

STATE OF UTAH
DIVISION OF WATER QUALITY
DEPARTMENT OF ENVIRONMENTAL QUALITY
PO BOX 144870
SALT LAKE CITY, UTAH 84114-4870

GROUND WATER DISCHARGE PERMIT
Permit No. UGW490005

In compliance with the provisions of the Utah Water Quality Act, Title 19, Chapter 5, Utah Code, the Act,

Elberta Valley Ag
16240 South 12800 West
Elberta, Utah 84626

hereafter, referred to as the Permittee, is granted a ground water discharge permit for the operation of a dairy farm. The dairy is located on a tract of land encompassed within Section 20, Township 10 South, Range 1 West, Salt Lake Base and Meridian, in Utah County, Utah at Latitude: 39.93743 and Longitude: 111.96433.

This permit is based on representations made by the Permittee and other information contained in the administrative record. It is the responsibility of the Permittee to read and understand all provisions of this permit.

The facility shall be maintained and operated in accordance with conditions set forth in this permit and the Utah Administrative Rules for Ground Water Quality Protection (R317-6).

This permit shall become effective on **DATE.**

This permit and authorization to operate shall expire at midnight **DATE.**

Signed this xxxx day of July 2026.

Candice A. Hasenyager , P.E.
Director
Utah Division of Water Quality

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Applicable Elberta Valley Ag Operations Documents for this permit include but are not limited to:

- 1) Elberta Valley Ag Comprehensive Nutrient Management Plan (Appendix A)
- 2) Elberta Valley Ag Owner and Operations Manual (Appendix B)
- 3) Elberta Valley Ag Sampling and Analysis Plan (Appendix C)

PART I SPECIFIC CONDITIONS

A. GROUND WATER CLASSIFICATION

Ground water class as defined in Utah Administrative Code (Utah Admin. Code) R317-6-4. Ground water classification is determined through background ground water monitoring (Table 1) at the monitoring wells associated with each farm site. Results of the accelerated ground water monitoring sampling indicate that ground water under the dairy is Class III - Limited Use Ground Water. This determination may be changed if subsequent compliance monitoring indicates background ground water quality has changed at the dairy site. Past operations at the existing dairy or other unidentified off-site activities appear to have affected ground water quality in the unconfined aquifer at the site based on high concentrations of nitrate, chlorides, and total dissolved solids (TDS) detected in both up and downgradient dairy monitoring wells.

B. BACKGROUND GROUND WATER QUALITY

Table 1 provides background ground water quality data from site compliance monitoring wells. Ground water quality information is presented in Table 1. All parameters in Table 1 are in units of mg/l, except pH. Background is defined as the mean analyte concentration at each monitoring well during the accelerated background monitoring period. For any new wells installed during the permit term, a formal determination of background water quality will be made after completion of accelerated background monitoring as required under Part I.G.4.g.

Table 1: Background Ground Water Quality

Parameter	Background Level (mg/l)		
	MW-1	MW-2	MW-4
pH (units)	7.56	7.33	7.45
Total Dissolved Solids	1227	5825	2000
Chloride	266	1375	650
Bicarbonate (HCO ₃)	106	82	107
Nitrate as N	29	253	100
Ammonia as N	ND	0.15	0.09
Sulfate	304	1315	293

ND = non-detect; units = mg/L

C. GROUND WATER PROTECTION LEVELS

Ground Water Protection Levels for each farm site are presented in Table 2. Protection levels are based on the results of the accelerated background monitoring period under the requirements of R314-6-4 as required in Part I.G.4.g of this permit. Ground Water Protection Levels have been established for the following parameters: ammonia as N, bicarbonate, chloride, nitrate + nitrite as N, sulfate, and total dissolved solids. Protection levels are determined based on the greater of 1.25 times the mean background concentration, the mean background concentration plus twice the standard deviation, or 0.5 times the ground water quality standard for each analyte. In no case will a pollutant be allowed to exceed the ground water quality standards as listed in R317.6.2 unless otherwise specified by the Director.

Table 2: Ground Water Protection Levels

Parameter	Protection Level (mg/l)	Protection Level (mg/l)	Protection Level (mg/l)
	MW-1	MW-2	MW-4
pH (units)	6.5-8.5 ^(a)	6.5-8.5 ^(a)	6.5-8.5 ^(a)
Total Dissolved Solids	1500	6900	3178
Chloride	333	1683	757
Bicarbonate (HCO ₃)	132	114	203
Nitrate as N	40	300	173
Ammonia as N	7.5	7.5	7.5
Sulfate	380	1683	370

(a) Ground Water Quality Standard

D. BEST AVAILABLE TECHNOLOGY (BAT) STANDARD

The administration of this permit is founded on the use of Best Available Technology (BAT), in accordance with the requirements of Utah Admin. Code R317-6-1. The construction permit issued in July 2005 describes construction standards for wastewater treatment ponds at the dairy site. Compliance with the requirements of BAT will be demonstrated by construction, operation and maintenance of the waste handling system according to the construction permit previously issued. Achievement of these performance standards will be demonstrated by compliance with the following requirements:

1. Only wastes from the dairy operations shall be disposed of in the ponds.
2. No ground water degradation beyond permit limits established in Table 2 as measured at compliance monitoring wells.

E. PERMITTED FACILITIES

The facilities authorized under this permit are listed in Table 3. These facilities constitute those, not permitted by rule, where there is potential for discharge of contaminants to ground water.

Table 3: Permitted Facilities

Facility	Discharge Control Technology	Depth	Volume (Million gallons)
Treatment Pond Cell 1	Polymer liner	26 feet	21.98
Treatment Pond Cell 2	Polymer liner	26 feet	19.00
Treatment Pond Cell 3	Polymer liner	26 feet	14.65
Treatment Pond Cell 4	Polymer liner	26 feet	13.08
Treatment Pond Cell 5	Polymer liner	26 feet	7.38
Other dairy wastewater storage ponds	Vinyl liner	8 feet	3.9

F. BEST MANAGEMENT PRACTICES

1. Wastewater and sludge from the treatment ponds may only be land-applied at the appropriate agronomic rate and in accordance with the approved *Elberta Valley Ag Comprehensive Nutrient Management Plan* (Appendix A). This plan was developed to minimize impact to ground water from farm operations by applying wastewater at the agronomic uptake rate of crops. For purposes of this permit, the agronomic uptake rate is defined as the rate where all available nitrogen is taken up by crops or other plants before

it can leach below the root zone, and where other waste constituents are applied at rates that do not cause ground or surface water pollution or plant toxicity incompatible with the intended use of the land. The Permittee must keep records of analyses of applied wastes and soils at application sites, types of crop grown, application rate calculations, and dates, times and rates of each application for all application sites, in order to demonstrate compliance with agronomic rate requirements. Wastes shall not be land applied to frozen or saturated ground or in situations that could result in surface runoff. The area of wastewater land application is currently limited to land owned by the Permittee. If additional land area is needed, the Permittee must notify the Director and receive approval for land application on the additional area.

2. The Permittee shall operate the facility such that the groundwater quality standards (Utah Admin. Code R317-6-2) and Ground Water Protection Levels in Table 2 that were developed for this permit are not exceeded in the unconfined aquifer underlying the dairy, farming operations, or other aquifers that may be impacted by facility operations. Utah ground water regulations also contain standards for contaminants such as metals, pesticides and volatile organic compounds. Accordingly, the Permittee must not discharge these or any other contaminants in a manner that could impair beneficial uses of the ground water.
3. The Permittee shall operate all dairy wastewater treatment pond cells according to the *Elberta Valley Ag Owner and Operations Manual* (Appendix B). Implementation of the Manual will ensure proper handling of dairy wastewater, prompt cleanup of any releases, and an ongoing operation, inspection, and maintenance program for facilities included in this permit.

G. CLOSURE PLAN

At least 180 days prior to closure of any treatment pond, the Permittee shall submit to the Director a site-specific closure and post-closure management plan for disposition of the liquids, solids and liner material of the treatment pond(s) to be closed. The liner material will be tested according to an approved testing plan to determine an appropriate means of disposal that will not lead to ground water contamination. The monitoring wells will continue to be sampled for a post closure monitoring period as determined by the Director.

H. COMPLIANCE MONITORING

The Permittee is required to monitor ground water quality and source activities that could potentially impact the ground water quality. Monitoring shall be performed according to the provisions of Part I.G.4 at a semi-annual frequency at the timelines listed in Part I.I to assure compliance with the terms of this permit.

1. Compliance Monitoring Wells. The network of monitoring wells shall provide the ability to detect contamination in the uppermost ground water aquifer, which could result from excess lagoon seepage. Under the provisions of this permit, ground water contamination in the shallow aquifer under the lagoon sites would be a reason for the Permittee to take remedial action before further degradation occurs.
 - a. *Location of Monitoring Wells.* The Permittee has installed a monitoring well system to establish the ground water flow gradient underlying the lagoon systems and to monitor ground water quality in both the upgradient and downgradient wells. The Permittee shall be required to drill additional monitoring wells if the ground water flow directions are different than expected and the existing monitoring wells do not accurately capture potential impacts of lagoon seepage.

Information about any new wells installed under this permit shall be submitted to the Director and include:

- i. Well identification;
 - ii. Latitude and Longitude relative to the North American Datum of 1983 (NAD83);
 - iii. Hinge elevation, and
 - iv. The associated well construction log.
 - b. *Repair and Replacement of Monitoring Wells.* If a monitoring well becomes damaged, yields insufficient water for sampling, or is otherwise no longer suitable for its intended monitoring purpose, or if a previously observed hydraulic gradient between two monitoring wells becomes reversed, the Permittee shall notify the Director in writing within five (5) days of becoming aware of the condition. Within thirty (30) days of notification, the Permittee shall submit a plan and proposed timeline to the Director for either redevelopment of the compromised well or the installation of a replacement monitoring well.
 - c. *Future Modification of Monitoring Well Network.* If at any time the Director determines the monitoring well network to be inadequate due to a change in gradient or for any other reason, the Permittee shall submit within 30 days of receipt of notification a plan and compliance schedule to modify the monitoring well network.
2. Monitoring Period. The Permittee shall adhere to the monitoring schedule and associated monitoring report deadlines detailed in Part I.I.1 for the term of the permit.
 3. Monitoring Requirements. The Permittee shall comply with the requirements outlined in Utah Admin. Code R317-6, the monitoring requirements outlined in Part I.G. of this permit, the ground water quality standards listed in Utah Admin. Code R317-6, and the protection levels listed in Table 2 of this permit.
 4. Ground Water Quality Monitoring Provisions. Ground water quality monitoring shall be conducted following the provisions listed below.
 - a. *Laboratory Approval.* All water quality analyses shall be performed by a laboratory certified by the State of Utah to perform such analysis.
 - b. *Water Level Measurement.* In association with each well sampling event, water level measurements shall be made in each monitoring well prior to removal of any water from the well casing. These measurements will be made from a surveyed permanent single reference point clearly marked on the top of the well or surface casing. Measurements will be made to the nearest 0.01 foot.
 - c. *Sampling Protocol.* Water quality samples will be collected, handled and analyzed in conformance with the current approved version of the *Elberta Valley Ag Sampling and Analysis Plan* (Appendix C). The results of ground water monitoring shall be reported in accordance with the schedule in Part I Section H.
 - d. *Ground Water Analyses.* The following analyses shall be performed on all water samples collected from monitoring wells:

- i) Field Measurements:
 - 1) pH,
 - 2) specific conductance,
 - 3) water level, and
 - 4) temperature
- ii) Laboratory Analyses:
 - 1) ammonia as nitrogen,
 - 2) nitrate + nitrite as nitrogen,
 - 3) bicarbonate,
 - 4) calcium,
 - 5) chloride,
 - 6) magnesium,
 - 7) potassium,
 - 8) sodium,
 - 9) sulfate, and
 - 10) Total Dissolved Solids (TDS).

e. *Wastewater Analyses.* The following analyses shall be performed on a wastewater sample from a representative treatment pond:

- i) Field Measurements:
 - 1) pH,
 - 2) specific conductance,
 - 3) temperature
- ii) Laboratory Analyses:
 - 1) ammonia as nitrogen,
 - 2) nitrate + nitrite as nitrogen,
 - 3) total Kjeldahl nitrogen (TKN),
 - 4) bicarbonate,
 - 5) carbonate
 - 6) calcium,
 - 7) chloride,
 - 8) magnesium,
 - 9) potassium,
 - 10) sodium,
 - 11) sulfate,
 - 12) Phosphorous, and
 - 13) Total Dissolved Solids (TDS).

f. *Monitoring Frequency.* Monitoring wells shall be sampled semi-annually for compliance monitoring.

g. *Accelerated Monitoring.* For any monitoring wells installed during the term of this permit, water quality samples shall be collected for all the analytes listed in Part I.G.d. Accelerated sampling will be completed on a quarterly basis until a minimum of eight (8) events have been completed to establish background ground

water quality at the new monitoring well location.

5. Annual Lagoon Sampling. A representative treatment pond shall be sampled annually. Sample collection, handling, and analysis shall be conducted in accordance with the most recently revised and approved version of the *Elberta Valley Ag Sampling and Analysis Plan*. Analyses for nitrogen species shall be conducted at the same laboratory. Results of the treatment pond wastewater performance monitoring accompanied by any supporting raw data shall be submitted to the Division of Water Quality with the next Ground Water Quality Monitoring Report.
6. BAT Performance Monitoring. Permittee shall verify the results of the BAT designated for each facility component listed in Table 3 with an inspection and maintenance program as listed in the *Elberta Valley Ag Owner and Operations Manual*. Documentation of compliance with this program shall be maintained on site for review by representatives of the Division. The Permittee shall operate the treatment ponds in accordance with the Best Management Practices specified in the *Elberta Valley Ag Owner and Operations Manual*.

