory.

KD: JRD

Approved By **Kelly A. Dunnahoo, B.S.** Digitally signed by Kelly A. Dunnahoo, B.S.
Title: Laboratory Director
Date: 2023-05-03

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ENVIRONMENTAL FGL AGRICULTURAL
Analytical Chemists

May 3, 2023

Innovative Ag Services, LLC
1201 Delta View Road Suite 5
Hanford, CA 93230

Description : 1D
Project : 0224 Dias & Sons Dairy

Lab No. : VI 2342060-001
Customer No. : 4018573
Reference : 40362
Sampled On : April 5, 2023 at 13:00
Sampled By : Henry
Received On : April 5, 2023 at 16:05
Matrix : Ag Water

Sample Results - Inorganic

Constituent	Result	RL	Units	Note	Dil.	DQF	Sample Preparation			Sample Analysis			
Dairy Analysis							Date	Time	Who	Method	Date	Time	Who
Alkalinity (as CaCO3)	140	10	mg/L		1		04/11/2023	14:02	amm	SM 4500-H+B	04/11/2023	22:06	amm
Bicarbonate	170	10	mg/L		1		04/11/2023	14:02	amm	SM 4500-H+B	04/11/2023	22:06	amm
Carbonate	ND	10	mg/L		1	U	04/11/2023	14:02	amm	SM 4500-H+B	04/11/2023	22:06	amm
Hydroxide	ND	10	mg/L		1	U	04/11/2023	14:02	amm	SM 4500-H+B	04/11/2023	22:06	amm
Chloride	106	4*	mg/L		4		04/19/2023	14:34	ldm	EPA 300.0	04/21/2023	05:41	ldm
Nitrate Nitrogen	32.6	0.4*	mg/L		4	bT	04/19/2023	14:34	ldm	EPA 300.0	04/21/2023	05:41	ldm
Conductivity	1030	1	umhos/cm		1		04/11/2023	14:02	amm	SM 4500-H+B	04/11/2023	22:06	amm
Sulfate Sulfur	22.7	0.17	mg/L		1	l	04/06/2023	16:30	ldm	EPA 300.0	04/07/2023	01:50	krh
Solids, Total Dissolved (TDS)	710	20	mg/L		1		04/07/2023	16:00	ctl	SM 2540 C	04/10/2023	11:00	ctl
Calcium	75	1	mg/L		1		04/28/2023	04:05	ejc	EPA 200.7	05/01/2023	18:15	ac
Magnesium	8	1	mg/L		1		04/28/2023	04:05	ejc	EPA 200.7	05/01/2023	18:15	ac
Potassium	ND	1	mg/L		1	J	04/28/2023	04:05	ejc	EPA 200.7	05/01/2023	18:15	ac
Sodium	95	1	mg/L		1		04/28/2023	04:05	ejc	EPA 200.7	05/01/2023	18:15	ac

DQF Flags Definition:
- U Constituent results were non-detect.
- b The Blank was positive for constituent but less than the PQL
- T Exceeded method/regulatory-specific holding time.
- l The MS/MSD did not meet QC criteria.
- J Reported value is estimated; detected at a concentration below the RL and above the laboratory MDL.

ND=Non-Detected, RL=Reporting Level * RL adusted for dilution, Dil.=Dilution

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ENVIRONMENTAL FGL AGRICULTURAL
Analytical Chemists

May 3, 2023
Innovative Ag Services, LLC

Lab No. : VI 2342060
Customer No. : 4018573

Quality Control - Metals

Constituent	Method	Date/ID	Type	Units	Conc.	QC Data	DQO	Note
Metals								
Calcium	200.7	04/28/2023:204567EJC	Blank	mg/L		ND	<1	
			LCS	mg/L	12.00	112 %	85-115	
			MS	mg/L	12.00	99.3 %	75-125	
		(VI 2342354-001)	MSD	mg/L	12.00	104 %	75-125	
			MSRPD	mg/L	0.8000	2.7%	≤20.0	
			MS	mg/L	12.00	172 %	<¼	
		(VI 2342109-003)	MSD	mg/L	12.00	164 %	<¼	
			MSRPD	mg/L	0.8000	0.9%	≤20.0	
Magnesium	200.7	04/28/2023:204567EJC	Blank	mg/L		ND	<1	
			LCS	mg/L	12.00	97.9 %	85-115	
			MS	mg/L	12.00	103 %	75-125	
		(VI 2342354-001)	MSD	mg/L	12.00	105 %	75-125	
			MSRPD	mg/L	0.8000	1.9%	≤20	
			MS	mg/L	12.00	123 %	75-125	
		(VI 2342109-003)	MSD	mg/L	12.00	121 %	75-125	
			MSRPD	mg/L	0.8000	0.7%	≤20	
Potassium	200.7	04/28/2023:204567EJC	Blank	mg/L		ND	<1	
			LCS	mg/L	12.00	113 %	85-115	
			MS	mg/L	12.00	105 %	75-125	
		(VI 2342354-001)	MSD	mg/L	12.00	111 %	75-125	
			MSRPD	mg/L	0.8000	2.6%	≤20.0	
			MS	mg/L	12.00	175 %	<¼	
		(VI 2342109-003)	MSD	mg/L	12.00	170 %	<¼	
			MSRPD	mg/L	0.8000	0.6%	≤20.0	
Sodium	200.7	04/28/2023:204567EJC	Blank	mg/L		1	<1	
			LCS	mg/L	12.00	111 %	85-115	
			MS	mg/L	12.00	98.8 %	75-125	
		(VI 2342354-001)	MSD	mg/L	12.00	162 %	<¼	
			MSRPD	mg/L	0.8000	3.3%	≤20.0	
			MS	mg/L	12.00	30.1 %	<¼	
		(VI 2342109-003)	MSD	mg/L	12.00	16.2 %	<¼	
			MSRPD	mg/L	0.8000	1.3%	≤20.0	

Definition

<¼	: High Sample Background - Spike concentration was less than one forth of the sample concentration.
Blank	: Method Blank - Prepared to verify that the preparation process is not contributing contamination to the samples.
DQO	: Data Quality Objective - This is the criteria against which the quality control data is compared.
LCS	: Laboratory Control Standard/Sample - Prepared to verify that the preparation process is not affecting analyte recovery.
MS	: Matrix Spikes - A random sample is spiked with a known amount of analyte. The recoveries are an indication of how that sample matrix affects analyte recovery.
MSD	: Matrix Spike Duplicate of MS/MSD pair - A random sample duplicate is spiked with a known amount of analyted. The recoveries are an indication of how that sample matrix affects analyte recovery.
MSRPD	: MS/MSD Relative Percent Difference (RPD) - The MS relative percent difference is an indication of precision for the preparation and analysis.
ND	: Non-detect - Result was below the DQO listed for the analyte.

