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2013 POST-HARVEST SAMPLING REPORT
DAIRY APPLICATION FIELD MANAGEMENT

SDWA-10-2013-0080 / Yakima Valley Dairies
Cow Palace Dairy
Granger, Washington

August 27, 2015

Prepared For:

Cow Palace LLC
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Title:

2013 Post-Harvest Sampling Report
Dairy Application Field Management
SDWA-10-2013-0080 / Yakima Valley Dairies
Cow Palace Dairy
Granger, Washington

Reference:

IES Project No. 1408-0012-004

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AFMP	Application Field Management Plan
AOC	Administrative Order on Consent
bgs	below ground surface
COC	Chain of Custody
DAFR	Dairy Application Field Report
DQO	data quality objective
EPA	U.S. Environmental Protection Agency
HSP	Health and Safety Plan
mmohs/cm	millimohs per centimeter
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
ppm	parts-per-million
PARCC	precision, accuracy, representativeness, comparability, and completeness
PC	Project Coordinator
QAM	Quality Assurance Manager
QAPP	Quality Assurance Project Plan
QC	quality control
SOP	standard operating procedure
SOW	Statement of Work
SU	Sampling Unit
WCC	Western Coordinating Committee

Soil sampling required as part of the Cow Palace Dairy Facility Application Field Management Plan (ARCADIS, 2013) was conducted by Agrimanagement, Inc. (Agrimanagement) at the seven application fields (Figure 1) associated with the Cow Palace Dairy between September 17 and October 1, 2013.

Nitrate concentrations at the 2-foot depth interval exceeded the 45 ppm goal identified in the Administrative Order on Consent (AOC; SDWA 10-2013-0080) Scope of Work (SOW) in four of the seven fields sampled (Table 1 and Figures 2 and 3). In accordance with the AOC, for each field that exceeds 45 ppm at the 2-foot depth, Cow Palace, LLC has employed Mr. Scott Stephen of Agrimanagement as the soil scientist to manage the fields with the goal of reducing the soil nitrate level to below 45 ppm at the 2-foot depth. While Mr. Stephen will assist the dairy with management of the fields that exhibited nitrate concentrations greater than 45 ppm at the 2-foot interval (CP-SU-01 [65.1 ppm], CP-SU-02 [52.6 ppm], CP-SU-03 [44.7 and 47.2 ppm], and CP-SU-06 [53.8 ppm]), Mr. Stephen will also assist the dairy with management of fields that did not exhibit concentrations greater than 45 ppm (CP-SU-04A [15.2 ppm], CP-SU-04B [39.7 ppm], and CP-SU-05 [5.1 ppm]).

At the direction of EPA, the dairy has calculated the tons of nitrate present at the 3-foot depth in the dairy's application fields during the 2013 post-harvest sampling event. Collectively, beneath all of the application fields at the Cow Palace, there are approximately 48 tons of nitrate at the 3-foot depth. This value was developed by multiplying the nitrate concentrations measured at the 3-foot depth interval in each field (Table 1) by a field-specific conversion factor to determine pounds per acre (lbs/acre) values for each field. The field-specific conversion factor (Table 2) was developed using field-specific soil bulk density values obtained during field capacity soil sampling conducted during Irrigation Water Management Plan implementation activities in the fall of 2014, to convert parts per million (ppm) to pounds per acre (lbs/acre). The nitrate pounds per acre value was then multiplied by the acreage of the field to estimate the pounds of nitrate present in the field at the 3-foot depth interval. These values were added together for all of the fields associated with the facility and divided by 2,000 to convert to tons.

1 INTRODUCTION

This Dairy Application Field Report (DAFR) was prepared by Inland Earth Sciences Corporation (IES) on behalf of Cow Palace, LLC. (Cow Palace) for 2013 Post-Harvest sampling activities described in the Dairy Facility Application Field Management Plan [(AFMP), ARCADIS 2013]. This DAFR summarizes sampling activities completed at the Cow Palace Dairy (Site) (Figure 1) by Agrimanagement, Inc. (Agrimanagement) of Yakima, Washington consistent with the requirements of the AFMP and Section III.F.1 of the Statement of Work (SOW) [Appendix A of the Administrative Order on Consent (AOC) SDWA 10-2013-0080].

