INLAND EARTH SCIENCES

Consultants in the Earth and Environmental Sciences

GROUNDWATER MONITORING DATA REPORT
First Quarter 2016
Yakima Valley Dairies
SDWA-10-2013-0080

May 31, 2016

EPA Docket No.:

SDWA-10-2013-0080

GROUNDWATER MONITORING DATA REPORT
First Quarter 2016
Yakima Valley Dairies
Outlook, Washington

Reference:

IES Project No. 1408-0010-003

Date:

May 31, 2016

Prepared By:

Steven L. Hicks, PE
Quality Manager

Kevin M. Freeman, PG
Project Coordinator

INLAND EARTH SCIENCES CORPORATION
8704 E. Dalton Avenue
Spokane, Washington 99212
(509) 563-5242

TABLE OF CONTENTS

DISTRIBUTION LIST ..... **vi**

ACRONYMS AND ABBREVIATIONS ..... **vii**

EXECUTIVE SUMMARY ..... **viii**

1. REPORT ORGAINZATION **1**

2. INTRODUCTION **1**
2.1. Location and Setting 1
2.2. Regional Geology and Hydrogeology 2

3. INVESTIGATION ACTIVITIES **3**
3.1. Groundwater Monitoring Well Installation 3
3.2. First Quarter 2016 Groundwater Sampling Event 4
3.2.1. Measurement of Static Water Levels *4*
3.2.2. Measure Total Depth of the Well and Water Column *4*
3.2.3. Sample Collection *4*
3.2.4. Sample Handling and Custody *5*
3.2.5. Measurement of Final Water Level *6*
3.2.6. Equipment Decontamination *6*
3.2.7. Health and Safety *6*

4. SOIL AND GROUNDWATER CHARACTERISTICS **7**
4.1. Subsurface Soil Characteristics 7
4.2. Groundwater Characteristics 7
4.3. Temporal Groundwater Level Monitoring 8
4.4. Human Influences on Groundwater Flow 9
4.5. Average Linear Groundwater Flow Velocity 10

5. ANALYTICAL PROGRAM **11**
5.1. Analytical Methods 11
5.2. Quality Control 11
5.2.1. Field Quality Control Samples *12*
5.2.2. Laboratory Quality Control Procedures *12*
5.3. Data Validation and Usability 12
5.4. Data Management 12
5.5. Corrective Actions 13

6. DATA VALIDATION AND USABILITY **13**
6.1. Data Review, Verification, and Validation 13

7. GROUNDWATER SAMPLING RESULTS **13**
7.1. Field Parameters 13
7.2. Nitrate 15
7.3. Nitrite 17
7.4. Ammonia 17
7.5. Total Kjeldahl Nitrogen 17
7.6. Total Phosphorus 17
7.7. Inorganic Anions 17
7.7.1. Chloride *17*
7.7.2. Fluoride *17*

7.7.3. Sulfate *18*
7.8. Metals 18
7.8.1. Calcium *18*
7.8.2. Magnesium *18*
7.8.3. Potassium *18*
7.8.4. Sodium *18*
7.9. Alkalinity 18
7.9.1. Bicarbonate Alkalinity *18*
7.9.2. Total Alkalinity *19*
7.10. Water Type Classifications 19
7.10.1. Anion and Cation Balance *19*
7.10.2. Stiff Diagrams *19*
7.10.3. Piper Diagrams *20*

8. REFERENCES 22

9. CERTIFICATIONS 23
9.1. Cow Palace Certification 23
9.2. D & A Dairy and George DeRuyter & Son Dairy Certification 24
9.3. George & Margaret Certification 25
9.4. Liberty Dairy Certification 26

TABLES

Table 1 Monitoring Well Construction
Table 2 Measured Water Levels and Groundwater Elevations
Table 3 Field Parameter Measurements
Table 4 Cumulative Measured Water Levels and Groundwater Elevations
Table 5 Estimated Possible Average Linear Groundwater Flow Velocities
Table 6 Groundwater Analytical Results
Table 7 Cumulative Groundwater Analytical Results

FIGURES

Figure 1 Site Vicinity Map
Figure 2A Site Map
Figure 2B Aerial Photograph
Figure 3A General Facility Plan
Figure 3B Facility Plan – Cow Palace Dairy
Figure 3C Facility Plan – George DeRuyter & Son and D&A Dairies
Figure 3D Facility Plan – Liberty and H&S Bosma Dairies
Figure 4 Conceptual Site Model Flow Chart
Figure 5 Conceptual Site Model
Figure 6 Cross-Section Location Map
Figure 7 Cross-Section A-A’
Figure 8 Cross-Section B-B’
Figure 9 Cross-Section C-C’
Figure 10 Cross-Section D-D’

FIGURES (continued)

Figure 11 Cross-Section E-E'
Figure 12 Cross-Section F-F'
Figure 13 Cross-Section G-G'
Figure 14 Groundwater Potentiometric Contour Map
Figure 15A Groundwater Hydrographs – All Transducers
Figure 15B Groundwater Hydrograph – Well DC-03
Figure 15C Groundwater Hydrograph – Well DC-05
Figure 15D Groundwater Hydrograph – Well DC-05D
Figure 15E Groundwater Hydrograph – Well YVD-03
Figure 15F Groundwater Hydrograph – Well YVD-08
Figure 15G Groundwater Hydrograph – Well YVD-11
Figure 16A Nitrate Concentrations
Figure 16B Historical Nitrate Concentrations
Figure 17 Nitrate Concentrations East Downgradient Wells
Figure 18 Nitrate Concentrations West Downgradient Wells
Figure 19 Nitrate Concentrations Central Wells
Figure 20 Nitrate Concentrations Northern Wells
Figure 21 Nitrate Concentrations Upgradient Wells
Figure 22 Nitrate and Total Dissolved Ion Concentration Along Transect F-F'
Figure 23 Nutrient Concentrations
Figure 24 Anion Concentrations
Figure 25 Metals Concentrations
Figure 26 Alkalinity Concentrations
Figure 27 Stiff Diagrams
Figure 28 Stiff Diagrams and Potentiometric Surface Map
Figure 29 Piper Diagram - All Wells
Figure 30 Piper Diagram - Group 1
Figure 31 Piper Diagram - Group 2
Figure 32 Piper Diagram - Group 3

APPENDICES

Appendix A Map of Facility Soil Types
Appendix B Groundwater Sampling Records
Appendix C Analytical Laboratory Reports
Appendix D Data Validation Report
Appendix E Ion Balance Sample Summary

NAME	ORGANIZATION
Adam Dolsen	Cow Palace
Dan DeRuyter	George DeRuyter & Son Dairy
Henry Bosma	Liberty Dairy
Eric Winiecki	EPA
Rene Fuentes	EPA
Jennifer MacDonald	EPA
Kevin Freeman	Inland Earth Sciences
Steve Hicks	Inland Earth Sciences
Patrick W. Ryan	Perkins Coie
Lori Terry Gregory	Foster Pepper
Brendan V. Monahan	Stokes Lawrence Velikanje Moore & Shore

amsl	above mean sea level
AOC	Administrative Order on Consent
bgs	below ground surface
CAFOs	Confined Animal Feeding Operations
CSM	Conceptual Site Model
DQO	Data Quality Objective
EPA	U.S. Environmental Protection Agency
ft	feet
ft/ft	feet per foot
HAI	Haley & Aldrich, Inc.
HSP	Health and Safety Plan
IES	Inland Earth Sciences Corporation
LHG	Licensed Hydrogeologist
LG	Licensed Geologist
MCL	Maximum Contaminant Level
µS/cm	microsiemens per centimeter
meq/L	milliequivalents per liter
mg/L	milligrams per liter
mV	millivolts
NTU	Nephelometric Turbidity Units
NPDES	National Pollution Discharge Elimination System
NRCS	Natural Resources Conservation Service
ppm	parts per million
PARCC	Precision, Accuracy, Representativeness, Comparability, and Completeness
PE	Professional Engineer
PC	Project Coordinator
QA	Quality Assurance
QAM	Quality Assurance Manager
QAPP	Quality Assurance Project Plan
QC	Quality Control
SDG	Sample Delivery Group
SOP	Standard Operating Procedure
SU	Standard Units
SOW	Statement of Work
SWDA	Safe Water Drinking Act

The (1) Cow Palace Dairy, LLC; (2) D & A Dairy, LLC (also known as D&A Dairy L.L.C.), George DeRuyter & Son Dairy, L.L.C., and George & Margaret, L.L.C; and (3) Liberty Dairy LLC and its associated dairy facility H&S Bosma Dairy ("Dairies") present this Quarterly Groundwater Monitoring Data Report (the "Report") for the Yakima Valley Dairies (the "Dairies"). The Report is prepared in accordance with requirements identified in Section III.E of the Statement of Work (SOW) (Appendix B of Administrative Order on Consent [AOC] SDWA-10-2013-0080). Groundwater monitoring at the Dairies is required by the AOC in accordance with the Groundwater Monitoring Quality Assurance Project Plan (QAPP) dated June 21, 2013, revised August 28, 2015 (IES, 2015).

Pursuant to Section III.E of the AOC SOW, the objectives of groundwater monitoring are to establish a baseline of groundwater quality information at the Dairies to evaluate whether actions taken to reduce nitrogen loading are effective over time, and to collect information to supplement and verify existing information on the environmental setting at the Dairies, including further clarification of the hydraulic gradient of the aquifer beneath the Dairies. After eight years of quarterly groundwater monitoring (32 quarters), the nitrate levels in the monitoring wells that are downgradient of the dairy nitrogen sources will be evaluated. For any individual monitoring well where the nitrate level is not trending downward, additional source control actions will be required in accordance with Section III.G of the AOC.

A network of 26 groundwater monitoring wells is in place at the Dairies. In addition to seven groundwater monitoring wells that were installed by EPA in 2012, the Dairies installed 19 groundwater monitoring wells as part of the AOC in 2013. Twenty-three of the monitoring wells were completed at the top of the "shallow" surficial aquifer (at the water table), and three of the monitoring wells were completed deeper in the surficial aquifer. All of the wells were installed in the surficial aquifer which is used as a source of drinking water. All of the wells were designed and installed according to Washington State regulations and an EPA-approved QAPP.

This is the eleventh quarterly groundwater monitoring Report prepared under the AOC. From March 7 to 10, 2016, the Dairies sampled 26 of 26 wells at the site, in accordance with the sampling procedures outlined below and in the Groundwater Monitoring QAPP (ARCADIS 2013b).

Nitrate was measured as nitrogen (Nitrate-N). The nitrate results are presented spatially on a map in Figure 16A. Historical nitrate concentrations for the previous two years are presented in Figure 16B. The monitoring well network includes wells that are located upgradient and downgradient of the Dairies. There are four groundwater monitoring wells located upgradient of the Dairy facilities' footprint. All four wells were screened at the top of the aquifer. Nitrate concentrations reported in milligrams per liter (mg/L) in upgradient monitoring wells at the time the Dairies sampled the wells were:

Well	Nitrate (mg/L)
DC-01	8.6
YVD-02	Less than 0.2
YVD-03	4.6
YVD-04	3.7

The nitrate concentrations in these upgradient groundwater monitoring wells ranged from less than 0.2 mg/L to 8.6 mg/L. The drinking water standard, or maximum contaminant level (MCL), for nitrate is 10 mg/L. Nitrate concentrations in the upgradient monitoring wells were less than the MCL.

Nitrate concentrations (reported in mg/L) in the downgradient monitoring wells that were screened at the top of the aquifer (water table wells) were:

Well	Nitrate (mg/L)
DC-03	180
DC-04	53
DC-05	43
DC-07	2.2
DC-09	5.7
DC-14	16
YVD-05	2.7
YVD-06	0.51
YVD-07	1.8
YVD-08	32
YVD-09	48
YVD-10	98
YVD-11	65
YVD-12	13
YVD-13	32
YVD-14R	100
YVD-15	36
YVD-16	23
YVD-17	0.32

Nitrate concentrations in the downgradient water table groundwater monitoring wells ranged from 0.32 mg/L to 180 mg/L. Nitrate concentrations in six of the downgradient water table wells were less than the MCL; nitrate concentrations in 13 of the downgradient water table wells exceeded the MCL.

The Dairies installed three additional downgradient groundwater monitoring wells with well screens positioned at depths that were estimated by EPA to approximate the depth of a typical residential drinking water well in the area. Each of these deeper wells was paired at the same location with a water table well. The results for each well pair, with the water table well listed above its deeper counterpart, were:

Well	Nitrate (mg/L)	Well	Nitrate (mg/L)	Well	Nitrate (mg/L)
YVD-13	32	DC-03	180	DC-05	43
YVD-18	22	DC-03D	37	DC-05D	13

The results show higher nitrate concentrations at the top of the water table, and lower concentrations at depth. This is consistent with a scenario of nitrate loading occurring at the top of the aquifer, and the nitrate becoming increasingly diluted as it mixes with cleaner water below.

Groundwater samples were also analyzed for:

- Nitrite
- Ammonia
- Total Kjeldahl nitrogen

- Total phosphorus
- Inorganic anions (chloride, fluoride, sulfate)
- Metals (calcium, potassium, magnesium, sodium)
- Alkalinity (total and bicarbonate)

These results are presented on Figures 24, 25, and 26. The sulfate concentration detected in two downgradient wells, YVD-10 and YVD-13, met or exceeded the secondary contaminant level of 250 mg/L.

Site geology observed in most of the monitoring well borings typically consisted of finer-grained materials in the upper portion of borings and coarser-grained material in lower portions of borings. The surficial aquifer was typically encountered in the gravelly sand or sandy gravel that dominated most of the subsurface throughout the site. Depth to groundwater from ground surface ranged from 36 to 221 feet. Groundwater was deepest in borings located in areas of the site that were topographically higher. Comparatively, groundwater was shallowest in borings located in areas of the site that were topographically lower.

The groundwater gradient at the site is generally to the southwest at an average hydraulic gradient of 0.02 ft/ft. Hydraulic gradients are steeper in wells completed in the upslope areas with an average of 0.04 ft/ft. As groundwater flows to the southwest, hydraulic gradients flatten to about 0.01 ft/ft in the central portion of the site and then to 0.006 ft/ft in the south portion of the site. The calculated average linear groundwater flow velocities for the area under the Dairies range from 3 to 19 feet per day.

Site groundwater is primarily classified as calcium-bicarbonate type water. Calcium bicarbonate type waters were present in groundwater samples collected from 15 monitoring wells. Calcium-sulfate type waters were present in groundwater samples collected from six monitoring wells and sodium-bicarbonate type waters were present in groundwater samples collected from five monitoring wells.

Total dissolved ions show a significant increase in concentration along with nitrate as the groundwater moves downgradient beneath the Dairies (Figure 22). Figure 28 confirms that ion concentrations are generally more elevated in the downgradient monitoring wells toward the southwest.

1. REPORT ORGAINZATION

This Report includes the following sections: Executive Summary, Introduction, Location and Setting, Site Investigation Activities, Site Soil and Groundwater Characteristics, Analytical Program, and Analytical Results.

2. INTRODUCTION

The (1) Cow Palace Dairy, LLC; (2) D & A Dairy, LLC (also known as D&A Dairy L.L.C.), George DeRuyter & Son Dairy, L.L.C., and George & Margaret, L.L.C; and (3) Liberty Dairy LLC and its associated dairy facility H&S Bosma Dairy ("Dairies"), present this Quarterly Groundwater Monitoring Data Report (the "Report"). The Report is prepared in accordance with requirements identified in Section III.E of the Statement of Work (SOW) (Appendix B of Administrative Order on Consent [AOC] SDWA-10-2013-0080). Groundwater monitoring at the Dairies is required by the AOC in accordance with the Groundwater Monitoring Quality Assurance Project Plan (QAPP) dated June 21, 2013.

Pursuant to Section III.E of the AOC SOW, the objectives of groundwater monitoring are to establish a baseline of groundwater quality information at the Dairies to evaluate whether actions taken to reduce nitrogen loading are effective over time, and to collect information to supplement and verify existing information on the environmental setting at the Dairies, including further clarification of the hydraulic gradient of the aquifer beneath the Dairies. After eight years of quarterly groundwater monitoring (32 quarters), the nitrate levels in the monitoring wells that are downgradient of the dairy nitrogen sources will be evaluated. For any individual monitoring well where the nitrate level is not trending downward, additional source control actions will be required in accordance with Section III.G of the AOC.

2.1. Location and Setting

The Dairies include the George DeRuyter & Son Dairy, D & A Dairy, Cow Palace 1 and 2, Liberty Dairy, and H&S Bosma Dairy. The Dairies are located in an area that occupies both the easternmost portion of the Toppenish Basin and the westernmost portion of the Benton Basin within the south-central part of the Yakima Basin just south of the Rattlesnake Hills in Yakima County, Washington.

The Dairies are located approximately 10 road miles northwest of Sunnyside, Washington. A site vicinity map is presented as Figure 1. The Dairies occupy portions or all of Sections 25, 26, 27, 35, and 36 of Township 11 North, Range 21 East; Sections 19, 30, 31, and 32 of Township 11 North, Range 22 East; Section 1 of Township 10 North, Range 21 East; and Sections 6 and 7 of Township 10 North, Range 22 East, Willamette Meridian. Figure 2A shows the location of the Dairies, the installed monitoring wells, and general topography of the area. Figure 2B shows an aerial photograph of the Dairies. A figure showing the general facility plan for the Dairies, which includes land use information within the Dairies boundary, is included as Figure 3A.

Figures 3B, 3C and 3D present a facility plan for each individual Dairy; these include facility-specific features such as: dairy production, irrigation and domestic water wells, pipelines, and outfalls. One outfall is located within the footprint of the Liberty Dairy, as shown on Figure 3D. Discharge from the outfall is non-contact process water related to milk plate cooler. Cooling water from the plate cooler is discharged to Sunnyside Valley Irrigation District (SVID) Joint Drain 26-6. This outfall is not covered by a NPDES permit. There are no outfalls within the footprint of Cow Palace. One outfall is located within the footprint of the George DeRuyter & Son owned property, as shown on Figure 3C. Discharge from the outfall is

non-contact process water related to milk plate cooler. Cooling water from the plate cooler is discharged to Roza Irrigation District (RID) drain. This outfall is not covered by a NPDES permit. There are no French drains, sewer pipes, stormwater drains, or tile drains within the footprint of the Dairies.

Topography of the area containing the Dairies consists of gently rolling hills. Land use is predominantly large dairy farms, which are concentrated animal feeding operations (CAFOs), and irrigated cropland including corn fields, apple and cherry orchards and grape vineyards. Residences are interspersed throughout the area and are serviced by private water wells for drinking water.

2.2. Regional Geology and Hydrogeology

The information presented below is summarized from the U.S. Geological Survey (USGS) publication *Hydrogeologic Framework of the Yakima River Basin Aquifer System, Washington* (USGS 2009) and the U.S. Environmental Protection Agency (EPA) publication *Relation Between Nitrate in Water Wells and Potential Sources in the Lower Yakima Valley, Washington* (EPA 2012). Surface soils and drainage classification, as mapped by NRCS, within the footprint of the Respondents' dairy facilities are illustrated in Appendix A.

The Toppenish and Benton Basins consist of fine- and coarse-grained sediments overlying a sequence of three major basalt flows. The structural setting is created by bounding ridges such as the Rattlesnake Mountains, Ahtanum Ridge, Toppenish Ridge, and Horse Heaven Hills. The uppermost basalts of the Saddle Mountain Unit of the Columbia River Basalt Group are typically exposed in these upland ridges. This unit averages more than 500 feet thick. The underlying Wanapum unit averages 600 feet thick. These units are separated by the Mabton Interbed, with an average thickness of 70 feet.

The valley is filled with a variety of sediments that pinch out along the flanks of the ridges. These sediments include Touchet Beds, loess and thick alluvial sands and gravels, and significant thickness of Ellensburg Formation. The thickness of these sedimentary units decreases from an average of more than 500 feet in the Toppenish Basin to less than 200 feet in the lower Benton Basin.

Groundwater is found in fractures and interbeds formed of clinkers, permeable lava, lake deposits or paleosols and may occur at significant depths in the upland ridges, such as Horse Heaven Hills, and especially in the basalts. The water table is found at shallower depths as the valley is approached from these ridges. Near the Yakima River, depth to water may be less than 10 feet, especially during the irrigation season.

There are two main aquifer types underlying the Dairies. They include a surficial unconfined to semi-confined alluvial aquifer and an extensive basalt aquifer of great thickness underlying the sedimentary deposits. The basalt aquifer is believed to be semi-isolated from the surficial aquifer and stream systems. Groundwater flow within the surficial aquifer generally follows topography, with natural recharge occurring within the headlands and on the sides of the valley and discharge occurring to the Yakima River. Flow within the uppermost portions of the underlying deep surficial basaltic aquifer also generally follows this pattern.

Because the basalts extend to great depths, the deeper basaltic layers may convey waters across local flow divides to more regionally significant discharge locations such as the Columbia River. This pattern produces a major flow direction from northwest to southeast as water moves down the valley parallel to the course of the Yakima River. Other, more localized directions of flow, typically at shallower depths in

the uppermost sediments, tend to flow toward the Yakima River. Locally, the flow direction may be modified by geologic structures and by irrigation practices, drains, ditches, canals, and other hydrologic features.

The Lower Yakima Valley is filled with sediments shed by the ridges at the margins of the study area and those deposited in the valley bottom by the Yakima River. These sediments have an internal structure that strongly controls groundwater movement. As the water moves through these sediments, it tends to follow preferential flow paths composed of coarser sediments.

3. INVESTIGATION ACTIVITIES

Investigation efforts were initiated as a result of the September 21, 2013 Administrative Order on Consent. As stated in Section 2.0, the objectives of Groundwater Monitoring are to establish a baseline of groundwater quality information at the Dairies to evaluate whether actions taken to reduce nitrogen loading are effective over time, and to collect information to supplement and verify existing information on the environmental setting at the Dairies, including further clarification of the hydraulic gradient of the aquifer beneath the Dairies. As part of the ongoing activities a conceptual site model (CSM) was developed and will be updated and modified as necessary (Figure 4 and Figure 5).

The Groundwater Monitoring QAPP dated June 21, 2013 was conditionally approved with modification by EPA June 19, 2013. Field investigation activities pursuant to the EPA-approved QAPP were initiated in June 27, 2013. Drilling and monitoring well construction activities began on June 27, 2013 and concluded on August 23, 2013. Well development activities began on August 26, 2013 and concluded September 4, 2013. A Quarterly Groundwater monitoring program was initiated in September 2013. The Groundwater Monitoring QAPP was revised and updated on August 28, 2015.

3.1. Groundwater Monitoring Well Installation

A total of 19 groundwater monitoring wells were located, drilled and installed as part of the AOC at the Dairies. Sixteen monitoring wells were completed in the “shallow” surficial aquifer, and three monitoring wells were completed in the “deep” surficial aquifer. Cascade Drilling, L.P. (Cascade Drilling) of Woodinville, Washington was subcontracted to drill and develop the monitoring wells.

The exact location of each well was jointly agreed upon in the field by representatives of the Dairies and EPA. Well locations were marked with an annotated lathe stake. Details of drilling, installation and completion of monitoring wells is provided in the Groundwater Monitoring Well Installation Report (ARCADIS, 2013).

Well YVD-14 was destroyed by agricultural harvesting activities sometime during the month of June 2015. Well YVD-14 was abandoned and decommissioned on December 2, 2016. Well YVD-14R was installed on December 3 through 5, 2015 as a replacement well for well YVD-14. Well YVD-14 was located approximately 20 feet east of well YVD-14R. Well YVD-14 was abandoned and well YVD-14R was installed in accordance with the QAPP, Groundwater Monitoring Well Installation Work Plan, and Washington State Department of Ecology requirements.

3.2. First Quarter 2016 Groundwater Sampling Event

IES personnel performed monitoring and sampling of the 19 wells installed as part of the AOC SOW (the "YVD" wells) and the seven wells previously installed by EPA wells (the "DC" wells) from March 7 through 10, 2016. A total of 26 wells were sampled during this event. The locations of the monitoring wells are depicted in Figures 2A and 2B. The location and construction information for each well is presented in Table 1. The monitoring and sampling was performed in accordance with the sampling procedures documented in the Groundwater Monitoring QAPP (IES, 2015).

3.2.1. Measurement of Static Water Levels

Prior to purging water from a monitoring well, an electronic water level meter was used to measure the depth to groundwater. A set of synoptic (concurrent) water level measurements was collected from 26 monitored wells on March 8, 2016. Static water level measurements were recorded to the nearest 0.01-foot at the indicated reference point on the well casing. The static water level measurement was recorded on the Groundwater Sampling Forms presented in Appendix B. The recorded groundwater measurements for First Quarter 2016 are summarized in Table 2.

3.2.2. Measure Total Depth of the Well and Water Column

The total depth of each well was measured by lowering the water level tape to the bottom of the well and reading the depth at the well casing's reference point. The total well depth of the well was recorded on the Groundwater Sampling Form. The recorded monitoring well depth was compared to the original completion depth of the well to assess the accumulation of sediment in the well.

Using the static water level and the known depth to the bottom of the well measurements, the volume of standing water in the well was calculated. This volume, multiplied by the gallons per linear foot of the casing, equals the volume of water in the well casing. For example, a 2-inch-diameter well has 0.17 gallon per linear foot of casing. To calculate one casing volume with 10 feet of water in the casing, multiply 10 feet by 0.17 gallon per linear foot to equal 1.7 gallons.

3.2.3. Sample Collection

Groundwater samples were collected from the 26 wells. Groundwater samples were collected using low-flow sample collection procedures described in the Standard Operation Procedure (SOP) entitled *Low-Flow Groundwater Purging and Sampling Procedures for Monitoring Wells* (IES, 2015; Appendix E). Low-flow sample collection is a method that minimizes the impact of the purging process on groundwater chemistry and results in a smaller volume of purge water generated.

The low-flow sample collection method requires water quality indicator parameters and water levels to be measured during purging, prior to sample collection. Stabilization of the water quality indicator parameters, and monitoring water levels, is a prerequisite to sample collection. The water quality indicator parameters to be measured include dissolved oxygen, oxidation-reduction potential, pH, specific conductance, temperature, and turbidity. Analyte specifications for field parameters and stabilization criteria are presented in Table 4 of the Groundwater Monitoring QAPP (IES, 2015).

The purging and sampling of the monitoring wells was performed by installing a QED Sample Pro® Portable Micropurge Pump. The low-flow bladder pump was fitted with disposable Teflon bladders for

each well. The pump was connected to dedicated, twin-bonded, ¼-inch-outside-diameter polyethylene discharge line with a ¼-inch-outside-diameter polyethylene air line complete with a stainless steel inlet screen. The polyethylene tubing was cut to length and left in each well following sampling activities.

Groundwater field parameters collected during well purging included pH, temperature, specific conductance, turbidity, dissolved oxygen, and oxidation-reduction potential. Water quality parameters were measured using a Horiba™ U-52 multi-parameter water quality meter utilizing a flow through cell. Parameters were measured every three to five minutes during well purging until the parameters stabilized to within ±10 percent. The dissolved oxygen membrane was damaged on March 9, 2016 during cleaning of the probe, rendering the dissolved oxygen unit of the probe inactive; for March 9 and 10, 2016 no dissolved oxygen measurements were recorded. Observations regarding odors present, the color and amount of sediment/turbidity, or foreign matter present, were noted in the comments section of the Groundwater Sampling Form. Field data measurements recorded are presented in Table 3.

Sample collection was performed after all field measurements were taken and recorded via the low-flow method. Sample collection was conducted using the correct type and number of sample containers and the correct preservatives (if needed). Samples were not filtered in the field. Samples were transported and analyzed in accordance with the Groundwater Monitoring QAPP (IES, 2015).

3.2.4. Sample Handling and Custody

All samples were accompanied by a chain-of-custody record. When custody of samples was transferred, the individuals relinquishing and receiving the samples signed and dated the chain-of-custody record. The chain-of-custody record documents the custody transfer from the sampler, often through another agent (shipping/transport company), to the laboratory sample custodian.

Prior to shipment, samples were packaged properly and a chain-of-custody record accompanied each shipping container. All shipping containers were sealed with custody seals for shipment/transport to the laboratory unless the samples were hand delivered to the laboratory. Custody seals were placed in a manner that indicated if the container has been opened during shipment. Courier names and other pertinent information were documented on the chain-of-custody record. All shipments were accompanied by the chain-of-custody record that identifies the contents of the shipment. The original and one copy was included in the shipment, an additional copy was retained by the sampler and provided to the Dairies' Project Coordinator (PC). All shipping documentation (e.g., freight bills) was retained as part of the chain-of-custody documentation by the Dairies' PC.

All samples collected for laboratory analyses were delivered to TestAmerica Laboratory, Inc. (TestAmerica) located at 11922 E 1st Avenue, Spokane, Washington. Upon arrival at the laboratory, the TestAmerica sample custodian accepted custody of the samples from the carrier and entered information about the shipment into a sample receipt log that included the initials of the person delivering the package and the status of custody seals on the containers. The sample custodian logged in the samples following the laboratory SOP. Following sample analysis, the unused portions of all samples were disposed of by TestAmerica in accordance with their laboratory SOP. A total of three sample delivery groups were submitted to the analytical laboratory; the delivery groups and collection dates are as follows:

Sample Delivery Group	Samples Collected	Date Received by Lab
590-2952-1	March 7 & 8, 2016	March 9, 2016
590-2971-1	March 8 & 9, 2016	March 10, 2016
590-2994-1	March 9 & 10, 2016	March 11, 2016

Groundwater Sampling Forms were completed at each well and indicated samples collected, sample numbers, duplicate samples, and other pertinent information including significant events and observations that occurred during sampling activities. Sufficient information was noted on field sampling forms to enable participants to reconstruct events that occurred and to refresh the memory of field personnel, if needed (Appendix B). Original copies of all field forms and chain-of-custody documents were retained by the Dairies' PC in the project files.

3.2.4.1. Sample Containers, Preservatives, and Hold Times

Field personnel in coordination with the analytical laboratory determined the number and type of sample containers needed for a given sampling event, including enough sample containers for the QC/QA samples in addition to the containers required for the actual well sampling. Preservatives were required for EPA Method 350.1, 365.1, 351.2, and 200.7 analyses. TestAmerica provided the appropriate containers for the analytes, including required container sizes. The laboratory did not provide laboratory-prepared trip blanks.

3.2.5. Measurement of Final Water Level

Immediately after pumping ceased and after samples were collected, the final water level from the TOC for each well was measured and recorded on the Groundwater Sampling Form.

3.2.6. Equipment Decontamination

Water level and water quality meters were decontaminated to prevent cross-contamination between sampling sites. All other equipment/materials were either dedicated to a particular well, or were disposable. The following procedures were followed for the water level and water quality meters:

- The equipment was cleaned with a phosphate-free detergent such as Alconox™.
- The equipment was rinsed three successive times with deionized water.

Water used for decontamination was disposed in the immediate vicinity away from the nearest monitoring well. All disposable items such as paper towels, disposable gloves and wash cloths were deposited into garbage bags and disposed in a solid waste container located at the staging area.

3.2.7. Health and Safety

ARCADIS prepared a Project Health & Safety Plan (ARCADIS 2013a) in 2013. Work activities referenced in this Report were conducted in accordance with applicable OSHA rules and regulations, as well as those specifically established in the Project Health and Safety Plan. All personnel involved in the work were current with respect to required OSHA training and refresher requirements of 29 CFR Part 1920.120. The work was conducted in Level D personal protective equipment.

4. SOIL AND GROUNDWATER CHARACTERISTICS

The following section summarizes soil and groundwater conditions encountered during subsurface soil boring and well installation efforts conducted at the Dairies. Specific information for each soil boring is provided in the Groundwater Monitoring Well Installation Report (ARCADIS 2013).

4.1. Subsurface Soil Characteristics

Soil boring and groundwater monitoring well drilling efforts were conducted during June through August 2013. Borehole field observations are provided in geologic borehole logs provided in Appendix A of the *Groundwater Monitoring Well Installation Report* (ARCADIS 2013). Figure 6 illustrates the locations of geologic cross-sections across the Site. Figures 7 to 13 present geologic cross-sections.

Lithology and depths of borings varied throughout most of the site. Site geology in most borings typically consisted of encountering finer-grained materials in the upper portion of borings and coarser-grained material in lower portions of borings. A silt loam, likely equivalent to Warden silt loam soils, was typically encountered in most borings at the surface or within 20 feet of the surface. Silt loam thickness was greatest in the areas containing YVD-13 and YVD-18 (Figure 7, 8, and 13) and in the upland areas where YVD-04 and DC-01 (Figures 8, 9, 10, 11, and 13) are located. Silt loam in these areas ranged from 23 to 57 feet thick. The silt loam typically pinched out with distance from the upland borings towards lower-elevation borings. In areas where the silt loam layer was deeper, such as in DC-01, the silt loam interbeds with the sand and gravelly sand sediments that typically dominate the lithology of borings located further downslope (Figures 9, 10 and 12).

Several borings encountered a partially cemented layer of sand and gravel (e.g., YVD-08, YVD-12, YVD-13/18, and YVD-15) located either beneath or interbedded with the silt loam. This partially cemented layer was slow to drill and was generally five to ten feet thick. Lithology beneath the cemented layer varied from 10 to 20 feet of silt loam in some borings (e.g., YVD-13) and sand in other borings (e.g., YVD-12).

Various layers of sand, gravelly sand, and sandy gravel dominated most of the borings completed at the Dairies. Sand and gravel were typically poorly graded. Lenses of silty sand and clayey sand were encountered in some of the borings. These lenses typically were present in the deeper portion of borings.

Three borings, DC-01, YVD-02 and YVD-03, penetrated into weathered basalt. Weathered basalt was encountered in borings YVD-02 and YVD-03 at 12 and 184 feet below ground surface respectively. The surface of the weathered basalt greatly decreased in a short distance from these two wells in the down slope direction. Basalt was not encountered in the nearest down slope wells including YVD-04, YVD-06, or YVD-07. Total depths of these wells ranged from 168 to 245 feet bgs, thus indicating that basalt is deeper.

4.2. Groundwater Characteristics

The unconfined surficial aquifer is situated in gravelly sand or sandy gravel. Depth to water in the 26 wells ranged from 19 to 222 feet deep. Groundwater was deepest in borings located in areas of the site that were topographically higher (e.g., YVD-04, YVD-05, YVD-06, YVD-07, YVD-08, and YVD-09). Depths to water in these borings ranged from 110 to 221 feet below ground surface (bgs). Comparatively, groundwater was shallowest in borings located in areas of the site that were topographically lower (e.g.,

YVD-14, YVD-15, YVD-17, DC-03, and DC-04). Depths to water in these borings ranged from 34 to 93 feet below ground surface. Depths to water in borings completed in the weathered basalt or basalt ranged from 19 feet in YVD-02 to 189 feet below ground surface in YVD-03.

Groundwater elevations in the surficial aquifer gauged on March 8, 2016 range from 1,255.04 feet amsl in YVD-02 to 823.65 feet amsl in YVD-12. Depth to water ranged from 220.74 feet bgs measured in well YVD-04 to 35.6 feet bgs measured in well DC-04. A summary of cumulative water level measurements and groundwater elevations is presented in Table 4. Figure 14 presents interpretive groundwater potentiometric contours developed from the synoptic water level gauging event on March 8, 2016. Groundwater generally flows through the site to the southwest at an average hydraulic gradient of 0.02 feet per foot (ft/ft). Hydraulic gradients are steeper in wells completed in the upslope areas with an average of 0.04 ft/ft. As groundwater flows to the southwest, hydraulic gradients flatten to about 0.01 ft/ft in the central portion of the site and then to 0.006 ft/ft in the southern portion of the site.

Groundwater elevations in wells DC-09 and YVD-06 appear anomalous when compared to groundwater elevations in nearby wells. During the drilling of both these wells, groundwater was initially encountered at depths of 187 and 148 feet bgs, respectively. Following the completion of the monitoring wells, water levels stabilized at 144 and 108 feet bgs, respectively. The encountered lithology in the well borings suggests that groundwater may be under semi-confined to confined conditions due to the presence of a 16-foot thick sandy silt layer in DC-09 and a 34-foot thick silt layer in YVD-06.

Comparison of groundwater elevations in the three shallow/deep monitoring well pairs (YVD-13/YVD-18, DC-03/DC-03D, and DC-05/DC-05D), indicates a slight to no downward vertical hydraulic gradient present in the surficial unconfined aquifer as measured during the sampling event. The vertical gradients in well pair DC-03/DC-03D is downward and calculated at 0.002 ft/ft. The vertical gradient in well pair YVD-13/YVD-18 and DC-05/DC-05D is upward and is calculated at 0.001 and 0.004 ft/ft, respectively.

Although most of the monitoring wells are completed in sandy gravel or gravelly sand formations, recharge of groundwater was typically slow in most borings. In most cases, water levels took 30 minutes or more to stabilize in the borehole. Water levels in YVD-04 and YVD-06 took several hours to stabilize. Part of the slow recovery can be attributed to the relatively small saturated layer thicknesses in which the well screens were competed in (e.g., less than 15 feet).

4.3. Temporal Groundwater Level Monitoring

Temporal groundwater levels were monitored using Solinst® Levelogger® Junior Edge pressure transducers in six monitoring wells to evaluate seasonal fluctuations and trends in groundwater elevations. Two pressure transducers were installed in one of the shallow/deep monitoring well pairs to evaluate differences in head between the shallow and deep portions of the surficial aquifer. Wells included DC-03, DC-05/DC-05D well pair, YVD-03, YVD-08, and YVD-11. Additionally, a Solinst® Barologger® Edge barometric pressure transducer was deployed in YVD-08 to provide the basis to compensate water levels for barometric pressure changes. Water levels often exhibit a response to barometric pressure, i.e. a rise in barometric pressure will often result in a drop in water levels. The sensitivity of the water level response to pressure is termed barometric efficiency. Although barometric pressure compensation is calculated for each transducer, some fluctuation will be present due to the barometric efficiency of the aquifer.