I. NON-COMPLIANCE STATUS

1. Probable Out-of-Compliance Status. The Permittee shall evaluate results of each ground water sampling event to determine any exceedance of the Ground Water Protection Levels found in Table 2 above. Upon determination that a Ground Water Protection Level has been exceeded in any of the compliance monitoring wells listed in Table 2, the Permittee shall:
 - a. Immediately re-sample the source(s) found to be in probable out-of-compliance status for laboratory analysis of the exceeded protection level parameter(s). The Permittee shall submit the analytical results thereof and notify the Director of the probable out-of-compliance status within 30 days after the initial detection.
 - b. Upon exceedance of any one parameter listed in Table 2 for two consecutive sampling events, immediately implement an accelerated schedule of monthly sampling unless the Director determines that other periodic sampling is appropriate, for a period of two months or until the compliance status of the facility can be determined.
2. Out-of-Compliance Status Based on Confirmed Exceedance of Permit Ground Water Protection Levels
 - a. *Out-of-Compliance Status* shall be defined as follows:
 - i. For parameters that have been defined as detectable in the background and for which protection levels have been established, out-of-compliance shall be defined as two consecutive samples exceeding the protection level and the mean background concentration by two standard deviations.
 - b. *Notification and Accelerated Monitoring.* Upon determination by the Permittee or the Director, in accordance with Utah Admin. Code R317-6-6.17, that an out-of-compliance status exists, the Permittee shall:
 - i. Verbally notify the Director of the out-of-compliance status within 24 hours of the receipt of data, and

- ii. Provide written notice within 5 days after receipt of the data, and
 - iii. Continue an accelerated schedule of monthly ground water monitoring for at least one quarter until the facility is brought into compliance or as determined by the Director.
 - iv. The 5-day written submission required in Part I.H.2.b.2) shall contain:
 - 1) A description of the noncompliance and its cause;
 - 2) The period of noncompliance, including exact dates and times;
 - 3) The estimated amount of time noncompliance is expected to continue if it has not been corrected; and,
 - 4) Steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance.
 - v. The Permittee shall verbally report any noncompliance, which may endanger public health or the environment as soon as possible, but no later than 24 hours from the time the Permittee first became aware of the circumstances. The report shall be made to the Utah Department of Environmental Quality 24-hour number, (801) 536-4123.
- c. *Source and Contamination Assessment Study Plan.* Within 30 days after the written notice to the Director required under Part I.H.2.b.2, above, the Permittee shall submit a Source Contamination and Assessment Study Plan and compliance schedule for:
- 1) Assessment of the source or cause of the contamination, and determination of steps necessary to correct the source.
 - 2) Assessment of the extent of the ground water contamination and any potential dispersion.
 - 3) Evaluation of potential remedial actions to restore and maintain ground water quality and ensure that the ground water standards will not be exceeded at the compliance monitoring locations.
 - 4) After approval of the Source and Contamination Assessment Study Plan the Permittee shall implement the study plan within 90 days and provide a report on relevant findings.
3. Failure to Maintain Best Available Technology Required by Permit. A facility will be determined to be in an out-of-compliance status if best available technology has failed or cannot be maintained according to the provisions required by this permit, unless:
- a. The Permittee has notified the Division according to Part I.H.2, and
 - b. The failure was not intentional or was not caused by the Permittee's negligence, either in action or failure to act, and

- c. The Permittee has taken adequate remedial measures in a timely manner or has developed an approvable remedial action plan and implementation schedule for restoration of best available control technology, an equivalent control technology, or closure of the facility (implementation of an equivalent technology will require permit modification and re-issuance), and
 - d. The Permittee has demonstrated that any discharge of a pollutant from the facility is not in violation of the provisions of Utah Admin. Code R317-6.
4. Contamination Investigation Plan. If, after reviewing ground water monitoring data, the Source and Contamination Assessment Report, and other relevant information, the Director determines that use of any lagoon has caused an exceedance of ground water protection levels at any compliance monitoring point, the Permittee shall conduct a Contamination Investigation to determine the extent and severity of contamination caused by discharge of contaminants to ground water. The Permittee shall submit a proposed Contamination Investigation Plan, including a schedule for review by the Division, within 30 days following approval of the Source and Contamination Assessment Report. The Contamination Investigation Report shall meet the requirements outlined in Utah Admin. Code R317-6-6.15.D.
 5. Corrective Action Plan. After reviewing the results of the Contamination Investigation Report, the Director may require the Permittee to develop a Corrective Action Plan to remediate the contamination identified in the Contamination Investigation Report

J. REPORTING REQUIREMENTS

1. Semi-Annual Ground Water Monitoring. Monitoring required in Part I.G above shall be reported according to the schedule in Table 3 below, unless modified by the Director:

Table 4: Compliance Monitoring Report Schedule

Monitoring Period	Report Due Date
January through June	August 1
July through December	February 1

2. Water Level Measurements. Water level measurements from ground water monitoring wells will be reported as measured depth to ground water from the surveyed casing measuring point, and ground water elevations as converted by casing measuring point elevations.
3. Ground Water Quality Sampling. Reporting shall include the following:
 - a. Field Data Sheets - or copies thereof, including the field measurements and other pertinent field data, such as sampling location name/number, date and time, names of sampling crew, type of sampling (pump or grab), volume of water purged before sampling.
 - b. Laboratory Analytical Results - including date sampled, date received, and the results of analysis for each parameter, including value or concentration, units of measurement, reporting limit (minimum detection limit for the examination), analytical method, and the date of the analysis.

4. Monitoring Well As-Built Report. For each new well that is constructed, the Permittee shall submit well construction diagrams and descriptions of the final completion of the monitoring wells. The report is due within 60 days after the date of well completion. The report shall include:
 - a. Casing: depth, diameter, and type of material.
 - b. Screen: length, depth interval, diameter, material type, slot size.
 - c. Sand Pack: depth interval, material type and grain size.
 - d. Annular Seals: depth interval, material type.
 - e. Surface Casing and Cap: depth, diameter, material type, protection measures constructed.
 - f. Elevation and Location: ground surface elevation, elevation of water level measuring point, latitude and longitude in hours, minutes and seconds.
 - g. Well construction description, well completion description, results of well pump tests or slug tests.
5. Electronic Filing Requirements. In addition to submittal of the hard copy data, above, the Permittee will electronically submit the required ground water monitoring data in pdf format to the Water Quality Portal at: <https://deq.utah.gov/water-quality/water-quality-electronic-submissions>. In addition, all analytical results and water level elevations will be supplied to the Director in an electronic format such as Microsoft Excel or a comparable file format.

K. COMPLIANCE SCHEDULE

1. **Final Closure Plan.** In the event that the Permittee decides to discontinue its operations at the facility, the Permittee shall notify the Director of such a decision and submit a Final Closure Plan. The Final Closure Plan shall be submitted no later than 180 days prior to the closure of the facility. The Permittee shall resubmit Final Closure Plan within 60 days of receipt of written notice of deficiencies therein. Any material changes made to this plan after it receives Director approval shall require approval of the Director.
2. **Updated Sampling and Analysis Plan.** The Permittee shall provide an updated *Sampling and Analysis Plan* within 90 days of permit issuance. The updated *Sampling and Analysis Plan* shall include updated information on all sampling locations and a current site map with all sampling locations denoted.

PART II MONITORING, RECORDING AND REPORTING REQUIREMENTS

A. REPRESENTATIVE SAMPLING

Samples taken in compliance with the monitoring requirements established under Part I shall be representative of the monitored activity.

B. ANALYTICAL PROCEDURES

Water sample analysis must be conducted according to test procedures specified under Utah Admin. Code R317-6-6.3.L, unless other test procedures have been specified in this permit.

C. PENALTIES FOR TAMPERING

The Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate, any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than \$10,000 per violation, or by imprisonment for not more than six months per violation, or by both.

D. REPORTING OF MONITORING RESULTS

Monitoring results obtained during each reporting period specified in the permit, shall be submitted to the Director, Utah Division of Water Quality at the following address no later than the 15th day of the month following the completed reporting period:

State of Utah
Division of Water Quality
P.O. Box 144870
Salt Lake City, Utah 84114-4870
Attention: Ground Water Protection Section

E. COMPLIANCE SCHEDULES

Reports of compliance or noncompliance with, or any progress reports on interim and final requirements contained in any Compliance Schedule of this permit shall be submitted no later than 14 days following each schedule date.

F. ADDITIONAL MONITORING BY THE PERMITTEE

If the Permittee monitors any pollutant more frequently than required by this permit, using approved test procedures as specified in this permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted. Such increased frequency shall also be indicated.

G. RECORDS CONTENTS

Records of monitoring information shall include:

1. The date, exact place, and time of sampling or measurements;
2. The individual(s) who performed the sampling or measurements;
3. The date(s) and time(s) analyses were performed;
4. The individual(s) who performed the analyses;
5. The analytical techniques or methods used; and,
6. The results of such analyses.

H. RETENTION OF RECORDS

The Permittee shall retain records of all monitoring information, including all calibration and maintenance records and copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least three years from the date of the

sample, measurement, report or application. This period may be extended at the request of the Director at any time.

I. TWENTY-FOUR HOUR NOTICE OF NONCOMPLIANCE REPORTING

1. The Permittee shall verbally report any noncompliance which may endanger public health or the environment as soon as possible, but no later than 24 hours from the time the Permittee first became aware of the circumstances. The report shall be made to the Utah Department of Environmental Quality 24-hour number, (801) 536-4123.
2. A written submission shall also be provided to the Director within five days of the time that the Permittee becomes aware of the circumstances. The written submission shall contain:
 - a. A description of the noncompliance and its cause;
 - b. The period of noncompliance, including exact dates and times;
 - c. The estimated time noncompliance is expected to continue if it has not been corrected; and,
 - d. Steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance.
3. Reports shall be submitted to the addresses in Part II.D, Reporting of Monitoring Results.

J. OTHER NONCOMPLIANCE REPORTING

Instances of noncompliance not required to be reported within 24 hours shall be reported at the time that monitoring reports for Part II.D are submitted.

K. INSPECTION AND ENTRY

The Permittee shall allow the Director, or an authorized representative, to:

1. Enter upon the Permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of the permit;
2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
3. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and,
4. Sample or monitor at reasonable times, for the purpose of assuring permit compliance or as otherwise authorized by the Act, any substances or parameters at any location.

PART III COMPLIANCE RESPONSIBILITIES

A. DUTY TO COMPLY

The Permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application. The Permittee shall give advance notice to the Director of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

B. PENALTIES FOR VIOLATIONS OF PERMIT CONDITIONS

The Act provides that any person who violates a permit condition implementing provisions of the Act is subject to a civil penalty not to exceed \$10,000 per day of such violation. Any person who willfully or negligently violates permit conditions is subject to a fine not exceeding \$25,000 per day of violation. Any person convicted under Section 19-5-115(2) of the Act a second time shall be punished by a fine not exceeding \$50,000 per day. Nothing in this permit shall be construed to relieve the Permittee of the civil or criminal penalties for noncompliance.

C. NEED TO HALT OR REDUCE ACTIVITY NOT A DEFENSE

It shall not be a defense for a Permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

D. DUTY TO MITIGATE

The Permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

E. PROPER OPERATION AND MAINTENANCE

The Permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the Permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by the Permittee only when the operation is necessary to achieve compliance with the conditions of the permit.

PART IV GENERAL REQUIREMENTS

A. PLANNED CHANGES

The Permittee shall give notice to the Director as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required when the alteration or addition could significantly change the nature of the facility or increase the quantity of pollutants discharged.

B. ANTICIPATED NONCOMPLIANCE

The Permittee shall give advance notice of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

C. PERMIT ACTIONS

This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the Permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.

D. DUTY TO REAPPLY

If the Permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the Permittee must apply for and obtain a permit renewal or extension. The application should be submitted at least 180 days before the expiration date of this permit.

E. DUTY TO PROVIDE INFORMATION

The Permittee shall furnish to the Director, within a reasonable time, any information which the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The Permittee shall also furnish to the Director, upon request, copies of records required to be kept by this permit.

F. OTHER INFORMATION

When the Permittee becomes aware that it failed to submit any relevant facts in a permit application or submitted incorrect information in a permit application or any report to the Director, it shall promptly submit such facts or information.

G. SIGNATORY REQUIREMENTS

All applications, reports or information submitted to the Director shall be signed and certified.

1. All permit applications shall be signed as follows:

- a. For a corporation: by a responsible corporate officer;
- b. For a partnership or sole proprietorship: by a general partner or the proprietor, respectively.
- c. For a municipality, State, Federal, or other public agency: by either a principal executive officer or ranking elected official.

2. All reports required by the permit and other information requested by the Director shall be signed by a person described above or by a duly authorized representative of that person. A person is a duly authorized representative only if:

- a. The authorization is made in writing by a person described above and submitted to the Director, and,

- b. The authorization specified either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position.)
 3. Changes to Authorization. If an authorization under Part IV.G.2 is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of Part IV.G.2 must be submitted to the Director prior to or together with any reports, information, or applications to be signed by an authorized representative.
 4. Certification. Any person signing a document under this section shall make the following certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."
- H. PENALTIES FOR FALSIFICATION OF REPORTS

The Act provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance shall, upon conviction be punished by a fine of not more than \$10,000 per violation, or by imprisonment for not more than six months per violation, or by both.
- I. AVAILABILITY OF REPORTS

Except for data determined to be confidential by the Permittee, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the Director. As required by the Act, permit applications, permits, effluent data, and ground water quality data shall not be considered confidential.
- J. PROPERTY RIGHTS

The issuance of this permit does not convey any property rights of any sort, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations.
- K. SEVERABILITY

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.
- L. TRANSFERS

This permit may be automatically transferred to a new Permittee if:

1. The current Permittee notifies the Director at least 30 days in advance of the proposed transfer date;
2. The notice includes a written agreement between the existing and new Permittee containing a specific date for transfer of permit responsibility, coverage, and liability between them; and,
3. The Director does not notify the existing Permittee and the proposed new Permittee of his or her intent to modify, or revoke and reissue the permit. If this notice is not received, the transfer is effective on the date specified in the agreement mentioned in paragraph 2 above.

M. STATE LAWS

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the Permittee from any responsibilities, liabilities, penalties established pursuant to any applicable state law or regulation under authority preserved by Section 19-5-117 of the Act.

N. REOPENER PROVISION

This permit may be reopened and modified (following proper administrative procedures) to include the appropriate limitations and compliance schedule, if necessary, if one or more of the following events occur:

1. If new ground water standards are adopted by the Board, the permit may be reopened and modified to extend the terms of the permit or to include pollutants covered by new standards. The Permittee may apply for a variance under the conditions outlined in R317-6-6.4.D.
2. If alternative compliance mechanisms are required.
3. If subsequent ground water monitoring data reveals the background water quality values in Part I Table 1 are not accurate.

Comprehensive Nutrient Management Plan (CNMP)

(Version 3, 8/17/2016 Format)

The Comprehensive Nutrient Management Plan (CNMP) is an important part of the conservation management system (CMS) for your Animal Feeding Operation (AFO). This CNMP documents the planning decisions and operation and maintenance information for the AFO.

Farm/Facility: Elberta Valley Ag (EVA)
c/o Brandon Andersen
PO Box 10
Elberta, UT 84626
801-667-3500

Owner/Operator: Brandon Andersen

Plan Period: Mar 2023 - Feb 2028

Certified Comprehensive Nutrient Management Plan (CNMP) Planner

As a Certified Comprehensive Nutrient Management Plan (CNMP) Planner, I certify that I have reviewed the *Comprehensive Nutrient Management Plan* and that the elements of the document are technically compatible, reasonable and can be implemented.

Signature: HANNAH FREEZE (Affiliate) Digitally signed by HANNAH FREEZE (Affiliate)
Date: 2023.04.24 14:04:11 -06'00' Date: _____
Name: Hannah Freeze
Title: Certified CNMP Planner

Conservation District (Optional)

As a Conservation District employee, I have reviewed the *Comprehensive Nutrient Management Plan* and concur that the plan meets the District's conservation goals.

Signature: _____ Date: _____
Name: _____
Title: _____

Owner/Operator

As the owner/operator of this CNMP, I, as the decision maker, have been involved in the planning process and agree that the items/practices listed in each element of the CNMP are needed. I understand that I am responsible for keeping all necessary records associated with implementation of this CNMP. It is my intention to implement/accomplish this CNMP in a timely manner as described in the plan.