Cow Palace has retained Agrimanagement to implement sampling activities under the AFMP and to serve as their agronomy and soil science consultant as required by Section III.F.1.d of the AOC SOW. Specifically, Mr. Scott Stephen with Agrimanagement is the soil scientist retained by Cow Palace to fulfill the requirement of Section III.F.1.d of the AOC SOW to manage fields that exhibit nitrate concentrations in excess of 45 parts per million (ppm) at the 2-foot depth with the goal of achieving nitrate concentrations at or below 45 ppm at a 2-foot depth. In addition to assisting Cow Palace with management of fields that exceed 45 ppm at the 2-foot depth interval, Cow Palace has retained Mr. Stephen to assist with the management of fields that do not exceed 45 ppm to ensure holistic management of all fields at the dairy.

1.1 Purpose

As required under the nutrient management guidelines presented in Section III.F.1 of the AOC SOW, routine sampling is required for application fields with the objective of managing nutrient application. The collection and analysis of application field samples will be utilized to monitor mobile and non-mobile nutrients within the upper portion of the soil column, with the goal of attaining and/or maintaining nitrate (as nitrogen) concentrations equal to or less than 45 ppm at the 24-inch below ground surface (bgs) interval within application fields. Application field sample results will be used to determine agronomic application rates of solid or liquid manure and/or synthetic fertilizer while limiting the amount of mobile nutrients that may potentially migrate to groundwater.

Representative application field composite sampling is performed twice annually and consists of sampling representative of spring pre-planting and fall post-harvest conditions. This DFAR summarizes the 2013 fall post-harvest sampling event. The 2013 fall post-harvest field composite samples are designated for the purpose of evaluating the concentration of nitrate in soil within and below the effective crop rooting zone.

Table 1 presents a summary of the application field soil sampling results at the Site for the 2013 fall post-harvest sampling event. The locations of the dairy application fields are shown on Figure 1.

This DAFR summarizes the data collected to meet project objectives detailed in the site specific AFMP [approved by the U.S. Environmental Protection Agency (EPA) on November 7, 2013] and the AOC SOW. The 2013 post-harvest sampling event was conducted in good faith by Cow Palace prior to approval of the AFMP by EPA. Cow Palace elected to collect the samples prior to EPA approval rather than miss a critical sampling event due to procedural issues.

2 APPLICATION FIELD MANAGEMENT PLAN IMPLEMENTATION

Agrimanagement performed sampling activities at the Site consisting of application field sampling and liquid manure sampling between September 17 and October 1, 2013. A Site-specific Health and Safety Plan (Agrimanagement 2013) was developed prior to mobilization to the Site by Agrimanagement to establish health and safety procedures and minimize the potential risk to personnel while implementing sampling activities.

2.1 Application Field Sampling Methodology

As described in the AFMP (ARCADIS 2013), application field samples were collected from multiple Sampling Units (SUs) at the Site. The SUs were determined based from the following criteria:

- Current Nutrient Management Plan management units
- Field cropping history
- Evaluation of the most recent soil samples collected as part of Nutrient Management Plan requirements
- Soil series and topography
- Irrigation system types and capabilities

Representative samples were collected from a total of seven Sampling Units (SUs) at the Site, including: CP-SU-01, CP-SU-02, CP-SU-03, CP-SU-04A, CP-SU-04B, CP-SU-05, and CP-SU-06. Samples were collected within the SU in a random method (zig-zag or meander) to thoroughly represent the SU. Representative samples or field composites were collected from specific intervals at each SU. Subsample intervals were taken at 0 to 12 inches, 12 to 24 inches, and 24 to 36 inches (24 to 36 inch interval for fall post-harvest sampling only). As stated in the AFMP, the number of subsamples collected is based upon the size of the SU. A total of 201 application field samples were collected at the Site, 30 at CP-SU-01, 30 at CP-SU-02, 30 at CP-SU-03, 30 at CP-SU-04A, 26 at CP-SU-04B, 25 at CP-SU-05 and 30 at CP-SU-06.