Levelogger® transducers were suspended in the well screen intervals below the water table to the extent that water level fluctuations will not expose the transducers to air. Further, the transducers will be appropriately rated for the respective anticipated head in each well. Transducers were secured within the steel surface casing to prevent vandalism and/or tampering.

Transducers were programmed to record water levels every hour beginning at 12 noon on October 15, 2013. Data was collected from the transducers during the groundwater sampling event conducted in June 2015. Prior to deploying transducers and downloading data, water levels in wells were manually gauged using an electronic water level meter. Following the data download, water level data was compensated for changes in barometric pressure. The resulting groundwater hydrographs are presented in Figures 15A to 15F.

Groundwater levels in DC-03 (Figure 15B) showed a decreasing trend into March 2015. Water levels began increasing throughout Second, Third and mid-Fourth Quarter 2015, reaching a maximum of approximately 839 feet amsl on October 30, 2015. Water levels decreased in well DC-03 throughout the remainder of Fourth Quarter 2015 and through First Quarter 2015.

Groundwater levels in DC-05 (Figure 15C) continued a decreasing trend through Second Quarter 2015, reaching a minimum of 841.38 feet amsl in mid-July 2015. Water levels increased through the remainder of Third Quarter and Fourth Quarter 2015, reaching a maximum of 842.77 on December 12, 2015. Water level than began to decrease through the remainder of Fourth Quarter 2015 and continued decreasing through First Quarter 2016. Water levels in DC-05D (Figure 15D) exhibit a greater daily fluctuation than water levels in DC-05. Groundwater elevations in DC-05D began declining near the end of Fourth Quarter 2014 and have continued to decline through First Quarter 2016. Groundwater levels were generally lower in DC-05D compared to water levels in DC-05, thus indicating a slight downward hydraulic gradient.

Groundwater levels in monitoring well YVD-03 (Figure 15E) show a daily fluctuation ranging from 0.5 to 1 foot. Water levels in YVD-03 showed an increasing trend into mid-April 2015, with water levels increasing approximately 1 foot over this time period. Water levels in YVD-03 declined from mid-April 2015 through mid-First Quarter 2016, reaching a minimum of approximately 930 feet amsl. The water level trend in YVD-03 appears to stabilize, but with some daily fluctuation, through the remainder of First Quarter 2016.

Groundwater levels in monitoring well YVD-08 (Figure 15F) showed daily fluctuations of about 0.5-foot to 1-foot, beginning a slight decline toward the end of Second Quarter 2015 and continuing to decline through late November 2015. Water levels began to slightly increase through the remainder of Fourth Quarter 2015 and into First Quarter 2016.

Groundwater levels in YVD-11 showed daily fluctuations of approximately 0.1-foot (Figure 15G) and remained stable until mid-March 2015, then began a slight decline from mid-March through the end of Second Quarter 2015, reaching a minimum of 861 feet amsl in mid-July 2015. Water levels than began to increase into mid-October 2015, reaching a maximum of approximately 862 feet amsl. Water levels than began to decline through Fourth Quarter 2015 and continued to decline through First Quarter 2016.

4.4. Human Influences on Groundwater Flow

Human influences in the Yakima Valley may affect the hydrology and hydrogeology on and around the Dairies. These human influences include but are not limited to; water extraction wells, large septic

systems, storm water basins/structures, irrigation ditches/pipelines, surface water structures such as ponds, and field irrigation methods; a number of these structures are depicted in Figures 3B, 3C, and 3D.

Supply wells and regional wells withdraw water for irrigation, residential use, and other farming uses. These wells may withdraw consistent volumes of water year round or large volumes of water seasonally. Supply wells will likely effect the local hydraulic regime of the underlying aquifer, particularly within the area of well influence. Leakage of irrigation water from the Roza and Sunnyside Irrigation Canals is a source of recharge to the upper surficial aquifer during months when flow is present in the canals.

4.5. Average Linear Groundwater Flow Velocity

A potential average linear groundwater flow velocity for the surficial alluvial aquifer can be estimated based on the measured groundwater gradient and the observed characteristics of the aquifer material. The average linear velocity of groundwater flow (V_x) is determined according to the equation:

$$V_x = \frac{K}{n_e} \times I$$

Where: K = Hydraulic conductivity of the aquifer material
I = Hydraulic gradient of the aquifer
n_e = effective porosity of the aquifer material

No direct testing or analysis of hydraulic conductivity or effective porosity was performed for the surficial alluvial aquifer. Measurements of hydraulic conductivity and effective porosity are typically made using methods such as aquifer tests (i.e. pumping tests or slug tests) or physical analysis of aquifer material (e.g. permeameter testing, grain-size analysis). However, an estimate of the average linear groundwater velocity can be made using data (developed by others) for hydraulic conductivities and effective porosities of materials similar to that composing the surficial alluvial aquifer.

Review of the ARCADIS and EPA boring logs for wells completed at the Dairies indicate that the shallow surficial aquifer is chiefly composed of the following materials:

- Sands (SM) of fine grain size;
- Sands (SP) of medium grain size with fine gravels;
- Gravelly Sands (SP) of medium to coarse grain size with fine to coarse gravels, and;
- Sandy Gravels (GM) of fine grain size with fine to coarse sands.

Estimated values for hydraulic conductivity and effective porosity of the shallow surficial aquifer material are obtained from Method 9100, *Saturated Hydraulic Conductivity, Saturated Leachate Conductivity, and Intrinsic Permeability* (EPA, 1986) and *Data Collection Handbook to Support Modeling Impacts of Radioactive Material in Soil* (Yu et al, 1993), respectively. Values of hydraulic conductivity (K) and effective porosity (n_e) for materials similar to the shallow surficial aquifer were selected from the above-referenced literature. The selected values are presented in Table 5.

The hydraulic gradient (I) as measured during December 2015 in the vicinity of the Dairies averages 0.02 ft/ft. Hydraulic gradients in the upslope areas average of 0.04 ft/ft. Hydraulic gradients flatten to

approximately 0.01 ft/ft in the central portion of the Dairies and further flattening to 0.006 ft/ft in the south portion of the Dairies. A calculated range of average linear groundwater flow velocities in feet/day is presented in Table 5 based on the average and specific gradients. The calculated average linear groundwater flow velocities for the area under the Dairies range from 3 to 19 feet per day.

The average linear groundwater flow velocities presented in Table 5 are a range of estimated possible values only; they are calculated using data elements (hydraulic conductivity and effective porosity) that are not site-specific and may not reflect the actual conditions present at the Dairies. However, this range of calculated groundwater velocity, based on values of material properties and hydraulic conductivity presented in literature together with the measured site-specific hydraulic gradients is the best estimate of groundwater velocity that can be determined at this time.

5. ANALYTICAL PROGRAM

5.1. Analytical Methods

Groundwater samples were analyzed for the following analytes:

- Nitrate (as Nitrogen) by EPA Method 300.0
- Nitrite (as Nitrogen) by EPA Method 300.0
- Ammonia by EPA Method 350.1
- Total phosphorus by EPA Method 365.1
- Total Kjeldahl Nitrogen (TKN) by EPA Method 351.2
- Inorganic anions (chloride, fluoride, sulfate) by EPA Method 300.0
- Metals (calcium, potassium, magnesium, sodium) by EPA Method 200.7
- Alkalinity (total and bicarbonate) by Standard Method 2320B

The Groundwater Monitoring QAPP (IES, 2015; Table 3) presents the analytes, method, container, preservation method, and holding times for the groundwater samples collected during the Groundwater Monitoring. Because of the 48-hour holding time for nitrate analysis by EPA Method 300.0, samples were either hand delivered or shipped using an overnight delivery service each day (Sunday through Thursday). TestAmerica analyzed the samples immediately upon receipt to ensure holding time compliance. Analytical laboratory reports are presented in Appendix C.

5.2. Quality Control

This section presents the field and laboratory quality control (QC) requirements for Groundwater Monitoring Sampling.

5.2.1. Field Quality Control Samples

The Groundwater Monitoring Sampling included the collection of field QC samples including field duplicates and field blanks. Field QC samples were collected at the required frequency as specified in the QAPP.

5.2.2. Laboratory Quality Control Procedures

Laboratory QC procedures included the following:

- Nitrate analysis of water samples according to EPA Method 300.0
- Instrument calibration and standards as defined in the associated EPA method or Standard Method
- Laboratory blank measurements at a minimum five percent or one per batch frequency
- Accuracy and precision measurements at a minimum of one in 20 or one per set
- Data reduction and reporting according to laboratory SOP requirements
- Laboratory documentation according to laboratory SOP requirements.

5.3. Data Validation and Usability

All data underwent review and validation as described in Section 4 of the Groundwater Monitoring QAPP. Data validation for the Project is performed by Haley & Aldrich, Inc. (HAI) of Phoenix, Arizona. The Data Usability Summary Report is presented in Appendix D.

5.4. Data Management

All field data collected during the Groundwater Monitoring Sampling was recorded on Groundwater Sampling Forms (Appendix B). Pertinent information, such as field parameter measurements, was transferred to an Excel spreadsheet.

The analytical data obtained from the laboratory is maintained in an electronic data management tool. Additionally, the data are provided to the EPA in accordance with the procedures presented in “EPA Region 10 Monitoring and Analytical Data Deliverables Data Submission Process for Water Quality Exchange (WQX) Compatible Deliverables for Yakima Dairies (Docket No. SDWA-10-2013-0080), and “EPA Region 10 Geographic Information System Data Deliverable Guidance for Yakima Dairies (Docket No. SDWA-10-2013-0080). Data submitted to the EPA is provided in the requested format which is consistent with the examples provided by the EPA to the Dairies. Data is available via the Storage and Retrieval and Water Quality Exchange (STORET/WQX) Data Warehouse (http://www.epa.gov/waterdata/storage-and-retrieval-and-water-quality-exchange) under the Organization ID *YAKIMAVLYDAIRIES_WQX*.

5.5. Corrective Actions

No corrective actions were required for the First Quarter 2016 sampling event.

6. DATA VALIDATION AND USABILITY

6.1. Data Review, Verification, and Validation

All data underwent a Stage 2 validation, which included a data package completeness review. Data were validated in accordance with the latest EPA National Functional Guidelines. The data validation report is presented in Appendix D. Any deviation from the approved QAPP was either documented within the body of this report or in the data validation reports. All analyses met project data quality goals and criteria and are usable for all purposes except as noted below:

- In SDG 590-2971-1, Ammonia (as N) results for DC-01-160308 and DC-09-160308 were rejected due to field blank contamination.
- In SDG 590-2971-1, Total Kjeldahl Nitrogen (as N) (TKN) results for all samples except the field blank and YVD-07-160308 were rejected due to low matrix spike recoveries.
- In SDG 590-2994-1, Total Kjeldahl Nitrogen (as N) (TKN) results for DC-07-160309 were rejected due to field blank contamination.
- Three additional blank check samples were sent to the laboratory and analyzed for the same analytes as the groundwater to verify contamination was not being introduced through the decontamination source water. The results showed no evidence of source water contamination. No changes to validation qualifiers were necessary. Decontamination procedures will continue to be monitored.

7. GROUNDWATER SAMPLING RESULTS

Groundwater field parameter measurements for the First Quarter 2016 sampling event are presented in Table 3. Groundwater analytical results for First Quarter 2016.are presented in Table 6. A summary of cumulative groundwater sampling results is presented in Table 7. Additionally, a summary of the cation/anion balance is presented in Appendix E. These results establish current groundwater quality conditions in the surficial alluvial aquifer that underlies the Dairies. Further, analytical results will be compared to subsequent quarterly events to identify spatial and temporal water quality trends. All 26 wells were sampled during this groundwater sampling event.

7.1. Field Parameters

Groundwater field parameters collected during well purging included dissolved oxygen, pH, oxidation-reduction potential, specific conductance, temperature, and turbidity. Parameters were measured every three to five minutes during well purging until the parameters stabilized to within ±10 percent. A summary of the final measurements recorded during the purging of each well are presented in Table 3.

Dissolved oxygen measures the concentration of molecular oxygen dissolved in groundwater. Oxygen's limited solubility, as described by Henry's law, is directly related to atmospheric pressure and inversely related to water temperature and salinity. The solubility of oxygen increases proportionately with

hydrostatic pressure, hence depth. In dilute solutions at sea level, the solubility of oxygen ranges between 7.0 and 10.0 mg/L, at temperatures ranging between 15 to 31°C (APHA 1981).

The primary chemical characteristic of molecular oxygen is its ability to accept electrons from (oxidize) other species in water. Aerobic bacteria utilize dissolved oxygen as part of their metabolism. This results in the oxidation of organic carbon, hydrogen sulfide, ammonium, molecular nitrogen and other reductants. An important aspect of these biochemical reactions is their irreversibility; dissolved oxygen is always consumed and never produced as a result of bacterial metabolism. Groundwater sources usually contain a low level of dissolved oxygen compared to surface waters. A dissolved oxygen level less than 1.0 mg/L is considered indicative of anaerobic conditions.

The dissolved oxygen membrane was damaged on March 9, 2016 during cleaning of the probe, rendering the dissolved oxygen unit of the probe inactive; for March 9 and 10, 2016 no dissolved oxygen measurements were recorded. Dissolved oxygen in the measured wells ranged from 9.19 in monitoring wells YVD-02 to 18.13 mg/L in monitoring well YVD-04.

Oxidation-reduction potential (ORP) is a measure of the intensity or activity of an aqueous environment or soil to mediate reactions of important elements in biological systems (e.g., O, N, Mn, Fe, S, and C) and other metallic elements (EPA, 2013). The ORP is the tendency of a chemical species to acquire electrons and thereby be reduced. Each species has its own intrinsic reduction potential; the more positive the potential, the greater the species' affinity for electrons and tendency to be reduced.

In aqueous solutions, the ORP is the tendency of the solution to either gain or lose electrons when it is subject to change by introduction of a new species. A solution with a higher (more positive) ORP than the new species will have a tendency to gain electrons from the new species (i.e. to be reduced by oxidizing the new species) and a solution with a lower (more negative) ORP will have a tendency to lose electrons to the new species (i.e. to be oxidized by reducing the new species). The transfer of electrons between chemical species determines the ORP of an aqueous solution. It does not characterize the capacity of the system for oxidation or reduction, in much the same way that pH does not characterize the buffering capacity. A numerically positive ORP represents an environment conducive to the oxidation of an introduced substance by reduction of the original media.

Groundwater typically contains both reduced and oxidized species, however what is termed the redox buffer capacity of an aquifer is normally dominated by the chemistry of the aquifer matrix. In most natural groundwater systems iron is the dominant (by one to three orders of magnitude) buffering species involved in redox reactions.

The denitrification (NO_3 to N_2) reaction [$3CH_2O + 4NO_3^- = 2N_2 + 3HCO_3^- + H^+ + 2H_2O$] consumes organic matter in groundwater (Vance, 1996). Denitrification can occur under ORP conditions in the range of +100mV to +250mV. Water in contact with air will have an ORP in the range of +350mV to +500mV.

Most work with oxidation/reduction reactions involves solutions in closed systems that are in an equilibrium state. In groundwater with more than one oxidation/reduction species, the ORP cannot be accurately measured unless the reactants are at thermodynamic equilibrium. Some redox reactions can take from 10 to 1,000 years to reach equilibrium. However, environmental processes are typically in disequilibrium, caused by:

- Flowing groundwater conditions.
- Biological activity.
- Reactions of light bioactive elements (C, H, O, and S) which most often involve the breaking of covalent bonds, a process that is normally slow.
- Electrochemical reactions of exposed active mineral surfaces.

Oxidation-reduction potential ranged from 200 to 343 millivolts (mV) in monitoring wells YVD-02 and YVD-11, respectively.

The measured pH ranged from 7.00 to 8.23 standard units (SU) with the lowest reading measured in monitoring well DC-14 and the highest reading measured in well YVD-07.

Specific conductance is a measurement of the dissolved material in an aqueous solution, which relates to the ability of the media to conduct an electrical current. The greater the amount of dissolved material in a media, the higher the specific conductance value. Specific conductance in water depends on the concentration of ions, mobility, valence, relative concentrations, and the temperature of the solution. Natural waters have specific conductance that are usually much less than 1 micromho per centimeter (µmhos/cm). An estimate of total dissolved solids in mg/L can be made by multiplying specific conductance in µmhos/cm by a factor ranging from 0.55 to 0.9, depending on the concentration of soluble component. The presence of charged ionic species allows current to be conducted through the solution, but other undissociated species in the solution complicate the relationship between specific conductance and total dissolved solids. Specific conductance, as a field parameter, may best reflect major ion chemistry in groundwater as it is less affected by either volatilization or small-scale heterogeneity. Comparing temporal and spatial specific conductance measurements can provide an approximation of the mobility of the ionic species in the system. Specific conductance ranged from 0.266 to 2.43 microsiemens per centimeter (µS/cm) with the lowest reading measured in monitoring well YVD-17 and the highest reading measured in well DC-03.

Groundwater temperature measurements ranged from 12.30 to 16.34°C in monitoring wells DC-07 and YVD-02, respectively. Groundwater temperature measurements are made at the surface and do not necessarily indicate the water temperature of the aquifer.

The lowest turbidity reading was 2.1 nephelometric turbidity units (NTU) in monitoring well DC-03D. The highest turbidity readings, measured at greater than the instrument detection limit of 800 NTUs, were recorded in wells YVD-02 and YVD-10.

7.2. Nitrate

Nitrate (as nitrogen) was detected in 23 monitoring wells (Figure 16A). Nitrate was not detected at or above the method detection limit in well YVD-02. Detected concentrations range from less than 0.32 milligrams per liter (mg/L) in well YVD-17 to 180 mg/L in well DC-03 (Table 6).

Nitrate was measured in 10 wells at concentrations less than the maximum contaminant level (MCL) of 10 mg/L:

- DC-01 (8.6 mg/L)
- DC-07 (2.2 mg/L)
- DC-09 (5.7 mg/L)
- YVD-02 (less than 0.2 mg/L)
- YVD-03 (4.6 mg/L)
- YVD-04 (3.7 mg/L)
- YVD-05 (2.7 mg/L)
- YVD-06 (0.51 mg/L)
- YVD-07 (1.8 mg/L)
- YVD-17 (0.32 mg/L)

Nitrate was measured in 16 wells at concentrations greater than 10 mg/L:

- DC-03 (180 mg/L)
- DC-03D (37 mg/L)
- DC-04 (53 mg/L)
- DC-05 (43 mg/L)
- DC-05D (13 mg/L)
- DC-14 (16 mg/L)
- YVD-08 (32 mg/L)
- YVD-09 (48 mg/L)
- YVD-10 (98 mg/L)
- YVD-11 (65 mg/L)
- YVD-12 (13 mg/L)
- YVD-13 (32 mg/L)
- YVD-14R (100 mg/L)
- YVD-15 (36 mg/L)
- YVD-16 (23 mg/L)
- YVD-18 (22 mg/L)

Nitrate concentrations in well pairs showed lower detected concentrations in the deep well compared to the shallow well. Nitrate was detected in well pair YVD-13 (shallow) and YVD-18 (deep) at 32 and 22 mg/L, respectively. Nitrate was detected in well pair DC-03 (shallow) and DC-03D (deep) at 180 and 37 mg/L, respectively. Nitrate was detected in well pair DC-05 (shallow) and DC-05D (deep) at 43 and 13 mg/L, respectively.

Historic nitrate concentrations are presented in Figure 16A. Nitrate concentrations detected in wells over time are presented in Figures 17 through 22. Figure 17 presents nitrate concentrations detected over time in wells DC-04, DC-05, CD-05D, DC-07, YVD-15, and YVD-17 (the “East Downgradient” wells). Figure 18 presents nitrate concentrations detected over time in wells DC-03, DC-07, YVD-12, YVD-13, YVD-14, and YVD-18 (the “West Downgradient” wells). Figure 19 presents nitrate concentrations detected over time in wells YVD-08, YVD-09, YVD-10, YVD-11, and YVD-16 (the “Central” wells). Figure 20 presents nitrate concentrations detected over time in wells DC-09, DC-14, YVD-05, YVD-06, and YVD-07 (the “Northern” wells). Figure 21 presents nitrate concentrations detected over time in wells DC-01, YVD-02, YVD-03, and YVD-04 (the “Upgradient” wells). Figure 22 presents nitrate versus total dissolved ion (TDI) concentrations in wells along Transect F-F’ (wells YVD-02, YVD-07, YVD-10, YVD-14, and DC-03).

7.3. Nitrite

Nitrite was detected in the 26 wells at concentrations less than the laboratory reporting limits (Figure 23, Table 6).

7.4. Ammonia

Ammonia (as N) was detected in four monitoring wells. Ammonia concentrations are presented in Table 6 and depicted on Figure 23. Detected ammonia concentrations ranged from 0.12 in well YVD-09 to 1.1 mg/L in well YVD-07. The remaining wells contained ammonia at concentrations less than the laboratory reporting limit. Ammonia was detected in field blank YVD-F2-160308 at a concentration of 0.19 mg/L.

7.5. Total Kjeldahl Nitrogen

Total Kjeldahl Nitrogen (TKN) was detected in two monitoring wells. TKN concentrations are presented in Table 6 and depicted on Figure 23: Detected TKN concentrations range from 0.25 mg/L in well YVD-02 to 0.94 mg/L in DC-03. TKN was not detected in the duplicate sample collected for well DC-03. The remaining wells contained TKN at concentrations less than the laboratory reporting limit of 0.250 mg/L. TKN was detected in the collected equipment blank sample at a concentration of 1.9 mg/L and field blank YVD-F3-160309 at a concentration of 0.30 mg/L.

7.6. Total Phosphorus

Total phosphorus was detected in seven monitoring wells. Phosphorous concentrations are presented in Table 6 and depicted on Figure 23. Detected phosphorus concentrations range from 0.26 mg/L in well DC-01 to 0.59 mg/L in well YVD-02. The remaining wells contained phosphorous at concentrations less than the laboratory reporting limit.

7.7. Inorganic Anions

Inorganic anions included chloride, fluoride, and sulfate. The analytical results for the First Quarter 2016 sampling event are presented in Table 6 and depicted on Figure 24. A summary of the results is discussed below.

7.7.1. Chloride

Chloride was detected in 26 monitoring wells. Concentrations range from 2.8 mg/L in well YVD-17 to 150 mg/L in well DC-03. Chloride concentrations were less than the secondary contaminant level of 250 mg/L.

7.7.2. Fluoride

Fluoride was detected above the laboratory reporting limit in monitoring wells YVD-02, YVD-03, and the YVD-05 duplicate sample at concentrations of 0.57, 0.72, and 0.59 mg/L, respectively. Fluoride was not detected in the primary sample collected for well YVD-05. These concentrations are below the secondary

contaminant level for fluoride of 2.0 mg/L. The remaining wells contained fluoride at concentrations less than the laboratory reporting limits.

7.7.3. Sulfate

Sulfate was detected in 26 monitoring wells. Concentrations range from 4.8 mg/L in well YVD-17 to 390 mg/L in well YVD-13. Sulfate was detected in three wells, YVD-09, YVD-10, and YVD-13, at concentrations at or greater than the secondary contaminant level of 250 mg/L.

7.8. Metals

Metals included calcium, magnesium, potassium, and sodium. The analytical results for the First Quarter 2016 sampling event are presented in Table 6 and depicted on Figure 25. A summary of the results is discussed below.

7.8.1. Calcium

Calcium was detected in 26 monitoring wells. Concentrations range from 25 mg/L in well YVD-07 to 270 mg/L in well DC-03.

7.8.2. Magnesium

Magnesium was detected in 26 monitoring wells. Concentrations range from 8.8 mg/L in well DC-09 to 73 mg/L in well YVD-10.

7.8.3. Potassium

Potassium was detected in 26 monitoring wells. Concentrations range from 1.1 mg/L in well DC-07 to 9.2 mg/L in well YVD-09.

7.8.4. Sodium

Sodium was detected in 26 monitoring wells. Concentrations range from 8.4 mg/L in well YVD-17 to 190 mg/L in well YVD-09.

7.9. Alkalinity

Alkalinity included bicarbonate alkalinity and total alkalinity. The analytical results for the First Quarter 2016 sampling event are presented in Table 6 and depicted on Figure 26. A summary of the results is discussed below.

7.9.1. Bicarbonate Alkalinity

Bicarbonate alkalinity was detected in 26 monitoring wells. Concentrations range from 110 mg/L in well YVD-02 to 600 mg/L in well YVD-14R.

7.9.2. Total Alkalinity

Total alkalinity was detected in 26 monitoring wells. Concentrations range from 110 mg/L in well YVD-02 to 600 mg/L in well YVD-14R.

7.10. Water Type Classifications

Analytical results for cations and anions were used to construct Stiff patterns and Piper diagrams. These diagrams are used to evaluate the natural water chemistry of the shallow surficial aquifer, describe water type classifications, and map hydrochemical facies.

7.10.1. Anion and Cation Balance

Anion/cation balances for several monitoring wells fluctuated over the sampling events and appeared elevated (i.e., greater than five percent). It should be noted that anion/cation balance is not a definitive result, meaning that is a calculated value rather than directly measured. Elevated anion/cation balances can suggest issues with analysis for anions (by USEPA Method 300.0, an ion chromatography technique) or due to sample heterogeneity issues (e.g., turbidity). Each of these analytical methods were evaluated for quality control outliers and were found to be acceptable. A summary showing the calculated values of each of the ion concentrations is provided as Appendix E.

The total cation concentration was calculated as the sum of calcium, magnesium, sodium, and potassium. The total anion concentration was calculated as the sum of chloride, sulfate, and bicarbonate; and nitrate was also included because this negative ion was indicated to be at a relatively significant concentration in some samples. This information is summarized in a table with the calculated millequivalents per liter (meq/L, equivalent weight or equivalent mass) for the groundwater analytical results.

The ion balances for the groundwater samples were generally within +/- 5 percent, a general range used as one method for indicating that the major-ion laboratory analyses were of relatively good quality.

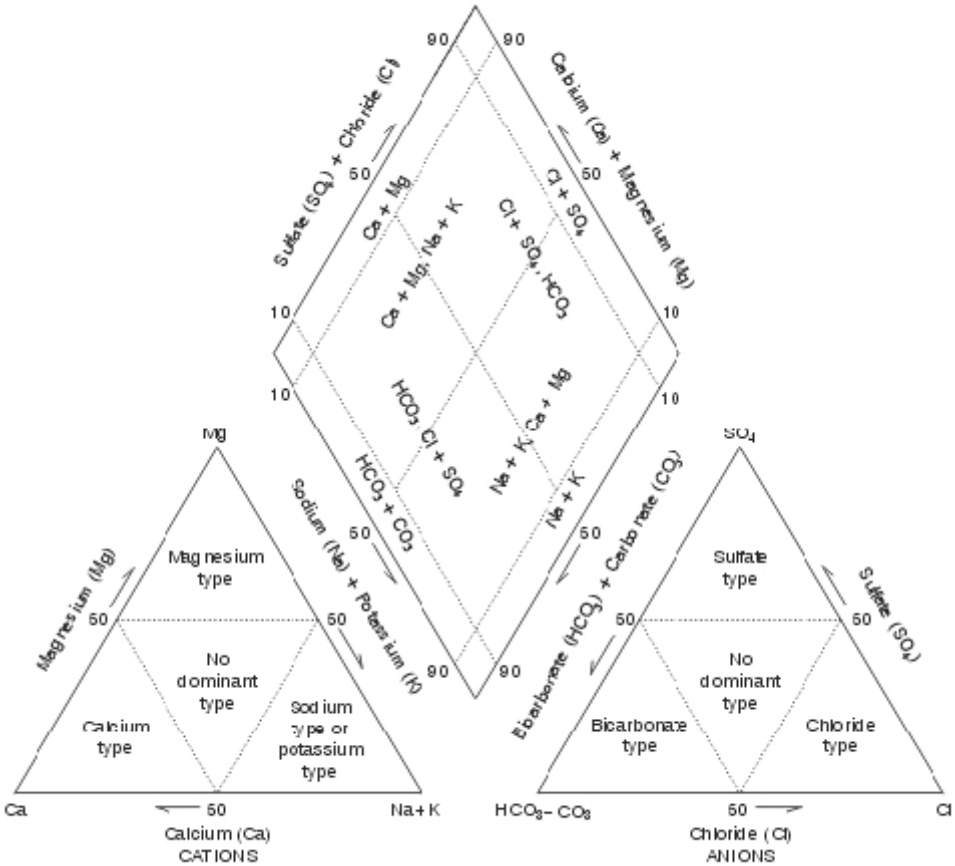
Exceptions include five samples (DC-04, YVD-02, YVD-03, YVD-04, and YVD-13). The ion balances for these samples suggests the analytical results may be unacceptable for one or more principal ions, or there were other constituents (perhaps such as organic anions, nutrients, and trace metals) contributing to higher ion balances and not accounted for in our calculations, or the groundwater chemistry was not in equilibrium (considered less likely based on the relatively neutral pH, etc.).

7.10.2. Stiff Diagrams

Stiff patterns are used to graphically compare the cation and anion concentrations for wells throughout the site both spatially and over time. A polygonal shape is created from four parallel horizontal lines extending on either side of a vertical zero axis. Cations are plotted on the left of the zero axis, one to each horizontal axis, and anions are plotted to the right, extending along a given horizontal axis. Stiff patterns are useful in making rapid visual comparison between water of different sources; generally waters with the same polygonal shapes are derived from the same source. The larger the area of the polygonal shape, the greater the concentrations of the various ions associated with the depicted sample. Figure 27 presents Stiff patterns for the sampled wells. Figure 28 presents the Stiff patterns next to the respective sample point on a facility base map. Concentrations in the Stiff diagrams are expressed in milliequivalents per liter (meq/L) and require a specific conversion for each individual ion concentration.

7.10.3. Piper Diagrams

Piper diagrams illustrate the geochemical characteristics of each sample point within the lithological flow path by plotting dissolved ion concentrations (expressed in meq/L) on two-dimensional trilinear diagrams. Each trilinear diagram represents the relative percentages of three ions. Cations are represented in the left trilinear diagram, anions in the right. The apex of each of the triangles represents 100 percent of the ion shown at that corner. For example, water compositions with more than 50 percent relative calcium ions would plot in the bottom left corner of the cation diagram and would be considered calcium dominant. Compositions with less than 50 percent of each of the represented cations would plot in the center of the diagram and would therefore be considered to have no dominant type. Each of the data points from the cation and anion diagrams are then projected into the quadrilateral above. The quadrilateral represents the water composition as a whole, with respect to the six represented ions.



Example 1. Piper Diagram displaying relative ion composition (USGS 2002)

The Piper diagrams were constructed in general accordance with ASTM D5754-95 Standard Guide for Displaying the Results of Chemical Analyses of Groundwater for Major Ions and Trace Elements – Trilinear Diagrams for Two or More Analyses. The wells are divided into well groups, based on location and with respect to groundwater gradient, and shown on individual Piper diagrams as Figure 30 through Figure 32. Individual data points within each sample group demonstrate the changes in the hydrochemical facies throughout the flow path. Figure 29 presents a Piper diagram of general water quality for all 25 well samples.

Group 1 consists of nine wells (DC-03, DC-03D, YVD-04, YVD-05, YVD-08, YVD-09, YVD-12, YVD-13, and YVD-18) located within the western portion of the Dairies. The wells in Group 1 display semi-equivalent concentrations of sodium and calcium with no dominant dissolved cation in the northern portion of the flowpath except DC-03D and YVD-04. Dissolved anion percentages in Group 1 varied from bicarbonate dominant in the northern portions of the site to sulfate dominant down gradient (YVD-13), and returning to bicarbonate anion dominated waters in the southernmost well (DC-03D). The analysis of the total major dissolved ion concentration of Group 1 indicates calcium bicarbonate water types with temporary hardness in the north, evolving to magnesium bicarbonate waters in the down-gradient areas.

Group 2 consists ten wells (DC-01, DC-04, DC-07, DC-14, YVD-03, YVD-06, YVD-10, YVD-14, YVD-15, and YVD-17) located within in the central portion of the Dairies. The wells in Group 2 vary from non-dominant concentrations of cations to slightly dissolved calcium cation dominant to magnesium cation dominant throughout the flow path. Dissolved anion percentages in group two varied from sulfate bicarbonate dominant in the northern portion of the Dairies, north of the Roza Canal, to bicarbonate dominant down gradient of the canal. The analysis of the total major dissolved ion concentration of Group 2 indicates mixing of calcium sulfate waters in the recharge area with increasingly bicarbonate waters down gradient resulting in a calcium bicarbonate water type with temporary hardness.

Group 3 consists of seven wells (DC-05, DC-05D, DC-09, YVD-02, YVD-07, YVD-11, and YVD-16) located within the eastern portion of the Dairies. The wells in Group 3 from are dissolved calcium and sodium cation dominant to waters throughout the flow path. Dissolved anion percentages in group one are bicarbonate dominant in the northern through the flow path. The analysis of the total major dissolved ion concentration of Group 3 indicates calcium-sodium bicarbonate water types with temporary hardness.

8. REFERENCES

American Public Health Association (APHA). 1981. Standard Methods for the Examination of Water and Wastewater, 15th ed. American Public Health Association. 1134pp

ARCADIS, 2013. Site Specific Health and Safety Plan, Yakima Valley Dairies. April 4.

ARCADIS. 2013. Groundwater Monitoring Well Installation Work Plan, Yakima Valley Dairies. June 21.

ARCADIS. 2013. Groundwater Monitoring Well Installation Report, Yakima Valley Dairies. November 3.

ASTM International, 2006. Standard Guide for Displaying the Results of Chemical Analyses of Groundwater for Major Ions and Trace Elements – Trilinear Diagrams for Two or More Analyses, D5754-95.

U.S. Environmental Protection Agency (EPA). 2012. Relation Between Nitrate in Water Wells and Potential Sources in the Lower Yakima Valley, Washington: EPA 910-R-12-003. December.

U.S. EPA, Field Measurement of Oxidation-Reduction Potential (ORP), U.S. EPA Region 4 Science and Ecosystem Support Division, January 29, 2013

EPA, 1986. Method 9100, Saturated Hydraulic Conductivity, Saturated Leachate Conductivity, and Intrinsic Permeability, Chapter 6 – Properties, Publication SW 846 Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.

IES, 2015. Groundwater Monitoring Quality Assurance Project Plan. August 28.

Natural Resources Conservation Service (NRCS), 2015. Web Soil Survey, Yakima County Area, Washington (WA677). Available online at http://websoilsurvey.nrcs.usda.gov/. Accessed February 2015.

U.S. Geological Survey (USGS). 2009. Hydrogeologic Framework of the Yakima River Basin Aquifer System: Scientific Investigations Report (SIR) 2009-5152, Washington.

USGS, 2002. Water Quality and Environmental Isotopic Analyses of Ground-Water Samples Collected from the Wasatch and Fort Union Formations in Areas of Coalbed Methane Development- Implications to recharge and Ground-water Flow, Eastern Powder River Basin, Wyoming.

Vance, David B., Redox Reactions in Remediation, Environmental Technology, Vol. 6 No. 4 Pages 24-25, July/Aug. 1996

Yu et al, 1993. Yu, C., Loureiro, C., Cheng, J.J., Jones, L.G., Wang, Y.Y., Chia, Y.P., and Faillace, E. Data Collection Handbook to Support Modeling Impacts of Radioactive Material in Soil. Environmental Assessment and Information Sciences Division, Argonne National Laboratory, Argonne, Illinois. April.

9. CERTIFICATIONS

9.1. Cow Palace 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: **DRAFT**

Name: Adam Dolsen

Title: Member

Date: _____

9.2. D & A Dairy and George DeRuyter & Son Dairy 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.

D & A Dairy, LLC (also known as D and A Dairy L.L.C.),
George DeRuyter & Son Dairy, L.L.C

Signature: **DRAFT**

Name: Dan DeRuyter

Title: Member

Date: _____

9.3. George & Margaret 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.

George & Margaret, L.L.C.