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May 3, 2023
Innovative Ag Services, LLC

Lab No. : VI 2342060
Customer No. : 4018573

Quality Control - Wet Chem

Constituent	Method	Date/ID	Type	Units	Conc.	QC Data	DQO	Note
Wet Chem								
Alkalinity (as CaCO3)	2320B	04/11/2023:203842AMM	ND	mg/L		0.4%	10	
Bicarbonate	2320B	(VI 2342017-001)	Dup	mg/L		1.36%	10	
Carbonate	2320B	(VI 2342017-001)	Dup	mg/L		2.90%	10	
E. C.	2320B	(VI 2342017-001)	Dup	umhos/cm		1.95%	5	
Solids, Total Dissolved	2540CE	04/07/2023:203713CTL	Blank	mg/L		ND	<20	
			LCS	mg/L	993.4	102%	90-110	
		(VI 2342065-004)	Dup	mg/L		1.31%	5	
		(VI 2342065-004)	Dup	mg/L		2.24%	5	
Chloride	300.0	04/19/2023:204209LDM	Blank	mg/L		ND	<1	
			LCS	mg/L	25.00	99.8 %	90-110	
			MS	mg/L	50.00	94.0 %	85-121	
		(VI 2342268-003)	MSD	mg/L	50.00	98.9 %	85-121	
			MSRPD	mg/L	10.00	4.4%	≤19	
			MS	mg/L	50.00	93.3 %	85-121	
		(VI 2342271-001)	MSD	mg/L	50.00	100 %	85-121	
			MSRPD	mg/L	10.00	5.4%	≤19	
Nitrate Nitrogen	300.0	04/19/2023:204209LDM	Blank	mg/L		1	<0.4	
			LCS	mg/L	20.00	98.7 %	90-110	
			MS	mg/L	40.00	87.3 %	85-119	
		(VI 2342268-003)	MSD	mg/L	40.00	91.4 %	85-119	
			MSRPD	mg/L	10.00	2.5%	≤19	
			MS	mg/L	40.00	86.5 %	85-119	
		(VI 2342271-001)	MSD	mg/L	40.00	92.4 %	85-119	
			MSRPD	mg/L	10.00	3.3%	≤19	
Sulfate Sulfur	300.0	04/06/2023:203791LDM	Blank	mg/L		ND	<0.5	
			LCS	mg/L	50.00	99.0 %	90-110	
			MS	mg/L	100.0	95.7 %	82-124	
		(CC 2381030-002)	MSD	mg/L	100.0	100 %	82-124	
			MSRPD	mg/L	100.0	3.9%	≤23	
			MS	mg/L	100.0	112 %	82-124	
		(SP 2304942-001)	MSD	mg/L	100.0	9.9 %	82-124	435
			MSRPD	mg/L	100.0	38.2%	≤23	435

Definition

Blank : Method Blank - Prepared to verify that the preparation process is not contributing contamination to the samples.

Dup : Duplicate Sample - A random sample with each batch is prepared and analyzed in duplicate. The relative percent difference is an indication of precision for the preparation and analysis.

LCS : Laboratory Control Standard/Sample - Prepared to verify that the preparation process is not affecting analyte recovery.

MS : Matrix Spikes - A random sample is spiked with a known amount of analyte. The recoveries are an indication of how that sample matrix affects analyte recovery.

MSD : Matrix Spike Duplicate of MS/MSD pair - A random sample duplicate is spiked with a known amount of analyted. The recoveries are an indication of how that sample matrix affects analyte recovery.

MSRPD : MS/MSD Relative Percent Difference (RPD) - The MS relative percent difference is an indication of precision for the preparation and analysis.

ND : Non-detect - Result was below the DQO listed for the analyte.

Explanation

435 : Sample matrix may be affecting this analyte. Data was accepted based on the LCS or CCV recovery.

Page 4 of 4

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Laboratory Analysis Work Order

Nº 40362

23420060

ID: # 0224

LABORATORY: FGL

SITE NAME: Dias & Sons

Billing: IAS

Authorized Copy Release to:

Innnovative Ag Services LLC

(559) 587-2800

ANALYSIS TO BE COMPLETED:

Irrigation/Ground Water (ELAP Standards)

W1 EC, NO_3N (Dom)

W2 EC, NO_3N, TDS, TN (Irr)

W3 NH_4-N (Ammonium)

W4 EC, NO_3N, Ca, Mg, Na, K, HCO_3, CO_3, SO_4S, Cl, TDS (Dom, GM)

W5 EC, NO_3N, TDS, TN, Ca, Mg, Na, HCO_3, CO_3, SO_4S, Cl (Irr, GM)

W6 NO_3N, NO_2 (Dom ILRP, Annually)

W7 Ca, Mg, Na, K, HCO_3, CO_3, SO_4, Cl + Lab Filtering (GWM)

W8 Other: _____

Qol 13.9

Process Waste Water (lagoon)

L1 EC, NH_4N, TKN, TP, TK, TDS (Quarterly)

L2 EC, NO_3N, NH_4N, TKN, TP, TK, TDS, pH (Annually)

L3 L1 + Ca, Mg, Na, HCO_3,CO_3, SO_4S, Cl (Biennially)

L4 Other: _____

Manure

M1 TN, TP, TK, %M (2/year)

M2 TN, TP, K, %M, Ca, Mg, Na, S, Cl, ash (Biennially)

M3 Other: _____

Plant Tissue

P1 TN, NO_3N, PO_4P, K (Mid Season - Wheat)

P2 TN, P, K (Mid-season - Corn)

P3 TN, TP, TK, Ash, %M (At Harvest)

P4 TN, %M

P5 % Moisture

P6 NIR

P7 Other: _____

Soil

S1 SP%, pH, EC, Ca, Mg, Na, K, ESP, LP, B, NO_3N, PO_4P, K-AA, Zn, Mn, Fe, Cu, SO_4S

S2 S1 + CEC, CaCO3, OM, C:N, TN

S3 NO_3N, NH_4N

S4 Other: _____

	Sample ID	Description	Analysis	Date/Time	Sampled by	IAS USE ONLY: FIELD TESTS NH_3N *	pH	Temp
1	ID	Dom	W4	1:00 4-5	Henry	—		
2								
3								
4								
5								
6								
7								
8								

* Field Test of ammonium nitrogen may only be made by a trained technician. Positive test to be analyzed for ammonium nitrogen by the laboratory.