Signature:  Brandon Andersen (Apr 24, 2023 20:30 MDT) Date: _____
Name: _____

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Section 1. Farmstead (Production Area)

1.1. Maps of Existing and Planned Farmstead Conservation Practices

1.2. Farmstead Conservation Practices -- Record of Decisions

In October of 2019 Brandon Andersen contacted myself (Hannah Freeze) and asked if I could help him write and updated CNMP for Elberta Valley Ag. I met with Brandon and his staff on October 25, 2019. We went through the 2012 CNMP and noted where updates and changes needed to be made. We went through cropping history, soils tests, and storage information.

March 2023 HJF – Brandon and I visited and realized in the last CNMP I wrote for EVA I did not include the feedlot animals as part of the plan. I updated all the animal numbers as well as the soil test information, so the CNMP is current for another 5 years.

1.3. Farmstead Conservation Practices – Implementation Requirements

There are no farmstead conservation practice implementation requirements needed in order for EVA to be in compliance with all state and federal water quality regulations. 3 groundwater monitoring wells are on the farmstead and are sampled twice a year. Sample results are reported to the State of Utah. All lagoons are lined with either synthetic liners or bentonite clay to eliminate any potential leaching. Lagoons 1-5 are lined with both synthetic liners and bentonite clay. The Fresh Pen ponds are lined with a synthetic liner (see Farmstead Map for lagoon locations). In-corral compost piles are utilized on the feedlot and when piles are cleaned out they are taken to one of the compost lots, then utilized out on crop fields.

1.4. Animal Inventory

Animal Group	Type or Production Phase	Number of Animals ^a	Average Weight (lbs)	Confinement Period	Manure Collected (%) ^b	Manure Storage
Milkers 1	Dairy (Lact)	1,187	1,500	Jan Early - Dec Late	100	Pond 1
Milkers 2	Dairy (Lact)	1,187	1,500	Jan Early - Dec Late	100	Compost 1
Milkers 3	Dairy (Lact)	1,188	1,500	Jan Early - Dec Late	100	Pond 2
Milkers 4	Dairy (Lact)	1,188	1,500	Jan Early - Dec Late	100	Compost 2
Drys 1	Dairy (Dry)	350	1,500	Jan Early - Dec Late	50	Pond 3
Drys 2	Dairy (Dry)	350	1,500	Jan Early - Dec Late	50	Pond 4
Springers 1	Heifer	1,125	1,000	Jan Early - Dec Late	25	Fresh Pond
Springers 2	Heifer	1,125	1,000	Jan Early - Dec Late	25	Fresh Pond
Springers 3	Heifer	1,125	1,000	Jan Early - Dec Late	25	Compost 3
Springers 4	Heifer	1,125	1,000	Jan Early - Dec Late	25	Compost 3
Cross Cattle	Beef (Yearling)	375	375	Jan Early - Dec Late	25	Cross Cattle Pen
Holstein Hef. Beef	Heifer	1,100	1,100	Jan Early - Dec Late	25	Hol Hef Beef Pen
DLL Bulls	Beef (Cow)	700	700	Jan Early - Jul Late	25	DLL Bull Pen
DLL Heifers	Heifer	550	550	Feb Early - Aug Late	25	DLL Heifer Pen
DLL Steers	Beef (Feeder)	600	600	Feb Early - Aug Late	25	DLL Steer Pen
Welfare Steers	Beef (Feeder)	600	600	Jan Early - Jun Late	25	Welfare Steer Pen

a. The average number of animals present in the production facility at any one time.

b. If manure collected is less than 100%, this indicates that the animals spend a portion of the day outside of the production facility or the production facility is unoccupied one or more times during the confinement period.

1.5. Manure Storage Information

Storage ID	Type of Storage	Pumpable or Spreadable Capacity	Annual Manure Collected	Maximum Days of Storage
Pond 1	Uncovered watertight structure	36,988,600 gal	6,239,000 gal	2,164
Pond 2	Uncovered watertight structure	29,590,880 gal	6,244,000 gal	1,730
Pond 3	Uncovered watertight structure	23,707,112 gal	948,000 gal	9,128
Pond 4	Uncovered watertight structure	19,612,560 gal	948,000 gal	7,551
Pond 5	Uncovered watertight structure	11,698,720 gal	0 gal	
Compost 1	Open lot	40,048 tons	26,166 tons	559
Compost 2	Open lot	23,512 tons	26,190 tons	328
Compost 3	Open lot	18,900 tons	8,724 tons	791
Fresh Pond	Uncovered watertight structure	8,343,192 gal	2,095,000 gal	1,454
Settling Pond 1	Uncovered watertight structure	977,075 gal	0 gal	
Settling Pond 2	Uncovered watertight structure	915,253 gal	0 gal	
Cross Cattle Pen	Open lot	3,103 tons	534 tons	2,121

Storage ID	Type of Storage	Pumpable or Spreadable Capacity	Annual Manure Collected	Maximum Days of Storage
Hol Hef Beef Pen	Open lot	2,074 tons	4,692 tons	161
DLL Bull Pen	Open lot	15,301 tons	822 tons	6,794
DLL Heifer Pen	Open lot	4,950 tons	686 tons	2,634
DLL Steer Pen	Open lot	22,514 tons	567 tons	14,493
Welfare Steer Pen	Open lot	14,296 tons	486 tons	10,737

1.6. Planned Manure Exports

There are no planned manure exports from the dairy. All liquid waste water is land applied through pivots. Solids are composted and used as bedding and applied to crop fields. No compost from the dairy is sold.

1.7. Planned Manure Imports

No planned manure imports.

1.8. Planned Internal Transfers of Manure

Using the topography of the area where the dairy is located, all manure management systems are connected using gravity flow. Waste from "The Hill" where the milk cows are housed runs through two separators, one primary and the other secondary. Solids are then windrowed in Compost Area 1 and liquids from the separator as well as lot runoff from the compost area gravity flow into a series of ponds (Ponds 1-5). All ponds are connected and can be emptied on fields through sprinkler application on 1581 acres south of Highway 6. Pivots are equipped with a secondary piping system to apply wastewater to crop fields. Every fall all ponds are pumped down to prepare for winter storage.

1.9. Brief Description of or Additional Information about Animal Feeding Operation (Optional)

Elberta Valley Ag is a 4,750-milking cow facility that covers approximately 100 acres. There are 4,500 total heifers on the facility at any given time and all replacement stock is raised on the facility. Bull calves are weaned then sent to a feedlot at another facility. Once bull calves reach 500 lbs., they are shipped to Kansas to be finished. There is an average of 1,100 calves in hutches.

Elberta Valley Ag operates 8293 irrigated acres and 12,117 acres of rangeland. Their main crop rotation is corn or wheat for 8 years, followed by alfalfa for 5 years. On average the harvested crop acreages are as follows:

- Wheat: 1429.1 acres

- Wheat (3 way winter): 761 acres

- Spring Barley: 987.4 acres

- Alfalfa: 2976 acres

- Corn (silage): 2139.5 acres

- Double Cropped Corn Silage: 248 acres

Recycled lagoon water is used to flush the free stall lanes. This practice reduces the amount of extra water added to the system for the dairy to handle.

Section 2. Crop and Pasture (Land Treatment)

2.1. Maps of Fields, Soils, Application Setbacks, Existing and Planned Crop and Pasture Conservation Practices

2.2. Crop and Pasture Conservation Practices -- Record of Decisions

Precautions should be taken when applying commercial fertilizer or manure on fields that border water bodies. Setbacks outlined in section 3.2 of this report should be followed. Where necessary, field edges should be bermed to ensure no field runoff can leave the field or enter water bodies.

The slurry pivots south of the dairy receive a double application of wastewater. These fields are double cropped with a cash crop (small grain or corn) followed by a cover crop. The cover crop includes annual rye, small grain, soybeans, sorghum, sunflowers, brassicas, turnips, and kale. The cover crop is grazed off by the feedlot beef stockers in the fall. During a corn rotation wastewater is applied in the spring before corn is planted, then again in the fall after the cover crop is grazed off. During a small grain rotation, wastewater is applied prior to the grain being planted, then again after the cover crop is planted. The cover crop in both rotation scenarios is irrigated up utilizing wastewater.

2.3. Crop and Pasture Conservation Practices – Implementation Requirements

Cover crops for nutrient management and sediment control may be implemented into current crop rotations. Crops can reduce nutrient needs through nitrogen fixation, nutrient cycling / capture and prevention of loss by leaching and erosion. Preference will be to cover crop mixes that include diverse species including plants with various rooting structures including fibrous and tap roots. Legumes may be included to fix nitrogen for the preceding crops; these could include vetches, clovers, or peas. Scavenger-type cover crops may be utilized to capture nutrients following cash crops and converting them into organic forms to prevent leaching during fall / spring and releasing nutrients to the following crop for example root plants such as radish and turnips or fast-growing annual grasses such as annual ryegrass. Cover crops should be selected that are compatible with cash crops grown, and the season they will be planted. Methods for cover crop establishment can include broadcasting, direct seeding, Interseeding into cash crop, other methods as needed. Seeding rates should reflect goals of the cover crop and planting methods to ensure proper plant populations. Contact your local conservation district or NRCS office for assistance in creating a cover crop mix.

There are 8,293 farmable acres available to Elberta Valley Ag. Of those irrigated acres, 250 acres are under wheel lines and the rest are under pivot irrigation. Liquid manure is applied to fields through pivots on 1581 acres south of Highway 6 (see Spreadable Acres Overview Map 1). Based on soil samples provided by Elberta Valley Ag, there are several fields with Phosphorus levels above 100 ppm. According to the NRCS 590 Standard, manure application should not occur on fields with soil test phosphorus levels higher than 100 ppm. Conservation measures should be implemented to avoid manure application on these fields where possible. See

Phosphorus < 50 ppm	Spread based on Nitrogen Needs
Phosphorus 50 -100 ppm	Spread based on Phosphorus needs
Phosphorus > 100 ppm	No Spreading

2.4. Predicted Soil Erosion

Average water, wind, irrigation, gully and ephemeral erosion estimates

Field	Predominant Soil Type	T Factor (t/ac/yr)	Slope (%)	Water (t/ac/yr)	Wind (t/ac/yr)	Irrigation Erosion Controlled (y/n)	Gully Erosion Controlled (y/n)	Ephemeral Erosion Controlled (y/n)	Total (t/ac/yr)
01P05	GbA (Genola SIL)	5	0.5						
01P06	GbA (Genola SIL)	5	0.5						
01P07	GbA (Genola SIL)	5	0.5						
01P08	GbA (Genola SIL)	5	0.5						
01P24	GbA (Genola SIL)	5	0.5						
01P25	GbA (Genola SIL)	5	0.5						
01P28	GbA (Genola SIL)	5	0.5						
01P29	GbA (Genola SIL)	5	0.5						
01P30	GbA (Genola SIL)	5	0.5						
01P31	GbA (Genola SIL)	5	0.5						
01P35	GbA (Genola SIL)	5	0.5						
01P37	GbA (Genola SIL)	5	0.5						
01P03	GbA (Genola SIL)	5	0.5						
01P11	GbA (Genola SIL)	5	0.5						
01P16	GbA (Genola SIL)	5	0.5						
01P18	GbA (Genola SIL)	5	0.5						
01P33	GbA (Genola SIL)	5	0.5						
01P34	GbA (Genola SIL)	5	0.5						
01WL	GbA (Genola SIL)	5	0.5						
01WL 01P25	GbA (Genola SIL)	5	0.5						
01WL wrights	GbA (Genola SIL)	5	0.5						
01P09	GbA (Genola SIL)	5	0.5						
01P12	GbA (Genola SIL)	5	0.5						
01P15	GbA (Genola SIL)	5	0.5						
01P17	GbA (Genola SIL)	5	0.5						
01P21	GbA (Genola SIL)	5	0.5						
01P26	GbA (Genola SIL)	5	0.5						

Field	Predominant Soil Type	T Factor (t/ac/yr)	Slope (%)	Water (t/ac/yr)	Wind (t/ac/yr)	Irrigation Erosion Controlled (y/n)	Gully Erosion Controlled (y/n)	Ephemeral Erosion Controlled (y/n)	Total (t/ac/yr)
01P27	GbA (Genola SIL)	5	0.5						
01P32	LaC (Linoyer VFSL)	5	3.5						
01P36	LaC (Linoyer VFSL)	5	3.5						
01P01	LaC (Linoyer VFSL)	5	3.5						
01P02	LaC (Linoyer VFSL)	5	3.5						
01P13	LaC (Linoyer VFSL)	5	3.5						
01P14	LaC (Linoyer VFSL)	5	3.5						
01P22	LaC (Linoyer VFSL)	5	3.5						
02F27	LaC (Linoyer VFSL)	5	3.5						
02P01	LaC (Linoyer VFSL)	5	3.5						
02P02	LaC (Linoyer VFSL)	5	3.5						
02P06	LaC (Linoyer VFSL)	5	3.5						
02P07	LaC (Linoyer VFSL)	5	3.5						
02P08	LaC (Linoyer VFSL)	5	3.5						
02P11	LaC (Linoyer VFSL)	5	3.5						
02P12A	LaC (Linoyer VFSL)	5	3.5						
02P14	LaC (Linoyer VFSL)	5	3.5						
02P15	LaC (Linoyer VFSL)	5	3.5						
02P17	LaC (Linoyer VFSL)	5	3.5						
02P19	LaC (Linoyer VFSL)	5	3.5						
02P22	LaC (Linoyer VFSL)	5	3.5						
02P23	LaC (Linoyer VFSL)	5	3.5						
02P24	LaC (Linoyer VFSL)	5	3.5						
02P26	LaC (Linoyer VFSL)	5	3.5						
02P30	LaC (Linoyer VFSL)	5	3.5						
01P04	LaC (Linoyer VFSL)	5	3.5						
01P10	LaC (Linoyer VFSL)	5	3.5						
01P19	LaC (Linoyer VFSL)	5	3.5						
01P20	LaC (Linoyer VFSL)	5	3.5						
02P03	LaC (Linoyer VFSL)	5	3.5						

Field	Predominant Soil Type	T Factor (t/ac/yr)	Slope (%)	Water (t/ac/yr)	Wind (t/ac/yr)	Irrigation Erosion Controlled (y/n)	Gully Erosion Controlled (y/n)	Ephemeral Erosion Controlled (y/n)	Total (t/ac/yr)
02P10	GbB (Genola SIL)	5	1.5						
02P18	GbB (Genola SIL)	5	1.5						
02P20	GbB (Genola SIL)	5	1.5						
02P21	GbB (Genola SIL)	5	1.5						
02P25	GbB (Genola SIL)	5	1.5						
02P29	GbB (Genola SIL)	5	1.5						
02P33	GbB (Genola SIL)	5	1.5						
02P34	GbB (Genola SIL)	5	1.5						
02P36	GbB (Genola SIL)	5	1.5						
02BB	GbB (Genola SIL)	5	1.5						
02BD	GbB (Genola SIL)	5	1.5						
02BD 13-15	GbB (Genola SIL)	5	1.5						
	GbB (Genola SIL)	5	1.5						
02BF	GbB (Genola SIL)	5	1.5						
02BG	GbB (Genola SIL)	5	1.5						
02P04	GbB (Genola SIL)	5	1.5						
02P05	GbB (Genola SIL)	5	1.5						
02P09	GbB (Genola SIL)	5	1.5						
02P12B	GbB (Genola SIL)	5	1.5						
02P13	GbB (Genola SIL)	5	1.5						
02P16	GbB (Genola SIL)	5	1.5						
02P28	GbB (Genola SIL)	5	1.5						
02P31	GbB (Genola SIL)	5	1.5						
02P32	GbB (Genola SIL)	5	1.5						
02P35	GbB (Genola SIL)	5	1.5						
02BC	GbB (Genola SIL)	5	1.5						
02BA	GbB (Genola SIL)	5	1.5						
02BH	GbB (Genola SIL)	5	1.5						
02BE	GbB (Genola SIL)	5	1.5						