Signature: **DRAFT**

Name: Dan DeRuyter

Title: Member

Date: _____

9.4. Liberty Dairy 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.

Liberty Dairy, LLC (*and its associated dairy facility H & S Bosma Dairy*)

Signature: **DRAFT**

Name: Henry Bosma

Title: Partner

Date: _____

TABLES

TABLE 1
MONITORING WELL CONSTRUCTION DETAILS
YAKIMA VALLEY DAIRIES / SDWA-10-2013-0080
GROUNDWATER MONITORING DATA REPORT
FIRST QUARTER 2016

Well ID	Geographic Coordinates [1]		MP Elevation [2] (ft AMSL)	Ground Surface Elevation (ft AMSL)	Well Depth (ft bgs)	Well Construction	Well Screen Type and Slot Size	Screen Length (ft)	Screened Interval		Filter Pack Interval	
	Latitude	Longitude							Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	Top of Filter Pack (ft bgs)	Bottom of Filter Pack (ft bgs)
YVD-02	46.422601	-120.113697	1,288.97	1,285.81	35.0	Schedule 40 PVC	PVC Slotted Pipe 0.020-inch (20-slot)	19.5	15.0	34.5	13.0	36.0
YVD-03	46.414227	-120.139638	1,120.68	1,118.15	200.1	Schedule 40 PVC	PVC Slotted Pipe 0.020-inch (20-slot)	19.5	180.1	199.6	176.0	202.0
YVD-04	46.408062	-120.156224	1,118.66	1,116.06	245.2	Schedule 40 PVC	PVC Slotted Pipe 0.020-inch (20-slot)	19.5	225.2	244.7	220.0	248.0
YVD-05	46.404457	-120.142790	1,051.78	1,052.26	182.2	Schedule 40 PVC	PVC Slotted Pipe 0.020-inch (20-slot)	19.5	162.2	181.7	156.0	208.0
YVD-06	46.407671	-120.137191	1,053.51	1,053.88	169.0	Schedule 40 PVC	PVC Slotted Pipe 0.020-inch (20-slot)	19.5	149.0	168.5	144.0	170.0
YVD-07	46.404432	-120.125205	1,073.03	1,070.59	168.3	Schedule 40 PVC	PVC Slotted Pipe 0.020-inch (20-slot)	19.5	148.3	167.8	145.0	169.0
YVD-08	46.396920	-120.152771	1,014.38	1,011.92	182.5	Schedule 40 PVC	PVC Slotted Pipe 0.020-inch (20-slot)	19.5	162.5	182.0	155.0	188.0
YVD-09	46.396832	-120.144078	966.81	964.28	122.3	Schedule 40 PVC	PVC Slotted Pipe 0.020-inch (20-slot)	19.5	102.3	121.8	9.5	128.0
YVD-10	46.396978	-120.136165	958.00	955.45	103.1	Schedule 40 PVC	PVC Slotted Pipe 0.020-inch (20-slot)	19.5	83.1	102.6	76.0	103.5
YVD-11	46.393446	-120.123627	967.91	965.51	116.9	Schedule 40 PVC	PVC Slotted Pipe 0.020-inch (20-slot)	19.5	96.9	116.4	94.0	117.3
YVD-12	46.389730	-120.166996	961.91	959.51	151.4	Schedule 40 PVC	PVC Slotted Pipe 0.020-inch (20-slot)	19.5	131.4	150.9	127.0	154.0
YVD-13	46.389708	-120.151673	965.59	963.07	141.0	Schedule 40 PVC	PVC Slotted Pipe 0.020-inch (20-slot)	19.5	121.0	140.5	117.0	148.0
YVD-14 [3]	46.389536	-120.145067	920.19	917.64	91.0	Schedule 40 PVC	PVC Slotted Pipe 0.020-inch (20-slot)	19.5	71.0	90.5	66.0	98.0
YVD-14R	46.389532	-120.145124	921.41	918.80	93.0	Schedule 40 PVC	PVC Slotted Pipe 0.020-inch (20-slot)	20.0	72.0	92.0	69.0	93.0
YVD-15	46.389802	-120.137153	940.61	938.08	105.1	Schedule 40 PVC	PVC Slotted Pipe 0.020-inch (20-slot)	19.5	85.1	104.6	81.0	128.0
YVD-16	46.389586	-120.114783	975.90	972.99	122.1	Schedule 40 PVC	PVC Slotted Pipe 0.020-inch (20-slot)	19.5	102.1	121.6	100.5	127.0
YVD-17	46.380761	-120.142067	866.73	864.28	47.7	Schedule 40 PVC	PVC Slotted Pipe 0.020-inch (20-slot)	19.5	27.7	47.2	25.0	58.0

TABLE 1
MONITORING WELL CONSTRUCTION DETAILS
YAKIMA VALLEY DAIRIES / SDWA-10-2013-0080
GROUNDWATER MONITORING DATA REPORT
FIRST QUARTER 2016

Well ID	Geographic Coordinates (1)		MP Elevation (2) (ft AMSL)	Ground Surface Elevation (ft AMSL)	Well Depth (ft bgs)	Well Construction	Well Screen Type and Slot Size	Screen Length (ft)	Screened Interval		Filter Pack Interval	
	Latitude	Longitude							Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	Top of Filter Pack (ft bgs)	Bottom of Filter Pack (ft bgs)
YVD-18 (4)	46.389758	-120.151671	965.74	963.42	179.9	Schedule 40 PVC	PVC Slotted Pipe 0.020-inch (20-slot)	9.5	169.9	179.4	166.0	181.5
DC-03D (5)	46.386220	-120.146054	911.33	908.83	116.1	Schedule 40 PVC	PVC Slotted Pipe 0.020-inch (20-slot)	9.5	106.1	115.6	100.0	116.5
DC-05D (6)	46.382517	-120.120210	915.91	913.55	126.8	Schedule 40 PVC	PVC Slotted Pipe 0.020-inch (20-slot)	9.5	116.8	126.3	114.0	128.0
DC-01	46.418795	-120.138185	1,199.17	1,199.64	160.0	Schedule 40 PVC	PVC Slotted Pipe 0.020-inch (20-slot)	20.0	140.0	160.0	136.0	160.0
DC-03	46.386289	-120.146145	910.58	911.04	85.0	Schedule 40 PVC	PVC Slotted Pipe 0.020-inch (20-slot)	20.0	62.5	82.5	58.5	85.0
DC-04	46.382446	-120.131129	877.22	877.62	51.0	Schedule 40 PVC	PVC Slotted Pipe 0.020-inch (20-slot)	20.0	29.5	49.5	24.5	51.0
DC-05	46.382358	-120.120237	911.95	912.35	86.0	Schedule 40 PVC	PVC Slotted Pipe 0.020-inch (20-slot)	20.0	63.5	83.5	59.5	86.0
DC-07	46.389612	-120.141671	889.29	889.78	61.0	Schedule 40 PVC	PVC Slotted Pipe 0.020-inch (20-slot)	20.0	38.5	58.5	34.5	61.0
DC-09	46.404230	-120.120858	1,048.60	1,048.97	196.0	Schedule 40 PVC	PVC Slotted Pipe 0.020-inch (20-slot)	20.0	173.5	193.5	169.5	196.0
DC-14	46.404240	-120.139685	1,036.61	1,036.92	151.0	Schedule 40 PVC	PVC Slotted Pipe 0.020-inch (20-slot)	20.0	128.5	148.5	124.5	151.0

Notes:

MP = Measureing Point, equivilent to the top of the PVC well casing
ft = feet
ft AMSL = feet above mean sea level
ft bgs = feet below ground surface
PVC = Polyvinal Chloride

(1) Latitude and longitude in decimal degrees, based on World Geodetic Survey 1984 (WGS84).
(2) Vertical elevation based on North American Vertical Datum 1988 (NAVD88).
(3) Well YVD-14 abandoned on November 30, 2015 due to damage. Well abandoned by overdrilling. Well YVD-14R located approximately 20 feet due west of well YVD-14 former location.
(4) Deep well paired with shallow well YVD-13; vertical seperation of 38.9 feet
(5) Deep well paired with shallow well DC-03; vertical seperation of 33.1 feet.
(6) Deep well paired with shallow well DC-05; vertical seperation of 42.8 feet.

TABLE 2
SUMMARY OF WATER LEVEL ELEVATIONS
YAKIMA VALLEY DAIRIES / SDWA-10-2013-0080
QUARTERLY GROUNDWATER MONITORING DATA REPORT
FIRST QUARTER 2016

Well	Date of Measurement	Reference Point Elevation (feet above MSL)	Depth to Water (1) (feet BTOC)	Static Water Level Elevation (feet above MSL)
DC-01	03/08/2016	1199.17	150.53	1048.64
DC-03	03/08/2016	910.58	73.99	836.59
DC-03D	03/08/2016	911.33	74.66	836.67
DC-04	03/08/2016	877.22	35.6	841.62
DC-05	03/08/2016	911.95	70.58	841.37
DC-05D	03/08/2016	915.91	74.70	841.21
DC-07	03/08/2016	889.29	45.50	843.79
DC-09	03/08/2016	1048.60	146.70	901.90
DC-14	03/08/2016	1036.61	131.26	905.35
YVD-02	03/08/2016	1288.97	33.93	1255.04
YVD-03	03/08/2016	1120.68	190.64	930.04
YVD-04	03/08/2016	1118.66	220.74	897.92
YVD-05	03/08/2016	1051.78	167.71	884.07
YVD-06	03/08/2016	1053.51	108.90	944.61
YVD-07	03/08/2016	1073.03	157.96	915.07
YVD-08	03/08/2016	1014.38	171.00	843.38
YVD-09	03/08/2016	966.81	111.16	855.65
YVD-10	03/08/2016	958.00	91.91	866.09
YVD-11	03/08/2016	967.91	107.58	860.33
YVD-12	03/08/2016	961.91	138.26	823.65
YVD-13	03/08/2016	965.59	127.87	837.72
YVD-14R	03/08/2016	921.41	78.53	842.88
YVD-15	03/08/2016	940.61	93.83	846.78
YVD-16	03/08/2016	975.90	114.51	861.39
YVD-17	03/08/2016	866.73	37.47	829.26
YVD-18	03/08/2016	965.74	128.05	837.69

Notes:
MSL = mean sea level
BTOC = bellow top of casing
(1) The depth to water was measured from the top of the casing.

TABLE 3
SUMMARY OF FIELD PARAMETERS MEASUREMENTS
YAKIMA VALLEY DAIRIES / SDWA-10-2013-0080
QUARTERLY GROUNDWATER MONITORING DATA REPORT
FIRST QUARTER 2016

Well	Sample Date	Volume Purged Liters[1] [2]	Temperature, Field Deg C	pH, Field pH units	ORP, Field mv	Specific Conductance, Field mS/cm	Turbidity, Field NTU	Dissolved Oxygen, Field mg/L
DC-01	03/08/2016	3.4	15.63	7.66	318	0.797	89.2	16.18
DC-03	03/10/2016	4.8	16.00	7.18	314	2.43	18.5	- [3]
DC-03D	03/10/2016	3.2	14.71	7.05	293	1.48	2.1	-
DC-04	03/09/2016	4.1	12.98	7.07	340	1.29	21.8	-
DC-05	03/09/2016	4.3	13.20	7.22	330	1.19	6.5	-
DC-05D	03/09/2016	3.4	12.74	7.64	298	0.740	1.3	-
DC-07	03/09/2016	3.2	12.30	6.42	302	0.685	22.3	-
DC-09	03/08/2016	2.9	14.20	8.21	300	0.365	275	25.26
DC-14	03/09/2016	2.8	14.24	7.00	312	1.13	141	-
YVD-02	03/08/2016	2.8	16.34	8.06	200	0.308	>800	9.19
YVD-03 [4]	03/07/2016	2.4	15.25	7.48	318	0.499	218	14.59
YVD-04 [4]	03/07/2016	0.75	15.48	7.79	292	0.464	189	18.13
YVD-05	03/07/2016	5.7	14.93	8.00	304	0.437	26.9	14.14
YVD-06	03/07/2016	1.6	15.50	7.79	319	0.285	325	14.67
YVD-07	03/08/2016	3.1	14.97	8.23	293	0.349	83.5	13.97
YVD-08 [5]	03/10/2016	8.3	14.52	7.44	310	1.23	180	-
YVD-09	03/10/2016	5.7	14.74	7.44	293	1.54	560	-
YVD-10	03/09/2016	3.9	12.66	7.03	318	2.32	>800	-
YVD-11	03/09/2016	3.1	12.72	7.31	343	1.38	327	-
YVD-12	03/09/2016	4.6	13.07	7.74	325	0.996	41.5	-
YVD-13	03/09/2016	3.4	13.45	7.85	308	1.18	8.7	-
YVD-14R	03/09/2016	6.2	13.60	6.99	333	2.06	25.7	-
YVD-15	03/09/2016	2.9	12.78	7.24	310	1.24	144	-
YVD-16	03/09/2016	4.0	13.39	7.56	325	0.964	735	-
YVD-17 [5]	03/10/2016	2.7	14.86	8.10	274	0.266	134	-
YVD-18	03/09/2016	3.7	13.88	7.96	309	0.812	35.1	-

Notes:
mS/cm = microsiemens per centimeter
mv = millivolts
Deg C = Degrees in Celsius
NTU = Nephelometric turbidity units
mg/L = milligrams per liter
ORP = oxidation-reduction potential
> = greater than

(1) = The purge volume is calculated from the moment that groundwater begins discharging to the sample time. The bladder pumps did not immediately begin discharging groundwater after they were turned on.
(2) = The total purge volume was also calculated assuming that the purge rates recorded in the field notes remained constant.
(3) = DO membrane was punctured. No dissolved oxygen result collected.
(4) = No indication of the time of first water in the field notes for this well. The total volume purged was not calculated but copied directly from the field notes.
(5) = Various rates were recorded in the field notes for this well. The average rate was used to calculate the total volume purged.

TABLE 4
SUMMARY OF WATER LEVEL ELEVATIONS
YAKIMA VALLEY DAIRIES / SDWA-10-2013-0080
QUARTERLY GROUNDWATER MONITORING DATA REPORT
FIRST QUARTER 2016

Well	Date of Measurement	Reference Point Elevation (feet above MSL)	Depth to Water [1] (feet BTOC)	Static Water Level Elevation (feet above MSL)
DC-01	09/16/2013	1199.17	150.45	1048.72
DC-01	12/09/2013	1199.17	150.66	1048.51
DC-01	03/16/2014	1199.17	150.43	1048.74
DC-01	06/01/2014	1199.17	150.50	1048.67
DC-01	09/21/2014	1199.17	150.32	1048.85
DC-01	12/14/2014	1199.17	150.20	1048.97
DC-01	03/05/2015	1199.17	150.35	1048.82
DC-01	06/15/2015	1199.17	150.41	1048.76
DC-01	09/21/2015	1199.17	150.50	1048.67
DC-01	12/13/2015	1199.17	150.46	1048.71
DC-01	03/08/2016	1199.17	150.53	1048.64
DC-03	09/16/2013	910.58	72.43	838.15
DC-03	12/09/2013	910.58	72.55	838.03
DC-03	03/16/2014	910.58	73.62	836.96
DC-03	06/01/2014	910.58	73.25	837.33
DC-03	09/21/2014	910.58	72.26	838.32
DC-03	12/14/2014	910.58	72.40	838.18
DC-03	03/05/2015	910.58	73.60	836.98
DC-03	06/15/2015	910.58	73.12	837.46
DC-03	09/21/2015	910.58	72.35	838.23
DC-03	12/13/2015	910.58	73.64	836.94
DC-03	03/08/2016	910.58	73.99	836.59
DC-03D	09/16/2013	911.33	73.03	838.30
DC-03D	12/09/2013	911.33	73.16	838.17
DC-03D	03/16/2014	911.33	74.35	836.98
DC-03D	06/01/2014	911.33	73.90	837.43
DC-03D	09/21/2014	911.33	72.87	838.46
DC-03D	12/14/2014	911.33	73.13	838.20
DC-03D	03/05/2015	911.33	74.28	837.05
DC-03D	06/15/2015	911.33	73.72	837.61
DC-03D	09/21/2015	911.33	72.96	838.37
DC-03D	12/13/2015	911.33	73.31	838.02
DC-03D	03/08/2016	911.33	74.66	836.67
DC-04	09/16/2013	877.22	31.75	845.47
DC-04	12/09/2013	877.22	32.61	844.61
DC-04	03/16/2014	877.22	34.55	842.67
DC-04	06/01/2014	877.22	34.65	842.57
DC-04	09/21/2014	877.22	31.99	845.23
DC-04	12/14/2014	877.22	32.98	844.24
DC-04	03/05/2015	877.22	34.31	842.91
DC-04	06/15/2015	877.22	34.70	842.52
DC-04	09/21/2015	877.22	33.61	843.61
DC-04	12/13/2015	877.22	34.38	842.84
DC-04	03/08/2016	877.22	35.60	841.62

TABLE 4
SUMMARY OF WATER LEVEL ELEVATIONS
YAKIMA VALLEY DAIRIES / SDWA-10-2013-0080
QUARTERLY GROUNDWATER MONITORING DATA REPORT
FIRST QUARTER 2016

Well	Date of Measurement	Reference Point Elevation (feet above MSL)	Depth to Water [1] (feet BTOC)	Static Water Level Elevation (feet above MSL)
DC-05	09/16/2013	911.95	67.78	844.17
DC-05	12/09/2013	911.95	68.28	843.67
DC-05	03/16/2014	911.95	69.25	842.70
DC-05	06/01/2014	911.95	70.15	841.80
DC-05	09/21/2014	911.95	69.43	842.52
DC-05	12/14/2014	911.95	68.80	843.15
DC-05	03/05/2015	911.95	69.33	842.62
DC-05	06/15/2015	911.95	70.28	841.67
DC-05	09/21/2015	911.95	69.94	842.01
DC-05	12/13/2015	911.95	69.59	842.36
DC-05	03/08/2016	911.95	70.58	841.37
DC-05D	09/16/2013	915.91	71.92	843.99
DC-05D	12/09/2013	915.91	72.04	843.87
DC-05D	03/16/2014	915.91	73.83	842.08
DC-05D	06/01/2014	915.91	74.80	841.11
DC-05D	09/21/2014	915.91	73.78	842.13
DC-05D	12/14/2014	915.91	73.02	842.89
DC-05D	03/05/2015	915.91	73.66	842.25
DC-05D	06/15/2015	915.91	74.71	841.20
DC-05D	09/21/2015	915.91	74.38	841.53
DC-05D	12/13/2015	915.91	73.88	842.03
DC-05D	03/08/2016	915.91	74.70	841.21
DC-07	09/16/2013	889.29	44.76	844.53
DC-07	12/09/2013	889.29	44.15	845.14
DC-07	03/16/2014	889.29	44.76	844.53
DC-07	06/01/2014	889.29	35.12	854.17
DC-07	09/21/2014	889.29	44.59	844.70
DC-07	12/14/2014	889.29	44.13	845.16
DC-07	03/05/2015	889.29	44.90	844.39
DC-07	06/15/2015	889.29	45.30	843.99
DC-07	09/21/2015	889.29	45.08	844.21
DC-07	12/13/2015	889.29	44.65	844.64
DC-07	03/08/2016	889.29	45.50	843.79
DC-09	09/16/2013	1048.60	147.16	901.44
DC-09	12/09/2013	1048.60	143.10	905.50
DC-09	03/16/2014	1048.60	139.81	908.79
DC-09	06/01/2014	1048.60	142.53	906.07
DC-09	09/21/2014	1048.60	143.67	904.93
DC-09	12/14/2014	1048.60	139.42	909.18
DC-09	03/05/2015	1048.60	137.83	910.77
DC-09	06/15/2015	1048.60	146.33	902.27
DC-09	09/21/2015	1048.60	151.28	897.32
DC-09	12/13/2015	1048.60	147.46	901.14
DC-09	03/08/2016	1048.60	146.70	901.90

TABLE 4
SUMMARY OF WATER LEVEL ELEVATIONS
YAKIMA VALLEY DAIRIES / SDWA-10-2013-0080
QUARTERLY GROUNDWATER MONITORING DATA REPORT
FIRST QUARTER 2016

Well	Date of Measurement	Reference Point Elevation (feet above MSL)	Depth to Water [1] (feet BTOC)	Static Water Level Elevation (feet above MSL)
DC-14	09/16/2013	1036.61	131.08	905.53
DC-14	12/09/2013	1036.61	131.10	905.51
DC-14	03/16/2014	1036.61	130.32	906.29
DC-14	06/01/2014	1036.61	130.02	906.59
DC-14	09/21/2014	1036.61	130.25	906.36
DC-14	12/14/2014	1036.61	137.91	898.70
DC-14	03/05/2015	1036.61	129.51	907.10
DC-14	06/15/2015	1036.61	129.37	907.24
DC-14	09/21/2015	1036.61	130.28	906.33
DC-14	12/13/2015	1036.61	130.71	905.90
DC-14	03/08/2016	1036.61	131.26	905.35
YVD-02	09/16/2013	1288.97	24.21	1264.76
YVD-02	12/09/2013	1288.97	32.85	1256.12
YVD-02	03/16/2014	1288.97	34.45	1254.52
YVD-02	06/01/2014	1288.97	22.10	1266.87
YVD-02	09/21/2014	1288.97	26.14	1262.83
YVD-02	12/14/2014	1288.97	33.01	1255.96
YVD-02	03/05/2015	1288.97	34.42	1254.55
YVD-02	06/15/2015	1288.97	19.69	1269.28
YVD-02	09/21/2015	1288.97	25.36	1263.61
YVD-02	12/13/2015	1288.97	33.25	1255.72
YVD-02	03/08/2016	1288.97	33.93	1255.04
YVD-03	09/16/2013	1120.68	189.88	930.80
YVD-03	12/09/2013	1120.68	190.42	930.26
YVD-03	03/16/2014	1120.68	189.10	931.58
YVD-03	06/01/2014	1120.68	188.97	931.71
YVD-03	09/21/2014	1120.68	189.04	931.64
YVD-03	12/14/2014	1120.68	188.73	931.95
YVD-03	03/05/2015	1120.68	187.92	932.76
YVD-03	06/15/2015	1120.68	188.70	931.98
YVD-03	09/21/2015	1120.68	189.63	931.05
YVD-03	12/13/2015	1120.68	189.85	930.83
YVD-03	03/08/2016	1120.68	190.64	930.04
YVD-04	09/16/2013	1118.66	220.55	898.11
YVD-04	12/09/2013	1118.66	223.50	895.16
YVD-04	03/16/2014	1118.66	222.20	896.46
YVD-04	06/01/2014	1118.66	221.04	897.62
YVD-04	09/21/2014	1118.66	220.67	897.99
YVD-04	12/14/2014	1118.66	221.30	897.36
YVD-04	03/05/2015	1118.66	220.72	897.94
YVD-04	06/15/2015	1118.66	221.61	897.05
YVD-04	09/21/2015	1118.66	221.99	896.67
YVD-04	12/13/2015	1118.66	221.71	896.95
YVD-04	03/08/2016	1118.66	220.74	897.92

TABLE 4
SUMMARY OF WATER LEVEL ELEVATIONS
YAKIMA VALLEY DAIRIES / SDWA-10-2013-0080
QUARTERLY GROUNDWATER MONITORING DATA REPORT
FIRST QUARTER 2016

Well	Date of Measurement	Reference Point Elevation (feet above MSL)	Depth to Water [1] (feet BTOC)	Static Water Level Elevation (feet above MSL)
YVD-05	09/16/2013	1051.78	167.50	884.28
YVD-05	12/09/2013	1051.78	166.35	885.43
YVD-05	03/16/2014	1051.78	165.40	886.38
YVD-05	06/01/2014	1051.78	165.58	886.20
YVD-05	09/21/2014	1051.78	166.01	885.77
YVD-05	12/14/2014	1051.78	165.35	886.43
YVD-05	03/05/2015	1051.78	164.86	886.92
YVD-05	06/15/2015	1051.78	166.04	885.74
YVD-05	09/21/2015	1051.78	168.04	883.74
YVD-05	12/13/2015	1051.78	167.75	884.03
YVD-05	03/08/2016	1051.78	167.71	884.07
YVD-06	09/16/2013	1053.51	110.65	942.86
YVD-06	12/09/2013	1053.51	108.21	945.30
YVD-06	03/16/2014	1053.51	105.98	947.53
YVD-06	06/01/2014	1053.51	106.49	947.02
YVD-06	09/21/2014	1053.51	108.02	945.49
YVD-06	12/14/2014	1053.51	106.32	947.19
YVD-06	03/05/2015	1053.51	104.68	948.83
YVD-06	06/15/2015	1053.51	106.37	947.14
YVD-06	09/21/2015	1053.51	109.01	944.50
YVD-06	12/13/2015	1053.51	108.72	944.79
YVD-06	03/08/2016	1053.51	108.90	944.61
YVD-07	09/16/2013	1073.03	157.99	915.04
YVD-07	12/09/2013	1073.03	157.26	915.77
YVD-07	03/16/2014	1073.03	153.95	919.08
YVD-07	06/01/2014	1073.03	153.87	919.16
YVD-07	09/21/2014	1073.03	155.93	917.10
YVD-07	12/14/2014	1073.03	155.40	917.63
YVD-07	03/05/2015	1073.03	153.42	919.61
YVD-07	06/15/2015	1073.03	154.30	918.73
YVD-07	09/21/2015	1073.03	157.09	915.94
YVD-07	12/13/2015	1073.03	158.05	914.98
YVD-07	03/08/2016	1073.03	157.96	915.07
YVD-08	09/16/2013	1014.38	170.83	843.55
YVD-08	12/09/2013	1014.38	171.08	843.30
YVD-08	03/16/2014	1014.38	170.66	843.72
YVD-08	06/01/2014	1014.38	170.50	843.88
YVD-08	09/21/2014	1014.38	170.50	843.88
YVD-08	12/14/2014	1014.38	170.22	844.16
YVD-08	03/05/2015	1014.38	169.83	844.55
YVD-08	06/15/2015	1014.38	170.13	844.25
YVD-08	09/21/2015	1014.38	170.67	843.71
YVD-08	12/13/2015	1014.38	170.63	843.75
YVD-08	03/08/2016	1014.38	171.00	843.38

TABLE 4
SUMMARY OF WATER LEVEL ELEVATIONS
YAKIMA VALLEY DAIRIES / SDWA-10-2013-0080
QUARTERLY GROUNDWATER MONITORING DATA REPORT
FIRST QUARTER 2016

Well	Date of Measurement	Reference Point Elevation (feet above MSL)	Depth to Water [1] (feet BTOC)	Static Water Level Elevation (feet above MSL)
YVD-09	09/16/2013	966.81	111.14	855.67
YVD-09	12/09/2013	966.81	109.93	856.88
YVD-09	03/16/2014	966.81	109.65	857.16
YVD-09	06/01/2014	966.81	109.95	856.86
YVD-09	09/21/2014	966.81	110.08	856.73
YVD-09	12/14/2014	966.81	109.90	856.91
YVD-09	03/05/2015	966.81	109.95	856.86
YVD-09	06/15/2015	966.81	110.35	856.46
YVD-09	09/21/2015	966.81	110.83	855.98
YVD-09	12/13/2015	966.81	110.89	855.92
YVD-09	03/08/2016	966.81	111.16	855.65
YVD-10	09/16/2013	958.00	90.04	867.96
YVD-10	12/09/2013	958.00	89.20	868.80
YVD-10	03/16/2014	958.00	89.39	868.61
YVD-10	06/01/2014	958.00	90.35	867.65
YVD-10	09/21/2014	958.00	90.41	867.59
YVD-10	12/14/2014	958.00	88.76	869.24
YVD-10	03/05/2015	958.00	89.90	868.10
YVD-10	06/15/2015	958.00	91.10	866.90
YVD-10	09/21/2015	958.00	91.85	866.15
YVD-10	12/13/2015	958.00	91.52	866.48
YVD-10	03/08/2016	958.00	91.91	866.09
YVD-11	09/16/2013	967.91	106.03	861.88
YVD-11	12/09/2013	967.91	105.77	862.14
YVD-11	03/16/2014	967.91	105.72	862.19
YVD-11	06/01/2014	967.91	106.07	861.84
YVD-11	09/21/2014	967.91	106.04	861.87
YVD-11	12/14/2014	967.91	106.08	861.83
YVD-11	03/05/2015	967.91	106.18	861.73
YVD-11	06/15/2015	967.91	106.67	861.24
YVD-11	09/21/2015	967.91	106.52	861.39
YVD-11	12/13/2015	967.91	106.88	861.03
YVD-11	03/08/2016	967.91	107.58	860.33
YVD-12	09/16/2013	961.91	138.50	823.41
YVD-12	12/09/2013	961.91	138.34	823.57
YVD-12	03/16/2014	961.91	137.55	824.36
YVD-12	06/01/2014	961.91	137.61	824.30
YVD-12	09/21/2014	961.91	137.45	824.46
YVD-12	12/14/2014	961.91	137.25	824.66
YVD-12	03/05/2015	961.91	136.52	825.39
YVD-12	06/15/2015	961.91	137.85	824.06
YVD-12	09/21/2015	961.91	138.95	822.96
YVD-12	12/13/2015	961.91	138.11	823.80
YVD-12	03/08/2016	961.91	138.26	823.65

TABLE 4
SUMMARY OF WATER LEVEL ELEVATIONS
YAKIMA VALLEY DAIRIES / SDWA-10-2013-0080
QUARTERLY GROUNDWATER MONITORING DATA REPORT
FIRST QUARTER 2016

Well	Date of Measurement	Reference Point Elevation (feet above MSL)	Depth to Water [1] (feet BTOC)	Static Water Level Elevation (feet above MSL)
YVD-13	09/16/2013	965.59	127.43	838.16
YVD-13	12/09/2013	965.59	127.25	838.34
YVD-13	03/16/2014	965.59	127.58	838.01
YVD-13	06/01/2014	965.59	127.59	838.00
YVD-13	09/21/2014	965.59	127.29	838.30
YVD-13	12/14/2014	965.59	127.20	838.39
YVD-13	03/05/2015	965.59	127.35	838.24
YVD-13	06/15/2015	965.59	127.60	837.99
YVD-13	09/21/2015	965.59	127.36	838.23
YVD-13	12/13/2015	965.59	127.13	838.46
YVD-13	03/08/2016	965.59	127.87	837.72
YVD-14	09/16/2013	920.19	77.30	842.89
YVD-14	12/09/2013	920.19	76.97	843.22
YVD-14	03/16/2014	920.19	77.45	842.74
YVD-14	06/01/2014	920.19	77.61	842.58
YVD-14	09/21/2014	920.19	77.28	842.91
YVD-14	12/14/2014	920.19	76.90	843.29
YVD-14	03/05/2015	920.19	77.51	842.68
YVD-14	06/17/2015	NM	NM	NM
YVD-14	09/21/2015	NM	NM	NM
YVD-14R	12/13/2015	921.41	77.76	843.65
YVD-14R	03/08/2016	921.41	78.53	842.88
YVD-15	09/16/2013	940.61	90.34	850.27
YVD-15	12/09/2013	940.61	90.49	850.12
YVD-15	03/16/2014	940.61	91.62	848.99
YVD-15	06/01/2014	940.61	92.57	848.04
YVD-15	09/21/2014	940.61	88.84	851.77
YVD-15	12/14/2014	940.61	90.56	850.05
YVD-15	03/05/2015	940.61	92.03	848.58
YVD-15	06/15/2015	940.61	93.22	847.39
YVD-15	09/21/2015	940.61	93.43	847.18
YVD-15	12/13/2015	940.61	93.21	847.40
YVD-15	03/08/2016	940.61	93.83	846.78
YVD-16	09/16/2013	975.90	112.95	862.95
YVD-16	12/09/2013	975.90	112.84	863.06
YVD-16	03/16/2014	975.90	112.50	863.40
YVD-16	06/01/2014	975.90	112.62	863.28
YVD-16	09/21/2014	975.90	113.02	862.88
YVD-16	12/14/2014	975.90	112.86	863.04
YVD-16	03/05/2015	975.90	112.42	863.48
YVD-16	06/15/2015	975.90	112.85	863.05
YVD-16	09/21/2015	975.90	113.95	861.95
YVD-16	12/13/2015	975.90	114.04	861.86
YVD-16	03/08/2016	975.90	114.51	861.39

TABLE 4
SUMMARY OF WATER LEVEL ELEVATIONS
YAKIMA VALLEY DAIRIES / SDWA-10-2013-0080
QUARTERLY GROUNDWATER MONITORING DATA REPORT
FIRST QUARTER 2016

Well	Date of Measurement	Reference Point Elevation (feet above MSL)	Depth to Water (1) (feet BTOC)	Static Water Level Elevation (feet above MSL)
YVD-17	09/16/2013	866.73	32.07	834.66
YVD-17	12/09/2013	866.73	34.81	831.92
YVD-17	03/16/2014	866.73	37.97	828.76
YVD-17	06/01/2014	866.73	35.50	831.23
YVD-17	09/21/2014	866.73	31.86	834.87
YVD-17	12/14/2014	866.73	34.74	831.99
YVD-17	03/05/2015	866.73	37.79	828.94
YVD-17	06/15/2015	866.73	34.57	832.16
YVD-17	09/21/2015	866.73	31.92	834.81
YVD-17	12/13/2015	866.73	35.16	831.57
YVD-17	03/08/2016	866.73	37.47	829.26
YVD-18	09/16/2013	965.74	127.49	838.25
YVD-18	12/09/2013	965.74	127.45	838.29
YVD-18	03/16/2014	965.74	127.75	837.99
YVD-18	06/01/2014	965.74	127.69	838.05
YVD-18	09/21/2014	965.74	127.33	838.41
YVD-18	12/14/2014	965.74	127.33	838.41
YVD-18	03/05/2015	965.74	127.46	838.28
YVD-18	06/15/2015	965.74	127.71	838.03
YVD-18	09/21/2015	965.74	127.42	838.32
YVD-18	12/13/2015	965.74	127.24	838.50
YVD-18	03/08/2016	965.74	128.05	837.69

Notes:
MSL = mean sea level
BTOC = below top of casing
NM = Not measured due to well damage.
(1) The depth to water was measured from the top of the casing.