Representative samples were collected according to the methods and procedures (i.e. sample volume, preservation, handling, etc.) stated in the AFMP (ARCADIS 2013). There were no deviations from the sample collection methodologies. Application field samples were submitted to SoilTest Farm Consultants, Inc. (SoilTest) of Moses Lake, Washington for laboratory analysis of the following:

- Ammonium – Western Coordinating Committee (WCC) S-3.50
- Nitrate (as Nitrogen) – WCC S-3.10
- Phosphorus - WCC S-4.10 (Olsen P)
- Potassium – WCC S-4.50

- pH - WCC S-2.20
- Electrical conductivity – WCC S-2.30
- Soil organic matter - WCC S-9.10

Figures presenting the location of application field samples, per SU, are provided in Appendix A. A table of application field sample locations (latitude and longitude), including sample depth information is presented in Appendix B.

2.1.1 Liquid Manure Sample Collection Methodology

Liquid manure samples were collected from within the pumping zone of the lagoon or lagoons that were used or were intended for application. The lagoon sample consisted of three sub-samples, collected from different areas of the lagoon. For each subsample, the scum was removed from the lagoon surface (where applicable), the liquid was agitated, and a sample was taken approximately 12-inches below the surface. Representative samples were collected according to the methods and procedures (i.e. sample volume, preservation, handling, etc.) stated in the AFMP (ARCADIS 2013). There were no deviations from the sample collection methodologies. Liquid manure sample locations are included in Appendix C.

Liquid manure samples were submitted to SoilTest for laboratory analysis of the following:

- Ammonium – WCC S-3.50
- Total nitrogen – WCC P-2.20
- Phosphorus - WCC P-4.20
- Potassium P-4.20
- Percent solids B-1.10

2.1.2 Solid Manure Sample Collection Methodology

Consistent with the AFMP, solid manure sampling was not required because no solid manure was applied to any of the application fields included in the AFMP. On November 5, 2014, EPA informed Cow Palace that solid manure sampling is required regardless of whether the solid manure is applied to AFMP fields or not. An addendum to the AFMP will be prepared and submitted to EPA for approval prior to the 2015 pre-plant soil sampling event.

2.2 Application Field Sample Collection

Soil samples were collected in accordance with the AFMP except when hard (i.e. difficult to penetrate) soil was encountered. Section 2.3.1 of the AFMP states “At any sampling location where soil is difficult to dig through, documentation will be provided to EPA that shows that at least three hand tools designed for digging through hard soils were employed in an effort to reach the required sample depth”. Agrimanagement personnel determined that soil samples collected using an alternative method of sample collection suited for hard soils (e.g. shovel, trowel, pick, etc.) yielded a subsample that was inconsistent in composition and volume than that collected

using an open-faced soil sampling tube. Agrimanagement will employ a hydraulic soil probe for future sampling events to obtain samples where hard soils are present. An addendum to the AFMP and the Agrimanagement HSP and submitted to EPA for approval prior to the 2015 pre-plant sampling event. There were no other deviations from the defined application field sample collection methodologies.

2.2.1 Sampling Unit CP-SU-01

A total of 30 application field subsamples were collected from CP-SU-01 (Appendix A). Subsamples were collected from the sampling unit in a random pattern. Rock, hard pan and heavily compacted soils prevented the collection of soil samples from all targeted soil sample intervals at some subsample locations (0 to 12 inches, 12 to 24 inches, and 24 to 36 inches). Rock and hard soil conditions were encountered between 0.75 and 2.7 feet below ground surface (bgs) at 16 of the 30 sample locations, as shown in Appendix B. The subsamples from each sampling interval were combined into three composite samples representing soils at depths for 12, 24, and 36 inches bgs.