Section 3. Nutrient Management Plan (590)

3.1. Nitrogen and Phosphorus Risk Analyses

Utah Phosphorus Index

Field	Crop Year	Winter Application Total	Non-Winter Application Total	P Index w/o P Apps	P Index w/ P Apps	P Loss Risk
01P05	2023	18.5	16.0	15.5	16.0	Low
01P06	2023	18.5	16.0	15.5	16.0	Low
01P07	2023	18.5	16.0	15.5	16.0	Low
01P08	2023	18.5	16.0	15.5	16.0	Low
01P24	2023	18.5	16.0	15.5	16.0	Low
01P25	2023	18.5	16.0	15.5	16.0	Low
01P28	2023	18.5	16.0	15.5	16.0	Low
01P29	2023	18.5	16.0	15.5	16.0	Low
01P30	2023	18.5	16.0	15.5	16.0	Low
01P31	2023	18.5	16.0	15.5	16.0	Low
01P35	2023	18.5	16.0	15.5	16.0	Low
01P37	2023	18.5	16.0	15.5	16.0	Low
01P03	2023	18.5	16.0	15.5	16.0	Low
01P11	2023	18.5	20.5	15.5	20.5	Low
01P16	2023	18.5	16.0	15.5	16.0	Low
01P18	2023	18.5	16.0	15.5	16.0	Low
01P33	2023	18.5	16.0	15.5	16.0	Low
01P34	2023	18.5	16.0	15.5	16.0	Low
01WL	2023	18.5	16.0	15.5	16.0	Low
01WL 01P25	2023	18.5	16.0	15.5	16.0	Low
01WL wrights	2023	18.5	16.0	15.5	16.0	Low
01P09	2023	26.0	23.5	23.0	23.5	Low
01P12	2023	26.0	23.5	23.0	23.5	Low

Field	Crop Year	Winter Application Total	Non-Winter Application Total	P Index w/o P Apps	P Index w/ P Apps	P Loss Risk
01P15	2023	26.0	23.5	23.0	23.5	Low
01P17	2023	26.0	23.5	23.0	23.5	Low
01P21	2023	26.0	23.5	23.0	23.5	Low
01P26	2023	26.0	23.5	23.0	23.5	Low
01P27	2023	26.0	23.5	23.0	23.5	Low
01P32	2023	28.5	25.0	24.5	25.0	Low
01P36	2023	28.5	25.0	24.5	25.0	Low
01P01	2023	21.0	17.5	17.0	17.5	Low
01P02	2023	21.0	17.5	17.0	17.5	Low
01P13	2023	21.0	17.5	17.0	17.5	Low
01P14	2023	21.0	17.5	17.0	17.5	Low
01P22	2023	21.0	17.5	17.0	17.5	Low
02F27	2023	21.0	17.5	17.0	17.5	Low
02P01	2023	21.0	17.5	17.0	17.5	Low
02P02	2023	19.5	17.5	17.0	17.5	Low
02P06	2023	19.5	17.5	17.0	17.5	Low
02P07	2023	19.5	17.5	17.0	17.5	Low
02P08	2023	19.5	17.5	17.0	17.5	Low
02P11	2023	19.5	17.5	17.0	17.5	Low
02P12A	2023	19.5	17.5	17.0	17.5	Low
02P14	2023	19.5	17.5	17.0	17.5	Low
02P15	2023	19.5	17.5	17.0	17.5	Low
02P17	2023	19.5	17.5	17.0	17.5	Low
02P19	2023	19.5	17.5	17.0	17.5	Low
02P22	2023	19.5	17.5	17.0	17.5	Low
02P23	2023	19.5	17.5	17.0	17.5	Low
02P24	2023	19.5	17.5	17.0	17.5	Low
02P26	2023	19.5	17.5	17.0	17.5	Low

Field	Crop Year	Winter Application Total	Non-Winter Application Total	P Index w/o P Apps	P Index w/ P Apps	P Loss Risk
02P30	2023	19.5	17.5	17.0	17.5	Low
01P04	2023	19.5	17.5	17.0	17.5	Low
01P10	2023	19.5	17.5	17.0	17.5	Low
01P19	2023	19.5	17.5	17.0	17.5	Low
01P20	2023	19.5	17.5	17.0	17.5	Low
02P03	2023	27.0	25.0	24.5	25.0	Low
02P10	2023	24.5	23.5	23.0	23.5	Low
02P18	2023	24.5	23.5	23.0	23.5	Low
02P20	2023	24.5	23.5	23.0	23.5	Low
02P21	2023	24.5	23.5	23.0	23.5	Low
02P25	2023	24.5	23.5	23.0	23.5	Low
02P29	2023	24.5	23.5	23.0	23.5	Low
02P33	2023	24.5	23.5	23.0	23.5	Low
02P34	2023	24.5	23.5	23.0	23.5	Low
02P36	2023	24.5	23.5	23.0	23.5	Low
02BB	2023	24.5	23.5	23.0	23.5	Low
02BD	2023	24.5	23.5	23.0	23.5	Low
02BD 13-15	2023	24.5	23.5	23.0	23.5	Low
02BF	2023	24.5	23.5	23.0	23.5	Low
02BG	2023	24.5	23.5	23.0	23.5	Low
02P04	2023	17.0	16.0	15.5	16.0	Low
02P05	2023	17.0	16.0	15.5	16.0	Low
02P09	2023	17.0	16.0	15.5	16.0	Low
02P12B	2023	17.0	16.0	15.5	16.0	Low
02P13	2023	17.0	16.0	15.5	16.0	Low
02P16	2023	17.0	16.0	15.5	16.0	Low
02P28	2023	17.0	16.0	15.5	16.0	Low
02P31	2023	17.0	16.0	15.5	16.0	Low

Field	Crop Year	Winter Application Total	Non-Winter Application Total	P Index w/o P Apps	P Index w/ P Apps	P Loss Risk
02P32	2023	17.0	16.0	15.5	16.0	Low
02P35	2023	17.0	16.0	15.5	16.0	Low
02BC	2023	17.0	16.0	15.5	16.0	Low
02BA	2023	17.0	16.0	15.5	16.0	Low
02BH	2023	17.0	16.0	15.5	16.0	Low
02BE	2023	17.0	16.0	15.5	16.0	Low

3.2. Manure Application Setback Distances

Manure application setbacks will be implemented according to the USDA-NRCS standard of 33' along roads, irrigation structures, and sensitive areas.

3.3. Soil Test Data

Field	Test Year	OM (%)	P Test Used	P	K	Mg	Ca	Na	Units	Soil pH	Buffer pH	CEC (meq/100g)	NO ₃ -N (ppm)	EC (mmhos/cm)
01P05	2022	3.2	Olsen	22	396	6	17	1	ppm	8.2		24.9	9.0	2.30
01P06	2022	3.0	Olsen	21	444	6	16		ppm	8.3		23.2	10.0	1.90
01P07	2022	3.0	Olsen	19	412	5	14		ppm	8.3		20.9	10.0	1.70
01P08	2022	3.0	Olsen	16	423	6	15	1	ppm	8.3		23.0	8.0	2.40
01P24	2022	2.3	Olsen	37	334	5	12	1	ppm	8.3		19.1	9.0	2.00
01P25	2022	2.5	Olsen	27	367	5	12		ppm	8.3		18.6	7.0	1.80
01P28	2022	3.8	Olsen	13	331	9	18	1	ppm	8.2		28.5	20.0	4.00
01P29	2022	3.7	Olsen	16	363	86	18	1	ppm	8.2		28.4	16.0	2.80
01P30	2022	3.3	Olsen	22	365	8	15	1	ppm	8.3		24.6	18.0	2.10
01P31	2022	3.5	Olsen	20	246	7	16	1	ppm	8.3		24.4	12.0	2.30
01P35	2022	2.3	Olsen	110	303	4	12	1	ppm	8.3		17.2	7.0	1.40
01P37	2022	1.4	Olsen	14	179	3	10		ppm	8.3		14.2	13.0	1.50
01P03	2022	2.5	Olsen	66	850	5	13	1	ppm	8.0		21.6	41.0	2.90
01P11	2022	4.4	Olsen	179	1,301	6	13	1	ppm	7.8		25.2	154.0	6.80
01P16									ppm					
01P18	2022	4.3	Olsen	124	1,162	8	14	1	ppm	8.0		27.7	77.0	5.10
01P33	2022	2.4	Olsen	27	458	5	13	1	ppm	8.1		21.1	42.0	2.80
01P34	2022	3.3	Olsen	14	387	9	18	1	ppm	8.0		28.8	35.0	3.80
01WL	2022	3.1	Olsen	26	375	6	16	1	ppm	8.1		23.9	31.0	2.00
01WL 01P25	2022	1.7	Olsen	16	349	4	12		ppm	8.2		17.9	14.0	1.30
01WL wrights	2022	2.6	Olsen	45	370	4	12	1	ppm	7.9		18.2	19.0	2.00
01P09	2022	3.0	Olsen	22	538	4	13		ppm	8.0		19.7	44.0	2.70
01P12	2022	4.3	Olsen	112	1,372	7	14	1	ppm	7.9		26.7	110.0	5.50
01P15	2022	3.3	Olsen	106	897	6	14	1	ppm	8.2		23.6	43.0	3.00
01P17	2022	4.8	Olsen	115	1,477	7	13	1	ppm	8.0		26.2	50.0	4.20
01P21	2022	2.6	Olsen	22	462	6	1	1	ppm	8.1		22.3	31.0	3.60
01P26	2022	3.5	Olsen	14	431	8	17	1	ppm	8.1		26.9	30.0	3.80
01P27	2022	3.4	Olsen	15	377	9	14	1	ppm	8.0		25.1	49.0	3.50
01P32	2022	2.0	Olsen	16	419	7	14	1	ppm	8.1		22.9	29.0	2.00

Field	Test Year	OM (%)	P Test Used	P	K	Mg	Ca	Na	Units	Soil pH	Buffer pH	CEC (meq/100g)	NO ₃ -N (ppm)	EC (mmhos/cm)
01P36	2022	2.6	Olsen	20	356	6	13	1	ppm	8.1		21.1	23.0	2.60
01P01	2022	2.2	Olsen	16	519	6	14	1	ppm	8.1		22.5	52.0	2.60
01P02	2022	2.5	Olsen	34	433	4	15	1	ppm	8.0		21.2	53.0	2.20
01P13	2022	2.8	Olsen	27	563	6	14	1	ppm	8.1		23.6	29.0	2.60
01P14	2022	3.2	Olsen	82	1,199	7	14	1	ppm	8.1		26.3	68.0	4.90
01P22	2022	2.5	Olsen	22	361	6	14	1	ppm	8.1		22.3	33.0	3.40
02F27	2022	2.7	Olsen	24	568	6	16	1	ppm	8.0		24.7	15.0	2.30
02P01	2022	2.6	Olsen	26	645	6	12	3	ppm	8.3		23.8	7.0	7.20
02P02	2022	2.7	Olsen	16	452	5	13	2	ppm	8.2		22.4	8.0	6.20
02P06	2022	2.8	Olsen	50	845	8	12	5	ppm	8.2		27.8	82.0	10.40
02P07	2022	3.0	Olsen	25	505	5	12	3	ppm	8.3		21.4	14.0	6.60
02P08	2022	3.3	Olsen	21	352	3	13	2	ppm	8.2		19.4	4.0	4.50
02P11	2022	3.2	Olsen	23	582	5	12	3	ppm	8.3		21.6	18.0	6.40
02P12A	2022	1.3	Olsen	16	315	3	12	1	ppm	8.4		16.6	9.0	2.40
02P14	2022	2.0	Olsen	15	381	3	11	1	ppm	8.2		15.7	26.0	2.30
02P15	2022	2.5	Olsen	14	295	3	13	2	ppm	8.4		19.1	9.0	3.20
02P17	2022	1.9	Olsen	11	255	4	14	1	ppm	8.3		19.8	8.0	2.20
02P19	2022	2.3	Olsen	19	355	4	13	1	ppm	8.2		19.6	15.0	2.90
02P22	2022	3.3	Olsen	30	325	5	15	2	ppm	8.1		23.0	12.0	5.80
02P23	2022	2.6	Olsen	30	313	4	12	2	ppm	8.1		18.7	8.0	3.70
02P24	2022	2.8	Olsen	43	310	4	13	2	ppm	8.1		19.9	11.0	5.90
02P26	2022	2.7	Olsen	21	420	4	13	1	ppm	8.1		20.3	9.0	3.90
02P30	2022	2.9	Olsen	28	398	6	13	2	ppm	8.2		21.1	6.0	3.60
01P04									ppm					
01P10									ppm					
01P19	2022	4.0	Olsen	136	1,437	8	15	1	ppm	8.0		28.1	94.0	3.90
01P20	2022	2.9	Olsen	74	929	5	11		ppm	8.1		19.4	59.0	5.80
02P03	2022	3.6	Olsen	46	437	6	14	2	ppm	7.8		23.1	125.0	10.00
02P10	2022	2.6	Olsen	22	608	4	13	2	ppm	8.1		21.3	20.0	5.40
02P18	2022	2.6	Olsen	16	447	5	14	2	ppm	7.9		22.1	28.0	3.20