TABLE 5
ESTIMATED POSSIBLE AVERAGE LINEAR GROUNDWATER FLOW VELOCITIES
YAKIMA VALLEY DAIRIES / SDWA-10-2013-0080
QUARTERLY GROUNDWATER MONITORING DATA REPORT
FIRST QUARTER 2016

Material	Hydraulic Conductivity (1, 2) [K] (feet per day)	Effective Porosity (3) [n_e]	$\frac{K}{n_e}$	Estimated Possible Average Linear Groundwater Flow Velocities [V_X] (feet per day)			
				Average I (4) *-0.02*	Upslope I *-0.04*	Central I *-0.01*	Southern I *-0.006*
Fine sand	53	0.33	161	3.2	6.4	1.6	1.0
Medium sand to fine gravel	131	0.32	409	8.2	16.4	4.1	2.5
Medium sand to coarse gravel	164	0.30	547	10.9	21.9	5.5	3.3
Fine gravel	267	0.28	954	19.1	38.1	9.5	5.7

Acronyms and Abbreviations:

(1) Hydraulic conductivities obtained from EPA Method 9100, Saturated Hydraulic Conductivity, Saturated Leachate Conductivity, and Intrinsic Permeability, Chapter 6 – Properties , Publication SW-846 Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, 1986.
(2) Hydraulic conductivities presented are for well-sorted (poorly graded) material.
(3) Effective porosity obtained from Data Collection Handbook to Support Modeling Impacts of Radioactive Material in Soil, Environmental Assessment and Information Sciences Division, Argonne National Laboratory, Argonne, Illinois. April 1993.
(4) Hydraulic gradient [I] in feet per foot (ft/ft)

TABLE 6
SUMMARY OF ANALYTICAL RESULTS
YAKIMA VALLEY DAIRIES / SDWA-10-2013-0080
QUARTERLY GROUNDWATER MONIOTRING DATA REPORT
FIRST QUARTER 2016

				Analyte	Calcium		Magnesium		Potassium		Sodium		Chloride		Fluoride		Nitrate (as N)		Nitrite (as N)		Sulfate		Ammonia (as N)		Total Kjeldahl Nitrogen (as N) (TKN)		Phosphorus		Alkalinity, Bicarbonate (as CaCO3)		Alkalinity, Total (as CaCO3)	
				Analytical Method	E200.7		E200.7		E200.7		E200.7		E300		E300		E300		E300		E300		E350.1		E351.2		E365.1		SM2320B		SM2320B	
Well ID	**Sample Name**	**Sample Date**	**Sample Type**	**Sample Group**	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code
DC-01	DC-01-160308	03/08/2016	Primary	59029711	**83**	-	**30**	-	**6.2**	-	**42**	-	**40**	-	5.0 U	-	**8.6**	-	2.0 U	-	**210 J+**	MSD	0.11 R	FBK, FDP	0.25 R	MSD	**0.26**	-	**150**	-	**150**	-
DC-03	DC-03-160310	03/10/2016	Primary	59029941	**270**	-	**72**	-	**3.1**	-	**180**	-	**150**	-	5.0 U	-	**180**	-	2.0 U	-	**170 J**	DUP	0.10 U	-	**0.94 J-**	FDP, MSD	0.25 U	-	**460**	-	**460**	-
DC-03	YVD-D4-160310	03/10/2016	Duplicate	59029941	**270**	-	**72**	-	**3.0**	-	**180**	-	**160**	-	5.0 U	-	**190**	-	2.0 U	-	**180 J**	DUP	0.10 U	-	0.25 UJ	FDP, MSD	0.25 U	-	**480**	-	**480**	-
DC-03D	DC-03D-160310	03/10/2016	Primary	59029941	**200**	-	**47**	-	**3.0**	-	**68**	-	**65**	-	2.5 U	-	**37**	-	1.0 U	-	**90 J**	DUP	0.10 U	-	0.25 UJ	FDP, MSD	0.25 U	-	**580**	-	**580**	-
DC-04	DC-04-160309	03/09/2016	Primary	59029711	**190**	-	**36**	-	**4.0**	-	**36**	-	**53**	-	2.5 U	-	**53**	-	1.0 U	-	**150 J+**	MSD	0.10 UJ	FDP	0.25 R	MSD	0.25 U	-	**390**	-	**390**	-
DC-05	DC-05-160309	03/09/2016	Primary	59029711	**140**	-	**54**	-	**2.9**	-	**53**	-	**35**	-	2.0 U	-	**43**	-	0.80 U	-	**140 J+**	MSD	0.10 UJ	FDP	0.25 R	MSD	0.25 U	-	**410**	-	**410**	-
DC-05D	DC-05D-160309	03/09/2016	Primary	59029711	**81**	-	**30**	-	**4.3**	-	**41**	-	**33**	-	2.0 U	-	**13**	-	0.80 U	-	**140 J+**	MSD	0.10 UJ	FDP	0.25 R	MSD	0.25 U	-	**220**	-	**220**	-
DC-07	DC-07-160309	03/09/2016	Primary	59029941	**91**	-	**17**	-	**1.1**	-	**36**	-	**31**	-	2.0 U	-	**2.2**	-	0.80 U	-	**78 J**	DUP	0.10 U	-	0.25 R	FBK, FDP, MSD	0.25 U	-	**280**	-	**280**	-
DC-09	DC-09-160308	03/08/2016	Primary	59029711	**35**	-	**8.8**	-	**3.3**	-	**39**	-	**16**	-	0.50 U	-	**5.7**	-	0.20 U	-	**31 J+**	MSD	0.25 R	FBK, FDP	0.25 R	MSD	0.25 U	-	**130**	-	**130**	-
DC-09	YVD-D2-160308	03/08/2016	Duplicate	59029711	**34**	-	**8.6**	-	**3.1**	-	**39**	-	**16**	-	0.50 U	-	**5.7**	-	0.20 U	-	**31 J+**	MSD	0.10 UJ	FDP	0.25 R	MSD	0.25 U	-	**130**	-	**130**	-
DC-14	DC-14-160309	03/09/2016	Primary	59029711	**130**	-	**38**	-	**6.6**	-	**95**	-	**82**	-	1.0 U	-	**16**	-	0.40 U	-	**39 J+**	MSD	0.10 UJ	FDP	0.25 R	MSD	**0.33**	-	**490**	-	**490**	-
Equipment Blank	YVD-EB-160310	03/10/2016	Equipment Blank	59029941	1.0 U	-	0.50 U	-	1.0 U	-	**1.1**	-	**1.1**	-	**0.67**	-	0.20 U	-	0.20 U	-	0.50 U	-	0.10 U	-	**1.9**	-	0.25 U	-	**15**	-	**15**	-
Field Blank	YVD-F1-160307	03/07/2016	Field Blank	59029521	1.0 U	-	0.50 U	-	1.0 U	-	0.50 U	-	0.80 U	-	0.50 U	-	0.20 U	-	0.20 U	-	0.50 U	-	0.10 U	-	0.25 U	-	0.25 U	-	4.0 U	-	4.0 U	-
Field Blank	YVD-F2-160308	03/08/2016	Field Blank	59029711	1.0 U	-	0.50 U	-	1.0 U	-	0.50 U	-	0.80 U	-	0.50 U	-	0.20 U	-	0.20 U	-	0.50 U	-	**0.19**	-	0.25 U	-	0.25 U	-	4.0 U	-	4.0 U	-
Field Blank	YVD-F3-160309	03/09/2016	Field Blank	59029941	1.0 U	-	0.50 U	-	1.0 U	-	0.50 U	-	0.80 U	-	0.50 U	-	0.20 U	-	0.20 U	-	0.50 U	-	0.10 U	-	**0.30**	-	0.25 U	-	4.0 U	-	4.0 U	-
Field Blank	YVD-F4-160310	03/10/2016	Field Blank	59029941	1.0 U	-	0.50 U	-	1.0 U	-	0.50 U	-	0.80 U	-	0.50 U	-	0.20 U	-	0.20 U	-	0.50 U	-	0.10 U	-	0.25 U	-	0.25 U	-	**13**	-	**13**	-
Blank Check	WW-1	04/25/2016	Blank Check	59032861	1.7 U	-	0.83 U	-	**190**	-	**400**	-	160 U	-	100 U	-	40 U	-	40 U	-	100 U	-	**0.33**	-	**1.4**	-	0.25 U	-	**110**	-	**110**	-
Blank Check	DW-1	04/25/2016	Blank Check	59032861	1.0 U	-	0.50 U	-	1.0 U	-	0.50 U	-	0.80 U	-	0.50 U	-	0.20 U	-	0.20 U	-	0.50 U	-	0.10 U	-	0.25 U	-	0.25 U	-	4.0 U	-	4.0 U	-
Blank Check	DI-1	04/25/2016	Blank Check	59032861	1.0 U	-	0.50 U	-	1.0 U	-	0.50 U	-	0.80 U	-	0.50 U	-	0.20 U	-	0.20 U	-	0.50 U	-	0.10 U	-	0.25 U	-	0.25 U	-	4.0 U	-	4.0 U	-
YVD-02	YVD-02-160308	03/08/2016	Primary	59029521	**32**	-	**20**	-	**5.8**	-	**22**	-	**3.0**	-	**0.57**	-	0.20 U	-	0.20 U	-	**54**	-	0.10 UJ	RPD	**0.25 J-**	MSD	**0.59**	-	**110 J**	FDP	**110 J**	FDP
YVD-03	YVD-03-160307	03/07/2016	Primary	59029521	**43**	-	**20**	-	**7.1**	-	**40**	-	**13**	-	**0.72**	-	**4.6**	-	0.20 U	-	**47**	-	0.10 UJ	RPD	0.25 UJ	MSD	**0.34**	-	**150 J**	FDP	**150 J**	FDP
YVD-04	YVD-04-160307	03/07/2016	Primary	59029521	**36**	-	**12**	-	**4.6**	-	**51**	-	**14**	-	0.50 U	-	**3.7**	-	0.20 U	-	**34**	-	0.10 UJ	RPD	0.25 UJ	MSD	0.25 U	-	**250 J**	FDP	**250 J**	FDP
YVD-05	YVD-05-160307	03/07/2016	Primary	59029521	**32**	-	**15**	-	**3.6**	-	**48**	-	**8.3**	-	1.0 U	-	**2.7**	-	0.40 U	-	**47**	-	0.10 UJ	RPD	0.25 UJ	MSD	0.25 U	-	**160 J**	FDP	**160 J**	FDP
YVD-05	YVD-D1-160307	03/07/2016	Duplicate	59029521	**32**	-	**15**	-	**3.6**	-	**48**	-	**8.7**	-	**0.59**	-	**2.9**	-	0.20 U	-	**48**	-	0.10 UJ	RPD	0.25 UJ	MSD	0.25 U	-	**170 J**	FDP	**170 J**	FDP
YVD-06	YVD-06-160307	03/07/2016	Primary	59029521	**38**	-	**7.2**	-	**2.5**	-	**17**	-	**2.8**	-	0.50 U	-	**0.51**	-	0.20 U	-	**7.8**	-	0.10 UJ	RPD	0.25 UJ	MSD	0.25 U	-	**160 J**	FDP	**160 J**	FDP
YVD-07	YVD-07-160308	03/08/2016	Primary	59029711	**25**	-	**11**	-	**4.0**	-	**42**	-	**6.7**	-	1.0 U	-	**1.8**	-	0.40 U	-	**49 J+**	MSD	**1.1 J+**	FBK, FDP	0.25 U	-	0.25 U	-	**140**	-	**140**	-
YVD-08	YVD-08-160310	03/10/2016	Primary	59029941	**120**	-	**44**	-	**5.6**	-	**87**	-	**120**	-	2.5 U	-	**32**	-	1.0 U	-	**210 J**	DUP	0.10 U	-	0.25 UJ	FDP, MSD	0.25 U	-	**240**	-	**240**	-
YVD-09	YVD-09-160310	03/10/2016	Primary	59029941	**110**	-	**42**	-	**9.2**	-	**190**	-	**72**	-	5.0 U	-	**48**	-	2.0 U	-	**250 J**	DUP	**0.12**	-	0.25 UJ	FDP, MSD	**0.33**	-	**360**	-	**360**	-
YVD-10	YVD-10-160309	03/09/2016	Primary	59029711	**310**	-	**73**	-	**4.1**	-	**120**	-	**140**	-	5.0 U	-	**98**	-	2.0 U	-	**280 J+**	MSD	0.10 UJ	FDP	0.25 R	MSD	**0.42**	-	**520**	-	**520**	-
YVD-11	YVD-11-160309	03/09/2016	Primary	59029711	**200**	-	**53**	-	**3.3**	-	**25**	-	**99**	-	5.0 U	-	**65**	-	2.0 U	-	**140 J+**	MSD	**0.14 J**	FDP	0.25 R	MSD	0.25 U	-	**340**	-	**340**	-
YVD-12	YVD-12-160309	03/09/2016	Primary	59029941	**95**	-	**35**	-	**2.6**	-	**73**	-	**73**	-	5.0 U	-	**13**	-	2.0 U	-	**170 J**	DUP	0.10 U	-	0.25 UJ	MSD	0.25 U	-	**210**	-	**210**	-
YVD-12	YVD-D3-160309	03/09/2016	Duplicate	59029941	**95**	-	**36**	-	**2.5**	-	**72**	-	**79**	-	0.50 U	-	**15**	-	0.20 U	-	**180 J**	DUP	0.10 U	-	0.25 UJ	MSD	0.25 U	-	**200**	-	**200**	-
YVD-13	YVD-13-160309	03/09/2016	Primary	59029941	**100**	-	**29**	-	**4.2**	-	**120**	-	**85**	-	5.0 U	-	**32**	-	2.0 U	-	**390 J**	DUP	0.10 U	-	0.25 UJ	FDP, MSD	0.25 U	-	**140**	-	**140**	-
YVD-14R	YVD-14R-160309	03/09/2016	Primary	59029941	**250**	-	**67**	-	**4.4**	-	**130**	-	**110**	-	5.0 U	-	**100**	-	2.0 U	-	**180 J**	DUP	0.10 U	-	0.25 UJ	FDP, MSD	0.25 U	-	**600**	-	**600**	-
YVD-15	YVD-15-160309	03/09/2016	Primary	59029711	**120**	-	**60**	-	**4.2**	-	**75**	-	**32**	-	5.0 U	-	**36**	-	2.0 U	-	**65 J+**	MSD	0.10 UJ	FDP	0.25 R	MSD	0.25 U	-	**520**	-	**520**	-
YVD-16	YVD-16-160309	03/09/2016	Primary	59029711	**90**	-	**36**	-	**7.4**	-	**86**	-	**39**	-	2.5 U	-	**23**	-	1.0 U	-	**130 J+**	MSD	**0.15 J**	FDP	0.25 R	MSD	**0.27**	-	**300**	-	**300**	-
YVD-17	YVD-17-160310	03/10/2016	Primary	59029941	**35**	-	**16**	-	**1.2**	-	**6.4**	-	**2.8**	-	0.50 U	-	**0.32**	-	0.20 U	-	**4.8 J**	DUP	0.10 U	-	0.25 UJ	FDP	0.25 U	-	**150**	-	**150**	-
YVD-18	YVD-18-160309	03/09/2016	Primary	59029941	**62**	-	**21**	-	**3.8**	-	**89**	-	**63**	-	2.5 U	-	**22**	-	1.0 U	-	**150 J**	DUP	0.10 U	-	0.25 UJ	FDP, MSD	0.25 U	-	**120**	-	**120**	-

TABLE 6
SUMMARY OF ANALYTICAL RESULTS
YAKIMA VALLEY DAIRIES / SDWA-10-2013-0080
QUARTERLY GROUNDWATER MONITORING DATA REPORT
FIRST QUARTER 2016

Notes:

1. **Bold** = detected result
2. Results reported in milligrams per liter (mg/L).
3. No samples were filtered in the field.
4. (as N) = reported as Nitrogen
5. (as CaCO3) = reported as calcium carbonate
6. U = The compound was analyzed for but not detected. The associated value is the compound reporting limit. Or the compound is considered non-detect at the listed value due to associated blank contamination.
7. UJ = The compound was not detected above the reported sample reporting limit; however, the reporting limit is approximate and may or may not represent the actual limit of quantitation.
8. J = The compound was positively identified; however, the associated numerical value is an estimated concentration.
9. J+ = The result is an estimated quantity, but the result may be biased high.
10. J- = The result is an estimated quantity, but the result may be biased low.
11. R = The sample results are rejected as unusable. The compound may or may not be present in the sample.
12. DUP = Laboratory duplicate RPD exceedance.
13. FBK = Field Blank Contamination.
14. FDP = Field Duplicate RPD exceedance.
15. MSD = MS/MSD percent recoveries were outside acceptance limits.
16. RPD = MS/MSD RPD outside of acceptance limits.

TABLE 7
CUMULATIVE ANALYTICAL RESULTS
YAKIMA VALLEY DAIRIES / SDWA-10-2013-0080
QUARTERLY GROUNDWATER MONITORING DATA REPORT
FIRST QUARTER 2016

				Analyte	Calcium		Magnesium		Potassium		Sodium		Chloride		Fluoride		Nitrate (as N)		Nitrite (as N)		Sulfate		Ammonia (as N)		Total Kjeldahl Nitrogen (TKN)		Phosphorus		Phosphorus		Phosphorus		Alkalinity, Bicarbonate (as CaCO3)		Alkalinity, Total (as CaCO3)	
				Analytical Method	E200.7		E200.7		E200.7		E200.7		E300		E300		E300		E300		E300		E350.1		E351.2		E365.1		E365.4		SM4500-P-E		SM2320B		SM2320B	
Well ID	Sample Name	Sample Date	Sample Type	Sample Group	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code
DC-01	DC-01-130104	01/04/2013	Primary	EPA01	-	-	-	-	-	-	-	-	-	-	-	-	9.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DC-01	DC-01-130924	09/24/2013	Primary	SWI0178	88.9	-	32.5	-	6.10	-	43.0	-	44.0	-	0.50 U	-	11.1	-	0.20 U	-	223	-	0.10 U	-	0.25 U	-	-	-	0.123	-	-	-	110	-	110	-
DC-01	DC-01-131211	12/11/2013	Primary	SWL0063	91.4	-	32.6	-	5.94	-	41.9	-	47.8	-	5.0 U	-	11.5	-	2.0 U	-	280 J-	MSD	0.02 R	MSD	0.20 U	-	-	-	-	-	0.186	-	159	-	160	-
DC-01	DC-01-140318	03/18/2014	Primary	SXC0095	90.5	-	31.4	-	5.93	-	40.2	-	48.2	-	5.0 U	-	11.2	-	2.0 U	-	250 J-	MSD	0.101	-	0.304	-	0.079	-	-	-	-	-	159	-	160	-
DC-01	DC-01-140602	06/02/2014	Primary	SXF0017	88.6	-	31.9	-	6.74	-	41.8	-	41.4	-	2.0 U	-	9.76	-	0.80 U	-	224 J-	MSD	0.10 U	-	0.45	-	0.81	-	-	-	-	-	164	-	165	-
DC-01	DC-01-140923	09/23/2014	Primary	SXI0158	89.4	-	31.2	-	6.02	-	44.3 J+	MSD	41.8	-	5.0 U	-	9.0	-	2.0 U	-	216	-	0.10 R	MSD	0.25 U	-	0.12	-	-	-	-	-	154	-	155	-
DC-01	DC-01-141216	12/16/2014	Primary	SXL0121	92.8	-	34.0	-	6.18	-	43.1	-	85.7	-	5.0 U	-	18.9	-	2.0 U	-	463	-	0.10 U	-	0.25 UJ	MSD	0.10 U	-	-	-	-	-	140	-	140	-
DC-01	DC-01-150316	03/16/2015	Primary	5904471	91	-	32	-	6.5	-	44	-	44	-	5.0 U	-	11	-	2.0 U	-	220	-	0.10 U	-	0.25 UJ	MSD	0.25 UJ	MSD	-	-	-	-	150	-	150	-
DC-01	DC-01-150616	06/16/2015	Primary	59010751	91 J+	MSD	33 J+	MSD	6.2 J+	MSD	42 J+	MSD	42	-	5.0 U	-	9.5	-	2.0 U	-	200 J-	MSD	0.10 U	-	0.25 UJ	MSD	0.25 U	-	-	-	-	-	150	-	150	-
DC-01	DC-01-150923	09/23/2015	Primary	59020281	83	-	32	-	6.0	-	43	-	37	-	5.0 U	-	8.6	-	2.0 U	-	200	-	0.13	-	0.25 R	MSD	0.25 U	-	-	-	-	-	150	-	150	-
DC-01	YVD-D1-150923	09/23/2015	Duplicate	59020281	85	-	33	-	6.1	-	43	-	43	-	0.50 U	-	10	-	0.20 U	-	210	-	0.10 U	-	0.25 R	MSD	0.25 U	-	-	-	-	-	160	-	160	-
DC-01	DC-01-151214	12/14/2015	Primary	59025431	97	-	34	-	6.8	-	48	-	38	-	5.0 U	-	8.8	-	2.0 U	-	220	-	0.10 R	MSD	0.25 R	MSD	0.30 J	FDP	-	-	-	-	170 J	FDP	170 J	FDP
DC-01	DC-01-160308	03/08/2016	Primary	59029711	83	-	30	-	6.2	-	42	-	40	-	5.0 U	-	8.6	-	2.0 U	-	210 J+	MSD	0.11 R	FBK, FDP	0.25 R	MSD	0.26	-	-	-	-	-	150	-	150	-
DC-03	DC-03-130102	01/02/2013	Primary	EPA01	-	-	-	-	-	-	-	-	-	-	-	-	190	-	-	-	-	-	0.10 U	-	-	-	-	-	-	-	-	-	-	-	-	-
DC-03	DC-03-130918	09/18/2013	Primary	SWI0138	284	-	73.7	-	2.73	-	173	-	176	-	5.0 U	-	166	-	2.0 U	-	176	-	0.10 U	-	0.25 U	-	-	-	0.10 U	-	-	-	435	-	435	-
DC-03	DC-03-131212	12/12/2013	Primary	SWL0078	280	-	75.0	-	3.29	-	172	-	172	-	5.0 U	-	174	-	2.0 U	-	176	-	0.02 U	-	0.20 U	-	-	-	-	-	0.244	-	474	-	475	-
DC-03	YVD-D3-131212	12/12/2013	Duplicate	SWL0078	292	-	77.3	-	3.53	-	181	-	142	-	5.0 U	-	182	-	2.0 U	-	160	-	0.02 U	-	0.8311 U	ERL	-	-	-	-	0.221	-	459	-	460	-
DC-03	DC-03-140319	03/19/2014	Primary	SXC0107	261	-	66.8	-	2.91	-	165	-	159 J	FDP	5.0 U	-	195	-	2.0 U	-	189 J	FDP	0.10 U	-	0.938 J-	MSD	0.057	-	-	-	-	-	459	-	460	-
DC-03	YVD-D3-140319	03/19/2014	Duplicate	SXC0107	261	-	66.7	-	2.81	-	166	-	128 J	FDP	5.0 U	-	164	-	2.0 U	-	150 J	FDP	0.10 U	-	0.718 J-	MSD	0.062	-	-	-	-	-	469	-	470	-
DC-03	DC-03-140604	06/04/2014	Primary	SXF0025	259	-	67.7	-	3.11	-	177	-	201	-	10.0 U	-	234	-	4.0 U	-	214	-	0.10 U	-	0.25 UJ	MSD	0.12	-	-	-	-	-	425	-	425	-
DC-03	DC-03-140924	09/24/2014	Primary	SXI0173	291	-	77.1	-	3.28	-	178	-	147	-	5.0 U	-	170	-	2.0 U	-	166	-	0.10 U	-	2.27 J+	MSD	0.054 J+	FBK	-	-	-	-	409	-	410	-
DC-03	DC-03-141217	12/17/2014	Primary	SXL0144	274	-	74.9	-	3.76	-	185	-	157	-	10.0 U	-	193	-	4.0 U	-	182	-	0.18 J+	FBK, MBK	0.25 R	MSD	0.13 J-	MSD	-	-	-	-	429	-	430	-
DC-03	YVD-D4-141217	12/17/2014	Duplicate	SXL0144	271	-	72.6	-	3.19	-	180	-	182	-	5.0 U	-	156	-	10.0 U	-	211	-	0.10 U	-	0.25 R	MSD	0.10 UJ	MSD	-	-	-	-	423	-	425	-
DC-03	DC-03-150318	03/18/2015	Primary	5904651	260	-	73	-	3.3 J-	MSD	180	-	160	-	5.0 U	-	180	-	2.0 U	-	160	-	0.10 U	-	0.45 J-	MSD	0.25 U	-	-	-	-	-	420	-	420	-
DC-03	YVD-D4-150318	03/18/2015	Duplicate	5904651	270	-	74	-	3.6 J-	MSD	180	-	150	-	2.5 U	-	180	-	1.0 U	-	160	-	0.12	-	0.53 J-	MSD	0.25 U	-	-	-	-	-	410	-	410	-
DC-03	DC-03-150617	06/17/2015	Primary	59011021	290	-	78 J	RPD	3.6 J	RPD	190 J	RPD	170	-	5.0 U	-	180 J-	MSD, FDP	2.0 U	-	170	-	0.10 U	-	0.25 R	MSD	0.25 U	-	-	-	-	-	460	-	460	-
DC-03	YVD-D4-150617	06/17/2015	Duplicate	59011021	290	-	77 J	RPD	3.6 J	RPD	190 J	RPD	180	-	5.0 U	-	10 J-	MSD, FDP	2.0 U	-	180	-	0.10 U	-	0.25 R	MSD	0.25 U	-	-	-	-	-	450	-	450	-
DC-03	DC-03-150925	09/25/2015	Primary	59020431	270	-	73	-	3.3	-	180	-	140	-	10.0 U	-	180	-	4.0 U	-	150	-	0.10	-	0.25 U	-	0.25 U	-	-	-	-	-	390	-	390	-
DC-03	YVD-D4-150925	09/25/2015	Duplicate	59020431	260	-	69	-	3.2	-	180	-	140	-	0.50 U	-	180	-	4.0 U	-	160	-	0.20	-	0.25 U	-	0.25 U	-	-	-	-	-	460	-	460	-
DC-03	DC-03-151216	12/16/2015	Primary	59025501	260	-	75	-	3.5	-	160	-	170	-	5.0 U	-	200	-	2.0 U	-	130	-	0.18 J-	MSD	0.25 R	MSD	0.25 UJ	MSD	-	-	-	-	400	-	400	-
DC-03	YVD-D4-151216	12/16/2015	Duplicate	59025501	250	-	75	-	3.5	-	160	-	160	-	2.5 U	-	170	-	1.0 U	-	130	-	0.10 R	MSD	0.25 R	MSD	0.25 UJ	MSD	-	-	-	-	380	-	380	-
DC-03	DC-03-160310	03/10/2016	Primary	59029941	270	-	72	-	3.1	-	180	-	150	-	5.0 U	-	180	-	2.0 U	-	170 J	DUP	0.10 U	-	0.94 J-	FDP, MSD	0.25 U	-	-	-	-	-	460	-	460	-
DC-03	YVD-D4-160310	03/10/2016	Duplicate	59029941	270	-	72	-	3.0	-	180	-	160	-	5.0 U	-	190	-	2.0 U	-	180 J	DUP	0.10 U	-	0.25 UJ	FDP, MSD	0.25 U	-	-	-	-	-	480	-	480	-
DC-03D	DC-03D-130918	09/18/2013	Primary	SWI0138	198	-	44.0	-	2.71	-	62.1	-	56.0	-	5.0 U	-	46.4	-	2.0 U	-	101	-	0.10 U	-	0.255	-	-	-	0.10 U	-	-	-	509	-	510	-
DC-03D	DC-03D-131212	12/12/2013	Primary	SWL0073	194	-	43.3	-	2.67	-	59.7	-	67.9	-	5.0 U	-	38.9	-	2.0 U	-	99.1	-	0.02 UJ	MSD	0.20 UJ	MSD	-	-	-	-	0.06 U	-	559	-	560	-
DC-03D	DC-03D-140319	03/19/2014	Primary	SXC0107	200	-	43.9	-	2.67	-	57.5	-	65.9	-	5.0 U	-	42.5	-	2.0 U	-	106	-	0.127	-	0.427 J-	MSD	0.05 U	-	-	-	-	-	564	-	565	-
DC-03D	DC-03D-140603	06/03/2014	Primary	SXF0017	179	-	40.9	-	2.66	-	59.0	-	65.5	-	2.0 U	-	42.0	-	0.80 U	-	103 J-	MSD	0.10 U	-	0.468	-	0.074 J+	FBK	-	-	-	-	542	-	543	-
DC-03D	DC-03D-140923	09/23/2014	Primary	SXI0173	216	-	46.6	-	3.40	-	67.8	-	59.5	-	2.5 U	-	38.0	-	1.0 U	-	89.4	-	0.10 U	-	0.25 U	-	0.098	-	-	-	-	-	514	-	515	-
DC-03D	DC-03D-141217	12/17/2014	Primary	SXL0121	203	-	46.8	-	2.92	-	60.7	-	62.8	-	2.5 U	-	38.6	-	1.0 U	-	92.2	-	0.10 U	-	0.282 J-	MSD	0.10 U	-	-	-	-	-	514	-	515	-
DC-03D	DC-03D-150317	03/17/2015	Primary	5904651	210	-	48	-	3.0 J-	MSD	68	-	63	-	2.5 U	-	37	-	1.0 U	-	87	-	0.10 U	-	0.25 UJ	MSD	0.25 U	-	-	-	-	-	530	-	530	-
DC-03D	DC-03D-150617	06/17/2015	Primary	59011021	210	-	48 J	RPD	3.2 J	RPD	68 J	RPD	71	-	2.5 U	-	42 J-	MSD	1.0 U	-	93	-	0.10 U	-	0.25 R	MSD	0.25 U	-	-	-	-	-	530	-	530	-
DC-03D	DC-03D-150925	09/25/2015	Primary	59020431	200	-	47	-	3.0	-	65	-	58	-	10.0 U	-	33	-	4.0 U	-	86	-	0.10 U	-	0.25 U	-	0.25 U	-	-	-	-	-	610	-	610	-
DC-03D	DC-03D-151216	12/16/2015	Primary	59025501	210	-	50	-	3.2	-	69	-	70	-	2.5 U	-	36	-	1.0 U	-	94	-	0.10 R	MSD	0.25 R	MSD	0.25 UJ	MSD	-	-	-	-	590	-	590	-
DC-03D	DC-03D-160310	03/10/2016	Primary	59029941	200	-	47	-	3.0	-	68	-	65	-	2.5 U	-	37	-	1.0 U	-	90 J	DUP	0.10 U	-	0.25 UJ	FDP, MSD	0.25 U	-	-	-	-	-	580	-	580	-

TABLE 7
CUMULATIVE ANALYTICAL RESULTS
YAKIMA VALLEY DAIRIES / SDWA-10-2013-0080
QUARTERLY GROUNDWATER MONITORING DATA REPORT
FIRST QUARTER 2016

				Analyte	Calcium		Magnesium		Potassium		Sodium		Chloride		Fluoride		Nitrate (as N)		Nitrite (as N)		Sulfate		Ammonia (as N)		Total Kjeldahl Nitrogen (TKN)		Phosphorus		Phosphorus		Phosphorus		Alkalinity, Bicarbonate (as CaCO3)		Alkalinity, Total (as CaCO3)	
				Analytical Method	E200.7		E200.7		E200.7		E200.7		E300		E300		E300		E300		E300		E350.1		E351.2		E365.1		E365.4		SM4500-P-E		SM2320B		SM2320B	
Well ID	Sample Name	Sample Date	Sample Type	Sample Group	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code
DC-04	DC-04-130103	01/03/2013	Primary	EPA01	-	-	-	-	-	-	-	-	-	-	-	-	26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DC-04	DC-04-130920	09/20/2013	Primary	SWI0142	141	-	25.5	-	3.45	-	32.1	-	39.4	-	5.0 U	-	-	-	-	-	93.6	-	0.10 U	-	3.03	-	-	-	0.10 U	-	-	-	305	-	305	-
DC-04	DC-04-130924	09/24/2013	Primary	SWI0175	-	-	-	-	-	-	-	-	-	-	-	-	31.7	-	2.0 U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DC-04	DC-04-131212	12/12/2013	Primary	SWL0073	148	-	28.4	-	3.51	-	31.7	-	41.1	-	5.0 U	-	36.7	-	2.0 U	-	110	-	0.02 UJ	MSD	0.20 UJ	MSD	-	-	-	-	0.104	-	315	-	315	-
DC-04	DC-04-140318	03/18/2014	Primary	SXC0107	153	-	28.0	-	3.58	-	30.4	-	42.0	-	5.0 U	-	37.3	-	2.0 U	-	107	-	0.10 U	-	0.707 J-	MSD	0.13	-	-	-	-	-	325	-	325	-
DC-04	DC-04-140603	06/03/2014	Primary	SXF0017	134	-	28.9	-	3.65	-	32.3	-	36.2	-	2.0 U	-	36.4	-	0.80 U	-	104 J-	MSD	0.10 U	-	0.645	-	0.24 J+	FBK	-	-	-	-	310	-	310	-
DC-04	DC-04-140923	09/23/2014	Primary	SXI0173	174	-	34.2	-	4.51	-	35.5	-	39.7	-	2.5 U	-	37.8	-	1.0 U	-	108	-	0.10 U	-	0.524 J+	MSD	0.29	-	-	-	-	-	317	-	320	-
DC-04	DC-04-141217	12/17/2014	Primary	SXL0121	182	-	35.7	-	4.34	-	34.9	-	42.7	-	2.5 U	-	40.8	-	1.0 U	-	120	-	0.10 U	-	0.25 UJ	MSD	0.17	-	-	-	-	-	329	-	330	-
DC-04	DC-04-150317	03/17/2015	Primary	5904651	180	-	34	-	3.9 J-	MSD	36	-	41	-	2.5 U	-	39	-	1.0 U	-	110	-	0.10 U	-	0.33 J-	MSD	0.25 U	-	-	-	-	-	340	-	340	-
DC-04	DC-04-150617	06/17/2015	Primary	59010961	180	-	34	-	4.1 J+	MSD	36 J+	MSD	46	-	5.0 U	-	42	-	2.0 U	-	110	-	0.10 U	-	0.25 UJ	MSD	0.25 U	-	-	-	-	-	330	-	330	-
DC-04	DC-04-150924	09/24/2015	Primary	59020391	160	-	36	-	3.9	-	33	-	48	-	2.5 U	-	48 J+	MSD	1.0 U	-	140 J-	MSD	0.10 UJ	MSD	0.25 J-	MSD	0.25 U	-	-	-	-	-	400	-	400	-
DC-04	YVD-D3-150924	09/24/2015	Duplicate	59020391	170	-	37	-	4.1	-	35	-	53	-	2.5 U	-	53 J+	MSD	1.0 U	-	150 J-	MSD	0.10 UJ	MSD	0.25 UJ	MSD	0.25 U	-	-	-	-	-	380	-	380	-
DC-04	DC-04-151215	12/15/2015	Primary	59025431	180	-	36	-	4.2	-	36	-	46	-	2.5 U	-	48	-	1.0 U	-	130	-	0.10 R	MSD	0.25 R	MSD	0.25 UJ	FDP	-	-	-	-	400 J	FDP	400 J	FDP
DC-04	DC-04-160309	03/09/2016	Primary	59029711	190	-	36	-	4.0	-	36	-	53	-	2.5 U	-	53	-	1.0 U	-	150 J+	MSD	0.10 UJ	FDP	0.25 R	MSD	0.25 U	-	-	-	-	-	390	-	390	-
DC-05	DC-05-130104	01/04/2013	Primary	EPA01	-	-	-	-	-	-	-	-	-	-	-	-	32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DC-05	DC-05-130920	09/20/2013	Primary	SWI0142	129	-	48.5	-	2.88	-	64.2	-	36.7	-	5.0 U	-	-	-	-	-	154	-	0.255	-	0.25 U	-	-	-	0.10 U	-	-	-	414	-	415	-
DC-05	DC-05-130924	09/24/2013	Primary	SWI0175	-	-	-	-	-	-	-	-	-	-	-	-	33.6	-	2.0 U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DC-05	DC-05-131212	12/12/2013	Primary	SWL0073	130	-	50.2	-	3.92	-	64.2	-	35.9	-	5.0 U	-	42.6	-	2.0 U	-	178	-	0.02 UJ	MSD	0.20 UJ	MSD	-	-	-	-	0.723	-	424	-	425	-
DC-05	DC-05-140318	03/18/2014	Primary	SXC0107	133	-	49.7	-	2.90	-	59.4	-	33.0	-	5.0 U	-	33.1	-	2.0 U	-	150	-	0.131	-	0.558 J-	MSD	0.060	-	-	-	-	-	404	-	405	-
DC-05	DC-05-140603	06/03/2014	Primary	SXF0017	118	-	46.7	-	3.25	-	61.3	-	31.6	-	2.0 U	-	32.6	-	0.80 U	-	128 J-	MSD	0.10 U	-	0.581	-	0.28 J+	FBK	-	-	-	-	412	-	413	-
DC-05	DC-05-140923	09/23/2014	Primary	SXI0173	140	-	53.5	-	3.86	-	71.0	-	35.0	-	2.5 U	-	35.8	-	1.0 U	-	122	-	0.10 U	-	0.998 J+	MSD	0.16	-	-	-	-	-	408	-	410	-
DC-05	DC-05-141217	12/17/2014	Primary	SXL0121	147	-	58.9	-	3.41	-	59.0	-	34.4	-	2.5 U	-	33.4	-	1.0 U	-	141	-	0.10 U	-	0.25 UJ	MSD	0.13	-	-	-	-	-	414	-	415	-
DC-05	DC-05-150317	03/17/2015	Primary	5904541	150	-	58	-	3.0	-	61	-	36	-	2.0	-	38 J-	MSD	0.80 U	-	140 J-	MSD	0.10 U	-	0.27 J-	MSD	0.25 U	-	-	-	-	-	430	-	430	-
DC-05	DC-05-150616	06/16/2015	Primary	59010961	140	-	57	-	3.0 J+	MSD	64 J+	MSD	35	-	2.0 U	-	37	-	0.80 U	-	120	-	0.10 U	-	0.25 UJ	MSD	0.25 U	-	-	-	-	-	410	-	410	-
DC-05	YVD-D2-150616	06/16/2015	Duplicate	59010961	140	-	56	-	3.3 J+	MSD	64 J+	MSD	35	-	5.0 U	-	41	-	2.0 U	-	110	-	0.10 U	-	0.25 UJ	MSD	0.25 U	-	-	-	-	-	410	-	410	-
DC-05	DC-05-150923	09/23/2015	Primary	59020391	130	-	57	-	3.1	-	56	-	33	-	2.0 U	-	38 J+	MSD	0.80 U	-	110 J-	MSD	0.10 UJ	MSD	0.25 UJ	MSD	0.25 U	-	-	-	-	-	440	-	440	-
DC-05	DC-05-151215	12/15/2015	Primary	59025431	140	-	55	-	2.9	-	51	-	29	-	2.0 U	-	38	-	0.80 U	-	120	-	0.10 R	MSD	0.25 R	MSD	0.25 UJ	FDP	-	-	-	-	440 J	FDP	440 J	FDP
DC-05	DC-05-160309	03/09/2016	Primary	59029711	140	-	54	-	2.9	-	53	-	35	-	2.0 U	-	43	-	0.80 U	-	140 J+	MSD	0.10 UJ	FDP	0.25 R	MSD	0.25 U	-	-	-	-	-	410	-	410	-
DC-05D	DC-05D-130920	09/20/2013	Primary	SWI0142	86.7	-	30.3	-	3.67	-	40.5	-	43.6	-	5.0 U	-	-	-	-	-	167	-	0.10 U	-	0.361	-	-	-	0.163	-	-	-	214	-	215	-
DC-05D	DC-05D-130924	09/24/2013	Primary	SWI0178	-	-	-	-	-	-	-	-	-	-	-	-	14.6	-	0.20 U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DC-05D	DC-05D-131211	12/11/2013	Primary	SWL0073	81.8	-	28.8	-	3.52	-	37.5	-	32.3	-	5.0 U	-	16.0	-	2.0 U	-	145	-	0.02 UJ	MSD	0.20 UJ	MSD	-	-	-	-	0.06 U	-	209	-	210	-
DC-05D	DC-05D-140318	03/18/2014	Primary	SXC0095	86.2	-	29.4	-	3.73	-	36.7	-	33.4	-	5.0 U	-	12.8	-	2.0 U	-	137 J-	MSD	0.182	-	0.25 U	-	0.072	-	-	-	-	-	209	-	210	-
DC-05D	DC-05D-140602	06/02/2014	Primary	SXF0017	67.4	-	24.6	-	4.99	-	34.3	-	30.6	-	2.0 U	-	3.36	-	0.80 U	-	122 J-	MSD	0.163	-	0.591	-	0.56 J+	FBK	-	-	-	-	214	-	215	-
DC-05D	DC-05D-140922	09/22/2014	Primary	SXI0148	83.3	-	30.2	-	3.56	-	37.8	-	30.9	-	2.0 U	-	11.7	-	0.80 U	-	127	-	0.10 U	-	0.424	-	0.057	-	-	-	-	-	203	-	205	-
DC-05D	DC-05D-141216	12/16/2014	Primary	SXL0121	78.9	-	29.5	-	5.18	-	36.8	-	35.9	-	5.0 U	-	7.90	-	0.20 U	-	140	-	0.10 U	-	0.25 UJ	MSD	0.39	-	-	-	-	-	199	-	200	-
DC-05D	DC-05D-150317	03/17/2015	Primary	5904541	78	-	29	-	4.6	-	39	-	31	-	2.0 U	-	7.7 J-	MSD	0.80 U	-	120 J-	MSD	0.10 U	-	0.25 UJ	MSD	0.30	-	-	-	-	-	210	-	210	-
DC-05D	DC-05D-150616	06/16/2015	Primary	59010961	79	-	30	-	4.7 J+	MSD	41 J+	MSD	34	-	2.0 U	-	8.6	-	0.80 U	-	120	-	0.10 U	-	0.25 UJ	MSD	0.27	-	-	-	-	-	210	-	210	-
DC-05D	DC-05D-150923	09/23/2015	Primary	59020391	74	-	31	-	4.4	-	38	-	31	-	2.0 U	-	8.9 J+	MSD	0.80 U	-	120 J-	MSD	0.10 UJ	MSD	0.25 UJ	MSD	0.25 U	-	-	-	-	-	200	-	200	-
DC-05D	YVD-D2-150923	09/23/2015	Duplicate	59020391	73	-	30	-	4.4	-	38	-	33	-	0.50 U	-	10 J+	MSD	0.20 U	-	120 J-	MSD	0.16 J	MSD	0.25 UJ	MSD	0.25 U	-	-	-	-	-	220	-	220	-
DC-05D	DC-05D-151215	12/15/2015	Primary	59025431	78	-	29	-	4.4	-	39	-	30	-	2.0 U	-	9.9	-	0.80 U	-	120	-	0.10 R	MSD	0.25 R	MSD	0.25 UJ	FDP	-	-	-	-	230 J	FDP	230 J	FDP
DC-05D	DC-05D-160309	03/09/2016	Primary	59029711	81	-	30	-	4.3	-	41	-	33	-	2.0 U	-	13	-	0.80 U	-	140 J+	MSD	0.10 UJ	FDP	0.25 R	MSD	0.25 U	-	-	-	-	-	220	-	220	-