2.2.2 Sampling Unit CP-SU-02

A total of 30 application field subsamples were collected from CP-SU-02 (Appendix A). Subsamples were collected from the sampling unit in a random pattern. Rock, hard pan, and heavily compacted soils prevented the collection of soil samples from all targeted soil sample intervals at some subsample locations (0 to 12 inches, 12 to 24 inches, and 24 to 36 inches). Rock and hard soil conditions were encountered between 1.0 and 2.5 feet bgs at 11 of the 30 sample locations, as shown in Appendix B. The subsamples from each sampling interval were combined into three composite samples representing soils at depths for 12, 24, and 36 inches bgs.

2.2.3 Sampling Unit CP-SU-03

A total of 30 application field subsamples were collected from CP-SU-03 (Appendix A). Subsamples were collected from the sampling unit in a random pattern. Rock, hard pan, and heavily compacted soils prevented the collection of soil samples from all targeted soil sample intervals at some subsample locations (0 to 12 inches, 12 to 24 inches, and 24 to 36 inches). Rock and hard soil conditions were encountered between 1.0 and 2.75 feet bgs at 21 of the 30 sample locations, as shown in Appendix B. The subsamples from each sampling interval were combined into three composite samples representing soils at depths for 12, 24, and 36 inches bgs.

2.2.4 Sampling Unit CP-SU-04A

A total of 30 application field subsamples were collected from CP-SU-04A (Appendix A). Subsamples were collected from the sampling unit in a random pattern. Rock, hard pan, and heavily compacted soils prevented the collection of soil samples from all targeted soil sample intervals at some subsample locations (0 to 12 inches, 12 to 24 inches, and 24 to 36 inches). Rock and hard soil conditions were encountered between 1.2 and 2.0 feet bgs at 6 of the 30 sample locations, as shown in Appendix B. The subsamples from each sampling interval were combined into three composite samples representing soils at depths for 12, 24, and 36 inches bgs.

2.2.5 Sampling Unit CP-SU-04B

A total of 26 application field subsamples were collected from CP-SU-04B (Appendix A). Subsamples were collected from the sampling unit in a random pattern. Rock, hard pan, and heavily compacted soils prevented the collection of soil samples from all targeted soil sample intervals at some subsample locations (0 to 12 inches, 12 to 24 inches, and 24 to 36 inches). Rock and hard soil conditions were encountered between 1.5 and 3.0 feet bgs at 4 of the 26 sample locations, as shown in Appendix B. The subsamples from each sampling interval were combined into three composite samples representing soils at depths for 12, 24, and 36 inches bgs.

2.2.6 Sampling Unit CP-SU-05

A total of 25 application field subsamples were collected from CP-SU-05 (Appendix A). Subsamples were collected from the sampling unit in a random pattern. Rock, hard pan, and heavily compacted soils prevented the collection of soil samples from all targeted soil sample intervals at some subsample locations (0 to 12 inches, 12 to 24 inches, and 24 to 36 inches). Rock and hard soil conditions were encountered between 1.5 and 2.2 feet bgs at 7 of the 25 sample locations, as shown in Appendix B. The subsamples from each sampling interval were combined into three composite samples representing soils at depths for 12, 24, and 36 inches bgs.

2.2.7 Sampling Unit CP-SU-06

A total of 30 application fields subsamples were collected from CP-SU-06 (Appendix A). Subsamples were collected from the sampling unit in a random pattern. Rock, hard pan, and heavily compacted soils prevented the collection of soil samples from all targeted soil sample intervals at some subsample locations (0 to 12 inches, 12 to 24 inches, and 24 to 36 inches). Rock and hard soil conditions were encountered between 1.5 and 2.5 feet bgs at 4 of the 30 sample locations, as shown in Appendix B. The subsamples from each sampling interval were combined into three composite samples representing soils at depths for 12, 24, and 36 inches bgs.