All samples are to follow the procedures noted in the Sampling & Analysis Plan of the NMP and the RWQCB specifications. Any samples taken outside of these procedures shall provide the procedures on the notes below. Additionally, if any preservatives are used in the collections or processing of sampes, please note below.

NOTES:

GLS 4/6/23

CDA 1240

CHAIN OF CUSTODY RECORDING

	Signature	Company	Received Date & Time	Relinquished Date & Time
1st		IAS	15	2:00 4-5-23
2nd		FGL	4-5-23 15:55	
3rd		FGL		4-5-23 16:05
4th			4/5/23 1605	

LABORATORY USE ONLY

Logged In By: _____ Total Samples: 4/5/23 1705 Laboratory #: _____

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ENVIRONMENTAL FGL AGRICULTURAL
Analytical Chemists

July 7, 2023

Innovative Ag Services, LLC
1201 Delta View Road Suite 5
Hanford, CA 93230

Lab No. : **VI 2343869**
Customer No. : **4018573**
Reference : **40937**

Laboratory Report

Introduction: This report package contains a total of 5 pages divided into 3 sections:

Case Narrative	(1 page)	: An overview of the work performed at FGL.
Sample Results	(1 page)	: Results for each sample submitted.
Quality Control	(3 pages)	: Supporting Quality Control (QC) results.

Case Narrative

This Case Narrative pertains to the following samples:

Sample Description	Date Sampled	Date Received	FGL Lab No.	Matrix
IR	06/19/2023	06/19/2023	VI 2343869-001	AGW

Sampling and Receipt Information:

The Sample was received in acceptable condition and within temperature requirements, unless noted on the Condition Upon Receipt (CUR) form. The Sample was received, prepared and analyzed within the method specified holding times. All samples arrived on ice. All samples were checked for pH if acid or base preservation is required (except for VOAs). For details of sample receipt information, please see the associated Chain of Custody and Condition Upon Receipt Form.

Quality Control: All samples were prepared and analyzed according to established quality control criteria. Any exceptions are noted in the Quality Control Section of this report.

Test Summary	
EPA 200.7	Preparation and analysis performed by FGL-Santa Paula (FGL-SP ELAP# 1573)
EPA 300.0	Preparation and analysis performed by FGL-Santa Paula (FGL-SP ELAP# 1573)
EPA 351.2	Preparation and analysis performed by FGL-Santa Paula (FGL-SP ELAP# 1573)
SM 2540 C	Preparation and analysis performed by FGL-Santa Paula (FGL-SP ELAP# 1573)
SM 4500-H+B	Preparation and analysis performed by FGL-Santa Paula (FGL-SP ELAP# 1573)

Certification: I certify that this data package is in compliance with ELAP standards, both technically and for completeness, except for any conditions listed above and in the QC Section. Release of the data contained in this data package is authorized by the Laboratory Director or his designee, as verified by the following electronic signature. This report shall not be reproduced except in full, without the written approval of the laboratory.

KD: EHB

Approved By **Kelly A. Dunnahoo, B.S.** Digitally signed by Kelly A. Dunnahoo, B.S.
Title: Laboratory Director
Date: 2023-07-10

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ENVIRONMENTAL AGRICULTURAL
Analytical Chemists

July 7, 2023

Innovative Ag Services, LLC
1201 Delta View Road Suite 5
Hanford, CA 93230

Description : IR
Project : 0224 Dias & Sons Dairy

Lab No. : VI 2343869-001
Customer No. : 4018573
Reference : 40937
Sampled On : June 19, 2023 at 11:15
Sampled By : Henry
Received On : June 19, 2023 at 16:05
Matrix : Ag Water

Sample Results - Inorganic

Constituent	Result	RL	Units	Note	Dil.	DQF	Sample Preparation			Sample Analysis			
Dairy Analysis							Date	Time	Who	Method	Date	Time	Who
Alkalinity (as CaCO3)	50	10	mg/L		1		06/20/2023	23:00	amm	SM 4500-H+B	06/21/2023	11:01	amm
Bicarbonate	70	10	mg/L		1		06/20/2023	23:00	amm	SM 4500-H+B	06/21/2023	11:01	amm
Carbonate	ND	10	mg/L		1	U	06/20/2023	23:00	amm	SM 4500-H+B	06/21/2023	11:01	amm
Hydroxide	ND	10	mg/L		1	U	06/20/2023	23:00	amm	SM 4500-H+B	06/21/2023	11:01	amm
Chloride	29	1	mg/L		1		06/20/2023	10:43	ldm	EPA 300.0	06/20/2023	20:18	ldm
Nitrogen, Total Kjeldahl	ND	0.5	mg/L		1	U	06/27/2023	18:10	lcr	EPA 351.2	06/28/2023	16:20	lcr
Nitrate Nitrogen	2.1	0.1	mg/L		1		06/20/2023	10:43	ldm	EPA 300.0	06/20/2023	20:18	ldm
Nitrogen, Total as Nitrogen	2.1	0.5	mg/L		1		06/27/2023	18:10	lcr	Calc.	06/28/2023	16:20	lcr
Nitrate + Nitrite as N	2.1	0.1	mg/L		1		06/20/2023	10:43	ldm	EPA 300.0	06/20/2023	20:18	ldm
Kjeldahl Nitrogen	ND	0.5	mg/L		1	U	06/27/2023	18:10	lcr	EPA 351.2	06/28/2023	16:20	lcr
Conductivity	305	1	umhos/cm		1		06/20/2023	23:00	amm	SM 4500-H+B	06/21/2023	11:01	amm
Sulfate Sulfur	10.9	0.17	mg/L		1		06/20/2023	10:43	ldm	EPA 300.0	06/20/2023	20:18	ldm
Solids, Total Dissolved (TDS)	190	20	mg/L		1		06/20/2023	16:00	ctl	SM 2540 C	06/21/2023	11:40	ctl
Calcium	8	1	mg/L		1		06/22/2023	22:49	ejc	EPA 200.7	06/23/2023	10:16	ac
Magnesium	ND	1	mg/L		1	U	06/22/2023	22:49	ejc	EPA 200.7	06/23/2023	10:16	ac
Sodium	49	1	mg/L		1		06/22/2023	22:49	ejc	EPA 200.7	06/23/2023	10:16	ac

DQF Flags Definition:
U Constituent results were non-detect.