TABLE 7
CUMULATIVE ANALYTICAL RESULTS
YAKIMA VALLEY DAIRIES / SDWA-10-2013-0080
QUARTERLY GROUNDWATER MONITORING DATA REPORT
FIRST QUARTER 2016

				Analyte	Calcium		Magnesium		Potassium		Sodium		Chloride		Fluoride		Nitrate (as N)		Nitrite (as N)		Sulfate		Ammonia (as N)		Total Kjeldahl Nitrogen (TKN)		Phosphorus		Phosphorus		Phosphorus		Alkalinity, Bicarbonate (as CaCO3)		Alkalinity, Total (as CaCO3)	
				Analytical Method	E200.7		E200.7		E200.7		E200.7		E300		E300		E300		E300		E300		E350.1		E351.2		E365.1		E365.4		SM4500-P-E		SM2320B		SM2320B	
Well ID	Sample Name	Sample Date	Sample Type	Sample Group	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code
DC-07	DC-07-130103	01/03/2013	Primary	EPA01	-	-	-	-	-	-	-	-	-	-	-	-	2.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DC-07	DC-07-130918	09/18/2013	Primary	SWI0123	122	-	18.4	-	1.0 U	-	45.7	-	30.5	-	5.0 U	-	4.30	-	2.0 U	-	168	-	0.10 U	-	0.25 U	-	-	-	0.10 U	-	-	-	315	-	315	-
DC-07	YVD-D1-130918	09/18/2013	Duplicate	SWI0123	122	-	18.5	-	1.0 U	-	46.1	-	32.8	-	5.0 U	-	4.30	-	2.0 U	-	179	-	0.10 U	-	0.25 U	-	-	-	0.10 U	-	-	-	295	-	295	-
DC-07	DC-07-131210	12/10/2013	Primary	SWL0055	27.5	-	11.5	-	3.82	-	38.4	-	31.0	-	5.0 U	-	4.70	-	2.0 U	-	117	-	0.02 UJ	MSD	0.4366 UJ	ERL, MSD	-	-	-	-	0.0648	-	260	-	260	-
DC-07	DC-07-140316	03/16/2014	Primary	SXC0081	88.4	-	15.4	-	1.04	-	33.5	-	26.5	-	2.0 U	-	4.72	-	0.80 U	-	78.9	-	0.116	-	0.25 U	-	0.11	-	-	-	-	-	260	-	260	-
DC-07	DC-07-140602	06/02/2014	Primary	SXF0008	93.7	-	16.5	-	1.0 U	-	36.3	-	28.2	-	2.0 U	-	0.80 U	-	0.80 U	-	105	-	0.10 U	-	0.340	-	0.12	-	-	-	-	-	245	-	245	-
DC-07	DC-07-140922	09/22/2014	Primary	SXI0148	87.1	-	16.1	-	1.0 U	-	33.7	-	29.8	-	2.0 U	-	4.88	-	0.80 U	-	98.2	-	0.10 U	-	0.487	-	0.19	-	-	-	-	-	215	-	215	-
DC-07	DC-07-141216	12/16/2014	Primary	SXL0108	83.6	-	15.1	-	1.0 U	-	30.6	-	24.2	-	2.0 U	-	2.80	-	0.80 U	-	80.4	-	0.10 U	-	0.261	-	0.10 U	-	-	-	-	-	210	-	210	-
DC-07	YVD-D2-141216	12/16/2014	Duplicate	SXL0108	84.2	-	15.1	-	1.0 U	-	30.8	-	25.6	-	0.50 U	-	2.92	-	0.20 U	-	82.1	-	0.10 U	-	0.305	-	0.10 U	-	-	-	-	-	210	-	210	-
DC-07	DC-07-150317	03/17/2015	Primary	5904541	94	-	17	-	1.0	-	35	-	29	-	2.0 U	-	4.6 J-	MSD	0.80 U	-	83 J-	MSD	0.10 U	-	0.25 UJ	MSD	0.25 U	-	-	-	-	-	240	-	240	-
DC-07	DC-07-150617	06/17/2015	Primary	59011021	97	-	17 J	RPD	1.0 U	-	37 J	RPD	32	-	2.0 U	-	4.0 J-	MSD	0.80 U	-	93	-	0.10 U	-	0.28 J-	MSD	0.25 U	-	-	-	-	-	230	-	230	-
DC-07	DC-07-150924	09/24/2015	Primary	59020391	76	-	15	-	1.0 U	-	33	-	30	-	2.0 U	-	2.7 J+	MSD	0.80 U	-	95 J-	MSD	0.10 UJ	MSD	0.25 UJ	MSD	0.25 U	-	-	-	-	-	240	-	240	-
DC-07	DC-07-151215	12/15/2015	Primary	59025501	87	-	16	-	1.0 U	-	34	-	29	-	2.0 U	-	2.5	-	0.80 U	-	70	-	0.10 R	MSD	0.25 R	MSD	0.41 J-	MSD	-	-	-	-	240	-	240	-
DC-07	DC-07-160309	03/09/2016	Primary	59029941	91	-	17	-	1.1	-	36	-	31	-	2.0 U	-	2.2	-	0.80 U	-	78 J	DUP	0.10 U	-	0.25 R	FBK, FDP, MSD	0.25 U	-	-	-	-	-	280	-	280	-
DC-09	DC-09-130103	01/03/2013	Primary	EPA01	-	-	-	-	-	-	-	-	-	-	-	-	6.0	-	-	-	-	-	0.10 U	-	-	-	-	-	-	-	-	-	-	-	-	-
DC-09	DC-09-130923	09/23/2013	Primary	SWI0178	34.0	-	8.41	-	2.75	-	39.7	-	-	-	-	-	-	-	-	-	-	-	0.10 U	-	0.447	-	-	-	0.10 U	-	-	-	44.7	-	45.0	-
DC-09	DC-09-130926	09/26/2013	Primary	SWI0190	-	-	-	-	-	-	-	-	16.2	-	0.50 U	-	6.02	-	0.20 U	-	30.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DC-09	DC-09-131211	12/11/2013	Primary	SWL0063	34.8	-	7.89	-	2.48	-	39.1	-	17.4	-	0.50 U	-	6.78	-	0.20 U	-	34.4 J-	MSD	0.02 R	MSD	0.20 U	-	-	-	-	-	0.125	-	129	-	130	-
DC-09	DC-09-140317	03/17/2014	Primary	SXC0095	35.4	-	8.43	-	2.88	-	36.5	-	15.6	-	0.82	-	5.85	-	0.20 U	-	28.8 J-	MSD	0.10 U	-	0.251	-	0.18	-	-	-	-	-	144	-	145	-
DC-09	DC-09-140602	06/02/2014	Primary	SXF0008	33.9	-	8.27	-	2.92	-	38.1	-	15.9	-	0.50 U	-	6.18	-	0.20 U	-	29.4	-	0.106	-	0.279	-	0.16 J	FDP	-	-	-	-	129	-	130	-
DC-09	YVD-D3-140602	06/02/2014	Duplicate	SXF0008	34.2	-	8.73	-	3.08	-	37.9	-	15.8	-	0.50 U	-	5.97	-	0.20 U	-	29.1	-	0.10 U	-	0.359	-	0.22 J	FDP	-	-	-	-	129	-	130	-
DC-09	DC-09-140923	09/23/2014	Primary	SXI0158	32.2	-	6.75	-	1.94	-	38.9 J+	MSD	15.8	-	0.50 U	-	6.01	-	0.20 U	-	29.6	-	0.10 R	MSD	0.25 U	-	0.05 U	-	-	-	-	-	124	-	125	-
DC-09	DC-09-141216	12/16/2014	Primary	SXL0108	35.3	-	7.98	-	2.48	-	39.1	-	16.3	-	0.50 U	-	5.94	-	0.20 U	-	30.2	-	0.10 U	-	0.25 U	-	0.13	-	-	-	-	-	129	-	130	-
DC-09	DC-09-150316	03/16/2015	Primary	5904541	36	-	8.0	-	2.6	-	43	-	17	-	0.60	-	5.9 J-	MSD	0.20 U	-	29 J-	MSD	0.15	-	0.25 UJ	MSD	0.25 U	-	-	-	-	-	130	-	130	-
DC-09	DC-09-150616	06/16/2015	Primary	59010751	34 J+	MSD	8.1 J+	MSD	2.3 J+	MSD	38 J+	MSD	16	-	0.50 U	-	5.8	-	0.20 U	-	28 J-	MSD	0.10 U	-	0.25 UJ	MSD	0.25 U	-	-	-	-	-	130	-	130	-
DC-09	DC-09-150923	09/23/2015	Primary	59020281	33	-	8.1	-	2.5	-	40	-	16	-	0.50 U	-	5.8	-	0.20 U	-	30	-	0.10 U	-	0.25 R	MSD	0.25 U	-	-	-	-	-	140	-	140	-
DC-09	DC-09-151214	12/14/2015	Primary	59025431	34	-	8.2	-	2.7	-	40	-	16	-	0.50 U	-	5.9	-	0.20 U	-	31	-	0.10 R	MSD	0.25 R	MSD	0.30 J	FDP	-	-	-	-	150 J	FDP	150 J	FDP
DC-09	DC-09-160308	03/08/2016	Primary	59029711	35	-	8.8	-	3.3	-	39	-	16	-	0.50 U	-	5.7	-	0.20 U	-	31 J+	MSD	0.25 R	FBK, FDP	0.25 R	MSD	0.25 U	-	-	-	-	-	130	-	130	-
DC-09	YVD-D2-160308	03/08/2016	Duplicate	59029711	34	-	8.6	-	3.1	-	39	-	16	-	0.50 U	-	5.7	-	0.20 U	-	31 J+	MSD	0.10 UJ	FDP	0.25 R	MSD	0.25 U	-	-	-	-	-	130	-	130	-
DC-14	DC-14-130103	01/03/2013	Primary	EPA01	-	-	-	-	-	-	-	-	-	-	-	-	26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DC-14	DC-14-130917	09/17/2013	Primary	SWI0113	121	-	32.3	-	5.85	-	94.9	-	80.2	-	0.50 U	-	12.0	-	0.20 U	-	34.2	-	0.115	-	0.310	-	-	-	0.199	-	-	-	454	-	455	-
DC-14	DC-14-131211	12/11/2013	Primary	SWL0063	91.2	-	23.9	-	4.71	-	94.0	-	64.4	-	5.0 U	-	5.80	-	2.0 U	-	33.9 J-	MSD	0.02 R	MSD	0.20 U	-	-	-	-	-	0.167	-	434	-	435	-
DC-14	DC-14-140318	03/18/2014	Primary	SXC0095	107	-	28.4	-	5.25	-	87.0	-	71.8	-	5.0 U	-	10.6	-	2.0 U	-	35.7 J-	MSD	0.10 U	-	0.25 U	-	0.26	-	-	-	-	-	494	-	495	-
DC-14	DC-14-140602	06/02/2014	Primary	SXF0017	95.9	-	26.3	-	5.37	-	83.2	-	56.1	-	1.0 U	-	6.46	-	0.40 U	-	24.2 J-	MSD	0.10 U	-	0.367	-	0.42 J+	FBK	-	-	-	-	425	-	425	-
DC-14	DC-14-140923	09/23/2014	Primary	SXI0158	106	-	27.6	-	4.95	-	88.6 J+	MSD	63.7	-	1.0 U	-	8.90	-	0.40 U	-	25.9	-	0.10 R	MSD	0.315	-	0.30	-	-	-	-	-	424	-	425	-
DC-14	DC-14-141216	12/16/2014	Primary	SXL0108	110	-	31.5	-	5.57	-	84.5	-	74.4	-	1.0 U	-	10.4	-	0.40 U	-	29.8	-	0.10 U	-	0.25 U	-	0.14	-	-	-	-	-	429	-	430	-
DC-14	DC-14-150316	03/16/2015	Primary	5904541	140	-	38	-	6.1	-	100	-	80	-	1.0 U	-	18 J-	MSD	0.40 U	-	38 J-	MSD	0.16	-	0.25 UJ	MSD	0.25 U	-	-	-	-	-	490	-	490	-
DC-14	DC-14-150616	06/16/2015	Primary	59010961	120	-	33	-	6.5 J+	MSD	85 J+	MSD	76	-	1.0 U	-	12	-	0.40 U	-	29	-	0.10 U	-	0.25 UJ	MSD	0.30	-	-	-	-	-	430	-	430	-
DC-14	DC-14-150924	09/24/2015	Primary	59020391	130	-	42	-	6.3	-	92	-	96	-	1.0 U	-	22 J+	MSD	0.40 U	-	42 J-	MSD	0.10 UJ	MSD	0.25 UJ	MSD	0.31	-	-	-	-	-	470	-	470	-
DC-14	DC-14-151214	12/14/2015	Primary	59025351	150	-	43	-	6.6	-	100	-	90	-	1.0 U	-	21	-	0.40 U	-	39	-	0.10 R	MSD	0.25 UJ	MSD	0.35	-	-	-	-	-	550	-	550	-
DC-14	YVD-D1-151214	12/14/2015	Duplicate	59025351	150	-	43	-	6.6	-	100	-	85	-	0.50 U	-	22	-	0.20 U	-	41	-	0.10 R	MSD	0.25 UJ	MSD	0.38	-	-	-	-	-	540	-	540	-
DC-14	DC-14-160309	03/09/2016	Primary	59029711	130	-	38	-	6.6	-	95	-	82	-	1.0 U	-	16	-	0.40 U	-	39 J+	MSD	0.10 UJ	FDP	0.25 R	MSD	0.33	-	-	-	-	-	490	-	490	-

TABLE 7
CUMULATIVE ANALYTICAL RESULTS
YAKIMA VALLEY DAIRIES / SDWA-10-2013-0080
QUARTERLY GROUNDWATER MONITORING DATA REPORT
FIRST QUARTER 2016

				Analyte	Calcium		Magnesium		Potassium		Sodium		Chloride		Fluoride		Nitrate (as N)		Nitrite (as N)		Sulfate		Ammonia (as N)		Total Kjeldahl Nitrogen (TKN)		Phosphorus		Phosphorus		Phosphorus		Alkalinity, Bicarbonate (as CaCO3)		Alkalinity, Total (as CaCO3)	
				Analytical Method	E200.7		E200.7		E200.7		E200.7		E300		E300		E300		E300		E300		E350.1		E351.2		E365.1		E365.4		SM4500-P-E		SM2320B		SM2320B	
Well ID	**Sample Name**	**Sample Date**	**Sample Type**	**Sample Group**	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code
Equipment Blank	YVD-EB-130918	09/18/2013	Equipment Blank	SWI0123	1.0 U	-	0.50 U	-	1.0 U	-	0.50 U	-	0.80 U	-	0.50 U	-	0.20 U	-	0.20 U	-	0.50 U	-	0.10 U	-	0.25 U	-	-	-	0.10 U	-	-	-	4.0 U	-	4.0 U	-
Equipment Blank	YVD-EB-130925	09/25/2013	Equipment Blank	SWI0175	1.0 U	-	0.50 U	-	1.0 U	-	0.50 U	-	0.80 U	-	0.50 U	-	0.20 U	-	0.20 U	-	0.50 U	-	0.10 U	-	0.25 U	-	-	-	0.10 U	-	-	-	4.0 U	-	4.0 U	-
Equipment Blank	YVD-EB-131212	12/12/2013	Equipment Blank	SWL0078	1.0 U	-	0.50 U	-	1.0 U	-	0.50 U	-	0.80 U	-	0.50 U	-	0.20 U	-	0.20 U	-	0.50 U	-	0.02 U	-	0.20 U	-	-	-	-	-	0.06 U	-	4.0 U	-	4.0 U	-
Equipment Blank	YVD-EB-140317	03/17/2014	Equipment Blank	SXC0081	1.0 U	-	0.50 U	-	1.0 U	-	0.50 U	-	0.80 U	-	0.50 U	-	0.20 U	-	0.20 U	-	0.50 U	-	**0.124**	-	0.25 U	-	0.05 U	-	-	-	-	-	4.0 U	-	4.0 U	-
Equipment Blank	YVD-EB-140318	03/18/2014	Equipment Blank	SXC0095	1.0 U	-	0.50 U	-	1.0 U	-	0.50 U	-	0.80 U	-	0.50 U	-	0.20 U	-	0.20 U	-	0.50 U	-	**0.13**	-	0.25 U	-	**0.050**	-	-	-	-	-	4.0 U	-	4.0 U	-
Equipment Blank	YVD-EB-140319	03/19/2014	Equipment Blank	SXC0107	1.0 U	-	0.50 U	-	1.0 U	-	0.50 U	-	0.80 U	-	0.50 U	-	0.20 U	-	0.20 U	-	0.50 U	-	0.10 U	-	0.25 U	-	0.05 U	-	-	-	-	-	4.0 U	-	4.0 U	-
Equipment Blank	YVD-EB-140604	06/04/2014	Equipment Blank	SXF0025	1.0 U	-	0.50 U	-	1.0 U	-	0.50 U	-	**1.46**	-	0.50 U	-	0.20 U	-	0.20 U	-	**1.24**	-	0.10 U	-	0.25 U	-	0.05 U	-	-	-	-	-	4.0 U	-	4.0 U	-
Equipment Blank	YVD-EB-140924	09/24/2014	Equipment Blank	SXI0173	1.0 U	-	0.50 U	-	1.0 U	-	0.50 U	-	0.80 U	-	0.50 U	-	0.20 U	-	0.20 U	-	0.50 U	-	0.10 U	-	**1.20**	-	**0.062**	-	-	-	-	-	4.0 U	-	4.0 U	-
Equipment Blank	YVD-EB-141217	12/17/2014	Equipment Blank	SXL0144	1.0 U	-	0.50 U	-	1.0 U	-	0.50 U	-	**0.9**	-	0.50 U	-	0.20 U	-	0.20 U	-	0.50 U	-	0.10 U	-	0.25 U	-	0.10 U	-	-	-	-	-	4.0 U	-	4.0 U	-
Equipment Blank	YVD-EB-150617	06/17/2015	Equipment Blank	59011021	1.0 U	-	0.50 U	-	1.0 U	-	0.50 U	-	0.80 U	-	0.50 U	-	0.20 U	-	0.20 U	-	0.50 U	-	0.10 U	-	**0.37**	-	0.25 U	-	-	-	-	-	**5.0**	-	**5.0**	-
Equipment Blank	YVD-EB-150925	09/25/2015	Equipment Blank	59020431	1.0 U	-	0.50 U	-	1.0 U	-	0.50 U	-	0.80 U	-	0.50 U	-	0.20 U	-	0.20 U	-	0.50 U	-	**0.10**	-	**0.38**	-	0.25 U	-	-	-	-	-	4.0 U	-	4.0 U	-
Equipment Blank	YVD-EB-151216	12/16/2015	Equipment Blank	59025501	1.0 U	-	0.50 U	-	1.0 U	-	0.50 U	-	0.80 U	-	0.50 U	-	0.20 U	-	0.20 U	-	0.50 U	-	**0.12 J-**	MSD	0.25 U	-	0.25 U	-	-	-	-	-	**5.0**	-	**5.0**	-
Equipment Blank	YVD-EB-160310	03/10/2016	Equipment Blank	59029941	1.0 U	-	0.50 U	-	1.0 U	-	**1.1**	-	**1.1**	-	**0.67**	-	0.20 U	-	0.20 U	-	0.50 U	-	0.10 U	-	**1.9**	-	0.25 U	-	-	-	-	-	**15**	-	**15**	-
Field Blank	YVD-F1-130916	09/16/2013	Field Blank	SWI0113	1.0 U	-	0.50 U	-	1.0 U	-	0.50 U	-	0.80 U	-	0.50 U	-	0.20 U	-	0.20 U	-	**0.530**	-	0.10 U	-	0.25 U	-	-	-	0.10 U	-	-	-	4.0 U	-	4.0 U	-
Field Blank	YVD-F2-130917	09/17/2013	Field Blank	SWI0113	1.0 U	-	0.50 U	-	1.0 U	-	0.50 U	-	0.80 U	-	0.50 U	-	0.20 U	-	0.20 U	-	**0.510**	-	0.10 U	-	0.25 U	-	-	-	0.10 U	-	-	-	4.0 U	-	4.0 U	-
Field Blank	YVD-F3-130918	09/18/2013	Field Blank	SWI0123	1.0 U	-	0.50 U	-	1.0 U	-	0.50 U	-	0.80 U	-	0.50 U	-	0.20 U	-	0.20 U	-	0.50 U	-	0.10 U	-	0.25 U	-	-	-	0.10 U	-	-	-	4.0 U	-	4.0 U	-
Field Blank	YVD-F4-130918	09/18/2013	Field Blank	SWI0138	1.0 U	-	0.50 U	-	1.0 U	-	0.50 U	-	0.80 U	-	0.50 U	-	0.20 U	-	0.20 U	-	0.50 U	-	**0.120**	-	0.25 U	-	-	-	0.10 U	-	-	-	4.0 U	-	4.0 U	-
Field Blank	YVD-F5-130919	09/19/2013	Field Blank	SWI0142	1.0 U	-	0.50 U	-	1.0 U	-	0.50 U	-	0.80 U	-	0.50 U	-	-	-	-	-	0.50 U	-	0.10 U	-	**0.373**	-	-	-	**0.243**	-	-	-	4.0 U	-	4.0 U	-
Field Blank	YVD-F6-130923	09/23/2013	Field Blank	SWI0178	1.0 U	-	0.50 U	-	1.0 U	-	0.50 U	-	-	-	-	-	-	-	-	-	-	-	0.10 U	-	0.25 U	-	-	-	0.10 U	-	-	-	4.0 U	-	4.0 U	-
Field Blank	YVD-F7-130924	09/24/2013	Field Blank	SWI0175	1.0 U	-	0.50 U	-	1.0 U	-	0.50 U	-	0.80 U	-	0.50 U	-	0.20 U	-	0.20 U	-	0.50 U	-	0.10 U	-	0.25 U	-	-	-	0.10 U	-	-	-	4.0 U	-	4.0 U	-
Field Blank	YVD-F7-130926	09/26/2013	Field Blank	SWI0190	-	-	-	-	-	-	-	-	0.80 U	-	0.50 U	-	0.20 U	-	0.20 U	-	0.50 U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Field Blank	YVD-F1-131209	12/09/2013	Field Blank	SWL0055	1.0 U	-	0.50 U	-	1.0 U	-	0.50 U	-	0.80 U	-	0.50 U	-	0.20 U	-	0.20 U	-	0.50 U	-	0.02 U	-	**0.33**	-	-	-	-	-	0.06 U	-	4.0 U	-	4.0 U	-
Field Blank	YVD-F2-131210	12/10/2013	Field Blank	SWL0063	1.0 U	-	0.50 U	-	1.0 U	-	0.50 U	-	0.80 U	-	0.50 U	-	0.20 U	-	0.20 U	-	0.50 U	-	0.02 U	-	**3.7**	-	-	-	-	-	0.06 U	-	4.0 U	-	4.0 U	-
Field Blank	YVD-F3-131211	12/11/2013	Field Blank	SWL0073	1.0 U	-	0.50 U	-	1.0 U	-	0.50 U	-	0.80 U	-	0.50 U	-	0.20 U	-	0.20 U	-	0.50 U	-	0.02 U	-	**0.43**	-	-	-	-	-	0.06 U	-	4.0 U	-	4.0 U	-
Field Blank	YVD-F4-131212	12/12/2013	Field Blank	SWL0078	1.0 U	-	0.50 U	-	1.0 U	-	0.50 U	-	0.80 U	-	0.50 U	-	0.20 U	-	0.20 U	-	0.50 U	-	0.02 U	-	0.20 U	-	-	-	-	-	0.06 U	-	4.0 U	-	4.0 U	-
Field Blank	YVD-F1-140316	03/16/2014	Field Blank	SXC0081	1.0 U	-	0.50 U	-	1.0 U	-	0.50 U	-	0.80 U	-	0.50 U	-	0.20 U	-	0.20 U	-	0.50 U	-	0.10 U	-	0.25 U	-	0.05 U	-	-	-	-	-	4.0 U	-	4.0 U	-
Field Blank	YVD-F2-140317	03/17/2014	Field Blank	SXC0095	1.0 U	-	0.50 U	-	1.0 U	-	0.50 U	-	0.80 U	-	0.50 U	-	0.20 U	-	0.20 U	-	0.50 U	-	0.10 U	-	0.25 U	-	0.05 U	-	-	-	-	-	4.0 U	-	4.0 U	-
Field Blank	YVD-F3-140318	03/18/2014	Field Blank	SXC0107	1.0 U	-	0.50 U	-	1.0 U	-	0.50 U	-	0.80 U	-	0.50 U	-	0.20 U	-	0.20 U	-	0.50 U	-	0.10 U	-	0.25 U	-	0.05 U	-	-	-	-	-	4.0 U	-	4.0 U	-
Field Blank	YVD-F4-140319	03/19/2014	Field Blank	SXC0107	1.0 U	-	0.50 U	-	1.0 U	-	0.50 U	-	0.80 U	-	0.50 U	-	0.20 U	-	0.20 U	-	0.50 U	-	0.10 U	-	0.25 U	-	0.05 U	-	-	-	-	-	4.0 U	-	4.0 U	-
Field Blank	YVD-F1-140601	06/01/2014	Field Blank	SXF0008	1.0 U	-	0.50 U	-	1.0 U	-	0.50 U	-	0.80 U	-	0.50 U	-	0.20 U	-	0.20 U	-	0.50 U	-	0.10 U	-	0.25 U	-	0.05 U	-	-	-	-	-	**4.25**	-	**4.25**	-
Field Blank	YVD-F2-140602	06/02/2014	Field Blank	SXF0017	1.0 U	-	0.50 U	-	1.0 U	-	0.50 U	-	0.80 U	-	0.50 U	-	0.20 U	-	0.20 U	-	0.50 U	-	0.10 U	-	0.25 U	-	**0.061**	-	-	-	-	-	4.0 U	-	4.0 U	-
Field Blank	YVD-F3-140603	06/03/2014	Field Blank	SXF0025	1.0 U	-	0.50 U	-	1.0 U	-	0.50 U	-	0.80 U	-	0.50 U	-	0.20 U	-	0.20 U	-	0.50 U	-	0.10 U	-	0.25 U	-	0.05 U	-	-	-	-	-	4.0 U	-	4.0 U	-
Field Blank	YVD-F1-140921	09/21/2014	Field Blank	SXI0148	1.0 U	-	0.50 U	-	1.0 U	-	0.50 U	-	0.80 U	-	0.50 U	-	0.20 U	-	0.20 U	-	0.50 U	-	0.10 U	-	0.25 U	-	0.05 U	-	-	-	-	-	4.0 U	-	4.0 U	-
Field Blank	YVD-F2-140922	09/22/2014	Field Blank	SXI0148	1.0 U	-	0.50 U	-	1.0 U	-	0.50 U	-	0.80 U	-	0.50 U	-	0.20 U	-	0.20 U	-	0.50 U	-	0.10 U	-	0.25 U	-	0.05 U	-	-	-	-	-	4.0 U	-	4.0 U	-
Field Blank	YVD-F3-140923	09/23/2014	Field Blank	SXI0158	1.0 U	-	0.50 U	-	1.0 U	-	0.50 U	-	0.80 U	-	0.50 U	-	0.20 U	-	0.20 U	-	0.50 U	-	**0.128**	-	0.25 U	-	0.05 U	-	-	-	-	-	4.0 U	-	4.0 U	-
Field Blank	YVD-F4-140924	09/24/2014	Field Blank	SXI0173	1.0 U	-	0.50 U	-	1.0 U	-	0.50 U	-	0.80 U	-	0.50 U	-	0.20 U	-	0.20 U	-	0.50 U	-	0.10 U	-	0.25 U	-	**0.054**	-	-	-	-	-	4.0 U	-	4.0 U	-
Field Blank	YVD-F1-141215	12/15/2014	Field Blank	SXL0103	1.0 U	-	0.50 U	-	1.0 U	-	0.50 U	-	0.80 U	-	0.50 U	-	0.20 UJ	DUP	0.20 U	-	0.50 UJ	DUP	0.10 U	-	0.25 U	-	0.10 U	-	-	-	-	-	4.0 U	-	4.0 U	-
Field Blank	YVD-F2-141215	12/15/2014	Field Blank	SXL0108	1.0 U	-	0.50 U	-	1.0 U	-	0.50 U	-	0.80 U	-	0.50 U	-	0.20 U	-	0.20 U	-	0.50 U	-	0.10 U	-	0.25 U	-	0.10 U	-	-	-	-	-	4.0 U	-	4.0 U	-
Field Blank	YVD-F3-141216	12/16/2014	Field Blank	SXL0121	1.0 U	-	0.50 U	-	1.0 U	-	0.50 U	-	0.80 U	-	0.50 U	-	0.20 U	-	0.20 U	-	0.50 U	-	0.10 U	-	0.25 U	-	0.10 U	-	-	-	-	-	4.0 U	-	4.0 U	-
Field Blank	YVD-F4-141217	12/17/2014	Field Blank	SXL0144	1.0 U	-	0.50 U	-	1.0 U	-	0.50 U	-	0.80 U	-	0.50 U	-	0.20 R	HTQ	0.20 R	HTQ	0.50 U	-	**0.101**	-	0.25 U	-	0.10 U	-	-	-	-	-	4.0 U	-	4.0 U	-

TABLE 7
CUMULATIVE ANALYTICAL RESULTS
YAKIMA VALLEY DAIRIES / SDWA-10-2013-0080
QUARTERLY GROUNDWATER MONITORING DATA REPORT
FIRST QUARTER 2016