Field	Test Year	OM (%)	P Test Used	P	K	Mg	Ca	Na	Units	Soil pH	Buffer pH	CEC (meq/100g)	NO ₃ -N (ppm)	EC (mmhos/cm)
02P20	2022	2.4	Olsen	14	287	4	13	1	ppm	8.3		19.1	17.0	2.60
02P21	2022	3.1	Olsen	16	335	4	13	1	ppm	8.0		19.9	30.0	3.80
02P25	2022	3.1	Olsen	56	455	4	13	2	ppm	7.8		19.7	81.0	5.00
02P29	2022	3.3	Olsen	37	633	5	14	5	ppm	7.9		22.6	33.0	5.30
02P33	2022	4.2	Olsen	52	1,042	8	10	3	ppm	8.2		24.1	41.0	5.00
02P34	2022	3.1	Olsen	57	1,309	8	10	4	ppm	8.3		25.6	51.0	8.80
02P36	2022	3.0	Olsen	30	848	8	14	5	ppm	8.1		30.1	37.0	9.40
02BB	2022	4.5	Olsen	142	719	8	10	2	ppm	7.8		22.0	68.0	3.60
02BD	2022	2.7	Olsen	119	736	8	9	2	ppm	8.1		21.5	54.0	3.50
02BD 13-15	2022	5.2	Olsen	165	928	9	10	2	ppm	8.1		24.8	47.0	2.80
02BF	2022	3.9	Olsen	128	833	9	10	2	ppm	7.9		24.1	48.0	4.40
02BG	2022	3.5	Olsen	131	1,187	11	11	3	ppm	8.0		29.4	51.0	5.30
02P04	2022	2.6	Olsen	32	434	4	14	2	ppm	7.9		21.5	49.0	5.60
02P05	2022	2.2	Olsen	22	378	4	13	1	ppm	8.1		19.9	47.0	3.90
02P09	2022	2.6	Olsen	16	502	3	13	2	ppm	8.1		20.0	54.0	5.10
02P12B	2022	2.3	Olsen	20	494	4	14	2	ppm	8.1		21.2	54.0	4.00
02P13	2022	1.9	Olsen	18	343	2	11	2	ppm	8.1		16.4	32.0	3.60
02P16	2022	2.2	Olsen	16	463	4	14	1	ppm	8.0		20.6	41.0	3.30
02P28	2022	2.0	Olsen	28	463	5	14	1	ppm	7.9		21.7	37.0	4.50
02P31	2022	3.0	Olsen	32	538	6	14	2	ppm	7.9		23.9	39.0	5.50
02P32	2022	3.0	Olsen	100	1,254	6	10	3	ppm	8.3		23.8	90.0	8.80
02P35	2022	2.5	Olsen	28	751	6	11	3	ppm	8.2		22.1	59.0	7.20
02BC	2022	3.5	Olsen	129	858	8	11	2	ppm	8.0		23.6	40.0	4.70
02BA	2022	3.4	Olsen	200	1,008	8	10	2	ppm	7.9		24.2	2.4	5.50
02BH	2022	3.4	Olsen	130	1,194	10	10	3	ppm	8.1		26.1	59.0	5.50
02BE	2022	3.6	Olsen	142	752	8	11	2	ppm	7.9		23.6	56.0	5.50

3.4. Manure Nutrient Analyses

Manure Source	Dry Matter (%)	Total N	NH ₄ -N	Total P ₂ O ₅	Total K ₂ O	Avail. P ₂ O ₅	Avail. K ₂ O	Units	Analysis Source and Date
Pond 1		31.4	6.3	16.7	32.3	13.4	27.5	lbs/1000 gal	MMP Estimate
Pond 2		31.4	6.3	16.7	32.3	13.4	27.5	lbs/1000 gal	MMP Estimate
Pond 3		24.4	4.9	11.1	28.3	8.9	24.1	lbs/1000 gal	MMP Estimate
Pond 4		24.4	4.9	11.1	28.3	8.9	24.1	lbs/1000 gal	MMP Estimate
Pond 5								lbs/1000 gal	MMP Estimate
Compost 1		6.7	1.3	4.0	7.7	3.2	6.5	lbs/ton	MMP Estimate
Compost 2		6.7	1.3	4.0	7.7	3.2	6.5	lbs/ton	MMP Estimate
Compost 3		4.4	0.9	2.1	6.8	1.7	5.8	lbs/ton	MMP Estimate
Fresh Pond		20.4	3.9	8.8	28.4	7.0	24.1	lbs/1000 gal	MMP Estimate
Settling Pond 1								lbs/1000 gal	MMP Estimate
Settling Pond 2								lbs/1000 gal	MMP Estimate
Cross Cattle Pen		7.9	2.7	4.6	7.9	3.7	6.7	lbs/ton	MMP Estimate
Hol Hef Beef Pen		4.4	0.9	2.1	6.8	1.7	5.8	lbs/ton	MMP Estimate
DLL Bull Pen		6.3	2.7	8.6	9.8	6.9	8.3	lbs/ton	MMP Estimate
DLL Heifer Pen		4.4	0.9	2.1	6.8	1.7	5.8	lbs/ton	MMP Estimate
DLL Steer Pen		6.3	2.3	8.4	9.8	6.7	8.3	lbs/ton	MMP Estimate
Welfare Steer Pen		6.3	2.3	8.4	9.8	6.7	8.3	lbs/ton	MMP Estimate

a. Entered analysis may be the average of several individual analyses.

b. Utah assumes that 80% of manure phosphorus and 85% of manure potassium is crop available. First-year per-acre nitrogen availability for individual manure applications is given in the Planned Nutrient Applications table. For more information about nitrogen availability in Utah, see Manure Estimated Nutrient Content spreadsheet, version 3.0e2.

3.5. Planned Crops and Fertilizer Recommendations

Field	Crop Year	Planned Crop	Yield Goal (per ac)	N Rec (lbs/ac)	P ₂ O ₅ Rec (lbs/ac)	K ₂ O Rec (lbs/ac)	N Removed (lbs/ac)	P ₂ O ₅ Removed (lbs/ac)	K ₂ O Removed (lbs/ac)	Custom Fert. Rec. Source
01P05	2023	Alfalfa	7.0 tons	0	0	0	396	93	420	
01P06	2023	Alfalfa	7.0 tons	0	0	0	396	93	420	
01P07	2023	Alfalfa	7.0 tons	0	0	0	396	93	420	
01P08	2023	Alfalfa	7.0 tons	0	0	0	396	93	420	
01P24	2023	Alfalfa	7.0 tons	0	0	0	396	93	420	
01P25	2023	Alfalfa	7.0 tons	0	0	0	396	93	420	
01P28	2023	Alfalfa	7.0 tons	0	75	0	396	93	420	
01P29	2023	Alfalfa	7.0 tons	0	0	0	396	93	420	
01P30	2023	Alfalfa	7.0 tons	0	0	0	396	93	420	
01P31	2023	Alfalfa	7.0 tons	0	0	0	396	93	420	
01P35	2023	Alfalfa	7.0 tons	0	0	0	396	93	420	
01P37	2023	Alfalfa	7.0 tons	0	75	0	396	93	420	
01P03	2023	Grass (100%)	12.5 tons	175	0	0	500	161	735	
01P11	2023	Grass (100%)	12.5 tons	175	0	0	500	161	735	
01P16	2023	Grass (100%)	12.5 tons	175			500	161	735	
01P18	2023	Grass (100%)	12.5 tons	175	0	0	500	161	735	
01P33	2023	Grass (100%)	12.5 tons	175	0	0	500	161	735	
01P34	2023	Grass (100%)	12.5 tons	175	25	0	500	161	735	
01WL	2023	Grass (100%)	12.5 tons	175	0	0	500	161	735	
01WL 01P25	2023	Grass (100%)	12.5 tons	175	0	0	500	161	735	
01WL wrights	2023	Grass (100%)	12.5 tons	175	0	0	500	161	735	
01P09	2023	Corn silage	28.0 tons	45	0	0	252	87	252	
01P12	2023	Corn silage	28.0 tons	0	0	0	252	87	252	
01P15	2023	Corn silage	28.0 tons	50	0	0	252	87	252	
01P17	2023	Corn silage	28.0 tons	25	0	0	252	87	252	
01P21	2023	Corn silage	28.0 tons	90	0	0	252	87	252	
01P26	2023	Corn silage	28.0 tons	95	50	0	252	87	252	

Field	Crop Year	Planned Crop	Yield Goal (per ac)	N Rec (lbs/ac)	P ₂ O ₅ Rec (lbs/ac)	K ₂ O Rec (lbs/ac)	N Removed (lbs/ac)	P ₂ O ₅ Removed (lbs/ac)	K ₂ O Removed (lbs/ac)	Custom Fert. Rec. Source
01P27	2023	Corn silage	28.0 tons	30	50	0	252	87	252	
01P32	2023	Corn silage	28.0 tons	100	0	0	252	87	252	
01P36	2023	Corn silage	28.0 tons	120	0	0	252	87	252	
01P01	2023	Grass (100%)	10.0 tons	175	0	0	400	129	588	
01P02	2023	Grass (100%)	10.0 tons	175	0	0	400	129	588	
01P13	2023	Grass (100%)	10.0 tons	175	0	0	400	129	588	
01P14	2023	Grass (100%)	10.0 tons	175	0	0	400	129	588	
01P22	2023	Grass (100%)	10.0 tons	175	0	0	400	129	588	
02F27	2023	Grass (100%)	10.0 tons	175	0	0	400	129	588	
02P01	2023	Alfalfa	7.0 tons	0	0	0	396	93	420	
02P02	2023	Alfalfa	7.0 tons	0	0	0	396	93	420	
02P06	2023	Alfalfa	7.0 tons	0	0	0	396	93	420	
02P07	2023	Alfalfa	7.0 tons	0	0	0	396	93	420	
02P08	2023	Alfalfa	7.0 tons	0	0	0	396	93	420	
02P11	2023	Alfalfa	7.0 tons	0	0	0	396	93	420	
02P12A	2023	Alfalfa	7.0 tons	0	0	0	396	93	420	
02P14	2023	Alfalfa	7.0 tons	0	75	0	396	93	420	
02P15	2023	Alfalfa	7.0 tons	0	75	0	396	93	420	
02P17	2023	Alfalfa	7.0 tons	0	75	0	396	93	420	
02P19	2023	Alfalfa	7.0 tons	0	0	0	396	93	420	
02P22	2023	Alfalfa	7.0 tons	0	0	0	396	93	420	
02P23	2023	Alfalfa	7.0 tons	0	0	0	396	93	420	
02P24	2023	Alfalfa	7.0 tons	0	0	0	396	93	420	
02P26	2023	Alfalfa	7.0 tons	0	0	0	396	93	420	
02P30	2023	Alfalfa	7.0 tons	0	0	0	396	93	420	
01P04	2023	Grass (100%)	10.0 tons	175			400	129	588	
01P10	2023	Grass (100%)	10.0 tons	175			400	129	588	
01P19	2023	Grass (100%)	10.0 tons	175	0	0	400	129	588	

Field	Crop Year	Planned Crop	Yield Goal (per ac)	N Rec (lbs/ac)	P ₂ O ₅ Rec (lbs/ac)	K ₂ O Rec (lbs/ac)	N Removed (lbs/ac)	P ₂ O ₅ Removed (lbs/ac)	K ₂ O Removed (lbs/ac)	Custom Fert. Rec. Source
01P20	2023	Grass (100%)	10.0 tons	175	0	0	400	129	588	
02P03	2023	Corn silage	28.0 tons	0	0	0	252	87	252	
02P10	2023	Corn silage	28.0 tons	130	0	0	252	87	252	
02P18	2023	Corn silage	28.0 tons	100	0	0	252	87	252	
02P20	2023	Corn silage	28.0 tons	140	50	0	252	87	252	
02P21	2023	Corn silage	28.0 tons	95	0	0	252	87	252	
02P25	2023	Corn silage	28.0 tons	0	0	0	252	87	252	
02P29	2023	Corn silage	28.0 tons	85	0	0	252	87	252	
02P33	2023	Corn silage	28.0 tons	55	0	0	252	87	252	
02P34	2023	Corn silage	28.0 tons	20	0	0	252	87	252	
02P36	2023	Corn silage	28.0 tons	70	0	0	252	87	252	
02BB	2023	Corn silage	28.0 tons	0	0	0	252	87	252	
02BD	2023	Corn silage	28.0 tons	10	0	0	252	87	252	
02BD 13-15	2023	Corn silage	28.0 tons	35	0	0	252	87	252	
02BF	2023	Corn silage	28.0 tons	30	0	0	252	87	252	
02BG	2023	Corn silage	28.0 tons	20	0	0	252	87	252	
02P04	2023	Grass (100%)	10.0 tons	175	0	0	400	129	588	
02P05	2023	Grass (100%)	10.0 tons	175	0	0	400	129	588	
02P09	2023	Grass (100%)	10.0 tons	175	0	0	400	129	588	
02P12B	2023	Grass (100%)	10.0 tons	175	0	0	400	129	588	
02P13	2023	Grass (100%)	10.0 tons	175	0	0	400	129	588	
02P16	2023	Grass (100%)	10.0 tons	175	0	0	400	129	588	
02P28	2023	Grass (100%)	10.0 tons	175	0	0	400	129	588	
02P31	2023	Grass (100%)	10.0 tons	175	0	0	400	129	588	
02P32	2023	Grass (100%)	10.0 tons	175	0	0	400	129	588	
02P35	2023	Grass (100%)	10.0 tons	175	0	0	400	129	588	
02BC	2023	Grass (100%)	10.0 tons	175	0	0	400	129	588	
02BA	2023	Grass (100%)	10.0 tons	175	0	0	400	129	588	

Field	Crop Year	Planned Crop	Yield Goal (per ac)	N Rec (lbs/ac)	P ₂ O ₅ Rec (lbs/ac)	K ₂ O Rec (lbs/ac)	N Removed (lbs/ac)	P ₂ O ₅ Removed (lbs/ac)	K ₂ O Removed (lbs/ac)	Custom Fert. Rec. Source
02BH	2023	Grass (100%)	10.0 tons	175	0	0	400	129	588	
02BE	2023	Grass (100%)	10.0 tons	175	0	0	400	129	588	

a. Unharvested cover crop or first crop in double-crop system.

b. Custom fertilizer recommendation.

3.6. Planned Nutrient Applications (Manure-spreadable Area)

Field	App. Month	Target Crop	Nutrient Source	Application Method	Rate Basis	Rate/Acre	Loads, Speed or Time	Total Amount Applied	Acres Cov.	Avail N (lbs/ac)	Avail P ₂ O ₅ (lbs/ac)	Avail K ₂ O (lbs/ac)
01P05	Dec 2023	Alfalfa	Pond 2	Pivots	1-yr N	27,554 gal	221 min	2,099,615 gal	76.2	397	368	758
01P07	Dec 2023	Alfalfa	Pond 2	Pivots	1-yr N	27,554 gal	290 min	2,755,400 gal	100.0	397	368	758
01P08	Dec 2023	Alfalfa	Pond 2	Pivots	1-yr N	27,554 gal	37 min	347,985 gal	12.6	397	368	758
01P03	Jan 2024	Grass (100%)	Pond 2	Pivots	1-yr N	34,754 gal	55 min	520,300 gal	15.0	500	464	956
01P03	Jan 2024	Grass (100%)	Compost 2	Box Spreader, incorp. w/in 30 day(s)	1-yr N	172.5 tons	2400.7 loads	24,007 tons	139.2	500	552	1121
01P11	Aug 2023	Grass (100%)	Hol Hef Beef Pen	Box Spreader, incorp. w/in 30 day(s)	1-yr N	500 tons	234.6 loads	2,346 tons	4.7	500	840	2900
01P11	Feb 2024	Grass (100%)	Pond 2	Pivots	1-yr N	34,754 gal	55 min	520,300 gal	15.0	500	464	956
01P16	Feb 2024	Grass (100%)	Hol Hef Beef Pen	Box Spreader, incorp. w/in 30 day(s)	1-yr N	250 tons	234.6 loads	2,346 tons	9.4	500	420	1450
01P18	Dec 2023	Grass (100%)	Pond 3	Pivots	1-yr N	44,654 gal	83 min	790,000 gal	17.7	500	397	1076
01P34	Dec 2023	Grass (100%)	Pond 4	Pivots	1-yr N	44,654 gal	83 min	790,000 gal	17.7	500	397	1076
01P09	Dec 2023	Corn silage	Pond 1	Pivots	1-yr N	27,154 gal	489 min	4,643,334 gal	171.0	391	363	747
01P12	Dec 2023	Corn silage	Pond 1	Pivots	1-yr N	27,154 gal	58 min	555,666 gal	20.5	391	363	747
01P15	Jan 2024	Corn silage	Pond 1	Pivots	1-yr N	27,154 gal	55 min	519,900 gal	19.1	391	363	747
01P21	Feb 2024	Corn silage	Pond 1	Pivots	1-yr N	27,154 gal	55 min	519,900 gal	19.1	391	363	747