ND=Non-Detected, RL=Reporting Level , Dil.=Dilution

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July 7, 2023
Innovative Ag Services, LLC

Lab No. : VI 2343869
Customer No. : 4018573

Quality Control - Metals

Constituent	Method	Date/ID	Type	Units	Conc.	QC Data	DQO	Note
Metals								
Calcium	200.7	06/22/2023:206896EJC	Blank	mg/L		ND	<1	
			LCS	mg/L	12.00	92.2%	85-115	
			MS	mg/L	12.00	191%	<¼	406
		(STK2338115-001)	MSD	mg/L	12.00	97.0%	75-125	
			MSRPD	mg/L		7.7%	≤20.0	
			MS	mg/L	12.00	49.5%	<¼	406
		(SP 2310519-001)	MSD	mg/L	12.00	61.4%	<1/4	
			MSRPD	mg/L		1.2%	≤20.0	
Magnesium	200.7	06/22/2023:206896EJC	Blank	mg/L		ND	<1	
			LCS	mg/L	12.00	102%	85-115	
			MS	mg/L	12.00	135%	<¼	406
		(STK2338115-001)	MSD	mg/L	12.00	96.0%	75-125	
			MSRPD	mg/L		7.1%	≤20	
			MS	mg/L	12.00	81.4%	75-125	
		(SP 2310519-001)	MSD	mg/L	12.00	86.9%	75-125	
			MSRPD	mg/L		1.3%	≤20	
Sodium	200.7	06/22/2023:206896EJC	Blank	mg/L		ND	<1	
			LCS	mg/L	12.00	96.6%	85-115	
			MS	mg/L	12.00	343%	<¼	406
		(STK2338115-001)	MSD	mg/L	12.00	95.4%	75-125	
			MSRPD	mg/L		8.1%	≤20.0	
			MS	mg/L	12.00	63.2%	<¼	406
		(SP 2310519-001)	MSD	mg/L	12.00	58.4%	<1/4	
			MSRPD	mg/L		0.5%	≤20.0	

Definition

Blank : Method Blank - Prepared to verify that the preparation process is not contributing contamination to the samples.

DQO : Data Quality Objective - This is the criteria against which the quality control data is compared.

LCS : Laboratory Control Standard/Sample - Prepared to verify that the preparation process is not affecting analyte recovery.

MS : Matrix Spikes - A random sample is spiked with a known amount of analyte. The recoveries are an indication of how that sample matrix affects analyte recovery.

MSD : Matrix Spike Duplicate of MS/MSD pair - A random sample duplicate is spiked with a known amount of analyted. The recoveries are an indication of how that sample matrix affects analyte recovery.

MSRPD : MS/MSD Relative Percent Difference (RPD) - The MS relative percent difference is an indication of precision for the preparation and analysis.

ND : Non-detect - Result was below the DQO listed for the analyte.

Explanation

406 : Matrix Spike (MS) not within the Acceptance Range (AR) because of high analyte concentration in the sample. Data was accepted based on the LCS or CCV recovery.

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CA ELAP Certification No. 2775

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CA ELAP Certification No. 2810

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July 7, 2023
Innovative Ag Services, LLC

Lab No. : VI 2343869
Customer No. : 4018573

Quality Control - Wet Chem

Constituent	Method	Date/ID	Type	Units	Conc.	QC Data	DQO	Note
Wet Chem								
Alkalinity (as CaCO3)	2320B	06/20/2023:206796AMM	ND	mg/L		0.2%	10	406
Bicarbonate	2320B	(CH 2374199-001)	Dup	mg/L		0.1%	10	
E. C.	2320B	(CH 2374199-001)	Dup	umhos/cm		0%	5	
Solids, Total Dissolved	2540CE	06/20/2023:206776CTL	Blank	mg/L		ND	<20	
			LCS	mg/L	993.7	100%	90-110	
		(VI 2343870-001)	Dup	mg/L		0.5%	5	
		(VI 2343870-001)	Dup	mg/L		1.87%	5	
Chloride	300.0	06/20/2023:206818LDM	Blank	mg/L		ND	<1	
			LCS	mg/L	25.00	101 %	90-110	
			MS	mg/L	50.00	96.8 %	85-121	
		(CH 2373592-001)	MSD	mg/L	50.00	94.4 %	85-121	
			MSRPD	mg/L	10.00	2.0%	≤19	
			MS	mg/L	50.00	102 %	85-121	
		(CH 2373999-001)	MSD	mg/L	50.00	98.2 %	85-121	
			MSRPD	mg/L	10.00	2.9%	≤19	
Nitrate + Nitrite as N	300.0	06/20/2023:206818LDM	Blank	mg/L		ND	<0.4	
			LCS	mg/L	20.00	100 %	90-110	
			MS	mg/L	40.00	99.9 %	85-119	
		(CH 2373592-001)	MSD	mg/L	40.00	97.5 %	85-119	
			MSRPD	mg/L	10.00	2.4%	≤19	
			MS	mg/L	40.00	88.9 %	85-119	
		(CH 2373999-001)	MSD	mg/L	40.00	86.1 %	85-119	
			MSRPD	mg/L	10.00	1.5%	≤19	
Nitrate Nitrogen	300.0	06/20/2023:206818LDM	Blank	mg/L		ND	<0.4	
			LCS	mg/L	20.00	100 %	90-110	
			MS	mg/L	40.00	99.9 %	85-119	
		(CH 2373592-001)	MSD	mg/L	40.00	97.5 %	85-119	
			MSRPD	mg/L	10.00	2.4%	≤19	
			MS	mg/L	40.00	88.9 %	85-119	
		(CH 2373999-001)	MSD	mg/L	40.00	86.1 %	85-119	
			MSRPD	mg/L	10.00	1.5%	≤19	
Sulfate Sulfur	300.0	06/20/2023:206818LDM	Blank	mg/L		ND	<0.5	
			LCS	mg/L	50.00	101 %	90-110	
			MS	mg/L	100.0	98.8 %	82-124	
		(CH 2373592-001)	MSD	mg/L	100.0	96.4 %	82-124	
			MSRPD	mg/L	10.00	2.2%	≤23	
			MS	mg/L	100.0	98.8 %	82-124	
		(CH 2373999-001)	MSD	mg/L	100.0	95.6 %	82-124	
			MSRPD	mg/L	10.00	2.4%	≤23	
Nitrogen, Total Kjeldahl	351.2	06/27/2023:207089LCR	Blank	mg/L		ND	<0.5	
			LCS	mg/L	12.00	93.1%	73-124	
			MS	mg/L	12.00	98.9%	54-136	
		(STK2337929-003)	MSD	mg/L	12.00	98.2%	54-136	
			MSRPD	mg/L		0.7%	≤27	
			MS	mg/L	12.00	90.2%	54-136	
		(STK2337929-004)	MSD	mg/L	12.00	89.4%	54-136	
			MSRPD	mg/L		1.0%	≤27	