				Analyte	Calcium		Magnesium		Potassium		Sodium		Chloride		Fluoride		Nitrate (as N)		Nitrite (as N)		Sulfate		Ammonia (as N)		Total Kjeldahl Nitrogen (TKN)		Phosphorus		Phosphorus		Phosphorus		Alkalinity, Bicarbonate (as CaCO3)		Alkalinity, Total (as CaCO3)	
				Analytical Method	E200.7		E200.7		E200.7		E200.7		E300		E300		E300		E300		E300		E350.1		E351.2		E365.1		E365.4		SM4500-P-E		SM2320B		SM2320B	
Well ID	Sample Name	Sample Date	Sample Type	Sample Group	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code
Field Blank	YVD-F1-150315	03/15/2015	Field Blank	5904471	1.0 U	-	0.50 U	-	1.0 U	-	0.50 U	-	0.80 U	-	0.50 U	-	0.20 U	-	0.20 U	-	0.50 U	-	0.10 U	-	0.25 U	-	0.25 U	-	-	-	-	-	15	-	15	-
Field Blank	YVD-F2-150316	03/16/2015	Field Blank	5904541	1.0 U	-	0.50 U	-	1.0 U	-	0.50 U	-	0.80 U	-	0.50 U	-	0.20 U	-	0.20 U	-	0.50 U	-	0.10 U	-	0.25 U	-	0.25 U	-	-	-	-	-	7.5	-	7.5	-
Field Blank	YVD-F3-150317	03/17/2015	Field Blank	5904651	1.2	-	0.50 U	-	1.0 U	-	0.50 U	-	0.80 U	-	0.50 U	-	0.20 U	-	0.20 U	-	0.50 U	-	0.10 U	-	0.25 U	-	0.25 U	-	-	-	-	-	4.5	-	4.5	-
Field Blank	YVD-F1-150615	06/15/2015	Field Blank	59010751	1.0 U	-	0.50 U	-	1.0 U	-	0.50 U	-	0.80 U	-	0.50 U	-	0.20 U	-	0.20 U	-	0.50 U	-	0.10 U	-	0.25 U	-	0.25 U	-	-	-	-	-	10	-	10	-
Field Blank	YVD-F2-150616	06/16/2015	Field Blank	59010961	1.0 U	-	0.50 U	-	1.0 U	-	0.50 U	-	0.80 U	-	0.50 U	-	0.20 U	-	0.20 U	-	0.50 U	-	0.10 U	-	0.25 U	-	0.25 U	-	-	-	-	-	5.0	-	5.0	-
Field Blank	YVD-F3-150617	06/17/2015	Field Blank	59011021	1.0 U	-	0.50 U	-	1.0 U	-	0.50 U	-	0.80 U	-	0.50 U	-	0.20 U	-	0.20 U	-	0.50 U	-	0.10 U	-	0.25 U	-	0.25 U	-	-	-	-	-	5.0	-	5.0	-
Field Blank	YVD-F1-150922	09/22/2015	Field Blank	59020141	1.0 U	-	0.50 U	-	1.0 U	-	0.50 U	-	0.80 U	-	0.50 U	-	0.20 U	-	0.20 U	-	0.50 U	-	0.10 U	-	0.26	-	0.25 U	-	-	-	-	-	4.0 U	-	4.0 U	-
Field Blank	YVD-F2-150923	09/23/2015	Field Blank	59020281	1.0 U	-	0.50 U	-	1.0 U	-	0.50 U	-	0.80 U	-	0.50 U	-	0.20 U	-	0.20 U	-	0.50 U	-	0.10 U	-	0.25 U	-	0.26	-	-	-	-	-	4.0 U	-	4.0 U	-
Field Blank	YVD-F3-150923	09/23/2015	Field Blank	59020391	1.0 U	-	0.50 U	-	1.0 U	-	0.50 U	-	0.80 U	-	0.50 U	-	0.20 U	-	0.20 U	-	0.50 U	-	0.10 U	-	0.25 U	-	0.25 U	-	-	-	-	-	4.0 U	-	4.0 U	-
Field Blank	YVD-F4-150924	09/24/2015	Field Blank	59020391	1.0 U	-	0.50 U	-	1.0 U	-	0.50 U	-	0.80 U	-	0.50 U	-	0.20 U	-	0.20 U	-	0.50 U	-	0.10 U	-	0.25 U	-	0.25 U	-	-	-	-	-	4.0 U	-	4.0 U	-
Field Blank	YVD-F5-150925	09/25/2015	Field Blank	59020431	1.0 U	-	0.50 U	-	1.0 U	-	0.50 U	-	0.80 U	-	0.50 U	-	0.20 U	-	0.20 U	-	0.50 U	-	0.10 U	-	0.25 U	-	0.25 U	-	-	-	-	-	4.0 U	-	4.0 U	-
Field Blank	YVD-F1-151213	12/13/2015	Field Blank	59025351	1.0 U	-	0.50 U	-	1.0 U	-	0.50 U	-	0.80 U	-	0.50 U	-	0.20 U	-	0.20 U	-	0.50 U	-	0.10 U	-	0.25 U	-	0.25 U	-	-	-	-	-	5.0	-	5.0	-
Field Blank	YVD-F2-151214	12/14/2015	Field Blank	59025431	1.0 U	-	0.50 U	-	1.0 U	-	0.50 U	-	0.80 U	-	0.50 U	-	0.20 U	-	0.20 U	-	0.50 U	-	0.10 U	-	0.25 U	-	0.25 U	-	-	-	-	-	5.0	-	5.0	-
Field Blank	YVD-F3-151215	12/15/2015	Field Blank	59025501	1.0 U	-	0.50 U	-	1.0 U	-	0.50 U	-	0.80 U	-	0.50 U	-	0.20 U	-	0.20 U	-	0.50 U	-	0.10 R	MSD	0.25 U	-	0.25 U	-	-	-	-	-	5.0	-	5.0	-
Field Blank	YVD-F4-151216	12/16/2015	Field Blank	59025501	1.0 U	-	0.50 U	-	1.0 U	-	0.50 U	-	0.80 U	-	0.50 U	-	0.20 U	-	0.20 U	-	0.50 U	-	0.10 R	MSD	0.25 U	-	0.25 U	-	-	-	-	-	5.0	-	5.0	-
Field Blank	YVD-F1-160307	03/07/2016	Field Blank	59029521	1.0 U	-	0.50 U	-	1.0 U	-	0.50 U	-	0.80 U	-	0.50 U	-	0.20 U	-	0.20 U	-	0.50 U	-	0.10 U	-	0.25 U	-	0.25 U	-	-	-	-	-	4.0 U	-	4.0 U	-
Field Blank	YVD-F2-160308	03/08/2016	Field Blank	59029711	1.0 U	-	0.50 U	-	1.0 U	-	0.50 U	-	0.80 U	-	0.50 U	-	0.20 U	-	0.20 U	-	0.50 U	-	0.19	-	0.25 U	-	0.25 U	-	-	-	-	-	4.0 U	-	4.0 U	-
Field Blank	YVD-F3-160309	03/09/2016	Field Blank	59029941	1.0 U	-	0.50 U	-	1.0 U	-	0.50 U	-	0.80 U	-	0.50 U	-	0.20 U	-	0.20 U	-	0.50 U	-	0.10 U	-	0.30	-	0.25 U	-	-	-	-	-	4.0 U	-	4.0 U	-
Field Blank	YVD-F4-160310	03/10/2016	Field Blank	59029941	1.0 U	-	0.50 U	-	1.0 U	-	0.50 U	-	0.80 U	-	0.50 U	-	0.20 U	-	0.20 U	-	0.50 U	-	0.10 U	-	0.25 U	-	0.25 U	-	-	-	-	-	13	-	13	-
Blank Check	WW-1	04/25/2016	Blank Check	59032861	1.7 U	-	0.83 U	-	190	-	400	-	160 U	-	100 U	-	40 U	-	40 U	-	100 U	-	0.33	-	1.4	-	0.25 U	-	-	-	-	-	110	-	110	-
Blank Check	DW-1	04/25/2016	Blank Check	59032861	1.0 U	-	0.50 U	-	1.0 U	-	0.50 U	-	0.80 U	-	0.50 U	-	0.20 U	-	0.20 U	-	0.50 U	-	0.10 U	-	0.25 U	-	0.25 U	-	-	-	-	-	4.0 U	-	4.0 U	-
Blank Check	DI-1	04/25/2016	Blank Check	59032861	1.0 U	-	0.50 U	-	1.0 U	-	0.50 U	-	0.80 U	-	0.50 U	-	0.20 U	-	0.20 U	-	0.50 U	-	0.10 U	-	0.25 U	-	0.25 U	-	-	-	-	-	4.0 U	-	4.0 U	-
YVD-02	YVD-02-130924	09/24/2013	Primary	SWI0178	20.4	-	5.89	-	3.50	-	8.56	-	3.85	-	0.50 U	-	0.410	-	0.20 U	-	5.77	-	0.146	-	0.25 U	-	-	-	0.124	-	-	-	54.9	-	55.0	-
YVD-02	YVD-02-140316	03/16/2014	Primary	SXC0081	90.8	-	71.7	-	12.6	-	88.6	-	3.93	-	1.02	-	0.20 U	-	0.20 U	-	66.9	-	0.10 U	-	0.25 U	-	0.54	-	-	-	-	-	199	-	200	-
YVD-02	YVD-02-140602	06/02/2014	Primary	SXF0008	62.7	-	48.7	-	8.53	-	23.0	-	2.75	-	0.50 U	-	0.20 U	-	0.20 U	-	3.12	-	0.10 U	-	0.490	-	3.8	-	-	-	-	-	82.2	-	82.5	-
YVD-02	YVD-02-140921	09/21/2014	Primary	SXI0148	29.6	-	13.7 J	FDP	4.53	-	11.6 J	FDP	2.64	-	0.50 U	-	0.20 U	-	0.20 U	-	13.8	-	0.10 U	-	0.274	-	0.86 J	FDP	-	-	-	-	89.4	-	90.0	-
YVD-02	YVD-D1-140921	09/21/2014	Duplicate	SXI0148	35.8	-	18.2 J	FDP	5.05	-	15.7 J	FDP	2.20	-	0.50 U	-	0.20 U	-	0.20 U	-	15.6	-	0.10 U	-	0.25 U	-	1.2 J	FDP	-	-	-	-	89.4	-	90.0	-
YVD-02	YVD-02-141215	12/15/2014	Primary	SXL0103	35.7	-	17.4	-	5.35	-	16.1	-	2.90 J+	MSD	0.50 U	-	0.220 J	DUP	0.20 U	-	33.6 J+	MSD, DUP	0.10 U	-	0.358	-	0.61	-	-	-	-	-	94.7	-	95.0	-
YVD-02	YVD-02-150615	06/15/2015	Primary	59010751	32 J+	MSD	16 J+	MSD	4.1 J+	MSD	12 J+	MSD	2.6	-	0.50 U	-	0.23	-	0.20 U	-	3.2 J-	MSD	0.11	-	0.25 UJ	MSD	1.1	-	-	-	-	-	75 J+	FBK	75 J+	FBK
YVD-02	YVD-02-150923	09/23/2015	Primary	59020281	28	-	17	-	4.8	-	14	-	2.5	-	0.50 U	-	0.20 U	-	0.20 U	-	9.5	-	0.10 U	-	0.25 J-	MSD	1.0 J+	FBK	-	-	-	-	95	-	95	-
YVD-02	YVD-02-151214	12/14/2015	Primary	59025351	38	-	23	-	6.3	-	25	-	2.6	-	0.50 U	-	0.20 U	-	0.20 U	-	24	-	0.10 R	MSD	0.76 J-	MSD	0.68	-	-	-	-	-	100	-	100	-
YVD-02	YVD-02-160308	03/08/2016	Primary	59029521	32	-	20	-	5.8	-	22	-	3.0	-	0.57	-	0.20 U	-	0.20 U	-	54	-	0.10 UJ	RPD	0.25 J-	MSD	0.59	-	-	-	-	-	110 J	FDP	110 J	FDP
YVD-03	YVD-03-130916	09/16/2013	Primary	SWI0113	57.5	-	24.3	-	9.00	-	43.0	-	14.0	-	0.740	-	4.75	-	0.490	-	70.7	-	0.10 U	-	0.488	-	-	-	0.890	-	-	-	209	-	210	-
YVD-03	YVD-03-131210	12/10/2013	Primary	SWL0063	48.7	-	20.4	-	6.67	-	40.2	-	14.3	-	1.0 U	-	5.96	-	0.40 U	-	54.8 J-	MSD	0.02 R	MSD	0.20 U	-	-	-	-	-	1.02	-	214	-	215	-
YVD-03	YVD-03-140317	03/17/2014	Primary	SXC0081	51.2	-	18.2	-	4.10	-	37.6	-	13.3	-	1.03	-	4.75	-	0.20 U	-	38.0	-	0.249	-	0.25 U	-	0.23	-	-	-	-	-	219	-	220	-
YVD-03	YVD-03-140602	06/02/2014	Primary	SXF0008	46.4	-	16.8	-	3.93	-	36.8	-	10.7	-	0.50 U	-	3.86	-	0.20 U	-	36.0	-	0.10 U	-	0.261	-	0.30	-	-	-	-	-	206	-	208	-
YVD-03	YVD-03-140923	09/23/2014	Primary	SXI0158	52.2	-	19.5	-	4.66 J	FDP	40.7 J+	MSD	11.8	-	0.620	-	3.97	-	0.20 U	-	34.7	-	0.10 R	MSD	0.25 U	-	0.33 J	FDP	-	-	-	-	199	-	200	-
YVD-03	YVD-D3-140923	09/23/2014	Duplicate	SXI0158	45.4	-	16.2	-	3.62 J	FDP	38.0 J+	MSD	12.1	-	0.650	-	4.04	-	0.20 U	-	34.4	-	0.10 R	MSD	0.25 U	-	0.24 J	FDP	-	-	-	-	199	-	200	-
YVD-03	YVD-03-141215	12/15/2014	Primary	SXL0108	51.7	-	19.3	-	4.47	-	39.1	-	12.9	-	0.540	-	4.27	-	0.20 U	-	37.0	-	0.10 U	-	0.40	-	0.76	-	-	-	-	-	199	-	200	-
YVD-03	YVD-03-150316	03/16/2015	Primary	5904541	46	-	17	-	3.9	-	39	-	13	-	0.84	-	4.1 J-	MSD	0.20 U	-	33 J-	MSD	0.10 U	-	0.25 UJ	MSD	0.25 U	-	-	-	-	-	210	-	210	-
YVD-03	YVD-03-150616	06/16/2015	Primary	59010751	50 J+	MSD	20 J+	MSD	6.1 J+	MSD	37 J+	MSD	12	-	0.68	-	4.0	-	0.20 U	-	41 J-	MSD	0.12	-	0.25 UJ	MSD	0.59	-	-	-	-	-	200	-	200	-
YVD-03	YVD-03-150922	09/22/2015	Primary	59020141	43	-	19	-	6.5	-	40	-	14	-	0.66	-	4.9	-	0.20 U	-	51	-	0.10 U	-	0.25 UJ	MSD	0.25 U	-	-	-	-	-	220	-	220	-
YVD-03	YVD-03-151214	12/14/2015	Primary	59025351	49	-	22	-	7.8	-	43	-	14	-	0.74	-	4.9	-	0.20 U	-	51	-	0.10 R	MSD	0.25 UJ	MSD	0.78	-	-	-	-	-	230	-	230	-
YVD-03	YVD-03-160307	03/07/2016	Primary	59029521	43	-	20	-	7.1	-	40	-	13	-	0.72	-	4.6	-	0.20 U	-	47	-	0.10 UJ	RPD	0.25 UJ	MSD	0.34	-	-	-	-	-	150 J	FDP	150 J	FDP

TABLE 7
CUMULATIVE ANALYTICAL RESULTS
YAKIMA VALLEY DAIRIES / SDWA-10-2013-0080
QUARTERLY GROUNDWATER MONITORING DATA REPORT
FIRST QUARTER 2016

				Analyte	Calcium		Magnesium		Potassium		Sodium		Chloride		Fluoride		Nitrate (as N)		Nitrite (as N)		Sulfate		Ammonia (as N)		Total Kjeldahl Nitrogen (TKN)		Phosphorus		Phosphorus		Phosphorus		Alkalinity, Bicarbonate (as CaCO3)		Alkalinity, Total (as CaCO3)	
				Analytical Method	E200.7		E200.7		E200.7		E200.7		E300		E300		E300		E300		E300		E350.1		E351.2		E365.1		E365.4		SM4500-P-E		SM2320B		SM2320B	
Well ID	Sample Name	Sample Date	Sample Type	Sample Group	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code
YVD-04	YVD-04-130916	09/16/2013	Primary	SWI0113	37.4	-	11.2	-	4.23	-	49.2	-	14.9	-	0.50 U	-	4.45	-	0.20 U	-	39.1	-	0.10 U	-	0.25 U	-	-	-	0.10 U	-	-	-	184	-	185	-
YVD-04	YVD-04-131210	12/10/2013	Primary	SWL0063	38.2	-	11.7	-	4.44	-	49.9	-	15.0	-	1.0 U	-	4.64	-	0.40 U	-	42.2 J-	MSD	0.02 R	MSD	0.20 U	-	-	-	-	-	0.112	-	203	-	205	-
YVD-04	YVD-04-140317	03/17/2014	Primary	SXC0081	37.7	-	11.6	-	4.46	-	47.8	-	15.1	-	0.630	-	4.03	-	0.20 U	-	35.2	-	0.10 U	-	0.25 U	-	0.078	-	-	-	-	-	209	-	210	-
YVD-04	YVD-04-140602	06/02/2014	Primary	SXF0008	36.8	-	11.5	-	4.41	-	50.5	-	14.3	-	1.0 U	-	3.78	-	0.40 U	-	36.2	-	0.113	-	0.25 U	-	0.053	-	-	-	-	-	191	-	193	-
YVD-04	YVD-04-140923	09/23/2014	Primary	SXI0158	37.8	-	11.5	-	4.49	-	52.2 J+	MSD	15.3	-	0.50 U	-	3.87	-	0.20 U	-	35.8	-	0.10 R	MSD	0.25 U	-	0.061	-	-	-	-	-	188	-	190	-
YVD-04	YVD-04-141215	12/15/2014	Primary	SXL0108	38.8	-	12.4	-	4.62	-	50.0	-	15.2	-	0.50 U	-	3.81	-	0.20 U	-	35.8	-	0.10 U	-	0.25 U	-	0.10 U	-	-	-	-	-	188	-	190	-
YVD-04	YVD-04-150315	03/15/2015	Primary	5904471	38	-	12	-	4.7	-	52	-	16	-	0.50 U	-	4.3	-	0.20 U	-	34	-	0.10 U	-	0.25 UJ	MSD	0.25 UJ	MSD	-	-	-	-	190	-	190	-
YVD-04	YVD-04-150615	06/15/2015	Primary	59010751	38 J+	MSD	8.5 J+	MSD	4.7 J+	MSD	49 J+	MSD	15	-	0.50 U	-	4.0	-	0.20 U	-	34 J-	MSD	0.10 U	-	0.25 UJ	MSD	0.25 U	-	-	-	-	-	190	-	190	-
YVD-04	YVD-04-150922	09/22/2015	Primary	59020141	36	-	11	-	4.6	-	51	-	15	-	0.50 U	-	3.9	-	0.20 U	-	35	-	0.13	-	0.25 UJ	MSD	0.25 U	-	-	-	-	-	200	-	200	-
YVD-04	YVD-04-151213	12/13/2015	Primary	59025351	39	-	12	-	4.9	-	53	-	15	-	0.50 U	-	4.1	-	0.20 U	-	36	-	0.10 R	MSD	0.25 UJ	MSD	0.39	-	-	-	-	-	200	-	200	-
YVD-04	YVD-04-160307	03/07/2016	Primary	59029521	36	-	12	-	4.6	-	51	-	14	-	0.50 U	-	3.7	-	0.20 U	-	34	-	0.10 UJ	RPD	0.25 UJ	MSD	0.25 U	-	-	-	-	-	250 J	FDP	250 J	FDP
YVD-05	YVD-05-130917	09/17/2013	Primary	SWI0113	66.0	-	31.0	-	6.95	-	46.2	-	10.2	-	0.50 U	-	4.90	-	0.20 U	-	76.8	-	0.112	-	0.435	-	-	-	1.62	-	-	-	184	-	185	-
YVD-05	YVD-05-131211	12/11/2013	Primary	SWL0063	41.5	-	17.0	-	3.33	-	45.5	-	10.0	-	1.0 U	-	4.36	-	0.40 U	-	68.4 J-	MSD	0.02 R	MSD	0.20 U	-	-	-	-	-	0.462	-	174	-	175	-
YVD-05	YVD-05-140317	03/17/2014	Primary	SXC0081	33.7	-	13.5	-	2.75	-	43.1	-	8.40	-	1.30	-	3.30	-	0.40 U	-	52.7	-	0.10 U	-	0.25 U	-	0.14	-	-	-	-	-	174	-	175	-
YVD-05	YVD-05-140601	06/01/2014	Primary	SXF0008	30.8	-	13.2	-	2.84	-	43.9	-	8.40	-	1.0 U	-	3.00	-	0.40 U	-	50.5	-	0.10 U	-	0.25 U	-	0.15	-	-	-	-	-	164	-	165	-
YVD-05	YVD-05-140922	09/22/2014	Primary	SXI0148	31.6	-	13.7	-	2.75	-	45.1	-	7.60	-	1.0 U	-	2.82	-	0.40 U	-	48.1	-	0.10 U	-	0.259	-	0.20	-	-	-	-	-	159	-	160	-
YVD-05	YVD-05-141215	12/15/2014	Primary	SXL0103	36.9	-	17.0	-	4.21	-	45.5	-	4.56 J+	MSD, FDP	1.0 U	-	1.50 J	FDP, DUP	0.40 U	-	27.7 J+	MSD, FDP, DUP	0.10 U	-	0.272	-	0.44 J	FDP	-	-	-	-	154	-	155	-
YVD-05	YVD-D1-141215	12/15/2014	Duplicate	SXL0103	34.2	-	15.0	-	3.54	-	44.9	-	7.80 J+	MSD, FDP	0.50 U	-	2.65 J	FDP, DUP	0.20 U	-	46.0 J+	MSD, FDP, DUP	0.10 U	-	0.264	-	0.29 J	FDP	-	-	-	-	153	-	155	-
YVD-05	YVD-05-150316	03/16/2015	Primary	5904471	33	-	15	-	3.6	-	47	-	8.0	-	1.0 U	-	2.8	-	0.40 U	-	47	-	0.10 U	-	0.25 UJ	MSD	0.25 UJ	MSD	-	-	-	-	160	-	160	-
YVD-05	YVD-05-150616	06/16/2015	Primary	59010751	35 J+	MSD	16 J+	MSD	4.0 J+	MSD	47 J+	MSD	8.9	-	1.0 U	-	3.1	-	0.40 U	-	49 J-	MSD	0.10 U	-	0.25 UJ	MSD	0.51	-	-	-	-	-	170	-	170	-
YVD-05	YVD-05-150922	09/22/2015	Primary	59020281	42	-	20	-	4.9	-	51	-	8.8	-	1.0 U	-	3.0	-	0.40 U	-	51	-	0.10 U	-	0.25 R	MSD	0.80	-	-	-	-	-	160	-	160	-
YVD-05	YVD-05-151214	12/14/2015	Primary	59025351	37	-	17	-	4.3	-	52	-	7.9	-	1.0 U	-	2.8	-	0.40 U	-	48	-	0.10 R	MSD	0.60 J-	MSD	0.65	-	-	-	-	-	180	-	180	-
YVD-05	YVD-05-160307	03/07/2016	Primary	59029521	32	-	15	-	3.6	-	48	-	8.3	-	1.0 U	-	2.7	-	0.40 U	-	47	-	0.10 UJ	RPD	0.25 UJ	MSD	0.25 U	-	-	-	-	-	160 J	FDP	160 J	FDP
YVD-05	YVD-D1-160307	03/07/2016	Duplicate	59029521	32	-	15	-	3.6	-	48	-	8.7	-	0.59	-	2.9	-	0.20 U	-	48	-	0.10 UJ	RPD	0.25 UJ	MSD	0.25 U	-	-	-	-	-	170 J	FDP	170 J	FDP
YVD-06	YVD-06-130917	09/17/2013	Primary	SWI0113	46.0	-	12.8	-	4.07	-	17.6	-	3.13	-	0.50 U	-	0.510	-	0.20 U	-	8.14	-	0.10 U	-	0.400	-	-	-	0.410	-	-	-	149	-	150	-
YVD-06	YVD-06-131209	12/09/2013	Primary	SWL0055	31.2 J	FDP	5.27 J	FDP	1.76	-	13.0 J	FDP	2.73	-	0.50 U	-	0.490 J	FDP	0.20 U	-	8.53	-	0.02 UJ	MSD	0.62 J	FBK,MSD,FDP	-	-	-	-	0.06 U	-	154	-	155	-
YVD-06	YVD-D1-131209	12/09/2013	Duplicate	SWL0055	38.9 J	FDP	6.55 J	FDP	2.24	-	16.5 J	FDP	8.0 U	-	5.0 U	-	6.40 J	FDP	2.0 U	-	9.10	-	0.02 UJ	MSD	0.40 J	FBK,MSD,FDP	-	-	-	-	0.06 U	-	159	-	160	-
YVD-06	YVD-06-140316	03/16/2014	Primary	SXC0081	40.1	-	7.59	-	2.68	-	16.2	-	3.47	-	0.580	-	0.610	-	0.20 U	-	8.33	-	0.10 U	-	0.297	-	0.13	-	-	-	-	-	174	-	175	-
YVD-06	YVD-D1-140316	03/16/2014	Duplicate	SXC0081	40.5	-	7.78	-	2.74	-	16.6	-	3.16	-	0.550	-	0.620	-	0.20 U	-	8.18	-	0.10 U	-	0.25 U	-	0.14	-	-	-	-	-	159	-	160	-
YVD-06	YVD-06-140601	06/01/2014	Primary	SXF0008	37.8	-	6.50	-	2.28	-	16.7	-	2.88 J	DUP	0.50 U	-	0.510	-	0.20 U	-	7.59	-	0.172	-	0.25 U	-	0.057	-	-	-	-	-	156	-	158	-
YVD-06	YVD-D1-140601	06/01/2014	Duplicate	SXF0008	38.3	-	6.56	-	2.30	-	16.9	-	2.95	-	0.50 U	-	0.560	-	0.20 U	-	7.63	-	0.10 U	-	0.25 U	-	0.064	-	-	-	-	-	153	-	155	-
YVD-06	YVD-06-140921	09/21/2014	Primary	SXI0148	41.3	-	8.52	-	2.69	-	17.4	-	2.45	-	0.50 U	-	0.440	-	0.20 U	-	7.98	-	0.139	-	0.359	-	0.18	-	-	-	-	-	149	-	150	-
YVD-06	YVD-06-141215	12/15/2014	Primary	SXL0103	40.3	-	7.83	-	2.58	-	16.9	-	2.50 J+	MSD	0.50 U	-	0.45 J	DUP	0.20 U	-	7.47 J+	MSD, DUP	0.10 U	-	0.25 U	-	0.10 U	-	-	-	-	-	149	-	150	-
YVD-06	YVD-06-150316	03/16/2015	Primary	5904471	38	-	6.8	-	2.2	-	17	-	2.8	-	0.50 U	-	0.99	-	0.20 U	-	10	-	0.10 U	-	0.25 UJ	MSD	0.25 UJ	MSD	-	-	-	-	150	-	150	-
YVD-06	YVD-06-150616	06/16/2015	Primary	59010751	40 J+	MSD	7.0 J+	MSD	2.2 J+	MSD	17 J+	MSD	2.7	-	0.50 U	-	0.53	-	0.20 U	-	7.9 J-	MSD	0.10 U	-	0.25 UJ	MSD	0.25 U	-	-	-	-	-	150	-	150	-
YVD-06	YVD-06-150922	09/22/2015	Primary	59020141	41	-	9.8	-	3.1	-	17	-	2.8	-	0.50 U	-	0.51	-	0.20 U	-	7.9	-	0.11	-	0.25 UJ	MSD	0.25 U	-	-	-	-	-	170	-	170	-
YVD-06	YVD-06-151214	12/14/2015	Primary	59025351	42	-	7.3	-	2.4	-	18	-	2.4	-	0.50 U	-	0.51	-	0.20 U	-	8.0	-	0.10 R	MSD	0.57 J-	MSD	0.25 U	-	-	-	-	-	170	-	170	-
YVD-06	YVD-06-160307	03/07/2016	Primary	59029521	38	-	7.2	-	2.5	-	17	-	2.8	-	0.50 U	-	0.51	-	0.20 U	-	7.8	-	0.10 UJ	RPD	0.25 UJ	MSD	0.25 U	-	-	-	-	-	160 J	FDP	160 J	FDP

TABLE 7
CUMULATIVE ANALYTICAL RESULTS
YAKIMA VALLEY DAIRIES / SDWA-10-2013-0080
QUARTERLY GROUNDWATER MONITORING DATA REPORT
FIRST QUARTER 2016

				Analyte	Calcium		Magnesium		Potassium		Sodium		Chloride		Fluoride		Nitrate (as N)		Nitrite (as N)		Sulfate		Ammonia (as N)		Total Kjeldahl Nitrogen (TKN)		Phosphorus		Phosphorus		Phosphorus		Alkalinity, Bicarbonate (as CaCO3)		Alkalinity, Total (as CaCO3)	
				Analytical Method	E200.7		E200.7		E200.7		E200.7		E300		E300		E300		E300		E300		E350.1		E351.2		E365.1		E365.4		SM4500-P-E		SM2320B		SM2320B	
Well ID	Sample Name	Sample Date	Sample Type	Sample Group	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code
YVD-07	YVD-07-130923	09/23/2013	Primary	SWI0178	27.7	-	16.2	-	5.03	-	37.7	-	-	-	-	-	-	-	-	-	-	-	0.10 U	-	0.395	-	-	-	0.516	-	-	-	79.4	-	80.0	-
YVD-07	YVD-07-130926	09/26/2013	Primary	SWI0190	-	-	-	-	-	-	-	-	7.53	-	0.50 U	-	4.40	-	0.20 U	-	37.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
YVD-07	YVD-07-131210	12/10/2013	Primary	SWL0055	99.2	-	16.0	-	1.0 U	-	40.4	-	8.46	-	0.550	-	5.30	-	0.20 U	-	50.0	-	0.02 UJ	MSD	0.20 UJ	MSD	-	-	-	-	0.06 U	-	135	-	135	-
YVD-07	YVD-07-140316	03/16/2014	Primary	SXC0081	33.4	-	14.1	-	4.45	-	42.5	-	11.6	-	0.83	-	3.90	-	0.20 U	-	69.2	-	0.116	-	0.25 U	-	0.22	-	-	-	-	-	134	-	135	-
YVD-07	YVD-07-140604	06/04/2014	Primary	SXF0025	38.4	-	18.3	-	5.57	-	44.5	-	9.74	-	1.0 U	-	3.36	-	0.40 U	-	57.0	-	0.10 U	-	0.348 J-	MSD	0.69	-	-	-	-	-	137	-	138	-
YVD-07	YVD-07-140922	09/22/2014	Primary	SXI0158	31.4	-	12.7	-	4.05	-	42.7 J+	MSD	10.3	-	1.0 U	-	5.52	-	0.40 U	-	51.8	-	0.10 R	MSD	0.25 U	-	0.20	-	-	-	-	-	134	-	135	-
YVD-07	YVD-07-141216	12/16/2014	Primary	SXL0108	29.9	-	12.2	-	3.83	-	40.6	-	8.76	-	1.0 U	-	2.92	-	0.40 U	-	51.2	-	0.10 U	-	0.25 U	-	0.10 U	-	-	-	-	-	133	-	135	-
YVD-07	YVD-07-150316	03/16/2015	Primary	5904541	37	-	15	-	4.3	-	50	-	15	-	1.0 U	-	4.0 J-	MSD	0.40 U	-	73 J-	MSD	0.10 U	-	0.25 UJ	MSD	0.25 U	-	-	-	-	-	140	-	140	-
YVD-07	YVD-D2-150316	03/16/2015	Duplicate	5904541	35	-	14	-	4.3	-	48	-	16	-	0.65	-	4.2 J-	MSD	0.20 U	-	70 J-	MSD	0.10 U	-	0.25 UJ	MSD	0.25 U	-	-	-	-	-	140	-	140	-
YVD-07	YVD-07-150616	06/16/2015	Primary	59010751	34 J+	MSD	14 J+	MSD	4.2 J+	MSD	43 J+	MSD	13	-	0.50 U	-	3.3	-	0.40 U	-	74 J-	MSD	0.10 U	-	0.25 UJ	MSD	0.25 U	-	-	-	-	-	150	-	150	-
YVD-07	YVD-D1-150616	06/16/2015	Duplicate	59010751	35 J+	MSD	14 J+	MSD	4.2 J+	MSD	44 J+	MSD	14	-	0.50 U	-	3.5	-	0.20 U	-	74 J-	MSD	0.10 U	-	0.25 UJ	MSD	0.25 U	-	-	-	-	-	140	-	140	-
YVD-07	YVD-07-150923	09/23/2015	Primary	59020281	33	-	14	-	4.2	-	48	-	9.9	-	1.0 U	-	4.7	-	0.40 U	-	68	-	0.22	-	0.25 R	MSD	0.25 U	-	-	-	-	-	160	-	160	-
YVD-07	YVD-07-151214	12/14/2015	Primary	59025431	30	-	13	-	4.5	-	48	-	6.7	-	1.0 U	-	2.4	-	0.40 U	-	59	-	0.10 R	MSD	0.25 R	MSD	0.97 J	FDP	-	-	-	-	140 J	FDP	140 J	FDP
YVD-07	YVD-07-160308	03/08/2016	Primary	59029711	25	-	11	-	4.0	-	42	-	6.7	-	1.0 U	-	1.8	-	0.40 U	-	49 J+	MSD	1.1 J+	FBK, FDP	0.25 U	-	0.25 U	-	-	-	-	-	140	-	140	-
YVD-08	YVD-08-130919	09/19/2013	Primary	SWI0138	126	-	43.8	-	6.03	-	88.3	-	145	-	5.0 U	-	8.00	-	2.0 U	-	105	-	0.10 U	-	0.935 J+	FBK	-	-	0.10 U	-	-	-	354	-	355	-
YVD-08	YVD-08-131211	12/11/2013	Primary	SWL0063	134	-	53.8	-	7.55	-	82.2	-	123	-	5.0 U	-	22.5	-	2.0 U	-	273 J-	MSD	0.02 R	MSD	0.750 U	ERL	-	-	-	-	1.46	-	259	-	260	-
YVD-08	YVD-08-140317	03/17/2014	Primary	SXC0095	122	-	42.0	-	5.30	-	75.1	-	128	-	5.0 U	-	14.3	-	2.0 U	-	173 J-	MSD	0.146	-	0.702	-	0.13	-	-	-	-	-	294	-	295	-
YVD-08	YVD-08-140602	06/02/2014	Primary	SXF0017	138	-	64.6	-	11.2	-	78.3	-	118	-	2.0 U	-	14.7	-	0.80 U	-	175 J-	MSD	0.10 U	-	1.12	-	2.7	-	-	-	-	-	279	-	280	-
YVD-08	YVD-08-140923	09/23/2014	Primary	SXI0173	103	-	36.3	-	5.87	-	76.9	-	122	-	2.5 U	-	8.10	-	1.0 U	-	107	-	0.10 U	-	0.867 J+	MSD	0.35	-	-	-	-	-	249	-	250	-
YVD-08	YVD-08-141216	12/16/2014	Primary	SXL0108	111	-	41.4	-	5.92	-	77.2	-	126	-	2.5 U	-	14.0	-	1.0 U	-	140	-	0.10 U	-	0.369	-	0.34	-	-	-	-	-	264	-	265	-
YVD-08	YVD-08-150317	03/17/2015	Primary	5904541	110	-	40	-	5.9	-	77	-	120	-	2.5 U	-	13 J-	MSD	1.0 U	-	130 J-	MSD	0.10 U	-	0.39 J-	MSD	0.67	-	-	-	-	-	230	-	230	-
YVD-08	YVD-D3-150317	03/17/2015	Duplicate	5904541	100	-	39	-	5.7	-	76	-	130	-	0.50 U	-	14 J-	MSD	0.20 U	-	150 J-	MSD	0.10 U	-	0.25 UJ	MSD	0.49	-	-	-	-	-	240	-	240	-
YVD-08	YVD-08-150617	06/17/2015	Primary	59010961	110	-	40	-	6.0 J+	MSD	82 J+	MSD	120	-	2.5 U	-	19	-	1.0 U	-	140	-	0.14	-	0.26 J-	MSD, FDP	0.53	-	-	-	-	-	280 J	FDP	280 J	FDP
YVD-08	YVD-D3-150617	06/17/2015	Duplicate	59010961	110	-	39	-	5.7 J+	MSD	77 J+	MSD	140	-	5.0 U	-	19	-	0.20 U	-	170	-	0.10 U	-	0.86 J-	MSD, FDP	0.39	-	-	-	-	-	220 J	FDP	220 J	FDP
YVD-08	YVD-08-150924	09/24/2015	Primary	59020391	110	-	44	-	5.6	-	82	-	120	-	2.5 U	-	20 J+	MSD	1.0 U	-	170 J-	MSD	0.10 UJ	MSD	0.25 UJ	MSD	0.31	-	-	-	-	-	260	-	260	-
YVD-08	YVD-08-151215	12/15/2015	Primary	59025501	120	-	44	-	6.2	-	85	-	120	-	2.5 U	-	26	-	1.0 U	-	190	-	0.10 R	MSD	0.25 R	MSD	0.33 J-	MSD	-	-	-	-	260	-	260	-
YVD-08	YVD-D3-151215	12/15/2015	Duplicate	59025501	120	-	46	-	6.2	-	85	-	110	-	5.0 U	-	26	-	0.20 U	-	180	-	0.15 J-	MSD	0.25 R	MSD	0.27 J-	MSD	-	-	-	-	250	-	250	-
YVD-08	YVD-08-160310	03/10/2016	Primary	59029941	120	-	44	-	5.6	-	87	-	120	-	2.5 U	-	32	-	1.0 U	-	210 J	DUP	0.10 U	-	0.25 UJ	FDP, MSD	0.25 U	-	-	-	-	-	240	-	240	-
YVD-09	YVD-09-130919	09/19/2013	Primary	SWI0138	107	-	39.3	-	8.21	-	189	-	96.3	-	5.0 U	-	74.7	-	2.0 U	-	236	-	0.10 U	-	0.533 R	FBK	-	-	0.232 R	FBK	-	-	369	-	370	-
YVD-09	YVD-09-131212	12/12/2013	Primary	SWL0078	109	-	42.0	-	9.21	-	176	-	87.2	-	5.0 U	-	64.4	-	2.0 U	-	193	-	0.02 U	-	0.661 U	ERL	-	-	-	-	0.647	-	384	-	385	-
YVD-09	YVD-09-140319	03/19/2014	Primary	SXC0107	109	-	40.8	-	9.33	-	173	-	104	-	5.50	-	62.4	-	2.0 U	-	214	-	0.10 U	-	0.653 J-	MSD	0.53	-	-	-	-	-	388	-	390	-
YVD-09	YVD-09-140603	06/03/2014	Primary	SXF0025	113	-	44.5	-	10.1	-	193	-	89.8	-	5.0 U	-	57.1	-	2.0 U	-	214	-	0.10 U	-	0.613 J-	MSD	0.72	-	-	-	-	-	367	-	368	-
YVD-09	YVD-09-140924	09/24/2014	Primary	SXI0173	118	-	41.7	-	8.88	-	203	-	68.2	-	5.0 U	-	48.0	-	2.0 U	-	166	-	0.10 U	-	0.502 J+	MSD	0.054 J+	FBK	-	-	-	-	359	-	360	-
YVD-09	YVD-09-141217	12/17/2014	Primary	SXL0121	130	-	56.3	-	12.9	-	187	-	85.0	-	5.0 U	-	53.9	-	2.0 U	-	223	-	0.10 U	-	0.25 UJ	MSD	1.3	-	-	-	-	-	359	-	360	-
YVD-09	YVD-09-150318	03/18/2015	Primary	5904651	110	-	46	-	9.3 J-	MSD	190	-	74	-	5.0 U	-	47	-	2.0 U	-	190	-	0.14	-	0.25 UJ	MSD	0.38	-	-	-	-	-	350	-	350	-
YVD-09	YVD-09-150617	06/17/2015	Primary	59010961	110	-	43	-	9.8 J+	MSD	190 J+	MSD	89	-	5.0 U	-	54	-	2.0 U	-	230	-	0.14	-	0.37 J-	MSD	0.36	-	-	-	-	-	350	-	350	-
YVD-09	YVD-09-150923	09/23/2015	Primary	59020391	110	-	46	-	9.6	-	180	-	78	-	0.50 U	-	56 J+	MSD	0.20 U	-	270 J-	MSD	0.21 J	MSD	0.26 J-	MSD	0.27	-	-	-	-	-	330	-	330	-
YVD-09	YVD-09-151215	12/15/2015	Primary	59025501	110	-	42	-	9.6	-	190	-	77	-	5.0 U	-	52	-	2.0 U	-	250	-	0.10 R	MSD	0.25 R	MSD	0.25 J-	MSD	-	-	-	-	340	-	340	-
YVD-09	YVD-09-160310	03/10/2016	Primary	59029941	110	-	42	-	9.2	-	190	-	72	-	5.0 U	-	48	-	2.0 U	-	250 J	DUP	0.12	-	0.25 UJ	FDP, MSD	0.33	-	-	-	-	-	360	-	360	-

TABLE 7
CUMULATIVE ANALYTICAL RESULTS
YAKIMA VALLEY DAIRIES / SDWA-10-2013-0080
QUARTERLY GROUNDWATER MONITORING DATA REPORT
FIRST QUARTER 2016