3.7. Field Nutrient Balance (Manure-spreadable Area)

Year	Field	Size ac	Crop	Yield Goal per ac	Fertilizer Recs ^a			Nutrients Applied ^b			Balance After Recs ^c			Balance After Removal ^d	
					N lbs/ac	P ₂ O ₅ lbs/ac	K ₂ O lbs/ac	N lbs/ac	P ₂ O ₅ lbs/ac	K ₂ O lbs/ac	N lbs/ac	P ₂ O ₅ lbs/ac	K ₂ O lbs/ac	P ₂ O ₅ lbs/ac	K ₂ O lbs/ac
2023	01P05	76.2	Alfalfa	7	0	0	0	0	0	0	0	0	0	-93	-420
2023	01P06	100.0	Alfalfa	7	0	0	0	0	0	0	0	0	0	-93	-420
2023	01P07	117.6	Alfalfa	7	0	0	0	0	0	0	0	0	0	-93	-420
2023	01P08	85.9	Alfalfa	7	0	0	0	0	0	0	0	0	0	-93	-420
2023	01P24	129.6	Alfalfa	7	0	0	0	0	0	0	0	0	0	-93	-420
2023	01P25	119.5	Alfalfa	7	0	0	0	0	0	0	0	0	0	-93	-420
2023	01P28	54.9	Alfalfa	7	0	75	0	0	0	0	0	-75	0	-93	-420
2023	01P29	57.4	Alfalfa	7	0	0	0	0	0	0	0	0	0	-93	-420
2023	01P30	89.5	Alfalfa	7	0	0	0	0	0	0	0	0	0	-93	-420
2023	01P31	121.6	Alfalfa	7	0	0	0	0	0	0	0	0	0	-93	-420
2023	01P35	63.2	Alfalfa	7	0	0	0	0	0	0	0	0	0	-93	-420
2023	01P37	119.0	Alfalfa	7	0	75	0	0	0	0	0	-75	0	-93	-420
2023	01P03	171.0	Grass (100%)	12.5	175	0	0	0	0	0	-175	0	0	-161	-735
2023	01P11	123.8	Grass (100%)	12.5	175	0	0	19	32	110	-156	32	110	-129	-625
2023	01P16	125.2	Grass (100%)	12.5	175			0	0	0	-175			-161	-735
2023	01P18	123.0	Grass (100%)	12.5	175	0	0	0	0	0	-175	0	0	-161	-735
2023	01P33	122.0	Grass (100%)	12.5	175	0	0	0	0	0	-175	0	0	-161	-735
2023	01P34	114.6	Grass (100%)	12.5	175	25	0	0	0	0	-175	-25	0	-161	-735
2023	01WL	55.0	Grass (100%)	12.5	175	0	0	0	0	0	-175	0	0	-161	-735
2023	01WL 01P25	40.0	Grass (100%)	12.5	175	0	0	0	0	0	-175	0	0	-161	-735
2023	01WL wrights	92.0	Grass (100%)	12.5	175	0	0	0	0	0	-175	0	0	-161	-735
2023	01P09	171.0	Corn silage	28	45	0	0	0	0	0	-45	0	0	-87	-252
2023	01P12	124.7	Corn silage	28	0	0	0	0	0	0	0	0	0	-87	-252
2023	01P15	120.8	Corn silage	28	50	0	0	0	0	0	-50	0	0	-87	-252
2023	01P17	125.4	Corn silage	28	25	0	0	0	0	0	-25	0	0	-87	-252
2023	01P21	61.6	Corn silage	28	90	0	0	0	0	0	-90	0	0	-87	-252
2023	01P26	121.5	Corn silage	28	95	50	0	0	0	0	-95	-50	0	-87	-252
2023	01P27	115.1	Corn silage	28	30	50	0	0	0	0	-30	-50	0	-87	-252
2023	01P32	130.4	Corn silage	28	100	0	0	0	0	0	-100	0	0	-87	-252

Year	Field	Size ac	Crop	Yield Goal per ac	Fertilizer Recs ^a			Nutrients Applied ^b			Balance After Recs ^c			Balance After Removal ^d	
					N lbs/ac	P ₂ O ₅ lbs/ac	K ₂ O lbs/ac	N lbs/ac	P ₂ O ₅ lbs/ac	K ₂ O lbs/ac	N lbs/ac	P ₂ O ₅ lbs/ac	K ₂ O lbs/ac	P ₂ O ₅ lbs/ac	K ₂ O lbs/ac
2023	01P36	113.9	Corn silage	28	120	0	0	0	0	0	-120	0	0	-87	-252
2023	01P01	97.6	Grass (100%)	10	175	0	0	0	0	0	-175	0	0	-129	-588
2023	01P02	171.4	Grass (100%)	10	175	0	0	0	0	0	-175	0	0	-129	-588
2023	01P13	120.0	Grass (100%)	10	175	0	0	0	0	0	-175	0	0	-129	-588
2023	01P14	125.0	Grass (100%)	10	175	0	0	0	0	0	-175	0	0	-129	-588
2023	01P22	125.3	Grass (100%)	10	175	0	0	0	0	0	-175	0	0	-129	-588
2023	02F27	64.0	Grass (100%)	10	175	0	0	0	0	0	-175	0	0	-129	-588
2023	02P01	129.0	Alfalfa	7	0	0	0	0	0	0	0	0	0	-93	-420
2023	02P02	125.5	Alfalfa	7	0	0	0	0	0	0	0	0	0	-93	-420
2023	02P06	124.0	Alfalfa	7	0	0	0	0	0	0	0	0	0	-93	-420
2023	02P07	121.1	Alfalfa	7	0	0	0	0	0	0	0	0	0	-93	-420
2023	02P08	123.3	Alfalfa	7	0	0	0	0	0	0	0	0	0	-93	-420
2023	02P11	125.1	Alfalfa	7	0	0	0	0	0	0	0	0	0	-93	-420
2023	02P12A	144.2	Alfalfa	7	0	0	0	0	0	0	0	0	0	-93	-420
2023	02P14	112.1	Alfalfa	7	0	75	0	0	0	0	0	-75	0	-93	-420
2023	02P15	114.4	Alfalfa	7	0	75	0	0	0	0	0	-75	0	-93	-420
2023	02P17	92.0	Alfalfa	7	0	75	0	0	0	0	0	-75	0	-93	-420
2023	02P19	118.0	Alfalfa	7	0	0	0	0	0	0	0	0	0	-93	-420
2023	02P22	124.7	Alfalfa	7	0	0	0	0	0	0	0	0	0	-93	-420
2023	02P23	125.6	Alfalfa	7	0	0	0	0	0	0	0	0	0	-93	-420
2023	02P24	100.7	Alfalfa	7	0	0	0	0	0	0	0	0	0	-93	-420
2023	02P26	56.4	Alfalfa	7	0	0	0	0	0	0	0	0	0	-93	-420
2023	02P30	116.3	Alfalfa	7	0	0	0	0	0	0	0	0	0	-93	-420
2023	01P04	125.0	Grass (100%)	10	175			0	0	0	-175			-129	-588
2023	01P10	124.6	Grass (100%)	10	175			0	0	0	-175			-129	-588
2023	01P19	123.0	Grass (100%)	10	175	0	0	0	0	0	-175	0	0	-129	-588
2023	01P20	121.4	Grass (100%)	10	175	0	0	0	0	0	-175	0	0	-129	-588
2023	02P03	125.4	Corn silage	28	0	0	0	0	0	0	0	0	0	-87	-252
2023	02P10	124.9	Corn silage	28	130	0	0	0	0	0	-130	0	0	-87	-252
2023	02P18	87.0	Corn silage	28	100	0	0	0	0	0	-100	0	0	-87	-252

Year	Field	Size ac	Crop	Yield Goal per ac	Fertilizer Recs ^a			Nutrients Applied ^b			Balance After Recs ^c			Balance After Removal ^d	
					N lbs/ac	P ₂ O ₅ lbs/ac	K ₂ O lbs/ac	N lbs/ac	P ₂ O ₅ lbs/ac	K ₂ O lbs/ac	N lbs/ac	P ₂ O ₅ lbs/ac	K ₂ O lbs/ac	P ₂ O ₅ lbs/ac	K ₂ O lbs/ac
2023	02P20	124.9	Corn silage	28	140	50	0	0	0	0	-140	-50	0	-87	-252
2023	02P21	125.5	Corn silage	28	95	0	0	0	0	0	-95	0	0	-87	-252
2023	02P25	100.6	Corn silage	28	0	0	0	0	0	0	0	0	0	-87	-252
2023	02P29	109.9	Corn silage	28	85	0	0	0	0	0	-85	0	0	-87	-252
2023	02P33	127.0	Corn silage	28	55	0	0	0	0	0	-55	0	0	-87	-252
2023	02P34	127.0	Corn silage	28	20	0	0	0	0	0	-20	0	0	-87	-252
2023	02P36	161.0	Corn silage	28	70	0	0	0	0	0	-70	0	0	-87	-252
2023	02BB	98.0	Corn silage	28	0	0	0	0	0	0	0	0	0	-87	-252
2023	02BD	125.0	Corn silage	28	10	0	0	0	0	0	-10	0	0	-87	-252
2023	02BD 13-15	60.0	Corn silage	28	35	0	0	0	0	0	-35	0	0	-87	-252
2023	02BF	118.0	Corn silage	28	30	0	0	0	0	0	-30	0	0	-87	-252
2023	02BG	117.0	Corn silage	28	20	0	0	0	0	0	-20	0	0	-87	-252
2023	02P04	123.6	Grass (100%)	10	175	0	0	0	0	0	-175	0	0	-129	-588
2023	02P05	129.3	Grass (100%)	10	175	0	0	0	0	0	-175	0	0	-129	-588
2023	02P09	124.6	Grass (100%)	10	175	0	0	0	0	0	-175	0	0	-129	-588
2023	02P12B	124.8	Grass (100%)	10	175	0	0	0	0	0	-175	0	0	-129	-588
2023	02P13	124.5	Grass (100%)	10	175	0	0	0	0	0	-175	0	0	-129	-588
2023	02P16	96.0	Grass (100%)	10	175	0	0	0	0	0	-175	0	0	-129	-588
2023	02P28	74.6	Grass (100%)	10	175	0	0	0	0	0	-175	0	0	-129	-588
2023	02P31	142.5	Grass (100%)	10	175	0	0	0	0	0	-175	0	0	-129	-588
2023	02P32	127.0	Grass (100%)	10	175	0	0	0	0	0	-175	0	0	-129	-588
2023	02P35	161.0	Grass (100%)	10	175	0	0	0	0	0	-175	0	0	-129	-588
2023	02BC	111.0	Grass (100%)	10	175	0	0	0	0	0	-175	0	0	-129	-588
2023	02BA	62.0	Grass (100%)	10	175	0	0	0	0	0	-175	0	0	-129	-588
2023	02BH	113.0	Grass (100%)	10	175	0	0	0	0	0	-175	0	0	-129	-588
2023	02BE	117.0	Grass (100%)	10	175	0	0	0	0	0	-175	0	0	-129	-588

^a Fertilizer Recs are the crop fertilizer recommendations. The N rec accounts for any N credit from previous legume crop.

^b Nutrients Applied are the nutrients expected to be available to the crop from that year's manure applications plus nutrients from that year's commercial fertilizer applications and nitrates from irrigation water. With a double-crop year, the total nutrients applied for both crops and the year's balances are listed on the second crop's line.

^c For N, Nutrients Applied minus Fertilizer Recs for indicated crop year. Also includes amount of residual N expected to become available that year from prior years' manure applications. For P₂O₅ and K₂O, Nutrients Applied minus Fertilizer Recs *through* the indicated crop year, with positive balances carried forward to subsequent years. Negative

values indicate a potential need to apply additional nutrients.

d Nutrients Applied minus amount removed by harvested portion of crop through the indicated year. Positive balances are carried forward to subsequent years.

e Custom fertilizer recommendation.

f Legume crop is assumed to utilize some or all of the supplied N.

g Includes residual N expected to become available that year from prior years' manure applications.

3.8. Manure Inventory Annual Summary (Optional)

Manure Source	Plan Period	On Hand at Start of Period	Total Generated	Total Imported	Total Transferred In	Total Applied	Total Exported	Total Transferred Out	On Hand at End of Period	Units
Pond 1	Mar '23 - Feb '24	0	6,239,000	0	0	6,238,800	0	0	200 gal	
Pond 2	Mar '23 - Feb '24	0	6,244,000	0	0	6,243,600	0	0	400 gal	
Pond 3	Mar '23 - Feb '24	0	948,000	0	0	790,000	0	0	158,000 gal	
Pond 4	Mar '23 - Feb '24	0	948,000	0	0	790,000	0	0	158,000 gal	
Pond 5	Mar '23 - Feb '24	0	0	0	0	0	0	0	0 gal	
Compost 1	Mar '23 - Feb '24	0	26,166	0	0	0	0	0	26,166 tons	
Compost 2	Mar '23 - Feb '24	0	26,190	0	0	24,007	0	0	2,183 tons	
Compost 3	Mar '23 - Feb '24	0	8,724	0	0	0	0	0	8,724 tons	
Fresh Pond	Mar '23 - Feb '24	0	2,095,000	0	0	0	0	0	2,095,000 gal	
Settling Pond 1	Mar '23 - Feb '24	0	0	0	0	0	0	0	0 gal	
Settling Pond 2	Mar '23 - Feb '24	0	0	0	0	0	0	0	0 gal	
Cross Cattle Pen	Mar '23 - Feb '24	0	534	0	0	0	0	0	534 tons	
Hol Heifer Beef Pen	Mar '23 - Feb '24	0	4,692	0	0	4,692	0	0	0 tons	
DLL Bull Pen	Mar '23 - Feb '24	0	822	0	0	0	0	0	822 tons	
DLL Heifer Pen	Mar '23 - Feb '24	0	686	0	0	0	0	0	686 tons	
DLL Steer Pen	Mar '23 - Feb '24	0	567	0	0	0	0	0	567 tons	
Welfare Steer Pen	Mar '23 - Feb '24	0	486	0	0	0	0	0	486 tons	
All Sources (liquid)	Mar '23 - Feb '24	0	16,474,000	0	0	14,062,400	0	0	2,411,600 gal	
All Sources (solid)	Mar '23 - Feb '24	0	68,867	0	0	28,699	0	0	40,168 tons	