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Definition

Blank	: Method Blank - Prepared to verify that the preparation process is not contributing contamination to the samples.
Dup	: Duplicate Sample - A random sample with each batch is prepared and analyzed in duplicate. The relative percent difference is an indication of precision for the preparation and analysis.
LCS	: Laboratory Control Standard/Sample - Prepared to verify that the preparation process is not affecting analyte recovery.
MS	: Matrix Spikes - A random sample is spiked with a known amount of analyte. The recoveries are an indication of how that sample matrix affects analyte recovery.
MSD	: Matrix Spike Duplicate of MS/MSD pair - A random sample duplicate is spiked with a known amount of analyted. The recoveries are an indication of how that sample matrix affects analyte recovery.
MSRPD	: MS/MSD Relative Percent Difference (RPD) - The MS relative percent difference is an indication of precision for the preparation and analysis.
ND	: Non-detect - Result was below the DQO listed for the analyte.

Explanation

406	: Matrix Spike (MS) not within the Acceptance Range (AR) because of high analyte concentration in the sample. Data was accepted based on the LCS or CCV recovery.

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Laboratory Analysis Work Order

Nº 40937

ID: # 0224 23438869

LABORATORY: ~~VF~~ FGL

SITE NAME: Dias & Sons

Billing: IAS

Authorized Copy Release to:

Innnovative Ag Services LLC

(559) 587-2800

ANALYSIS TO BE COMPLETED:

Irrigation/Ground Water (ELAP Standards)

W1 EC, NO_3N (Dom)
W2 EC, NO_3N, TDS, TN (Irr)
W3 NH_4-N (Ammonium)
W4 EC, NO_3N, Ca, Mg, Na, K, HCO_3, CO_3, SO_4S, Cl, TDS (Dom, GM)
W5 EC, NO_3N, TDS, TN, Ca, Mg, Na, HCO_3, CO_3, SO_4S, Cl (Irr, GM)
W6 NO_3N, NO_2 (Dom ILRP, Annually)
W7 Ca, Mg, Na, K, HCO_3, CO_3, SO_4, Cl + Lab Filtering (GWM)
W8 Other: _____

Process Waste Water (lagoon)

L1 EC, NH_4N, TKN, TP, TK, TDS (Quarterly)
L2 EC, NO_3N, NH_4N, TKN, TP, TK, TDS, pH (Annually)
L3 L1 + Ca, Mg, Na, HCO_3,CO_3, SO_4S, Cl (Biennially)
L4 Other: _____

Manure

M1 TN, TP, TK, %M (2/year)
M2 TN, TP, K, %M, Ca, Mg, Na, S, Cl, ash (Biennially)
M3 Other: _____

Plant Tissue

P1 TN, NO_3N, PO_4P, K (Mid Season - Wheat)
P2 TN, P, K (Mid-season - Corn)
P3 TN, TP, TK, Ash, %M (At Harvest)
P4 TN, %M
P5 % Moisture
P6 NIR
P7 Other: _____

Soil

S1 SP%, pH, EC, Ca, Mg, Na, K, ESP, LP, B, NO_3N, PO_4P, K-AA, Zn, Mn, Fe, Cu, SO_4S
S2 S1 + CEC, CaCO3, OM, C:N, TN
S3 NO_3N, NH_4N
S4 Other: _____

	Sample ID	Description	Analysis	Date/Time	Sampled by	IAS USE ONLY: FIELD TESTS NH_3N*	pH	Temp
1	IR	Irr	W5	11:15 6/19	Henry			
2								
3								
4								
5								
6								
7								
8								

* Field Test of ammonium nitrogen may only be made by a trained technician. Positive test to be analyzed for ammonium nitrogen by the laboratory.

All samples are to follow the procedures noted in the Sampling & Analysis Plan of the NMP and the RWQCB specifications. Any samples taken outside of these procedures shall provide the procedures on the notes below. Additionally, if any preservatives are used in the collections or processing of sampes, please note below.

NOTES: GLS 6/20/23
CDA 1139

CHAIN OF CUSTODY RECORDING

	Signature	Company	Received Date & Time	Relinquished Date & Time
1st		IAS		2:00 6/19/23
2nd		FGL	6-9-23 15:50	
3rd		FGL		6-9-23 16:05
4th			6/19/23 1605	

LABORATORY USE ONLY

Logged In By: _____ **Total Samples:** 6/19/23 1720 **Laboratory #:** _____

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ENVIRONMENTAL AGRICULTURAL
Analytical Chemists

September 19, 2023

Lab No. : **VI 2345631**
Customer No. : **4018573**
Reference : **41214**

Innovative Ag Services, LLC
1201 Delta View Road
Suite 5
Hanford, CA 93230

Laboratory Report

Introduction: This report package contains a total of 6 pages divided into 3 sections:

Case Narrative	(1 page)	: An overview of the work performed at FGL.
Sample Results	(2 pages)	: Results for each sample submitted.
Quality Control	(3 pages)	: Supporting Quality Control (QC) results.

Case Narrative

This Case Narrative pertains to the following samples:

Sample Description	Date Sampled	Date Received	FGL Lab No.	Matrix
1IR	08/23/2023	08/23/2023	VI 2345631-001	AGW
2D	08/23/2023	08/23/2023	VI 2345631-002	AGW

Sampling and Receipt Information:

All samples were received in acceptable condition and within temperature requirements, unless noted on the Condition Upon Receipt (CUR) form. All samples were received, prepared and analyzed within the method specified holding times. All samples arrived on ice. All samples were checked for pH if acid or base preservation is required (except for VOAs). For details of sample receipt information, please see the associated Chain of Custody and Condition Upon Receipt Form.

Quality Control: All samples were prepared and analyzed according to established quality control criteria. Any exceptions are noted in the Quality Control Section of this report.