				Analyte	Calcium		Magnesium		Potassium		Sodium		Chloride		Fluoride		Nitrate (as N)		Nitrite (as N)		Sulfate		Ammonia (as N)		Total Kjeldahl Nitrogen (TKN)		Phosphorus		Phosphorus		Phosphorus		Alkalinity, Bicarbonate (as CaCO3)		Alkalinity, Total (as CaCO3)	
				Analytical Method	E200.7		E200.7		E200.7		E200.7		E300		E300		E300		E300		E300		E350.1		E351.2		E365.1		E365.4		SM4500-P-E		SM2320B		SM2320B	
Well ID	Sample Name	Sample Date	Sample Type	Sample Group	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code
YVD-10	YVD-10-130917	09/17/2013	Primary	SWI0123	216	-	51.8	-	3.28	-	104	-	95.4	-	5.0 U	-	95.0	-	2.0 U	-	199	-	0.10 U	-	0.25 U	-	-	-	0.148	-	-	-	464	-	465	-
YVD-10	YVD-10-131212	12/12/2013	Primary	SWL0078	202	-	55.6	-	4.49	-	102	-	91.4	-	5.0 U	-	86.9	-	2.0 U	-	174	-	0.02 U	-	0.6495 U	ERL	-	-	-	-	1.40	-	459	-	460	-
YVD-10	YVD-10-140319	03/19/2014	Primary	SXC0107	218	-	54.0	-	3.93	-	96.8	-	86.8	-	5.0 U	-	77.6	-	2.0 U	-	163	-	0.109	-	0.507 J-	MSD	0.77	-	-	-	-	-	489	-	490	-
YVD-10	YVD-10-140603	06/03/2014	Primary	SXF0025	232	-	58.6	-	4.07	-	103	-	94.3	-	5.0 U	-	86.1	-	2.0 U	-	188	-	0.105	-	0.577 J-	MSD	0.80	-	-	-	-	-	487	-	488	-
YVD-10	YVD-10-140924	09/24/2014	Primary	SXI0173	276	-	65.8	-	3.86	-	116	-	115	-	5.0 U	-	97.2	-	2.0 U	-	217	-	0.10 U	-	0.443 J+	MSD	0.054 J+	FBK	-	-	-	-	523	-	525	-
YVD-10	YVD-10-141217	12/17/2014	Primary	SXL0144	248	-	60.4	-	3.88	-	110	-	97.9	-	5.0 U	-	78.7	-	2.0 U	-	180	-	0.50 U	-	0.25 R	MSD	0.69 J-	MSD	-	-	-	-	503	-	505	-
YVD-10	YVD-10-150318	03/18/2015	Primary	5904651	400	-	92	-	4.0 J-	MSD	130	-	180	-	5.0 U	-	120	-	2.0 U	-	370	-	0.10 U	-	0.25 UJ	MSD	0.42	-	-	-	-	-	590	-	590	-
YVD-10	YVD-10-150617	06/17/2015	Primary	59010961	390	-	95	-	4.6 J+	MSD	130 J+	MSD	39	-	5.0 U	-	20	-	2.0 U	-	110	-	0.12	-	0.44 J-	MSD	0.72	-	-	-	-	-	600	-	600	-
YVD-10	YVD-10-150923	09/23/2015	Primary	59020391	330	-	89	-	4.3	-	120	-	160	-	5.0 U	-	120 J+	MSD	2.0 U	-	370 J-	MSD	0.72 J	MSD	0.25 UJ	MSD	0.56	-	-	-	-	-	620	-	620	-
YVD-10	YVD-10-151214	12/14/2015	Primary	59025351	350	-	84	-	4.3	-	120	-	150	-	5.0 U	-	120	-	2.0 U	-	360	-	0.10 R	MSD	0.25 UJ	MSD	0.58	-	-	-	-	-	600	-	600	-
YVD-10	YVD-10-160309	03/09/2016	Primary	59029711	310	-	73	-	4.1	-	120	-	140	-	5.0 U	-	98	-	2.0 U	-	280 J+	MSD	0.10 UJ	FDP	0.25 R	MSD	0.42	-	-	-	-	-	520	-	520	-
YVD-11	YVD-11-130923	09/23/2013	Primary	SWI0178	183	-	51.9	-	5.44 J	FDP	23.2	-	-	-	-	-	-	-	-	-	-	-	0.10 U	-	0.25 U	-	-	-	0.753 J	FDP	-	-	254 J	FDP	255 J	FDP
YVD-11	YVD-D2-130923	09/23/2013	Duplicate	SWI0178	175	-	46.0	-	3.60 J	FDP	23.0	-	-	-	-	-	-	-	-	-	-	-	0.10 U	-	0.25 U	-	-	-	0.10 UJ	FDP	-	-	199 J	FDP	200 J	FDP
YVD-11	YVD-11-130926	09/26/2013	Primary	SWI0190	-	-	-	-	-	-	-	-	54.7	-	5.0 U	-	38.4	-	2.0 U	-	207	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
YVD-11	YVD-D3-130926	09/26/2013	Duplicate	SWI0190	-	-	-	-	-	-	-	-	61.4	-	5.0 U	-	46.2	-	2.0 U	-	228	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
YVD-11	YVD-11-131212	12/12/2013	Primary	SWL0073	171	-	43.4	-	3.37	-	23.2	-	58.7	-	5.0 U	-	49.9	-	2.0 U	-	208	-	0.02 UJ	MSD	0.20 UJ	MSD	-	-	-	-	0.245	-	294	-	295	-
YVD-11	YVD-11-140318	03/18/2014	Primary	SXC0107	183	-	44.4	-	3.15	-	22.2	-	61.6	-	5.0 U	-	43.7	-	2.0 U	-	193	-	0.10 U	-	0.503 J-	MSD	0.17	-	-	-	-	-	324	-	325	-
YVD-11	YVD-11-140603	06/03/2014	Primary	SXF0017	176	-	50.3	-	5.38	-	26.1	-	67.2	-	5.0 U	-	49.1	-	2.0 U	-	203 J-	MSD	0.10 U	-	0.564	-	0.84	-	-	-	-	-	312	-	313	-
YVD-11	YVD-11-140924	09/24/2014	Primary	SXI0173	193	-	47.9	-	3.86	-	25.6	-	67.2	-	2.5 U	-	46.6	-	1.0 U	-	159	-	0.10 U	-	0.453 J+	MSD	0.054 J+	FBK	-	-	-	-	294	-	295	-
YVD-11	YVD-11-141217	12/17/2014	Primary	SXL0121	198	-	53.6	-	4.77	-	25.6	-	72.1	-	5.0 U	-	49.1	-	2.0 U	-	158	-	0.10 U	-	0.25 UJ	MSD	0.46	-	-	-	-	-	289	-	290	-
YVD-11	YVD-11-150317	03/17/2015	Primary	5904651	190	-	51	-	4.3 J-	MSD	26	-	76	-	5.0 U	-	52	-	2.0 U	-	150	-	0.10 U	-	0.25 UJ	MSD	0.30	-	-	-	-	-	290	-	290	-
YVD-11	YVD-11-150616	06/16/2015	Primary	59010961	200	-	50	-	3.2 J+	MSD	27 J+	MSD	86	-	5.0 U	-	56	-	2.0 U	-	140	-	0.10 U	-	0.31 J-	MSD	0.25 U	-	-	-	-	-	290	-	290	-
YVD-11	YVD-11-150923	09/23/2015	Primary	59020281	200	-	55	-	3.4	-	25	-	90	-	5.0 U	-	66	-	2.0 U	-	130	-	0.12	-	0.25 R	MSD	0.25 U	-	-	-	-	-	310	-	310	-
YVD-11	YVD-11-151215	12/15/2015	Primary	59025431	210	-	60	-	5.2	-	25	-	100	-	5.0 U	-	74	-	2.0 U	-	140	-	0.10 R	MSD	0.25 R	MSD	0.59 J	FDP	-	-	-	-	110 J	FDP	110 J	FDP
YVD-11	YVD-D2-151215	12/15/2015	Duplicate	59025431	210	-	58	-	4.9	-	25	-	98	-	0.50 U	-	70	-	0.20 U	-	130	-	0.10 R	MSD	0.25 R	MSD	1.5 J	FDP	-	-	-	-	360 J	FDP	360 J	FDP
YVD-11	YVD-11-160309	03/09/2016	Primary	59029711	200	-	53	-	3.3	-	25	-	99	-	5.0 U	-	65	-	2.0 U	-	140 J+	MSD	0.14 J	FDP	0.25 R	MSD	0.25 U	-	-	-	-	-	340	-	340	-
YVD-12	YVD-12-130919	09/19/2013	Primary	SWI0142	98.6	-	37.5	-	3.14	-	77.3	-	98.2	-	5.0 U	-	-	-	-	-	245	-	0.10 U	-	0.608 R	FBK	-	-	0.356 J+	FBK	-	-	204	-	205	-
YVD-12	YVD-12-130925	09/25/2013	Primary	SWI0175	-	-	-	-	-	-	-	-	-	-	-	-	15.0	-	2.0 U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
YVD-12	YVD-12-131211	12/11/2013	Primary	SWL0073	93.5	-	36.2	-	3.63	-	73.2	-	97.0	-	5.0 U	-	20.1	-	2.0 U	-	262	-	0.02 UJ	MSD	0.23 R	MSD, FBK	-	-	-	-	0.218	-	194	-	195	-
YVD-12	YVD-12-140318	03/18/2014	Primary	SXC0095	92.9	-	35.9	-	3.27	-	73.4	-	95.2	-	5.0 U	-	17.0	-	2.0 U	-	236 J-	MSD	0.248	-	0.564	-	0.22	-	-	-	-	-	204	-	205	-
YVD-12	YVD-12-140603	06/03/2014	Primary	SXF0017	92.6	-	34.9	-	2.96	-	70.7	-	8.33	-	0.50 U	-	1.44	-	0.20 U	-	21.3 J-	MSD	0.10 U	-	0.415	-	0.28 J+	FBK	-	-	-	-	199	-	200	-
YVD-12	YVD-12-140922	09/22/2014	Primary	SXI0148	98.4	-	39.1	-	3.13	-	77.9	-	78.5	-	5.0 U	-	13.3	-	2.0 U	-	200	-	0.10 U	-	0.669	-	0.25	-	-	-	-	-	189	-	190	-
YVD-12	YVD-D2-140922	09/22/2014	Duplicate	SXI0148	99.3	-	39.0	-	3.00	-	77.8	-	82.4	-	2.0 U	-	15.5	-	0.80 U	-	200	-	0.10 U	-	0.653	-	0.20	-	-	-	-	-	194	-	195	-
YVD-12	YVD-12-141216	12/16/2014	Primary	SXL0121	99.3	-	39.6	-	3.23	-	71.8	-	84.1	-	5.0 U	-	15.1	-	2.0 U	-	228	-	0.10 U	-	0.25 UJ	MSD	0.25	-	-	-	-	-	194	-	195	-
YVD-12	YVD-12-150317	03/17/2015	Primary	5904541	93	-	37	-	3.6	-	73	-	75	-	5.0 U	-	14 J-	MSD	2.0 U	-	190 J-	MSD	0.10 U	-	0.56 J-	MSD	0.31	-	-	-	-	-	190	-	190	-
YVD-12	YVD-12-150617	06/17/2015	Primary	59010961	90	-	35	-	2.6 J+	MSD	83 J+	MSD	84	-	5.0 U	-	12	-	2.0 U	-	180	-	0.10 U	-	0.35 J-	MSD	0.25 U	-	-	-	-	-	190	-	190	-
YVD-12	YVD-12-150924	09/24/2015	Primary	59020391	92	-	39	-	3.5	-	73	-	78	-	5.0 U	-	15 J+	MSD	2.0 U	-	210 J-	MSD	0.10 UJ	MSD	0.25 UJ	MSD	0.25 U	-	-	-	-	-	190	-	190	-
YVD-12	YVD-12-151216	12/16/2015	Primary	59025501	95	-	37	-	3.1	-	74	-	76	-	5.0 U	-	14	-	2.0 U	-	180	-	0.10 R	MSD	0.58 J-	MSD	0.25 UJ	MSD	-	-	-	-	210	-	210	-
YVD-12	YVD-12-160309	03/09/2016	Primary	59029941	95	-	35	-	2.6	-	73	-	73	-	5.0 U	-	13	-	2.0 U	-	170 J	DUP	0.10 U	-	0.25 UJ	MSD	0.25 U	-	-	-	-	-	210	-	210	-
YVD-12	YVD-D3-160309	03/09/2016	Duplicate	59029941	95	-	36	-	2.5	-	72	-	79	-	0.50 U	-	15	-	0.20 U	-	180 J	DUP	0.10 U	-	0.25 UJ	MSD	0.25 U	-	-	-	-	-	200	-	200	-

TABLE 7
CUMULATIVE ANALYTICAL RESULTS
YAKIMA VALLEY DAIRIES / SDWA-10-2013-0080
QUARTERLY GROUNDWATER MONITORING DATA REPORT
FIRST QUARTER 2016

				Analyte	Calcium		Magnesium		Potassium		Sodium		Chloride		Fluoride		Nitrate (as N)		Nitrite (as N)		Sulfate		Ammonia (as N)		Total Kjeldahl Nitrogen (TKN)		Phosphorus		Phosphorus		Phosphorus		Alkalinity, Bicarbonate (as CaCO3)		Alkalinity, Total (as CaCO3)	
				Analytical Method	E200.7		E200.7		E200.7		E200.7		E300		E300		E300		E300		E300		E350.1		E351.2		E365.1		E365.4		SM4500-P-E		SM2320B		SM2320B	
Well ID	**Sample Name**	**Sample Date**	**Sample Type**	**Sample Group**	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code
YVD-13	YVD-13-130919	09/19/2013	Primary	SWI0138	102	-	29.9	-	4.30	-	114	-	90.3	-	5.0 U	-	27.6	-	2.0 U	-	365	-	0.10 U	-	0.395 R	FBK	-	-	0.175 R	FBK	-	-	134	-	135	-
YVD-13	YVD-13-131211	12/11/2013	Primary	SWL0073	101	-	29.4	-	4.16	-	110	-	77.8	-	5.0 U	-	21.7	-	2.0 U	-	278	-	0.02 UJ	MSD	0.20 UJ	MSD	-	-	-	-	0.110	-	139	-	140	-
YVD-13	YVD-13-140318	03/18/2014	Primary	SXC0095	102	-	29.3	-	4.27	-	106	-	80.3	-	5.0 U	-	24.2	-	2.0 U	-	312 J-	MSD	0.288	-	0.613	-	0.17	-	-	-	-	-	134	-	135	-
YVD-13	YVD-13-140603	06/03/2014	Primary	SXF0017	94.8	-	27.7	-	3.70	-	113	-	39.7	-	2.0 U	-	12.4	-	0.80 U	-	151 J-	MSD	0.103	-	0.727	-	0.078 J+	FBK	-	-	-	-	129	-	130	-
YVD-13	YVD-13-140923	09/23/2014	Primary	SXI0173	104	-	29.0	-	4.40	-	118	-	81.7	-	5.0 U	-	26.7	-	2.0 U	-	328	-	0.10 U	-	9.13 J+	MSD	0.05 U	-	-	-	-	-	124	-	125	-
YVD-13	YVD-13-141217	12/17/2014	Primary	SXL0121	114	-	33.1	-	4.74	-	119	-	86.5	-	5.0 U	-	27.3	-	2.0 U	-	355	-	0.10 U	-	0.25 UJ	MSD	0.10 U	-	-	-	-	-	124	-	125	-
YVD-13	YVD-13-150317	03/17/2015	Primary	5904541	100	-	30	-	4.0	-	120	-	72	-	5.0 U	-	24 J-	MSD	2.0 U	-	290 J-	MSD	0.10 U	-	0.25 UJ	MSD	0.25 U	-	-	-	-	-	130	-	130	-
YVD-13	YVD-13-150617	06/17/2015	Primary	59010961	110	-	30	-	4.4 J+	MSD	120 J+	MSD	81	-	5.0 U	-	27	-	2.0 U	-	310	-	0.10 U	-	0.68 J-	MSD	0.25 U	-	-	-	-	-	140	-	140	-
YVD-13	YVD-13-150924	09/24/2015	Primary	59020391	98	-	31	-	4.1	-	110	-	70	-	5.0 U	-	26 J+	MSD	2.0 U	-	330 J-	MSD	0.10 UJ	MSD	0.25 UJ	MSD	0.25 U	-	-	-	-	-	150	-	150	-
YVD-13	YVD-13-151216	12/16/2015	Primary	59025501	100	-	30	-	4.3	-	120	-	69	-	5.0 U	-	26	-	2.0 U	-	310	-	0.10 R	MSD	0.25 R	MSD	0.25 UJ	MSD	-	-	-	-	140	-	140	-
YVD-13	YVD-13-160309	03/09/2016	Primary	59029941	100	-	29	-	4.2	-	120	-	85	-	5.0 U	-	32	-	2.0 U	-	390 J	DUP	0.10 U	-	0.25 UJ	FDP, MSD	0.25 U	-	-	-	-	-	140	-	140	-
YVD-14	YVD-14-130918	09/18/2013	Primary	SWI0123	260	-	65.4	-	3.45	-	110	-	118	-	5.0 U	-	112	-	2.0 U	-	213	-	0.10 U	-	0.25 U	-	-	-	0.10 U	-	-	-	605	-	605	-
YVD-14	YVD-14-131212	12/12/2013	Primary	SWL0078	249	-	65.6	-	3.29	-	108	-	104	-	5.0 U	-	105	-	2.0 U	-	186	-	0.02 U	-	0.7957 U	ERL	-	-	-	-	0.06 U	-	544	-	545	-
YVD-14	YVD-14-140319	03/19/2014	Primary	SXC0107	248	-	64.5	-	3.37	-	102	-	108	-	5.0 U	-	101	-	2.0 U	-	190	-	0.10 U	-	0.562 J-	MSD	0.05 U	-	-	-	-	-	634	-	635	-
YVD-14	YVD-14-140604	06/04/2014	Primary	SXF0025	240	-	63.2	-	3.46	-	112	-	109	-	5.0 U	-	102	-	2.0 U	-	191	-	0.10 U	-	0.25 UJ	MSD	0.078	-	-	-	-	-	569	-	570	-
YVD-14	YVD-14-140924	09/24/2014	Primary	SXI0173	268	-	72.0	-	4.10	-	124	-	110	-	5.0 U	-	96.7	-	2.0 U	-	178	-	0.107	-	0.25 U	-	0.054 J+	FBK	-	-	-	-	554	-	555	-
YVD-14	YVD-14-141217	12/17/2014	Primary	SXL0121	252	-	70.9	-	3.83	-	113	-	110	-	5.0 U	-	96.1	-	2.0 U	-	185	-	0.10 U	-	0.25 UJ	MSD	0.10 U	-	-	-	-	-	539	-	540	-
YVD-14	YVD-14-150318	03/18/2015	Primary	5904651	260	-	70	-	3.6 J-	MSD	130	-	110	-	5.0 U	-	91	-	2.0 U	-	180	-	0.11	-	0.25 UJ	MSD	0.25 U	-	-	-	-	-	530	-	530	-
YVD-14R	YVD-14R-151216	12/16/2015	Primary	59025501	250	-	69	-	4.4	-	120	-	110	-	5.0 U	-	98	-	2.0 U	-	160	-	0.10 R	MSD	0.25 R	MSD	0.25 UJ	MSD	-	-	-	-	550	-	550	-
YVD-14R	YVD-14R-160309	03/09/2016	Primary	59029941	250	-	67	-	4.4	-	130	-	110	-	5.0 U	-	100	-	2.0 U	-	180 J	DUP	0.10 U	-	0.25 UJ	FDP, MSD	0.25 U	-	-	-	-	-	600	-	600	-
YVD-15	YVD-15-130917	09/17/2013	Primary	SWI0123	125	-	51.6	-	2.73	-	127	-	62.8	-	5.0 U	-	72.5	-	2.0 U	-	51.5	-	0.10 U	-	0.25 U	-	-	-	0.10 U	-	-	-	514	-	515	-
YVD-15	YVD-15-131212	12/12/2013	Primary	SWL0078	131	-	59.4	-	4.48	-	114	-	120	-	5.0 U	-	71.2	-	2.0 U	-	114	-	0.02 U	-	0.20 U	-	-	-	-	-	0.238	-	494	-	495	-
YVD-15	YVD-15-140319	03/19/2014	Primary	SXC0107	124	-	57.9	-	5.23	-	93.5	-	54.9	-	5.0 U	-	47.4	-	2.0 U	-	44.7	-	0.112	-	0.553 J-	MSD	0.22	-	-	-	-	-	534	-	535	-
YVD-15	YVD-15-140603	06/03/2014	Primary	SXF0025	138	-	64.7	-	5.20	-	110	-	82.5	-	5.0 U	-	88.1	-	2.0 U	-	39.0	-	0.10 U	-	0.475 J-	MSD	0.31	-	-	-	-	-	509	-	510	-
YVD-15	YVD-15-140924	09/24/2014	Primary	SXI0173	132	-	56.9	-	3.11	-	135	-	58.7	-	5.0 U	-	54.8	-	2.0 U	-	50.7	-	0.246	-	1.19 J+	MSD	0.054 J+	FBK	-	-	-	-	541	-	545	-
YVD-15	YVD-15-141217	12/17/2014	Primary	SXL0121	175	-	81.6	-	3.67	-	60.3	-	57.6	-	5.0 U	-	66.9	-	2.0 U	-	53.4	-	0.10 U	-	0.414 J-	MSD	0.17	-	-	-	-	-	518	-	520	-
YVD-15	YVD-15-150317	03/17/2015	Primary	5904651	280	-	130	-	8.4 J-	MSD	160	-	65	-	5.0 U	-	67	-	2.0 U	-	53	-	0.10 U	-	0.25 UJ	MSD	0.27	-	-	-	-	-	550	-	550	-
YVD-15	YVD-15-150617	06/17/2015	Primary	59011021	140	-	66 J	RPD	4.6 J	RPD	110 J	RPD	42	-	0.50 U	-	39 J-	MSD, HTQ	0.20 U	-	59	-	0.10 U	-	0.25 R	MSD	0.25 U	-	-	-	-	-	550	-	550	-
YVD-15	YVD-15-150925	09/25/2015	Primary	59020431	98	-	46	-	3.9	-	80	-	22	-	5.0 U	-	14	-	2.0 U	-	47	-	0.10 U	-	2.5 U	-	0.25 U	-	-	-	-	-	480	-	480	-
YVD-15	YVD-15-151215	12/15/2015	Primary	59025431	120	-	59	-	4.1	-	80	-	37	-	5.0 U	-	38	-	2.0 U	-	40	-	0.10 R	MSD	0.25 R	MSD	0.25 UJ	FDP	-	-	-	-	540 J	FDP	540 J	FDP
YVD-15	YVD-15-160309	03/09/2016	Primary	59029711	120	-	60	-	4.2	-	75	-	32	-	5.0 U	-	36	-	2.0 U	-	65 J+	MSD	0.10 UJ	FDP	0.25 R	MSD	0.25 U	-	-	-	-	-	520	-	520	-
YVD-16	YVD-16-130923	09/23/2013	Primary	SWI0178	85.0	-	32.9	-	6.16	-	81.7	-	-	-	-	-	-	-	-	-	-	-	0.10 U	-	0.375	-	-	-	0.10 U	-	-	-	189	-	190	-
YVD-16	YVD-16-130926	09/26/2013	Primary	SWI0190	-	-	-	-	-	-	-	-	44.1	-	5.0 U	-	28.8	-	2.0 U	-	140	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
YVD-16	YVD-16-131212	12/12/2013	Primary	SWL0073	87.7	-	32.1	-	5.25	-	79.8	-	46.7	-	5.0 U	-	28.8	-	2.0 U	-	163	-	0.02 UJ	MSD	0.20 UJ	MSD	-	-	-	-	0.06 U	-	309	-	310	-
YVD-16	YVD-16-140318	03/18/2014	Primary	SXC0107	105	-	53.2	-	15.0	-	75.5	-	46.1	-	5.0 U	-	23.5	-	2.0 U	-	130	-	0.10 U	-	1.01 J-	MSD	1.4	-	-	-	-	-	298	-	300	-
YVD-16	YVD-16-140603	06/03/2014	Primary	SXF0017	86.3	-	37.0	-	8.47	-	78.4	-	36.7	-	2.0 U	-	21.9	-	0.80 U	-	131 J-	MSD	0.10 U	-	0.741	-	0.83	-	-	-	-	-	287	-	288	-
YVD-16	YVD-16-140923	09/23/2014	Primary	SXI0173	99.2	-	38.9	-	7.48	-	94.1	-	38.0	-	2.5 U	-	21.4	-	1.0 U	-	114	-	0.10 U	-	0.747 J+	MSD	0.22	-	-	-	-	-	303	-	305	-
YVD-16	YVD-16-141217	12/17/2014	Primary	SXL0121	94.9	-	37.1	-	6.77	-	83.7	-	37.9	-	2.5 U	-	20.6	-	1.0 U	-	118	-	0.10 U	-	0.25 UJ	MSD	0.25 J	FDP	-	-	-	-	298	-	300	-
YVD-16	YVD-D3-141217	12/17/2014	Duplicate	SXL0121	92.9	-	36.2	-	6.27	-	81.7	-	39.9	-	0.50 U	-	22.4	-	0.20 U	-	130	-	0.10 U	-	0.29 J-	MSD	0.10 J	FDP	-	-	-	-	308	-	310	-
YVD-16	YVD-16-150317	03/17/2015	Primary	5904651	93	-	34	-	6.1 J-	MSD	87	-	39	-	2.5 U	-	22	-	1.0 U	-	120	-	0.11	-	0.29 J-	MSD	0.25 U	-	-	-	-	-	310	-	310	-
YVD-16	YVD-16-150616	06/16/2015	Primary	59010961	96	-	35	-	6.2 J+	MSD	91 J+	MSD	43	-	2.5 U	-	23	-	1.0 U	-	120	-	0.10	-	0.25 UJ	MSD	0.25 U	-	-	-	-	-	310	-	310	-
YVD-16	YVD-16-150923	09/23/2015	Primary	59020281	88	-	37	-	6.5	-	85	-	39	-	2.5 U	-	23	-	1.0 U	-	130	-	0.10 U	-	0.25 R	MSD	0.25 U	-	-	-	-	-	330	-	330	-
YVD-16	YVD-16-151215	12/15/2015	Primary	59025431	89	-	34	-	5.7	-	85	-	38	-	2.5 U	-	22	-	1.0 U	-	120	-	0.10 R	MSD	0.25 R	MSD	0.25 UJ	FDP	-	-	-	-	350 J	FDP	350 J	FDP
YVD-16	YVD-16-160309	03/09/2016	Primary	59029711	90	-	36	-	7.4	-	86	-	39	-	2.5 U	-	23	-	1.0 U	-	130 J+	MSD	0.15 J	FDP	0.25 R	MSD	0.27	-	-	-	-	-	300	-	300	-

TABLE 7
CUMULATIVE ANALYTICAL RESULTS
YAKIMA VALLEY DAIRIES / SDWA-10-2013-0080
QUARTERLY GROUNDWATER MONITORING DATA REPORT
FIRST QUARTER 2016

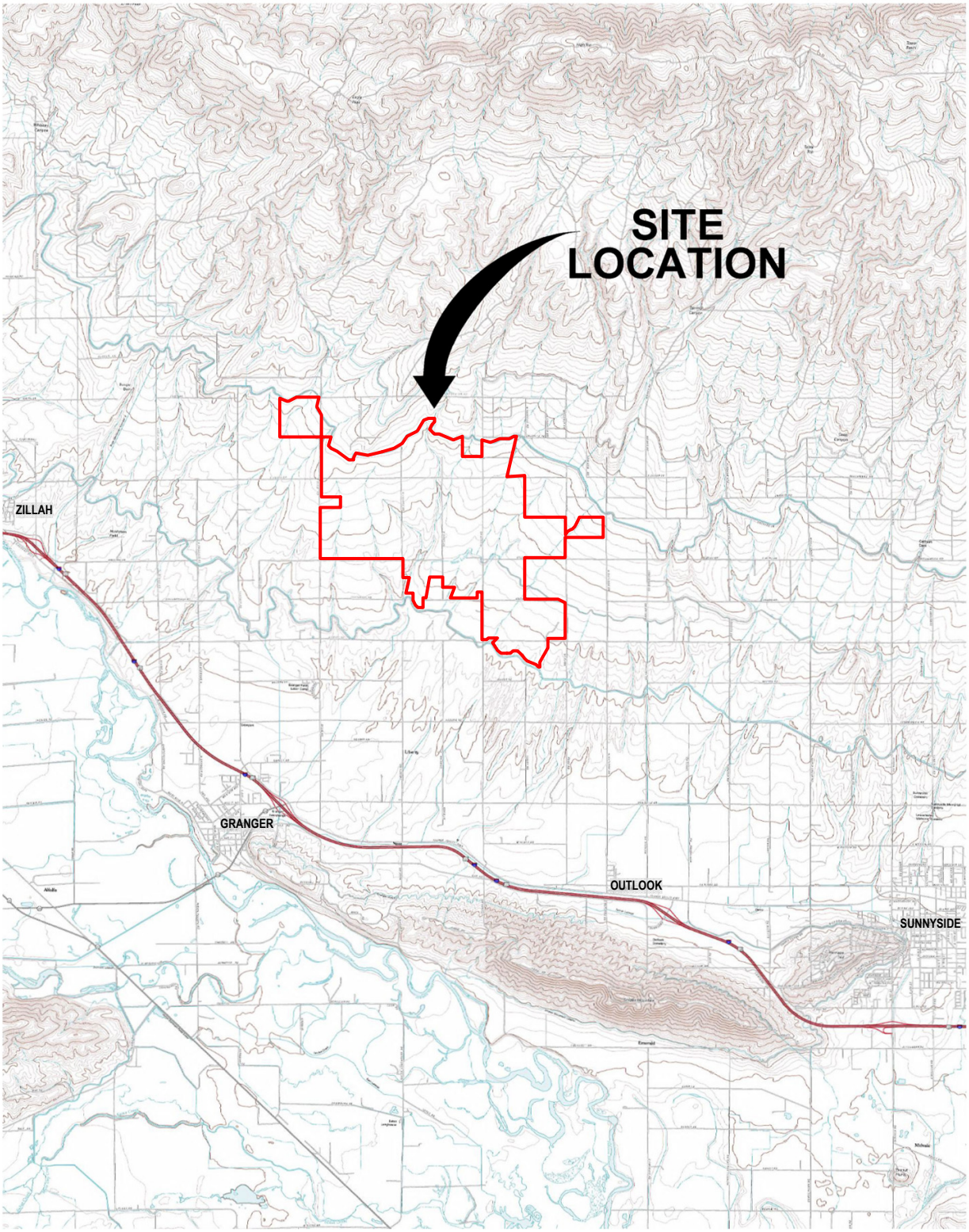
				Analyte	Calcium		Magnesium		Potassium		Sodium		Chloride		Fluoride		Nitrate (as N)		Nitrite (as N)		Sulfate		Ammonia (as N)		Total Kjeldahl Nitrogen (TKN)		Phosphorus		Phosphorus		Phosphorus		Alkalinity, Bicarbonate (as CaCO3)		Alkalinity, Total (as CaCO3)	
				Analytical Method	E200.7		E200.7		E200.7		E200.7		E300		E300		E300		E300		E300		E350.1		E351.2		E365.1		E365.4		SM4500-P-E		SM2320B		SM2320B	
Well ID	Sample Name	Sample Date	Sample Type	Sample Group	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code	Result, Qualifier	Validation Code
YVD-17	YVD-17-130919	09/19/2013	Primary	SWI0142	**72.7**	-	**35.8**	-	**8.32**	-	**12.2**	-	**3.10**	-	0.50 U	-	-	-	-	-	**6.48**	-	0.10 U	-	2.5 U	-	-	-	**3.64**	-	-	-	**213**	-	**215**	-
YVD-17	YVD-17-130924	09/24/2013	Primary	SWI0175	-	-	-	-	-	-	-	-	-	-	-	-	**0.800**	-	0.20 U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
YVD-17	YVD-17-131210	12/10/2013	Primary	SWL0055	**54.2**	-	**28.4**	-	**5.25**	-	**7.89**	-	**2.98**	-	0.50 U	-	**0.680**	-	0.20 U	-	**6.64**	-	0.02 UJ	MSD	0.29 R	FBK, MSD	-	-	-	-	**1.61**	-	**169**	-	**170**	-
YVD-17	YVD-17-140316	03/16/2014	Primary	SXC0081	**36.0**	-	**17.6**	-	**1.73**	-	**6.09**	-	**3.45**	-	**0.650**	-	**1.07**	-	0.20 U	-	**6.42**	-	**0.166**	-	0.25 U	-	**0.30**	-	-	-	-	-	**144**	-	**145**	-
YVD-17	YVD-17-140601	06/01/2014	Primary	SXF0008	**42.3**	-	**18.5**	-	**2.22**	-	**8.71**	-	**3.17**	-	0.50 U	-	**0.670**	-	0.20 U	-	**5.74**	-	0.10 U	-	**0.287**	-	**0.52**	-	-	-	-	-	**169**	-	**170**	-
YVD-17	YVD-17-140922	09/22/2014	Primary	SXI0148	**47.5**	-	**21.2**	-	**2.91**	-	**9.92**	-	**2.87**	-	0.50 U	-	**0.96**	-	0.20 U	-	**5.08**	-	0.10 U	-	**0.293**	-	**0.36**	-	-	-	-	-	**183**	-	**185**	-
YVD-17	YVD-17-141215	12/15/2014	Primary	SXL0103	**42.1**	-	**17.8**	-	**1.84**	-	**9.15**	-	**2.99 J+**	MSD	0.50 U	-	**0.660 J**	DUP	0.20 U	-	**6.01 J+**	MSD, DUP	0.10 U	-	0.25 U	-	**0.19**	-	-	-	-	-	**168**	-	**170**	-
YVD-17	YVD-17-150316	03/16/2015	Primary	5904471	**33**	-	**17**	-	**1.4**	-	**6.3**	-	**3.5**	-	**0.50**	-	**1.1**	-	0.20 U	-	**5.7**	-	0.10 U	-	0.25 UJ	MSD	0.25 UJ	MSD	-	-	-	-	**130**	-	**130**	-
YVD-17	YVD-D1-150316	03/16/2015	Duplicate	5904471	**33**	-	**17**	-	**1.5**	-	**6.2**	-	**3.5**	-	**0.51**	-	**1.2**	-	0.20 U	-	**5.7**	-	0.10 U	-	0.25 UJ	MSD	0.25 UJ	MSD	-	-	-	-	**130**	-	**130**	-
YVD-17	YVD-17-150617	06/17/2015	Primary	59010961	**41**	-	**18**	-	**1.8 J+**	MSD	**8.7 J+**	MSD	**3.0**	-	0.50 U	-	**0.59**	-	0.20 U	-	**5.4**	-	0.10 U	-	0.25 UJ	MSD	**0.25**	-	-	-	-	-	**160**	-	**160**	-
YVD-17	YVD-17-150924	09/24/2015	Primary	59020391	**40**	-	**18**	-	**2.0**	-	**9.0**	-	**3.1**	-	**0.60**	-	0.20 U	-	**1.2**	-	**5.6 J-**	MSD	0.10 UJ	MSD	0.25 UJ	MSD	**0.26**	-	-	-	-	-	**170**	-	**170**	-
YVD-17	YVD-17-151216	12/16/2015	Primary	59025501	**38**	-	**17**	-	**1.4**	-	**8.0**	-	**2.6**	-	0.50 U	-	**0.55**	-	0.20 U	-	**5.4**	-	0.10 R	MSD	0.25 R	MSD	0.25 UJ	MSD	-	-	-	-	**180**	-	**180**	-
YVD-17	YVD-17-160310	03/10/2016	Primary	59029941	**35**	-	**16**	-	**1.2**	-	**6.4**	-	**2.8**	-	0.50 U	-	**0.32**	-	0.20 U	-	**4.8 J**	DUP	0.10 U	-	0.25 UJ	FDP	0.25 U	-	-	-	-	-	**150**	-	**150**	-
YVD-18	YVD-18-130919	09/19/2013	Primary	SWI0142	**42.9**	-	**13.7**	-	**3.22**	-	**78.3**	-	**61.4**	-	5.0 U	-	-	-	-	-	**122**	-	0.10 U	-	0.456 R	FBK	-	-	0.10 U	-	-	-	**119**	-	**120**	-
YVD-18	YVD-18-130925	09/25/2013	Primary	SWI0175	-	-	-	-	-	-	-	-	-	-	-	-	**13.6**	-	2.0 U	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
YVD-18	YVD-18-131211	12/11/2013	Primary	SWL0073	**50.4**	-	**17.1**	-	**3.02**	-	**71.3**	-	**62.9**	-	5.0 U	-	**14.2 J**	FDP	2.0 U	-	**116**	-	0.02 UJ	MSD	1.5 UJ	MSD	-	-	-	-	0.06 U	-	**109**	-	**110**	-
YVD-18	YVD-D2-131211	12/11/2013	Duplicate	SWL0073	**50.2**	-	**16.7**	-	**3.06**	-	**70.9**	-	**66.5**	-	5.0 U	-	**23.5 J**	FDP	2.0 U	-	**129**	-	0.02 UJ	MSD	0.20 UJ	MSD	-	-	-	-	0.06 U	-	**114**	-	**115**	-
YVD-18	YVD-18-140318	03/18/2014	Primary	SXC0095	**51.7**	-	**16.5**	-	**3.30**	-	**77.5**	-	**66.7**	-	5.0 U	-	**18.8**	-	2.0 U	-	**147 J-**	MSD	**0.134 J**	FDP	**0.358**	-	**0.068**	-	-	-	-	-	**119**	-	**120**	-
YVD-18	YVD-D2-140318	03/18/2014	Duplicate	SXC0095	**52.0**	-	**16.6**	-	**3.26**	-	**78.0**	-	**62.1**	-	5.0 U	-	**17.1**	-	2.0 U	-	**140 J-**	MSD	**0.28 J**	FDP	**0.342**	-	**0.082**	-	-	-	-	-	**124**	-	**125**	-
YVD-18	YVD-18-140603	06/03/2014	Primary	SXF0017	**46.8**	-	**15.4**	-	**3.24**	-	**77.7**	-	**64.0**	-	2.0 U	-	**16.9**	-	0.80 U	-	**135 J-**	MSD	0.10 U	-	**0.796**	-	**0.071 J+**	FBK	-	-	-	-	**117**	-	**118**	-
YVD-18	YVD-18-140923	09/23/2014	Primary	SXI0173	**48.5**	-	**15.6**	-	**3.80**	-	**81.6**	-	**54.7**	-	2.5 U	-	**13.8**	-	1.0 U	-	**111**	-	0.10 U	-	**0.335 J+**	MSD	**0.086**	-	-	-	-	-	**114**	-	**115**	-
YVD-18	YVD-18-141216	12/16/2014	Primary	SXL0121	**52.7**	-	**17.7**	-	**3.63**	-	**81.8**	-	**59.6**	-	2.5 U	-	**16.5**	-	1.0 U	-	**131**	-	0.10 U	-	0.25 UJ	MSD	0.10 U	-	-	-	-	-	**114**	-	**115**	-
YVD-18	YVD-18-150317	03/17/2015	Primary	5904541	**56**	-	**19**	-	**3.5**	-	**87**	-	**64**	-	2.5 U	-	**20 J-**	MSD	1.0 U	-	**140 J-**	MSD	0.10 U	-	0.25 UJ	MSD	0.25 U	-	-	-	-	-	**110**	-	**110**	-
YVD-18	YVD-18-150617	06/17/2015	Primary	59010961	**55**	-	**18**	-	**4.1 J+**	MSD	**86 J+**	MSD	**65**	-	2.5 U	-	**17**	-	1.0 U	-	**120**	-	0.10 U	-	0.25 UJ	MSD	0.25 U	-	-	-	-	-	**110**	-	**110**	-
YVD-18	YVD-18-150924	09/24/2015	Primary	59020391	**52**	-	**19**	-	**3.5**	-	**77**	-	**63**	-	2.5 U	-	**20 J+**	MSD	1.0 U	-	**140 J-**	MSD	0.10 UJ	MSD	0.25 UJ	MSD	0.25 U	-	-	-	-	-	**120**	-	**120**	-
YVD-18	YVD-18-151216	12/16/2015	Primary	59025501	**60**	-	**20**	-	**4.0**	-	**91**	-	**66**	-	2.5 U	-	**23**	-	1.0 U	-	**150**	-	0.10 R	MSD	0.25 R	MSD	0.25 UJ	MSD	-	-	-	-	**120**	-	**120**	-
YVD-18	YVD-18-160309	03/09/2016	Primary	59029941	**62**	-	**21**	-	**3.8**	-	**89**	-	**63**	-	2.5 U	-	**22**	-	1.0 U	-	**150 J**	DUP	0.10 U	-	0.25 UJ	FDP, MSD	0.25 U	-	-	-	-	-	**120**	-	**120**	-

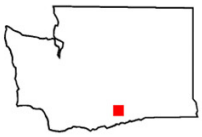
TABLE 7
CUMULATIVE ANALYTICAL RESULTS
YAKIMA VALLEY DAIRIES / SDWA-10-2013-0080
QUARTERLY GROUNDWATER MONITORING DATA REPORT
FIRST QUARTER 2016

Notes:

1. **Bold** = detected result
2. Results reported in milligrams per liter (mg/L).
3. No samples were filtered in the field.
4. (as N) = reported as Nitrogen
5. (as CaCO3) = reported as calcium carbonate
6. U = The compound was analyzed for but not detected. The associated value is the compound reporting limit. Or the compound is considered non-detect at the listed value due to associated blank contamination.
7. UJ = The compound was not detected above the reported sample reporting limit; however, the reporting limit is approximate and may or may not represent the actual limit of quantitation.
8. R = The sample results are rejected as unusable. The compound may or may not be present in the sample.
9. J = The compound was positively identified; however, the associated numerical value is an estimated concentration.
10. J- = The result is an estimated quantity, but the result may be biased low.
11. J+ = The result is an estimated quantity, but the result may be biased high.
12. DUP = Laboratory duplicate RPD was outside acceptance limits.
13. ERL = Elevated reporting limit
14. FBK, MBK = Field or method blank contamination.
15. FDP = Field Duplicate RPD exceedance.
16. HTQ = Holding time violation.
17. MSD = MS/MSD percent recoveries or RPD was outside acceptance limits.
18. RPD = Relative Percentage Difference was outside acceptance limits.