3.10. Plan Nutrient Balance (Manure-spreadable Area)

	N (lbs)	P ₂ O ₅ (lbs)	K ₂ O (lbs)
Total Manure Nutrients on Hand at Start of Plan ^a	0	0	0
Total Manure Nutrients Collected ^b	909,832	505,357	1,037,984
Total Manure Nutrients Imported ^c	0	0	0
Total Manure Nutrients Exported ^d	0	0	0
Total Manure Nutrients Gained/Lost in Transfer ^e	0	0	0
Total Manure Nutrients on Hand at End of Plan ^f	297,841	173,481	373,329
Total Manure Nutrients Applied ^g	612,157	331,778	664,732
Available Manure Nutrients Applied (Utilized by plan's crops) ^h	2,350	3,948	13,630
Available Manure Nutrients Applied (Not utilized by plan's crops) ⁱ	271,766	261,620	551,140
Commercial Fertilizer Nutrients Applied (Utilized by plan's crops) ^j	0	0	0
Commercial Fertilizer Nutrients Applied (Not utilized by plan's crops) ^k	0	0	0
Available Nutrients Applied (Manure and fertilizer; utilized by plan's crops) ^l	2,350	3,948	13,630
Nutrient Utilization Potential ^m	2,004,692	1,043,190	4,337,420
Nutrient Balance of Spreadable Acres ^{n p}	-2,002,342	-1,039,242	-4,323,790
Average Nutrient Balance per Spreadable Acre per Year ^{o p}	-209	-108	-451

a. Total manure nutrients present in storage at the beginning of the plan.

b. Total manure nutrients collected on the farm.

c. Total manure nutrients imported onto the farm.

d. Total manure nutrients exported from the farm to an external operation.

e. Net change in total manure nutrients due to transfers between storage units with differing analyses.

f. Total manure nutrients present in storage at the end of plan.

g. Total nutrients present in land-applied manure. These values do not account for losses due to rate, timing, and method of application.

h. Manure nutrients applied and available to crops in the plan. These values are based on the total manure nutrients applied after accounting for nutrient losses due to rate, timing, and method of application. Nutrients which will not be utilized by crops in the plan are excluded from these values.

i. Manure nutrients applied that will be utilized by crops outside the plan. This usually results from Fall nutrient applications at the end of the plan intended for crops in subsequent years.

j. Nutrients applied as commercial fertilizers and nitrates contained in irrigation water. Nutrients that will not be utilized by crops in the plan are excluded from these values.

k. Nutrients applied as commercial fertilizer which will be utilized by crops outside the plan.

l. Sum of available manure nutrients applied and commercial fertilizer nutrients applied.

m. Nutrient utilization potential of crops grown. For N the value is based on the N recommendation for non-legume crops and N uptake or other state-imposed limit for N application rates for legumes. P₂O₅ and K₂O values are based on fertilizer recommendations or crop removal (whichever is greater).

n. Available nutrients applied minus crop nutrient utilization potential. Negative values indicate additional nutrient utilization potential and positive values indicate over-application.

o. Average per acre-year nutrient balance. Values are calculated by dividing nutrient balance of spreadable acres by the number of spreadable acres in the plan and by the length of the plan in years. Negative values indicate additional nutrient utilization potential and positive values indicate over-application.

p. Non-trivial, positive values for N indicate that the plan was not properly developed. Negative values for N indicate additional nutrient utilization potential which may or may not be intentional. For example, plans that include legume crops often will not utilize the full N utilization potential for legume crops if manure can be applied to non-legume crops that require N for optimum yield. Positive values for P₂O₅ and/or K₂O do not necessarily indicate that the plan was developed improperly. For example, producers may be allowed to apply N-based application rates of manure to fields with low soil test P values or fields with a low potential P-loss risk based on the risk assessment tool used by the state. Negative values for P₂O₅ and K₂O indicate that planned applications to some fields are less than crop removal rates or fertilizer recommendations.

EVA 2023 Updated CNMP

Final Audit Report

2023-04-25

Created:	2023-04-24
By:	Tracy McDaniel (tmcdaniel@agreserves.com)
Status:	Signed
Transaction ID:	CBJCHBCAABAA-oqv5Ay6TWBR182FGfZTPpbTvEsbVUIv

"EVA 2023 Updated CNMP" History

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OWNER AND OPERATIONS MANUAL

ELBERTA VALLEY AG WASTEWATER MANAGEMENT SYSTEM

Revised August, 2025

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I. Project Summary

Ownership - Contact List

Elberta Valley Ag is owned and operated by Agreserves, Inc. The facility is located at 16100 So. 12800 West in Elberta, Utah 84626 Telephone: (801) 667-3500.

Managers to Contact:

Brandon Andersen	General Manager	(385) 312-2181
Nathan Judd	Nutrient Manager	(801) 667-3500

Purpose/objectives:

Elberta Valley Ag has two purposes: (1) to provide milk and other dairy products for The Church of Jesus Christ of Latter-day Saint's (Church) welfare system, and (2) the sale of excess milk on the open market, with the profits generated being used by the Church for humanitarian needs worldwide.

The dairy facility includes items that are required to properly utilize the animal waste produced by the dairy in an environmentally friendly way and in accordance with all government regulations. The following general list includes the major items to be addressed in this manual:

- Training of personnel
- Operation of each waste management element
 - Flush system
 - Lagoon system
 - Pumping system
 - Compost development facility
 - Lagoon water for irrigation
 - Solids separation system
- Storm drainage
- Test wells monitoring schedules
- Permit violation response
- Maintenance of waste management system/equipment
- Operating and maintenance schedules

II. Executive Summary

Purpose: To have a manual that expressly explains the operation and maintenance of the waste management system for Elberta Valley Ag.

Discussion: Elberta Valley Ag's dairy is a 6,500 wet cow dairy. The facility currently has one milking building with various rooms, milking equipment room, restrooms, offices and supply rooms and two double 40 herringbone parlors. A second, robotic parlor, is also in development and will be completed in the fall of 2025.

The waste management system consists of several components:

- A five cell aerobic lagoon system (76 million gallons)
- Pumps, underground piping, and automatic flush valves
- A recycle lagoon water system for flushing
- A flush water receiving area with concrete pits where the manure can be processed through a solids separation system
- A solids separation system that consists of an agitation pump, two liquid pumps and two solids separators
- Biologics are added from time to time to assure minimum odors and an aerobic system that functions as designed
- One 100,000 gallon tank for recycled water to flush alleys and lanes
- A compost area where the solids are stored and composted for use on the farm and dairy
- An irrigation system for the lagoon water to be applied to the farmland

The waste lagoons are lined according to DWQ regulations and it is the intent of Elberta Valley Ag management to be in compliance with all rules and conditions associated with the Ground Water Discharge Permit. Test wells are installed and samples will be taken in accordance with the rules.

This manual includes the information necessary to maintain the wastewater management system and the procedures associated with training and actions to be taken in the case of a malfunction.

III. Waste Management

Flush System

Freestall Barns

The flush system for the freestall barns consists of 39 automatic flush valves. There is a panel by each barn with buttons to activate the valves. Pumps are located in pump house #1 with a 100,000 gallon metal reservoir to hold recycled flush water, a pipe system to transfer lagoon water to the 100,000 gallon tank to the flush valves in the freestall barns and from the drains in the freestall barns to the solids separator receiving pits. Each valve can be activated automatically or manually as needed. The HMI controls for the flush valves in the freestall barn are located in the NW corner between the milking parlor and pen 8. The valves in the freestall barns are activated by an employee whose job title is cow pusher. Each time the pusher takes cows from one of the 18 pens to the milking parlor he goes to the panel next to the pen he is moving and pushes the button associated with that pen. There are two alleys in each pen. When the button is activated the first alley flushes the prescribed amount of time, normally about 90 seconds. When that alley is finished that valve closes and the flush valve for the second alley pops up and it is flushed. When the sequence is completed the valves shut off and recede into the concrete floor.

If for some reason the separator pumps are not working these buttons cannot be activated and there is an alarm that will notify those that have responsibility for the separator pumps that the system needs attention. If the flush valves do not activate the HMI panel identifies possible causes so the technician can rapidly diagnose the problem. Each employee that has responsibility for the flushing system is trained how to trouble shoot a problem and who to contact if a more skilled technician is needed.

Flush water recycling outlets from lagoon cells 4 and 5 provide water to the flush water recycling pumps located in pump house #1 near cell 4. Either cell or both cells can deliver water to the pump house via manual control valves in the cell outlet piping. The planned detention volume will be basically held in cells 1, 2 and 3. Transfer of water to cells 4 and 5 shall be as required to provide water for recycling during the required detention months of the year.

Milking Barn

The flush system for the milking parlors and holding pens consist of 12 automatic flush valves, a pipe and drainage system, a recycle pump that transfers water from the milk cooling system (chillers & plate coolers) to a 300,000 gallon metal reservoir.

The 300,000 gallon reservoir is located adjacent to the 100,000 gallon reservoir mentioned in the freestall section. The water from this 300,000 gallon tank is used for stock watering and to flush the milking parlors and holding pens. The flush valves in the milking parlors are automatically activated eighteen times per day. The water from the milking parlors drain into the same line that drains the rest of the facility. The holding pen flush water flows to the center cow alley at the rear of the milking building and follows the alley to the main drain at the very south of the freestall barns where it then flows into the solid separator receiving pit.

The same override that is on the freestall flush valves is on the milking parlor flush valves. Therefore, it would be nearly impossible for overflow from the drains or the separator receiving pit to spill effluent onto the ground.

Lagoon System

Lagoons

This facility has a five (5) cell interconnected lagoon system with 76 million gallons of wastewater storage at one time. Each of the five cells is 26 ft deep from the top of freeboard to the bottom of the cell. The cells all have 3:1 side slopes. Each cell is 219 ft wide at the edge of the freeboard, the maximum high water level in each cell is 2 ft below the freeboard.

Cell # 1	1000 ft. long
Cell # 2	800 ft. long
Cell # 3	650 ft. long
Cell # 4	500 ft. long
Cell # 5	350 ft. long

The volume designed into the lagoons provides wastewater treatment for 5,000 cows generating some 330,000 gallons of waste water per day, 365 days per year. Five-month detention (150 days) is planned at 50,000,000 gallons. The total five cell total storage volume is approximately 76,000,000 gallons.

The lagoon system is to be monitored three times a day by personnel trained to transfer water from cell to cell to maintain the desired level to accommodate the current inflow and cow flush water inflow. The inflow will be different depending on the number of cows in the freestall barns, evaporation and time of year.

Recycled lagoon water is used to flush freestall alleys in the freestall barns and the cow lanes from the freestall barn to the milking parlors. There is a grid of 15-inch underground piping that conveys the flush water from the dairy facility to a solid separation location where the liquid drops in the 15-inch pipe and is gravity fed to the #1 cell on the lagoon system. Measurement is required of all water use in the dairy system. The fresh water has totalizing water meters installed on the water well, the chiller pump inlet and the process water pump inlet. Each lagoon cell is equipped with a water level indicator measuring water depth in the cell at 1 foot intervals.

Lagoon water surface elevations are physically visible from the measuring points on the surface water indicator located on the freshwater make-up concrete apron found in each cell of the lagoon system.

The lagoon cells are all lined with a 20 ml. PVC liner and 12-inch clay ballast. The lagoons transfer water from cell to cell via manually operated transfer piping and/or overflow piping. Overflow piping is only from Cell 1 to 2 and Cell 3 to 4, because of difference in elevation. The transfer piping from Cell 2 to 3 and Cell 4 to 5 will be locked open to serve as overflow because

these Cells are the same elevation. There will be no over-flow out of cell 5, the lagoons are monitored three times daily and there is the capability to pump out of cell 5 to three separate pumping systems. The transfer pipes are set to be 6 feet above the bottom of each cell. The planned dead storage is to keep the aerobic microbes working in all cells in all conditions.

Each cell has a freshwater make-up supply with an air gap discharge onto a concrete apron. The freshwater inlet is manually controlled. Each freshwater apron has a lagoon water depth measuring device attached to the apron for visual observation of water depth. The lagoon cells are totally enclosed in a 6 ft high barb wire fence. The berms between cells are 30 ft and 24 ft wide to accommodate light truck traffic. All berms are finish graded with a gravel wearing surface.

SEE DRAWINGS C-1B, C-1, C-2 AND C-2A

Pumping System

Pump house #1

The flush water is recycled through a pump house located east of the lagoons and west of the heifer raising unit. The pump house is an enclosed block building with a duplex booster pump set (identical pumps) each delivering 1,160 GPM at 170 ft TDH to the flush water reservoir. The electrical control system for the pumps are located in the pump house. Only one (1) pump is normally operating at a time with the pumps alternating each time the pump control turns on the pumps. The pump is to maintain a set water level in the flush water reservoir. The inlet piping from lagoon cells 4 and 5 is a 10-inch diameter. The discharge piping just outside the pump house to the recycle flush water reservoir is 10-inch diameter PVC. All piping and/or plumbing in the pump house is metal pipe. The pumps are radio controlled by a sensor mounted on the flush water reservoir.

SEE DRAWING C-18

Compost Development

The solid waste that is generated from the flushing system and scrapings from the open lots is processed into compost. A commercial compost turner is used to convert raw dairy manure into high quality compost. The past practice is to use some compost for bedding for the livestock, and the remainder is applied to the crop land pursuant to a Comprehensive Nutrient Management Plan (approximately 9,500 acres). The manure from the solid separators is loaded onto dump trucks and hauled to the composting location near the dairy facility. Compost used for bedding will be turned enough times to elevate the temperature to over 130 degrees Fahrenheit to kill pathogens and allowed to dry down before placing into the freestalls as bedding. The material from open lots is turned fewer times and spread onto the crop land as fertilizer.

Irrigation System

The lagoons have a 150 days winter storage capacity for the winter months when land application through center irrigation pivots is difficult. It is the normal practice to irrigate until

November and begin again in March. In a rare instance if it were necessary to discontinue irrigation in October and not be able to resume until April this system would accommodate such an incident. The lagoon system is linked through independent underground lines to provide irrigation water from the lagoons to accommodate 3,200 acres (30 center pivots). The lagoons are used throughout the summer irrigation season to irrigate growing crops. In the fall they are pumped down and the water is applied to the land to allow room for winter storage. In early spring (March) the water accumulated through the winter is applied to farmland in preparation for spring planting. Soil and lagoon water samples are taken to determine the needs of the soil and the nutrients in the water is metered onto the fields based on the need of the crop being grown.

Freshwater make-up supplies with manual shut-off valves are located in each lagoon cell. Fresh water can be introduced to any lagoon with a 2 ft. minimum air gap discharging to a concrete apron running down the 3:1 slope to the operating water surface. The purpose of having an ability to provide make-up water to a given cell is to insure that when large amounts of lagoon water are taken to the irrigation system that any required surface elevation can be maintained to continue to develop flush water without interruption. The introduction of fresh water is vital to the management of the lagoon system.

Separator System

The separator facility is located immediately south of Freestall barn 4 and receives waste water from free-stalls and milking barn. The waste water is discharged into a holding vault that is accessible for periodic cleaning with a front end-loader. This holding area discharges the waste water over a weir in the side wall to a deep separator holding basin and then pumped to the separator equipment and conveyor system that separates solids over a screen. It then discharges the remaining water to lagoon cell 1. The conveyor separated material is stock-piled in piles to be picked up and delivered to the compost designated area by truck. Any time the holding basin is full and the separators are not keeping up with the demand or the two (2) separators are not working properly the total flush valve system is locked out from delivering additional waste water to the separator. The holding basin is provided with overflow ports in the side wall to safe-guard for an emergency with the flow going to the large catch basin where the solids are collected to drain directly into the waste water outfall line to lagoon cell 1.