Test Summary	
EPA 200.7	Preparation and analysis performed by FGL-Santa Paula (FGL-SP ELAP# 1573)
EPA 300.0	Preparation and analysis performed by FGL-Santa Paula (FGL-SP ELAP# 1573)
EPA 351.2	Preparation and analysis performed by FGL-Santa Paula (FGL-SP ELAP# 1573)
SM 2540 C	Preparation and analysis performed by FGL-Santa Paula (FGL-SP ELAP# 1573)
SM 4500-H+B	Preparation and analysis performed by FGL-Santa Paula (FGL-SP ELAP# 1573)
SM 4500-NO3 F	Preparation and analysis performed by FGL-Santa Paula (FGL-SP ELAP# 1573)

Certification: I certify that this data package is in compliance with ELAP standards, both technically and for completeness, except for any conditions listed above and in the QC Section. Release of the data contained in this data package is authorized by the Laboratory Director or his designee, as verified by the following electronic signature. This report shall not be reproduced except in full, without the written approval of the laboratory.

KD: EHB

Approved By **Kelly A. Dunnahoo, B.S.** Digitally signed by Kelly A. Dunnahoo, B.S.
Title: Laboratory Director
Date: 2023-09-20

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ENVIRONMENTAL AGRICULTURAL
Analytical Chemists

September 19, 2023

Innovative Ag Services, LLC
1201 Delta View Road
Suite 5
Hanford, CA 93230

Description : 1IR
Project : 0224 Dias & Sons Dairy

Lab No. : VI 2345631-001
Customer No. : 4018573
Reference : 41214
Sampled On : August 23, 2023 at 11:45
Sampled By : Alex
Received On : August 23, 2023 at 15:57
Matrix : Ag Water

Sample Results - Inorganic

Constituent	Result	RL	Units	Note	Dil.	DQF	Sample Preparation			Sample Analysis			
Dairy Analysis							Date	Time	Who	Method	Date	Time	Who
Alkalinity (as CaCO3)	90	10	mg/L		1		08/29/2023	10:16	amm	SM 4500-H+B	08/29/2023	11:54	amm
Bicarbonate	110	10	mg/L		1		08/29/2023	10:16	amm	SM 4500-H+B	08/29/2023	11:54	amm
Carbonate	ND	10	mg/L		1	U	08/29/2023	10:16	amm	SM 4500-H+B	08/29/2023	11:54	amm
Hydroxide	ND	10	mg/L		1	U	08/29/2023	10:16	amm	SM 4500-H+B	08/29/2023	11:54	amm
Chloride	111	2*	mg/L		2		08/24/2023	10:26	ldm	EPA 300.0	08/25/2023	08:15	ldm
Nitrogen, Total Kjeldahl	ND	0.5	mg/L		1	Ul	09/06/2023	10:10	sta	EPA 351.2	09/11/2023	20:05	lcr
Nitrate Nitrogen	17.8	0.1	mg/L		1		08/24/2023	10:26	ldm	EPA 300.0	08/24/2023	20:03	ldm
Nitrogen, Total as Nitrogen	17.9	0.5	mg/L		1	l	09/06/2023	10:10	sta	Calc.	09/11/2023	20:05	lcr
Nitrate + Nitrite as N	17.9	0.1	mg/L		1		08/24/2023	10:26	ldm	EPA 300.0	08/24/2023	20:03	ldm
Kjeldahl Nitrogen	ND	0.5	mg/L		1	Ul	09/06/2023	10:10	sta	EPA 351.2	09/11/2023	20:05	lcr
Conductivity	806	1	umhos/cm		1		08/29/2023	10:16	amm	SM 4500-H+B	08/29/2023	11:54	amm
Sulfate Sulfur	19.5	0.17	mg/L		1		08/24/2023	10:26	ldm	EPA 300.0	08/24/2023	20:03	ldm
Solids, Total Dissolved (TDS)	510	20	mg/L		1		08/25/2023	12:45	ctl	SM 2540 C	08/28/2023	10:45	ctl
Calcium	62	1	mg/L		1		08/31/2023	07:12	ejc	EPA 200.7	09/05/2023	20:56	ac
Magnesium	1	1	mg/L		1		08/31/2023	07:12	ejc	EPA 200.7	09/05/2023	20:56	ac
Sodium	98	1	mg/L		1		08/31/2023	07:12	ejc	EPA 200.7	09/05/2023	20:56	ac

DQF Flags Definition:
U Constituent results were non-detect.
l The MS/MSD did not meet QC criteria.

ND=Non-Detected, RL=Reporting Level * RL adjusted for dilution, Dil.=Dilution

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ENVIRONMENTAL EGL AGRICULTURAL
Analytical Chemists

September 19, 2023

Innovative Ag Services, LLC
1201 Delta View Road
Suite 5
Hanford, CA 93230

Description : 2D
Project : 0224 Dias & Sons Dairy

Lab No. : VI 2345631-002
Customer No. : 4018573
Reference : 41214
Sampled On : August 23, 2023 at 11:55
Sampled By : Alex
Received On : August 23, 2023 at 15:57
Matrix : Ag Water

Sample Results - Inorganic

Constituent	Result	RL	Units	Note	Dil.	DQF	Sample Preparation			Sample Analysis			
Dairy Analysis							Date	Time	Who	Method	Date	Time	Who
Alkalinity (as CaCO3)	90	10	mg/L		1		08/29/2023	10:16	amm	SM 4500-H+B	08/29/2023	13:25	amm
Bicarbonate	110	10	mg/L		1		08/29/2023	10:16	amm	SM 4500-H+B	08/29/2023	13:25	amm
Carbonate	ND	10	mg/L		1	U	08/29/2023	10:16	amm	SM 4500-H+B	08/29/2023	13:25	amm
Hydroxide	ND	10	mg/L		1	U	08/29/2023	10:16	amm	SM 4500-H+B	08/29/2023	13:25	amm
Chloride	92	1	mg/L		1		08/24/2023	10:26	ldm	EPA 300.0	08/24/2023	18:18	ldm
Nitrogen, Total Kjeldahl	ND	0.5	mg/L		1	Ul	09/06/2023	10:10	sta	EPA 351.2	09/11/2023	20:08	lcr
Nitrate Nitrogen	18.4	0.4	mg/L		1		09/15/2023	13:00	lfs	SM 4500-NO3 F	09/15/2023	16:47	lfs
Nitrogen, Total as Nitrogen	18.4	0.5	mg/L		1	l	09/06/2023	10:10	sta	Calc.	09/11/2023	20:08	lcr
Nitrate + Nitrite as N	18.4	0.4	mg/L		1		09/15/2023	13:00	lfs	SM 4500-NO3 F	09/15/2023	16:47	lfs
Kjeldahl Nitrogen	ND	0.5	mg/L		1	Ul	09/06/2023	10:10	sta	EPA 351.2	09/11/2023	20:08	lcr
Conductivity	747	1	umhos/cm		1		08/29/2023	10:16	amm	SM 4500-H+B	08/29/2023	13:25	amm
Sulfate Sulfur	17.8	0.17	mg/L		1		08/24/2023	10:26	ldm	EPA 300.0	08/24/2023	18:18	ldm
Solids, Total Dissolved (TDS)	450	20	mg/L		1		08/25/2023	12:45	ctl	SM 2540 C	08/28/2023	10:45	ctl
Calcium	58	1	mg/L		1		08/31/2023	07:12	ejc	EPA 200.7	09/05/2023	20:37	ac
Magnesium	1	1	mg/L		1		08/31/2023	07:12	ejc	EPA 200.7	09/05/2023	20:37	ac
Sodium	101	1	mg/L		1		08/31/2023	07:12	ejc	EPA 200.7	09/05/2023	20:37	ac

DQF Flags Definition:
U Constituent results were non-detect.
l The MS/MSD did not meet QC criteria.