2.3 Liquid Manure Sample Collection

Two liquid manure samples were collected at the Site. A liquid manure sample was collected from Lagoon 1 (CP-Lagoon 1) and Lagoon 4 (CP-Lagoon 4A). Each sample was a composite of three subsamples. There were no deviations in the AFMP collection methodologies. A figure presenting the location of liquid manure samples is provided in Appendix C.

2.4 Quality Control

2.4.1 Sample QC

The quality control (QC) samples associated with application field and liquid manure sampling where prepared and collected according to the protocols specified in the AFMP (ARCADIS 2013). The intended frequency for field duplicate samples collected for application field sampling and liquid manure sampling is one duplicate in every 20 samples, or a minimum of one duplicate per sampling day per media. One field duplicate was collected for application field samples collected

from the Site, there were no field duplicates collected for liquid manure sample collection. Analytical results for QC samples are included in Appendix H.

Field quality control sample collection requirements for liquid manure sampling will be reviewed and implemented accordingly prior to the next sampling event.

2.4.2 Chain of Custody

Chain of custody (COC) forms, identifying each sample contained in the sample cooler, were completed and signed by AgriManagement personnel, and accompanied each respective sample cooler. One COC form was retained for the field records; the remaining copies were placed inside the sample cooler. Samples were delivered to Soiltest (laboratory) by AgriManagement. Copies of all COC forms are provided in Appendix E.

2.4.3 Field Documentation

As stated in the AFMP, Site sampling activities were documented on field forms. Copies of the field forms are provided in Appendix F.

2.5 Decontamination Procedures

Upon completion of sample collection, sampling equipment was decontaminated according to the procedures described in the AFMP (ARCADIS 2013). All equipment was cleaned prior to first use and between sample units. Equipment decontamination was performed to prevent cross-contamination between samples and to maintain a clean working environment for all personnel.

3 SITE INVESTIGATION RESULTS

3.1 Fertility Reports

A Fertility Report was prepared for each SU based on the application field sampling activities conducted (Appendix G). A summary of the fertility data presents the mobile and non-mobile nutrient concentrations per sample interval for the respective SU sampled. If a restrictive layer was encountered during application field sampling, the layer is described and the average sampling depth noted. All Fertility Reports were prepared in accordance with the objectives specified in the AFMP.

3.2 Application Field Soil Sampling Results

Table 1 presents a summary of the application field soil sampling results at the Site for the 2013 fall post-harvest sampling event. The locations of the dairy application fields are shown on Figure 1. Figure 2 presents application fields located at the Site that exhibited nitrate concentrations greater than 45 ppm at the 2-foot interval. Figure 3 is a chart showing nitrate concentrations in the 2-foot interval at each field. Maps of subsample locations within each field are presented in Appendix A. Subsample locations for each field are presented in Appendix B. Laboratory sample data sheets are presented in Appendix D. Laboratory Data Validation Reports are provided in Appendix H.

Within this section, nitrate concentrations in ppm have been converted to pounds per acre (lbs/acre). The conversion factors used to perform the conversion between ppm and lbs/acre are shown in Table 2 along with the average soil bulk density for each sampling interval of the sampling unit. The average soil bulk density was derived by taking the average of soil bulk densities determined during soil field capacity sampling conducted as part of implementation of the Irrigation Water Management Plan (ARCADIS, 2014). Each sampling unit and depth interval has a unique average soil bulk density and hence ppm to lbs/acre conversion factor. Using site-specific values for the ppm to lbs/acre conversions eliminates the confusion resulting from using assumed bulk densities and conversion factors that vary depending on region and reason for data collection. In Appendix D, the laboratory automatically calculated lbs/acre values using an assumed bulk density that is not consistent with field conditions. Therefore, the laboratory will not report lbs/acre values on laboratory data sheets in the future. Rather, these values will be calculated using the site-specific soil bulk densities presented in Table 2.