Storm Drainage

Elberta Valley Ag's freestall barns and milking facility located west of the main office have covered roofs. The rainwater falls from the roofs onto an area that cattle do not have access to. The terrain is graded and sloped to the east where two small reservoirs are located to hold the storm water until it evaporates. The open corrals on the south end of the dairy facility the Elberta Heifer Center are sloped and graded to drain storm water to the south end of those corrals into a depression that is less than 100 X 300 X 2 feet deep where it can evaporate. The water is unable to leave the premises of the landowner and because the water table is near 200 feet there is not a concern for ground water contamination. There are only a few occasions in any given year where there would be standing water in this area and it only takes a short time for the water to dissipate.

Test Wells

Three test wells have been drilled located in accordance with the recommendations for the Department of Water Quality. The water table depth is between 175 and 250 feet. The test wells are at the depth required to reach the water level. Samples will be taken as prescribed in the ground water permit.

Permit Violation Response

If, for any reason, there is a discharge to the waters of the state, oral notification will be made within 24-hours to the Division of Water Quality (DWQ) (801-538-6146); or the 24-hour answering service (801-536-4123) and notify the Executive Secretary in writing within 5 working days of the discharge from the facility. Copies will be kept of the notification which will include:

1. Description of the discharge: A description of the discharge and its cause, including a description of the flow path to the receiving water body and an estimate of the flow and volume discharged.
2. Time of the discharge: The period of discharge, including exact dates and times, and the anticipated time it is expected to continue, and steps taken or planned to reduce, eliminate and prevent recurrence of the discharge.

IV. Training

Operation

-Flush system. Each time the cow pusher takes cows from one of the 16 pens to the milking parlor he goes to the panel next to the pen he is moving and pushes the button associated with that pen. There are two alleys in each pen, when the button is activated the first alley flushes the prescribed amount of time normally about 90 seconds when that alley is finished that valve closes and the flush valve for the second alley pops up and it is flushed. When the sequence is completed the valves shut off and recede into the concrete floor. If the separator holding basin is full or for some reason the separator pumps are not working these buttons cannot be activated.

-Lagoon system. The lagoon system will be monitored three times a day and personnel trained to monitor transfer water from cell to cell by adjusting the valves between cells 1&2 to maintain water levels. The valves between cells 3&4 will be opened and closed to maintain volume needed to supply flush system, and farm irrigation. Overflow piping is only from Cell 1 to 2 and Cell 3 to 4, because of difference in elevation. The transfer piping from Cell 2 to 3 and Cell 4 to 5 will be locked open to serve as overflow because these Cells are the same elevation.

-Pumping system. The pumps are automatically controlled by a sensor mounted on the flush water reservoir. Flush tank level is monitored daily by inspecting the visual level indicator on the tank. All flush valves are inspected daily for leaks.

-Compost development. The manure from the solid separators is loaded onto dump trucks and hauled to the composting location near the dairy facility. A commercial compost turner is used

to convert raw dairy manure into high quality compost. Compost will be turned enough times to elevate the temperature to over 130 degrees Fahrenheit to kill pathogens and allowed to dry down. Finished compost will be hauled to bedding area and farm crop land.

-Irrigation system. Soil samples from crop land and lagoon water samples are taken to determine the needs of the soil. The nutrients in the water are metered onto the fields based on the needs of the crop being grown.

-Solids separation system. The waste water is discharged into a holding vault and then over a weir in the side wall to a deep separator holding basin that is automatically controlled, pumping the waste water through the separator equipment and conveyor system and discharges the remaining water to lagoon cell 1.

-Permit violation response. If, for any reason, there is a discharge to the waters of the state, oral notification will be made within 24-hours to the Division of Water Quality (DWQ) (801-538-6146); or the 24 hour answering service (801-536-4123) and notify the Executive Secretary in writing within 5 working days of the discharge from the facility. Copies will be kept of the notification which will include:

-Description of the discharge: A description of the discharge and its cause, including a description of the flow path to the receiving water body and an estimate of the flow and volume discharged.

-Time of the discharge: The period of discharge, including exact dates and times, and the anticipated time it is expected to continue, and steps taken or planned to reduce, eliminate and prevent recurrence of the discharge.

V. Permits

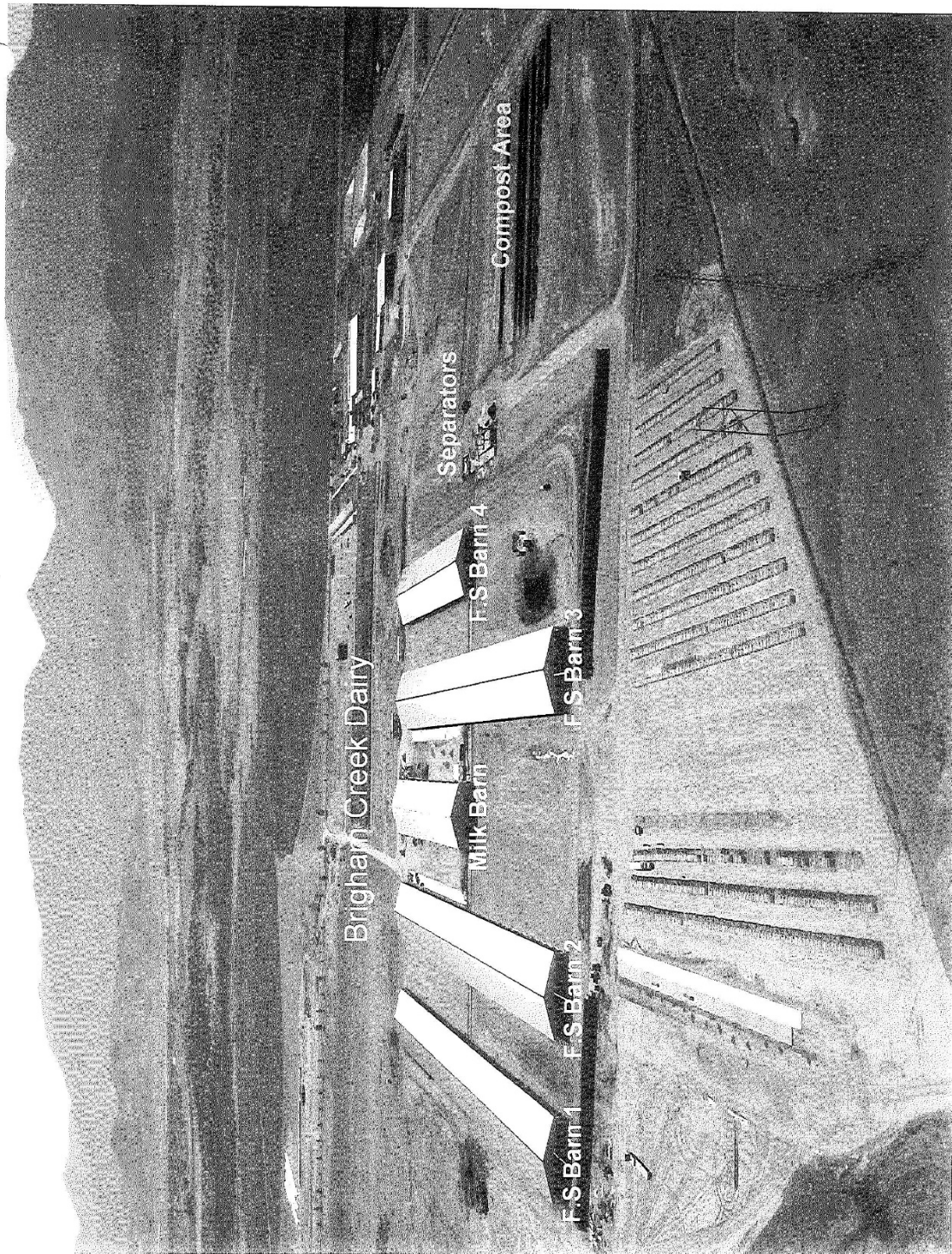
Permits required for this project include:

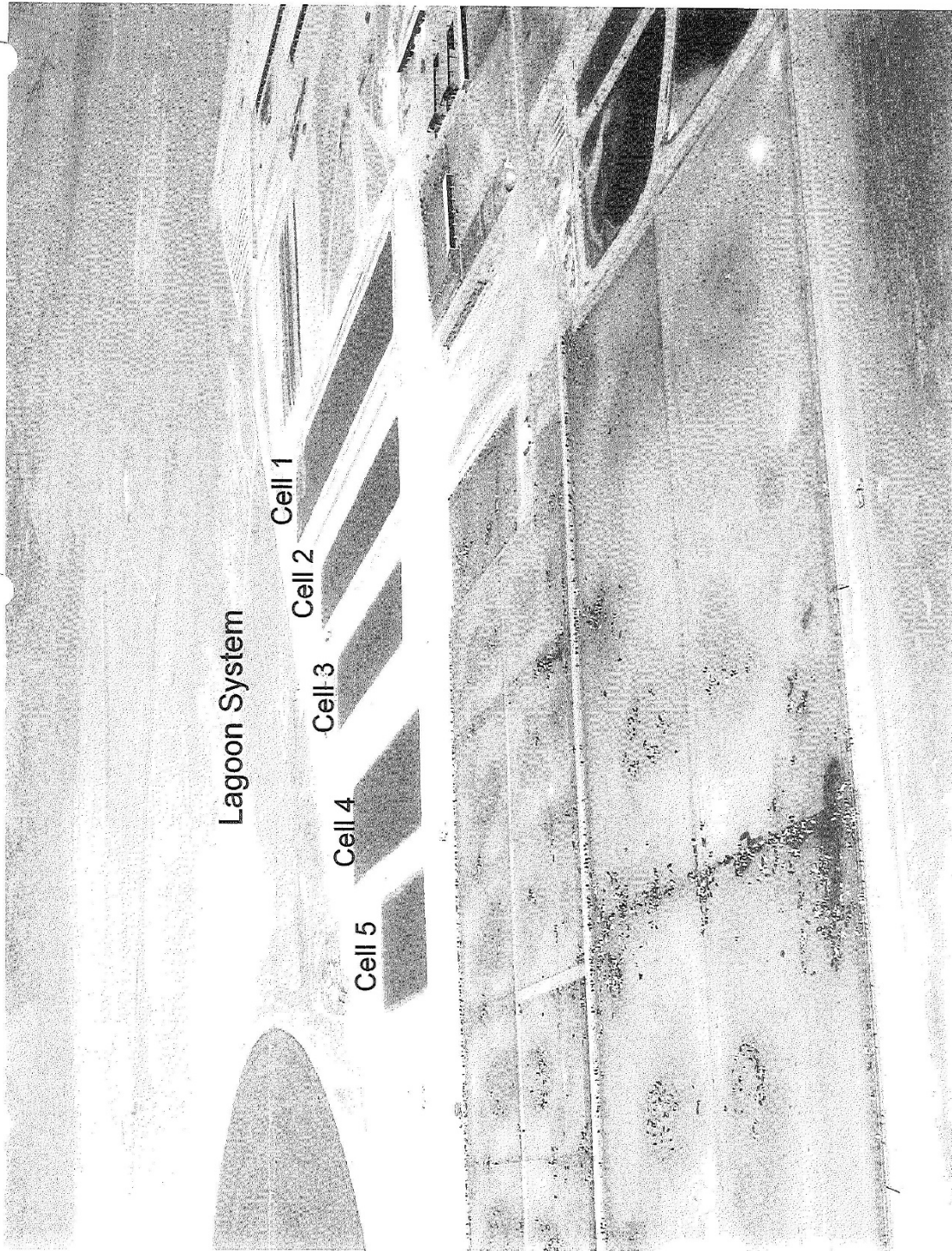
- Dairy building construction -- Utah County, Utah
- Electrical safety - Utah County, Utah
- DEQ wastewater lagoon construction/operation- Utah State
- Water tank- Utah County, Utah
- Fire Marshall approval - Utah County, Utah
- DWQ Ground Water Discharge Permit- Utah State DWQ
- Comprehensive Nutrient Management Plan – NRCS

VI. Attachments

- Aerial photo Elberta Valley Ag
- Aerial photo 5 cell lagoon system
- Drawings

- C-1
- C-IB
- C-2
- C-2A
- C-18





Elberta Valley Ag Sampling and Analysis Plan

Revised August, 2020

1. Initial Training - Training in sampling procedures was first performed by Mike Zimmerman Well Service, LLC on April 11, 2006).

2. Ongoing Training - Subsequent sampling technicians have been trained by one or more existing technicians since 2006. Training also occurs whenever the DWQ engineer visits the dairy to participate in sampling.

3. Compliance Monitoring Period - Monitoring shall continue throughout the term of permit; semi-annually sampling for the monitoring wells and annually for treatment ponds. MW-4 is new and will be sampled on a quarterly basis until a minimum of eight (8) events have been completed to establish baseline ground water quality.

4. Water Level Measurement - In association with each well sampling event, water level measurements are made in each monitoring well prior to removal of any water from the well casing. These measurements are taken from the top of the well casing. Measurements are made to the nearest 0.01 foot.

5. Purging of well casing - The procedure is as follows:

A. Calculations are made from the well depth (provided by Mike Zimmerman Well Service, LLC) and from the water level measurements taken on sampling day. From this the feet of water in casing and casing volume is determined using an Elberta Valley Ag excel worksheet.

B. Three times (3X) the casing volume is calculated.

C. The pump time required is determined from the prior GPM test, and verified during current the purging process to calculate the minutes to achieve a 3X casing volume.

D. The appropriate sample bottles (supplied by analytical laboratory) are (labeled with sample location, date and time sampled).

E. Latex gloves are used during sampling.

F. Field measurements are taken: pH, specific conductance, water level and temperature.

G. Samples are taken.

H. Samples are preserved on ice for transportation to the analytical laboratory at the conclusion of sampling.

I. The chain of custody form is completed and accompanies the samples to the laboratory, and is signed over upon arrival.

J. Laboratory analysis requested: (as per Permit Part 1.F.1.f.ii)

- ammonia as nitrogen,
- nitrate + nitrite as nitrogen,
- bicarbonate,
- calcium,
- chloride,
- magnesium,
- potassium,
- sodium,
- sulfate, and
- Total Dissolved Solids (TDS).

6. Results of the monitoring well samples shall be submitted to the Division of Water Quality with the Ground Water Quality Monitoring Report.

7. Wastewater Analyses - The following analyses shall be performed on a wastewater sample from a representative treatment pond annually:

A. Field measurements: PH, specific conductance, temperature.

B. Laboratory Analysis: (as per UGW Part 1.F.1.g.ii)

- ammonia as nitrogen,
- nitrate + nitrite as nitrogen,
- total Kjeldahl nitrogen (TKN),
- bicarbonate,
- carbonate,
- calcium,
- chloride,
- magnesium,
- potassium,
- sodium,
- sulfate,
- phosphorous, and
- TDS.

8. Laboratory Approval - All water quality analyses shall be performed by a laboratory certified by the State of Utah to perform such analysis. Currently, sample analyses is performed by ChemTech Ford laboratory.

9. Analyses for nitrogen species shall be conducted at the same laboratory. Results of the treatment pond wastewater performance monitoring accompanied by any supporting raw data shall be submitted to the Division of Water Quality with the next Ground Water Quality Monitoring Report.

DWQ-2020-017110