ND=Non-Detected, RL=Reporting Level * RL adjusted for dilution, Dil.=Dilution

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September 19, 2023
Innovative Ag Services, LLC

Lab No. : VI 2345631
Customer No. : 4018573

Quality Control - Metals

Constituent	Method	Date/ID	Type	Units	Conc.	QC Data	DQO	Note
Metals								
Calcium	200.7	08/31/2023:209761EJC	Blank	mg/L		ND	<1	
			LCS	mg/L	12.00	113%	85-115	
			MS	mg/L	12.00	66.8%	<¼	406
		(VI 2345631-002)	MSD	mg/L	12.00	81.8%	75-125	
			MSRPD	mg/L		2.7%	≤20.0	
			MS	mg/L	12.00	114%	75-125	
		(CH 2377307-001)	MSD	mg/L	12.00	117%	75-125	
			MSRPD	mg/L		1.5%	≤20.0	
Magnesium	200.7	08/31/2023:209761EJC	Blank	mg/L		ND	<1	
			LCS	mg/L	12.00	115%	85-115	
			MS	mg/L	12.00	107%	75-125	
		(VI 2345631-002)	MSD	mg/L	12.00	106%	75-125	
			MSRPD	mg/L		1.3%	≤20	
			MS	mg/L	12.00	116%	75-125	
		(CH 2377307-001)	MSD	mg/L	12.00	117%	75-125	
			MSRPD	mg/L		0.9%	≤20	
Sodium	200.7	08/31/2023:209761EJC	Blank	mg/L		ND	<1	
			LCS	mg/L	12.00	111%	85-115	
			MS	mg/L	12.00	31.3%	<¼	406
		(VI 2345631-002)	MSD	mg/L	12.00	57.7%	<1/4	
			MSRPD	mg/L		3.0%	≤20.0	
			MS	mg/L	12.00	117%	75-125	
		(CH 2377307-001)	MSD	mg/L	12.00	120%	75-125	
			MSRPD	mg/L		1.4%	≤20.0	

Definition

Blank : Method Blank - Prepared to verify that the preparation process is not contributing contamination to the samples.
DQO : Data Quality Objective - This is the criteria against which the quality control data is compared.
LCS : Laboratory Control Standard/Sample - Prepared to verify that the preparation process is not affecting analyte recovery.
MS : Matrix Spikes - A random sample is spiked with a known amount of analyte. The recoveries are an indication of how that sample matrix affects analyte recovery.
MSD : Matrix Spike Duplicate of MS/MSD pair - A random sample duplicate is spiked with a known amount of analyted. The recoveries are an indication of how that sample matrix affects analyte recovery.
MSRPD : MS/MSD Relative Percent Difference (RPD) - The MS relative percent difference is an indication of precision for the preparation and analysis.
ND : Non-detect - Result was below the DQO listed for the analyte.

Explanation

406 : Matrix Spike (MS) not within the Acceptance Range (AR) because of high analyte concentration in the sample. Data was accepted based on the LCS or CCV recovery.

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September 19, 2023
Innovative Ag Services, LLC

Lab No. : VI 2345631
Customer No. : 4018573

Quality Control - Wet Chem

Constituent	Method	Date/ID	Type	Units	Conc.	QC Data	DQO	Note
Wet Chem								
E. C.	2320B	08/29/2023:209673AMM	ND	umhos/cm		4.59%	5	406
Solids, Total Dissolved	2540CE	08/25/2023:209549CTL	Blank	mg/L		ND	<20	
			LCS	mg/L	991.5	98.3 %	90-110	
		(VI 2345629-003)	Dup	mg/L		2.7%	5	
		(VI 2345629-003)	Dup	mg/L		1.4%	5	
Chloride	300.0	08/24/2023:209576LDM	Blank	mg/L		ND	<1	
			LCS	mg/L	25.00	98.8 %	90-110	
			MS	mg/L	50.00	92.3 %	67-117	
		(SP 2314123-005)	MSD	mg/L	50.00	92.3 %	67-117	
			MSRPD	mg/L	10.00	0.06%	≤7	
			MS	mg/L	50.00	98.1 %	67-117	
		(VI 2345581-004)	MSD	mg/L	50.00	98.1 %	67-117	
			MSRPD	mg/L	10.00	0.02%	≤7	
Nitrate + Nitrite as N	300.0	08/24/2023:209576LDM	Blank	mg/L		ND	<0.4	
			LCS	mg/L	20.00	99.1 %	90-110	
			MS	mg/L	40.00	100 %	86-112	
		(SP 2314123-005)	MSD	mg/L	40.00	100 %	86-112	
			MSRPD	mg/L	10.00	0.2%	≤7	
			MS	mg/L	40.00	98.8 %	86-112	
		(VI 2345581-004)	MSD	mg/L	40.00	98.9 %	86-112	
			MSRPD	mg/L	10.00	0.03%	≤7	
Nitrate Nitrogen	300.0	08/24/2023:209576LDM	Blank	mg/L		ND	<0.4	
			LCS	mg/L	20.00	99.1 %	90-110	
			MS	mg/L	40.00	100 %	86-112	
		(SP 2314123-005)	MSD	mg/L	40.00	100 %	86-112	
			MSRPD	mg/L	10.00	0.2%	≤7	
			MS	mg/L	40.00	98.8 %	86-112	
		(VI 2345581-004)	MSD	mg/L	40.00	98.9 %	86-112	
			MSRPD	mg/L	10.00	0.03%	≤7	
Sulfate Sulfur	300.0	08/24/2023:209576LDM	Blank	mg/L		ND	<0.5	
			LCS	mg/L	50.00	100 %	90-110	
			MS	mg/L	100.0	94.7 %	18-165	
		(SP 2314123-005)	MSD	mg/L	100.0	94.8 %	18-165	
			MSRPD	mg/L	10.00	0.1%	≤7	
			MS	mg/L	100.0	100 %	18-165	
		(VI 2345581-004)	MSD	mg/L	100.0	101 %	18-165	
			MSRPD	mg/L	10.00	0.05%	≤7	
Nitrogen, Total Kjeldahl	351.2	09/06/2023:209952STA	Blank	mg/L		ND	<0.5	
			LCS	mg/L	12.00	92.8%	73-124	
			MS	mg/L	12.00	90.5%	90-110	
		(VI 2345582-001)	MSD	mg/L	12.00	88.5%	90-110	435
			MSRPD	mg/L		2.2%	≤20	
			MS	mg/L	12.00	84.9%	90-110	435
		(VI 2345630-001)	MSD	mg/L	12.00	88.2%	90-110	435
			MSRPD	mg/L		3.6%	≤20	
Nitrate + Nitrite as N	4500NO3F	09/15/2023:210406LFS	Blank	mg/L		ND	<0.4	
			LCS	mg/L	11.22	95.0%	80-120	
			MS	mg/L	5.609	93.0%	66-125	
		(STK2352536-001)	MSD	mg/L	5.609	92.3%	66-125	
			MSRPD	mg/L		0.8%	≤30.4	