3.2.1 Sampling Unit CP-SU-01

Nitrate concentrations measured at CP-SU-01 are presented below:

	NO3-N (ppm)	**NO3-N** (lbs/acre)	**Sum of Tested NO3-N** (lbs/acre)
1 foot (0-12")	89.3	327	434
2 foot (12-24")	65.1	252	252
3 foot (24-36")	67.4	255	255

The nitrate concentration at the 2-foot depth interval in CP-SU-01 exceeded 45 ppm. In addition to the nitrate concentrations presented above, the following results were reported from application field samples collected from 0 to 12 inches bgs: Ammonium (0.5 ppm), Phosphorus (290 ppm), Potassium (1,474 ppm), pH (7.6 standard units), electrical conductivity [1.21 millimhos per centimeter (mmhos/cm)], and organic matter (3.0 %).

3.2.2 Sampling Unit CP-SU-02

Nitrate concentrations measured at CP-SU-02 are presented below:

	NO3-N (ppm)	**NO3-N** (lbs/acre)	**Sum of Tested NO3-N** (lbs/acre)
1 foot (0-12")	66.7	222	277
2 foot (12-24")	52.6	185	185
3 foot (24-36")	57.5	216	216

The nitrate concentration at the 2-foot depth interval in CP-SU-02 exeeded 45 ppm. In addition to the nitrate concentrations presented above, the following results were reported from application field samples collected from 0 to 12 inches bgs: Ammonium (1.3 ppm), Phosphorus (72 ppm), Potassium (886 ppm), pH (8.1 standard units), electrical conductivity (0.54 mmhos/cm), and organic matter (2.5 %).

3.2.3 Sampling Unit CP-SU-03

Nitrate concentrations measured at CP-SU-03 are presented below:

	NO3-N (ppm)	**NO3-N** (lbs/acre)	**Sum of Tested NO3-N** (lbs/acre)
1 foot (0-12")	49.5	189	245
2 foot (12-24")	44.7	177	177
3 foot (24-36")	63.2	244	244

Nitrate concentrations at the 2-foot depth interval in CP-SU-03 did not exceed 45 ppm in the primary sample. However, the duplicate sample collected at CP-SU-03 at the 2-foot depth interval had a nitrate concentration of 47.2 ppm. In addition to the nitrate concentrations presented above, the following results were reported from application field samples collected from 0 to 12 inches bgs: Ammonium (1.5 ppm), Phosphorus (134 ppm), Potassium (803 ppm), pH (7.8 standard units), electrical conductivity (0.54 mmhos/cm), and organic matter (2.5 %).

3.2.4 Sampling Unit CP-SU-04A

Nitrate concentrations measured at CP-SU-04A are presented below:

	NO3-N (ppm)	**NO3-N** (lbs/acre)	**Sum of Tested NO3-N** (lbs/acre)
1 foot (0-12")	19.9	68	177
2 foot (12-24")	15.2	53	53
3 foot (24-36")	18.4	66	66

Nitrate concentrations at the 2-foot depth interval in CP-SU-04A did not exceed 45 ppm. In addition to the nitrate concentrations presented above, the following results were reported from application field samples collected from 0 to 12 inches bgs: Ammonium (2.0 ppm), Phosphorus (162 ppm), Potassium (450 ppm), pH (7.7 standard units), electrical conductivity (0.37 mmhos/cm), and organic matter (2.9 %).

3.2.5 Sampling Unit CP-SU-04B

Nitrate concentrations measured at CP-SU-04B are presented below:

	NO3-N (ppm)	**NO3-N** (lbs/acre)	**Sum of Tested NO3-N** (lbs/acre)
1 foot (0-12")	15.2	52	101
2 foot (12-24")	39.7	141	141
3 foot (24-36")	65.8	248	248

Nitrate concentrations at the 2-foot depth interval in CP-SU-04B did not exceed 45 ppm. In addition to the nitrate concentrations presented above, the following results were reported from application field samples collected from 0 to 12 inches bgs: Ammonium (3.0 ppm), Phosphorus (116 ppm), Potassium (860 ppm), pH (8.0 standard units), electrical conductivity (0.34 mmhos/cm), and organic matter (1.9 %).