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September 19, 2023
Innovative Ag Services, LLC

Lab No. : VI 2345631
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Quality Control - Wet Chem

Constituent	Method	Date/ID	Type	Units	Conc.	QC Data	DQO	Note
Nitrate Nitrogen	4500NO3F	09/15/2023:210406LFS	Blank	mg/L		ND	<0.4	
			LCS	mg/L	11.22	95.0%	80-120	
			MS	mg/L	5.609	93.0%	66-125	
		(STK2352536-001)	MSD	mg/L	5.609	92.3%	66-125	
			MSRPD	mg/L		0.8%	≤30.4	

Definition

Blank : Method Blank - Prepared to verify that the preparation process is not contributing contamination to the samples.

Dup : Duplicate Sample - A random sample with each batch is prepared and analyzed in duplicate. The relative percent difference is an indication of precision for the preparation and analysis.

LCS : Laboratory Control Standard/Sample - Prepared to verify that the preparation process is not affecting analyte recovery.

MS : Matrix Spikes - A random sample is spiked with a known amount of analyte. The recoveries are an indication of how that sample matrix affects analyte recovery.

MSD : Matrix Spike Duplicate of MS/MSD pair - A random sample duplicate is spiked with a known amount of analyted. The recoveries are an indication of how that sample matrix affects analyte recovery.

MSRPD : MS/MSD Relative Percent Difference (RPD) - The MS relative percent difference is an indication of precision for the preparation and analysis.

ND : Non-detect - Result was below the DQO listed for the analyte.

Explanation

406 : Matrix Spike (MS) not within the Acceptance Range (AR) because of high analyte concentration in the sample. Data was accepted based on the LCS or CCV recovery.

435 : Sample matrix may be affecting this analyte. Data was accepted based on the LCS or CCV recovery.

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Laboratory Analysis Work Order

Nº 41214

ID: # 0224 2345631

LABORATORY: FGL

SITE NAME: Dias & Sons Dairy

Billing: IAS

Authorized Copy Release to:

Innnovative Ag Services LLC

(559) 587-2800

ANALYSIS TO BE COMPLETED:

Irrigation/Ground Water (ELAP Standards)

W1 EC, NO_3N (Dom)
W2 EC, NO_3N, TDS, TN (Irr)
W3 NH_4-N (Ammonium)
W4 EC, NO_3N, Ca, Mg, Na, K, HCO_3, CO_3, SO_4S, Cl, TDS (Dom, GM)
W5 EC, NO_3N, TDS, TN, Ca, Mg, Na, HCO_3, CO_3, SO_4S, Cl (Irr, GM)
W6 NO_3N, NO_2 (Dom ILRP, Annually)
W7 Ca, Mg, Na, K, HCO_3, CO_3, SO_4, Cl + Lab Filtering (GWM)
W8 Other: _____

RCI 17.1 i ID# TH407

Process Waste Water (lagoon)

L1 EC, NH_4N, TKN, TP, TK, TDS (Quarterly)
L2 EC, NO_3N, NH_4N, TKN, TP, TK, TDS, pH (Annually)
L3 L1 + Ca, Mg, Na, HCO_3,CO_3, SO_4S, Cl (Biennially)
L4 Other: _____

Manure

M1 TN, TP, TK, %M (2/year)
M2 TN, TP, K, %M, Ca, Mg, Na, S, Cl, ash (Biennially)
M3 Other: _____

Plant Tissue

P1 TN, NO_3N, PO_4P, K (Mid Season - Wheat)
P2 TN, P, K (Mid-season - Corn)
P3 TN, TP, TK, Ash, %M (At Harvest)
P4 TN, %M
P5 % Moisture
P6 NIR
P7 Other: _____

Soil

S1 SP%, pH, EC, Ca, Mg, Na, K, ESP, LP, B, NO_3N, PO_4P, K-AA, Zn, Mn, Fe, Cu, SO_4S
S2 S1 + CEC, CaCO3, OM, C:N, TN
S3 NO_3N, NH_4N
S4 Other: _____

	Sample ID	Description	Analysis	Date/Time	Sampled by	IAS USE ONLY: FIELD TESTS NH_3N *	pH	Temp
1	IIR	Irr	W5	8/23 11:45	Alex	—		
2	ZD	Irr	W5	8/23 11:55	Alex	—		
3								
4								
5								
6								
7								
8								

* Field Test of ammonium nitrogen may only be made by a trained technician. Positive test to be analyzed for ammonium nitrogen by the laboratory.

All samples are to follow the procedures noted in the Sampling & Analysis Plan of the NMP and the RWQCB specifications. Any samples taken outside of these procedures shall provide the procedures on the notes below. Additionally, if any preservatives are used in the collections or processing of sampes, please note below.

NOTES:

CHAIN OF CUSTODY RECORDING

	Signature	Company	Received Date & Time	Relinquished Date & Time
1st	[illegible]	IAS		8/23/23 3:00
2nd	AJB	FGL	8/23/23 1535	
3rd	AJB	FGL		8/23/23 1557
4th	AJH		8/23/23 1557	

LABORATORY USE ONLY

Logged In By: [illegible] Total Samples 23/23 TM Laboratory #: [illegible] 8/24/23 1155.

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