3.2.6 Sampling Unit CP-SU-05

Nitrate concentrations measured at CP-SU-05 are presented below:

	NO3-N (ppm)	**NO3-N** (lbs/acre)	**Sum of Tested NO3-N** (lbs/acre)
1 foot (0-12")	11.5	41	99
2 foot (12-24")	5.1	20	20
3 foot (24-36")	4.9	17	17

Nitrate concentrations at the 2-foot depth interval in CP-SU-05 did not exceed 45 ppm. In addition to the nitrate concentrations presented above, the following results were reported from application field samples collected from 0 to 12 inches bgs: Ammonium (3.3 ppm), Phosphorus (133 ppm), Potassium (735 ppm), pH (7.9 standard units), electrical conductivity (0.39 mmhos/cm), and organic matter (2.3 %).

3.2.7 Sampling Unit CP-SU-06

Nitrate concentrations measured at CP-SU-06 are presented below:

	NO3-N (ppm)	**NO3-N** (lbs/acre)	**Sum of Tested NO3-N** (lbs/acre)
1 foot (0-12")	66.8	221	292
2 foot (12-24")	53.8	200	200
3 foot (24-36")	33.7	120	120

Nitrate concentrations at the 2-foot depth interval in CP-SU-06 exceeded 45 ppm. In addition to the nitrate concentrations presented above, the following results were reported from application field samples collected from 0 to 12 inches bgs: Ammonium (1.4 ppm), Phosphorus (105 ppm), Potassium (934 ppm), pH (7.7 standard units), electrical conductivity (0.69 mmhos/cm), and organic matter (1.9 % - estimated value).

3.3 Liquid Manure Sample Results

Liquid manure sample results are included in Table 3. The liquid manure samples were collected from Lagoon 1 and Lagoon 4 on September 5, 2013. Sample CP-Lagoon 1 was analyzed for Total Nitrogen (451 ppm), Ammonium (360 ppm), Phosphorus (58 ppm), Potassium (682 ppm) and Percent solids (0.4%). Sample CP-Lagoon 4 was analyzed for Total Nitrogen (645 ppm), Ammonium (59 ppm), Phosphorus (42 ppm), Potassium (1,140 ppm) and Percent solids (0.7%). Laboratory analytical data sheets are provided in Appendix D.

3.4 Data Validation

Laboratory analytical reports were reviewed and validated in accordance with the AFMP (ARCADIS 2013). This sampling event was conducted prior to EPA approval of the AFMP. Laboratory performance and data quality could not be independently evaluated by EPA because the laboratory did not provide complete analytical documentation.

Data qualifiers were added to select data during the data validation process. Additional information regarding data qualifiers can be found in the laboratory data validation reports

(Appendix H). The data set collected during the 2013 post-harvest sampling event meets the Data Quality Objectives as outlined in the AFMP (ARCADIS 2013).

4 REFERENCES

AgriManagement. 2013. Application Field Sampling Health and Safety Plan

ARCADIS-U.S., Inc. (ARCADIS). 2013. Dairy Facility Application Field Management Plan. Cow Palace, LLC. Yakima, Washington. November 2013.

ARCADIS-U.S., Inc. (ARCADIS). 2014. Irrigation Water Management Plan, Cow Palace, LLC. Yakima, Washington. November 2013.

5 CERTIFICATION

I certify under the penalty of law that this document and all attachments were prepared by me or under my direction or supervision in accordance with a system designed to assure that qualified personnel gathered and evaluated the information submitted. Based on my inquiry of any and all persons directly responsible for gathering and analyzing the information obtained, I certify that the information contained in or accompanying this submittal is to the best of my knowledge and belief, true, accurate and complete. As to those identified portion(s) of this submittal for which I cannot personally verify the accuracy, I certify that this submittal and all attachments were prepared in accordance with procedures designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those directly responsible for gathering the information, or the immediate supervisor of such person(s), 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.

Cow Palace, LLC

Signature _____

Name: Adam Dolsen

Title: Member

Date: _____