FIGURES





0 10,000' 20,000'

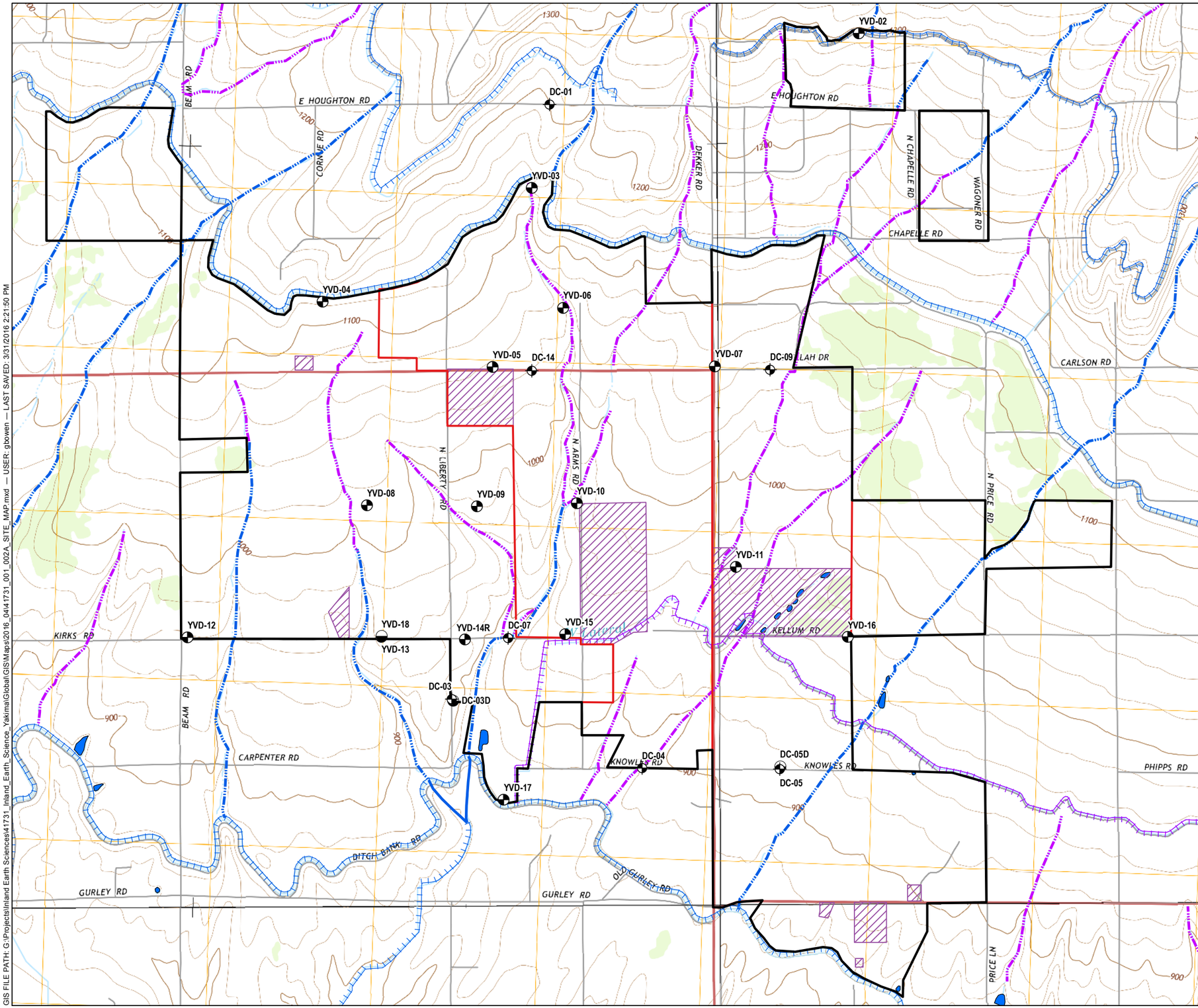
GRAPHIC SCALE

YAKIMA VALLEY DAIRIES
SDWA-10-2013-0080
QUARTERLY GROUNDWATER MONITORING DATA REPORT

SITE VICINITY MAP

INLAND EARTH SCIENCES

FIGURE
1



LEGEND

- EPA SHALLOW SURFICIAL AQUIFER MONITORING WELL
- YVD SHALLOW SURFICIAL AQUIFER MONITORING WELL
- YVD DEEP SURFICIAL AQUIFER MONITORING WELL
- APPROXIMATE BOUNDARY OF DAIRY FACILITIES
- RESPONDENTS OWNERSHIP BOUNDARY
- LAND WITHIN BOUNDARY NOT OWNED OR OPERATED BY RESPONDENTS

CURRENT SURFACE FLOW REGIMES

- LAKE OR POND
- PERENNIAL STREAM
- INTERMITTENT STREAM
- CANAL OR DITCH

HISTORICAL SURFACE FLOW REGIMES

- INTERMITTENT STREAM
- CANAL OR DITCH

NOTE

SOURCES INCLUDE BUT ARE NOT LIMITED TO: YAKIMA COUNTY GIS DEPT., ROZA IRRIGATION DISTRICT, SUNNYSIDE VALLEY IRRIGATION DISTRICT, USGS (2013).

N

0 2,000 4,000
SCALE IN FEET

INLAND EARTH SCIENCES

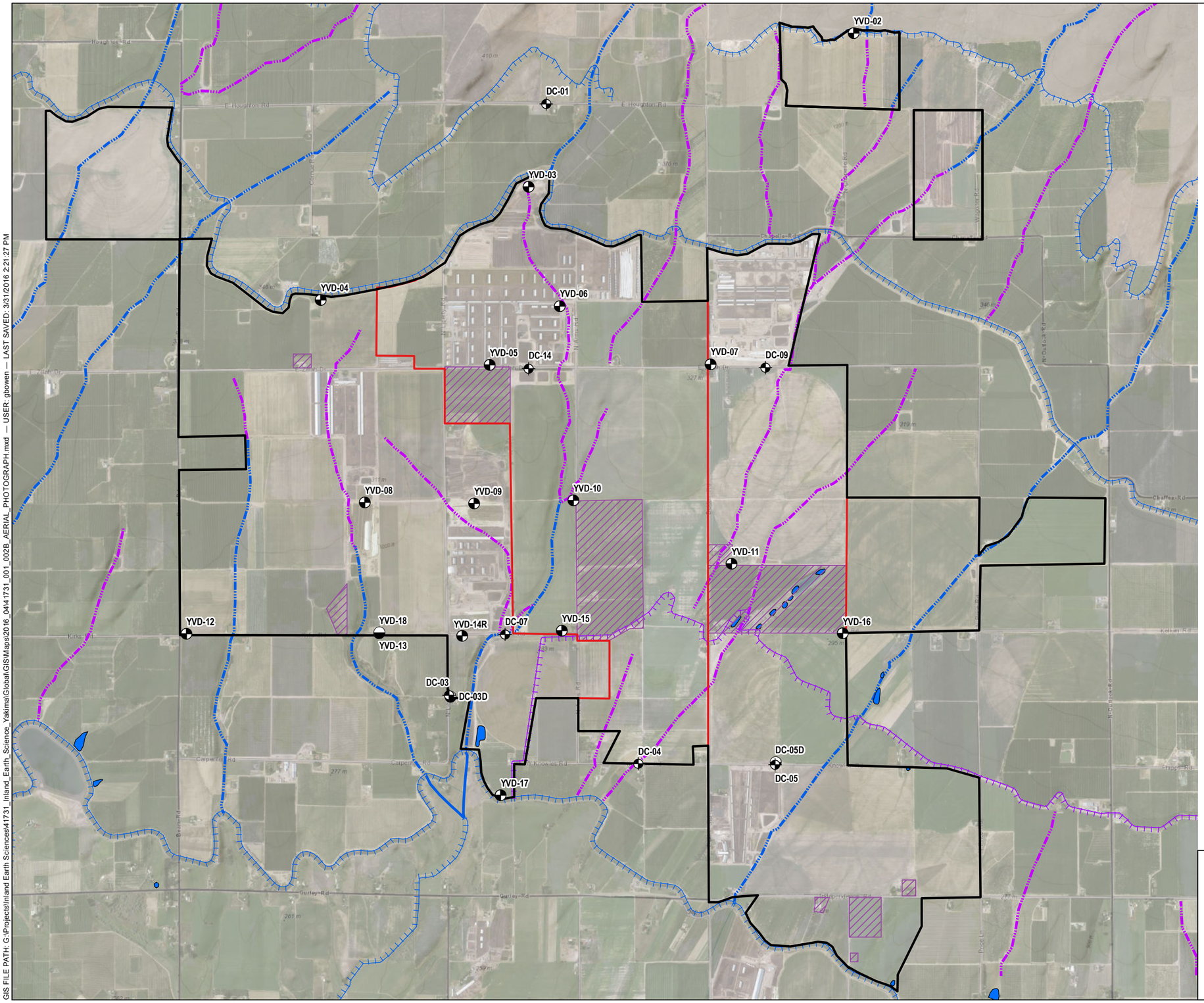
QUARTERLY GROUNDWATER MONITORING DATA REPORT
ADMINISTRATIVE ORDER ON CONSENT
YAKIMA VALLEY DAIRIES / SDWA-10-2013-0080
OUTLOOK, WASHINGTON

SITE MAP

MARCH 2016

FIGURE 2A

GIS FILE PATH: G:\Projects\Inland Earth Sciences\41731_Inland_Earth_Science_Yakima\Global\GIS\Maps\2016_04\41731_001_002A_SITE_MAP.mxd — USER: gbowen — LAST SAVED: 3/31/2016 2:21:50 PM



LEGEND

- EPA SHALLOW SURFICIAL AQUIFER MONITORING WELL
- YVD SHALLOW SURFICIAL AQUIFER MONITORING WELL
- YVD DEEP SURFICIAL AQUIFER MONITORING WELL
- APPROXIMATE BOUNDARY OF DAIRY FACILITIES
- RESPONDENTS OWNERSHIP BOUNDARY
- LAND WITHIN BOUNDARY NOT OWNED OR OPERATED BY RESPONDENTS

CURRENT SURFACE FLOW REGIMES

- LAKE OR POND
- PERENNIAL STREAM
- INTERMITTENT STREAM
- CANAL OR DITCH

HISTORICAL SURFACE FLOW REGIMES

- INTERMITTENT STREAM
- CANAL OR DITCH

NOTES

1. SOURCES INCLUDE BUT ARE NOT LIMITED TO: YAKIMA COUNTY GIS DEPT., ROZA IRRIGATION DISTRICT, SUNNYSIDE VALLEY IRRIGATION DISTRICT, USGS.

2. AERIAL IMAGERY AND BASE MAP SOURCE: ESRI, 2013

N

0 2,000 4,000

SCALE IN FEET

INLAND EARTH SCIENCES

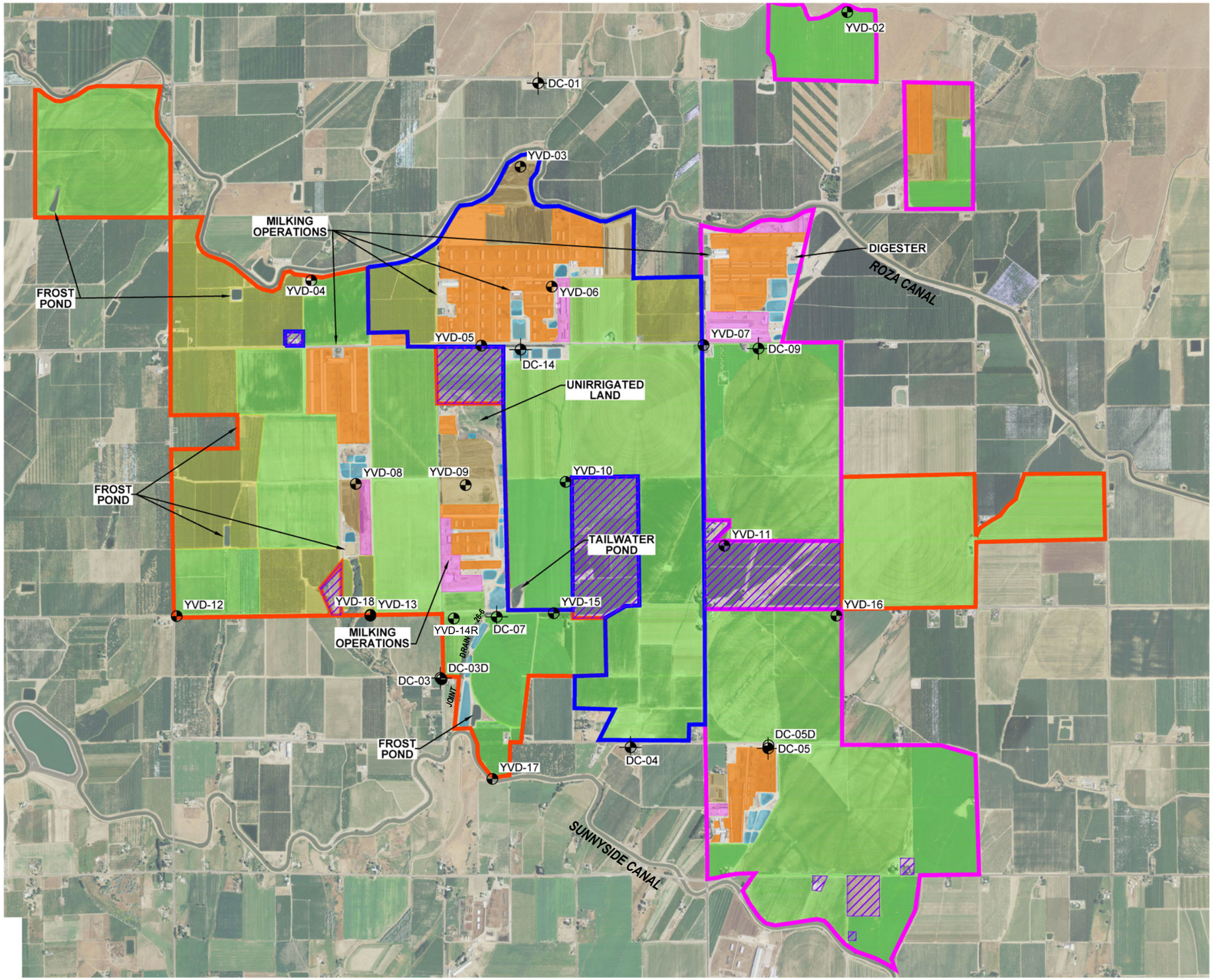
QUARTERLY GROUNDWATER MONITORING DATA REPORT
ADMINISTRATIVE ORDER ON CONSENT
YAKIMA VALLEY DAIRIES / SDWA-10-2013-0080
OUTLOOK, WASHINGTON

AERIAL PHOTOGRAPH

MARCH 2016

FIGURE 2B

GIS FILE PATH: G:\Projects\Inland Earth Sciences\41731_Inland_Earth_Science_Yakima\Global\GIS\Maps\2016_04\41731_001_002B_AERIAL_PHOTOGRAPH.mxd — USER: gbowen — LAST SAVED: 3/31/2016 2:21:27 PM



SOURCE: WASHINGTON 2011 NAIP ORTHO-IMAGERY-18 INCH DATA, WASHINGTON STATE ORTHOIMAGE PORTAL [HTTP://GEOGRAPHY.WA.GOV/ORTHO]

LEGEND:

- DC-01 — EPA SHALLOW SURFICIAL AQUIFER MONITORING WELL
- YVD-10 — YVD SHALLOW SURFICIAL AQUIFER MONITORING WELL
- DC-03D — YVD DEEP SURFICIAL AQUIFER MONITORING WELL
- APPROXIMATE BOUNDARY OF DAIRY FACILITIES
- RESPONDENTS OWNERSHIP BOUNDARIES
- LAND WITHIN BOUNDARY NOT OWNED OR OPERATED BY RESPONDENTS
- LAGOONS
- IRRIGATED CROPLAND/ORCHARDS
- APPLICATION FIELDS
- MANURE STORAGE
- UNLINED CORRALS
- SILAGE STORAGE
- COW PALACE OWNED PROPERTY
- GEORGE DERUYTER & SON OWNED PROPERTY
- BOSMA OWNED PROPERTY

NOTE:
ALL LANDS UNDER AGRICULTURAL USE ARE IRRIGATED AND FERTILIZED.

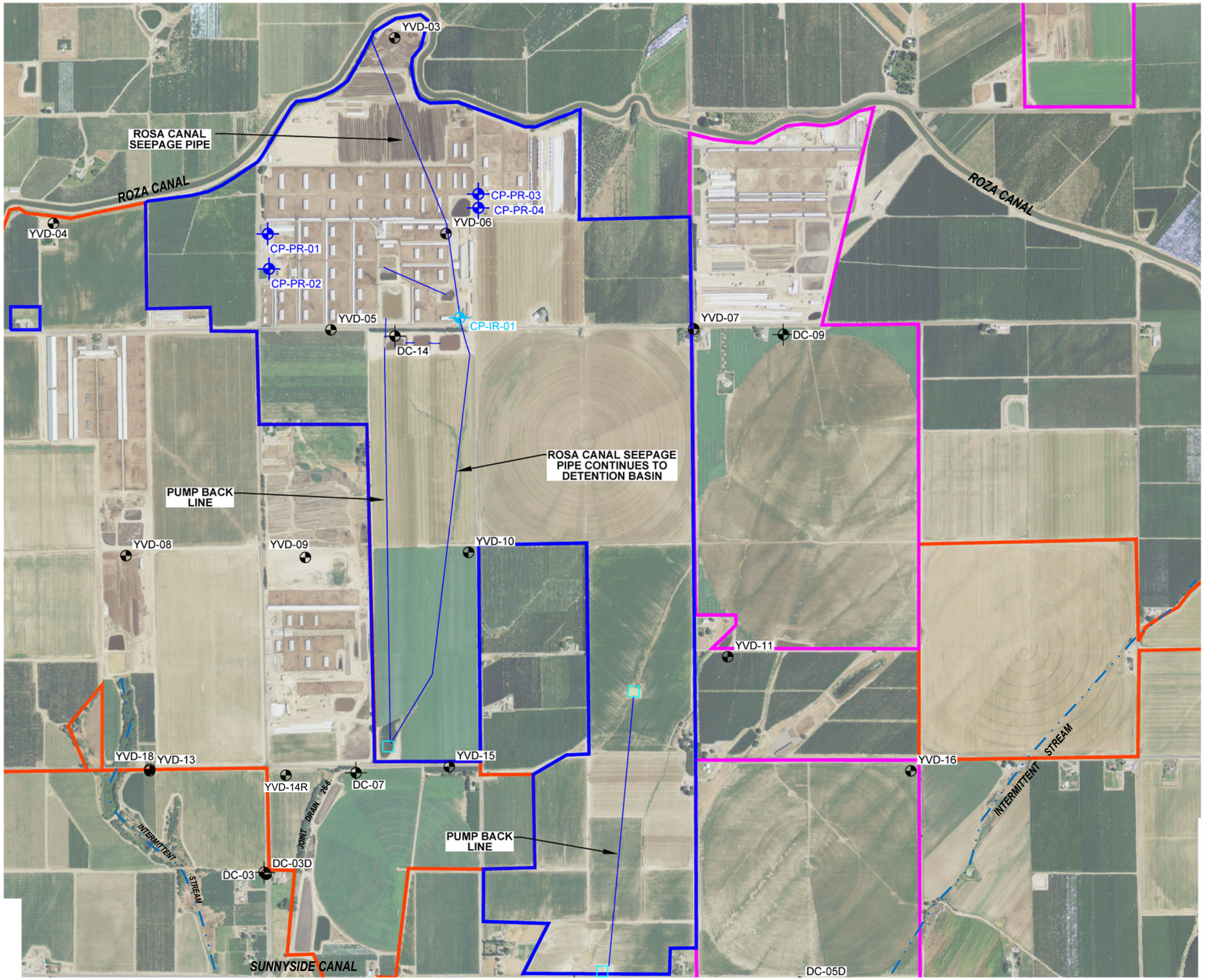
0 2000' 4000'
GRAPHIC SCALE

YAKIMA VALLEY DAIRIES
SDWA-10-2013-0080
QUARTERLY GROUNDWATER MONITORING DATA REPORT

GENERAL FACILITY PLAN

INLAND EARTH SCIENCES

FIGURE
3A



SOURCE: WASHINGTON 2011 NAIP ORTHO-IMAGERY-18 INCH DATA, WASHINGTON STATE ORTHOIMAGE PORTAL [HTTP://GEOGRAPHY.WA.GOV/ORTHO]

LEGEND:

- DC-01 — EPA SHALLOW SURFICIAL AQUIFER MONITORING WELL
- YVD-10 — YVD SHALLOW SURFICIAL AQUIFER MONITORING WELL
- DC-03D — YVD DEEP SURFICIAL AQUIFER MONITORING WELL
- PRODUCTION WELL
- IRRIGATION WELL
- DETENTION BASIN
- COW PALACE OWNED PROPERTY
- GEORGE DERUYTER & SON OWNED PROPERTY
- BOSMA OWNED PROPERTY

NOTE:
ALL LANDS UNDER AGRICULTURAL USE ARE IRRIGATED AND FERTILIZED.

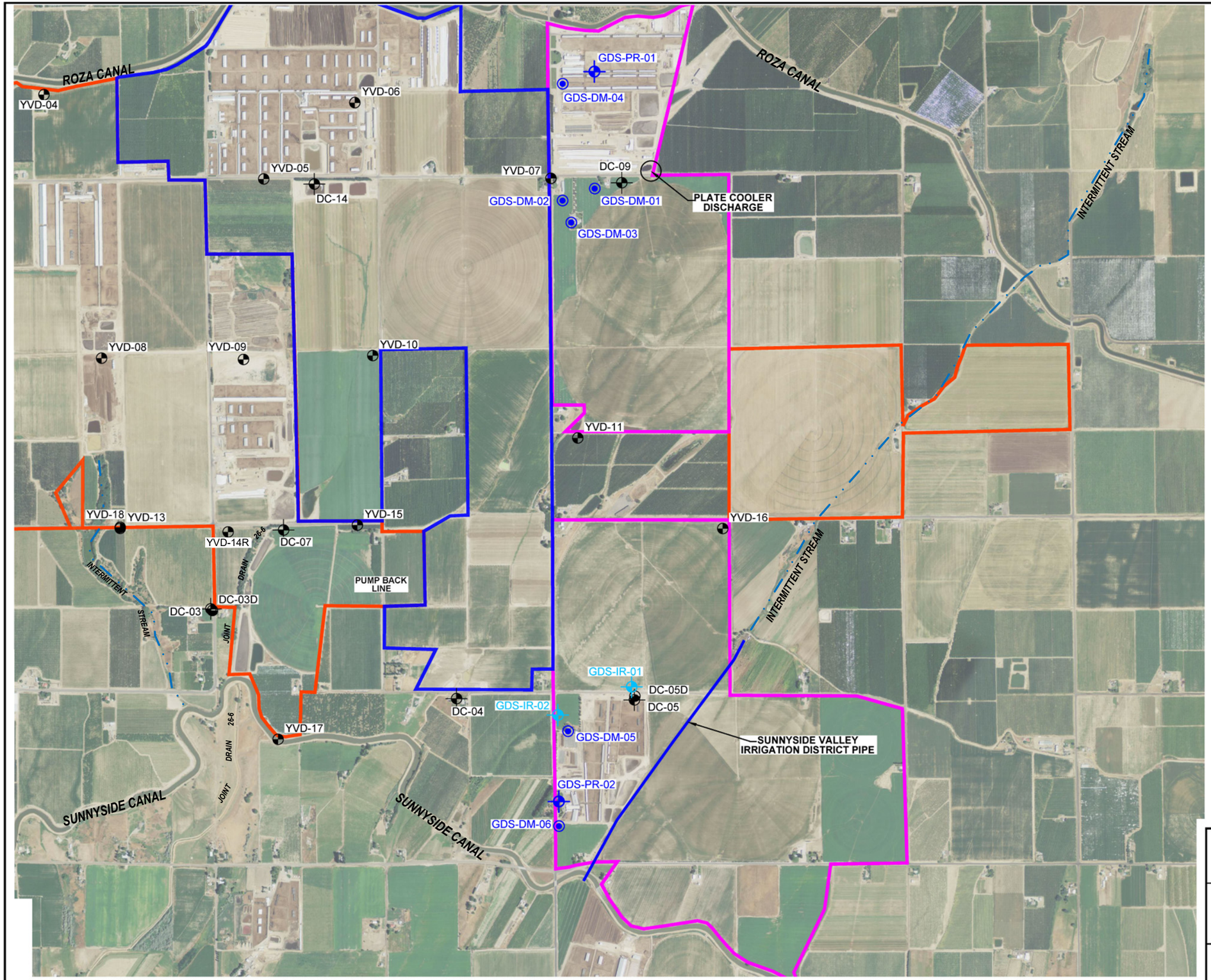
0 1200' 2400'
GRAPHIC SCALE

YAKIMA VALLEY DAIRIES
SDWA-10-2013-0080
QUARTERLY GROUNDWATER MONITORING DATA REPORT

FACILITY PLAN
COW PALACE DAIRY

INLAND EARTH SCIENCES

FIGURE
3B



SOURCE: WASHINGTON 2011 NAIP ORTHO-IMAGERY-18 INCH DATA, WASHINGTON STATE ORTHOIMAGE PORTAL [HTTP://GEOGRAPHY.WA.GOV/ORTHO]

LEGEND:

- DC-01 — EPA SHALLOW SURFICIAL AQUIFER MONITORING WELL
- YVD-10 — YVD SHALLOW SURFICIAL AQUIFER MONITORING WELL
- DC-03D — YVD DEEP SURFICIAL AQUIFER MONITORING WELL
- PRODUCTION WELL
- IRRIGATION WELL
- DOMESTIC WELL
- COW PALACE OWNED PROPERTY
- GEORGE DERUYTER & SON OWNED PROPERTY
- BOSMA OWNED PROPERTY

NOTE:
ALL LANDS UNDER AGRICULTURAL USE ARE IRRIGATED AND FERTILIZED.

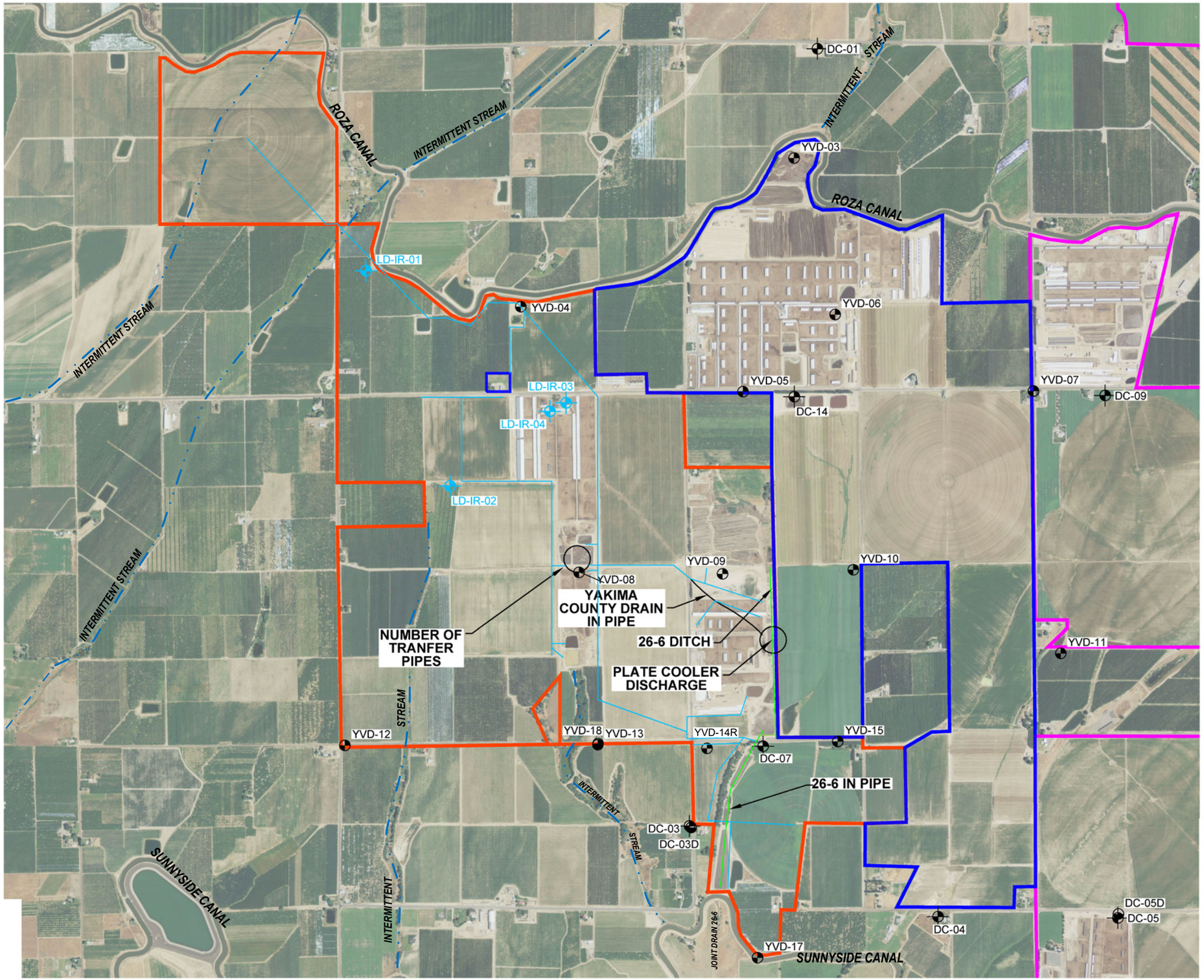
0 1500' 3000'
GRAPHIC SCALE

YAKIMA VALLEY DAIRIES
SDWA-10-2013-0080
QUARTERLY GROUNDWATER MONITORING DATA REPORT

FACILITY PLAN
GEO. DERUYTER & SON AND D&A DAIRIES

INLAND EARTH SCIENCES

FIGURE
3C



SOURCE: WASHINGTON 2011 NAIP ORTHO-IMAGERY-18 INCH DATA, WASHINGTON STATE ORTHOIMAGE PORTAL [HTTP://GEOGRAPHY.WA.GOV/ORTHO]

LEGEND:

- DC-01 — EPA SHALLOW SURFICIAL AQUIFER MONITORING WELL
- YVD-10 — YVD SHALLOW SURFICIAL AQUIFER MONITORING WELL
- DC-03D — YVD DEEP SURFICIAL AQUIFER MONITORING WELL
- PRODUCTION WELL
- IRRIGATION WELL
- DOMESTIC WELL
- DETENTION BASIN
- COW PALACE OWNED PROPERTY
- GEORGE DERUYTER & SON OWNED PROPERTY
- BOSMA OWNED PROPERTY
- IRRIGATION WATER SUPPLY PIPING
- 26–6 DITCH AND 26–6 IN PIPE

NOTE:

ALL LANDS UNDER AGRICULTURAL USE ARE IRRIGATED AND FERTILIZED.

0 1500' 3000'

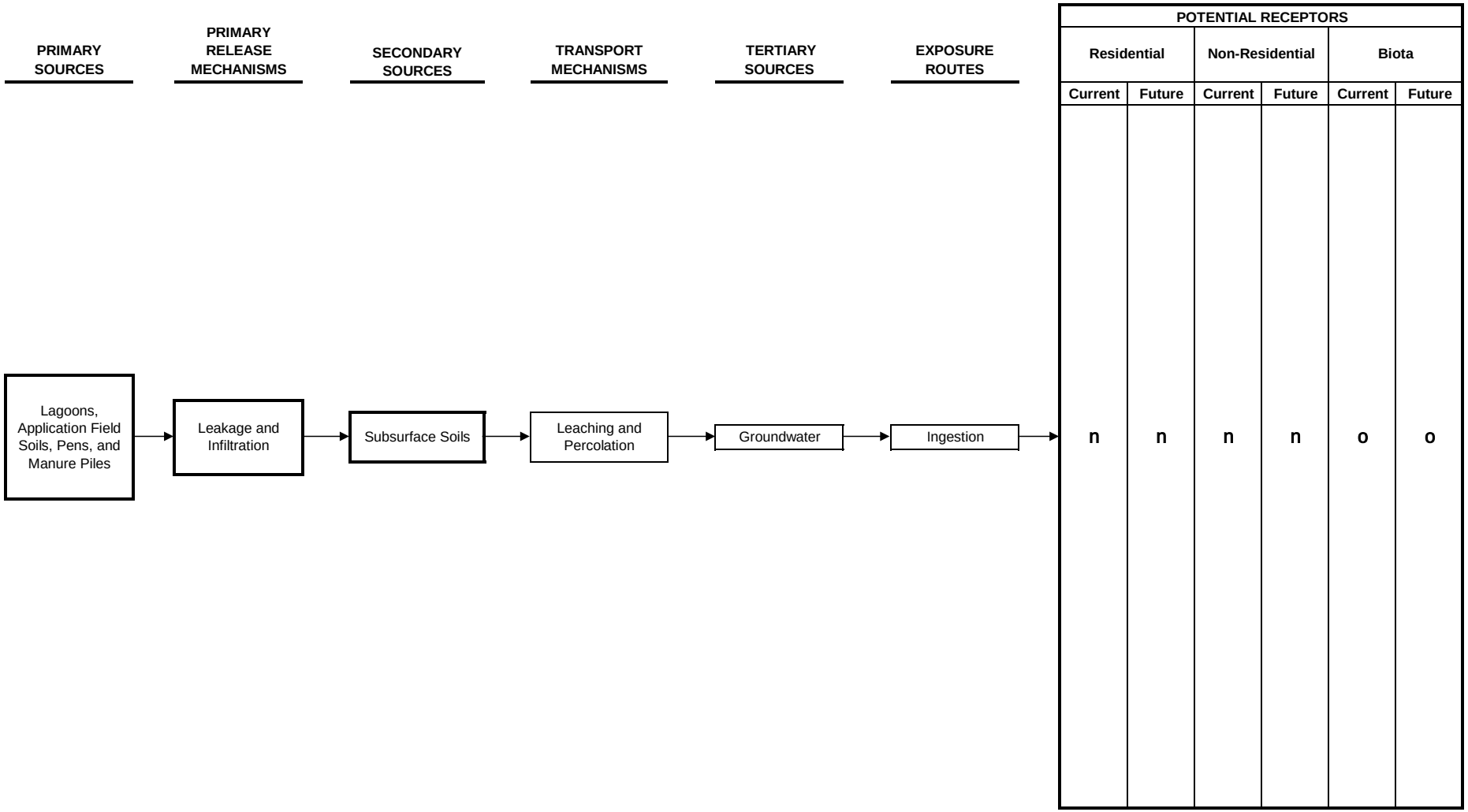
GRAPHIC SCALE

YAKIMA VALLEY DAIRIES
SDWA-10-2013-0080
QUARTERLY GROUNDWATER MONITORING DATA REPORT

FACILITY PLAN
LIBERTY AND H&S BOSMA DAIRIES

INLAND EARTH SCIENCES

FIGURE
3D



Notes:

n This route is a primary source of exposure.

o There is no known exposure by this route.

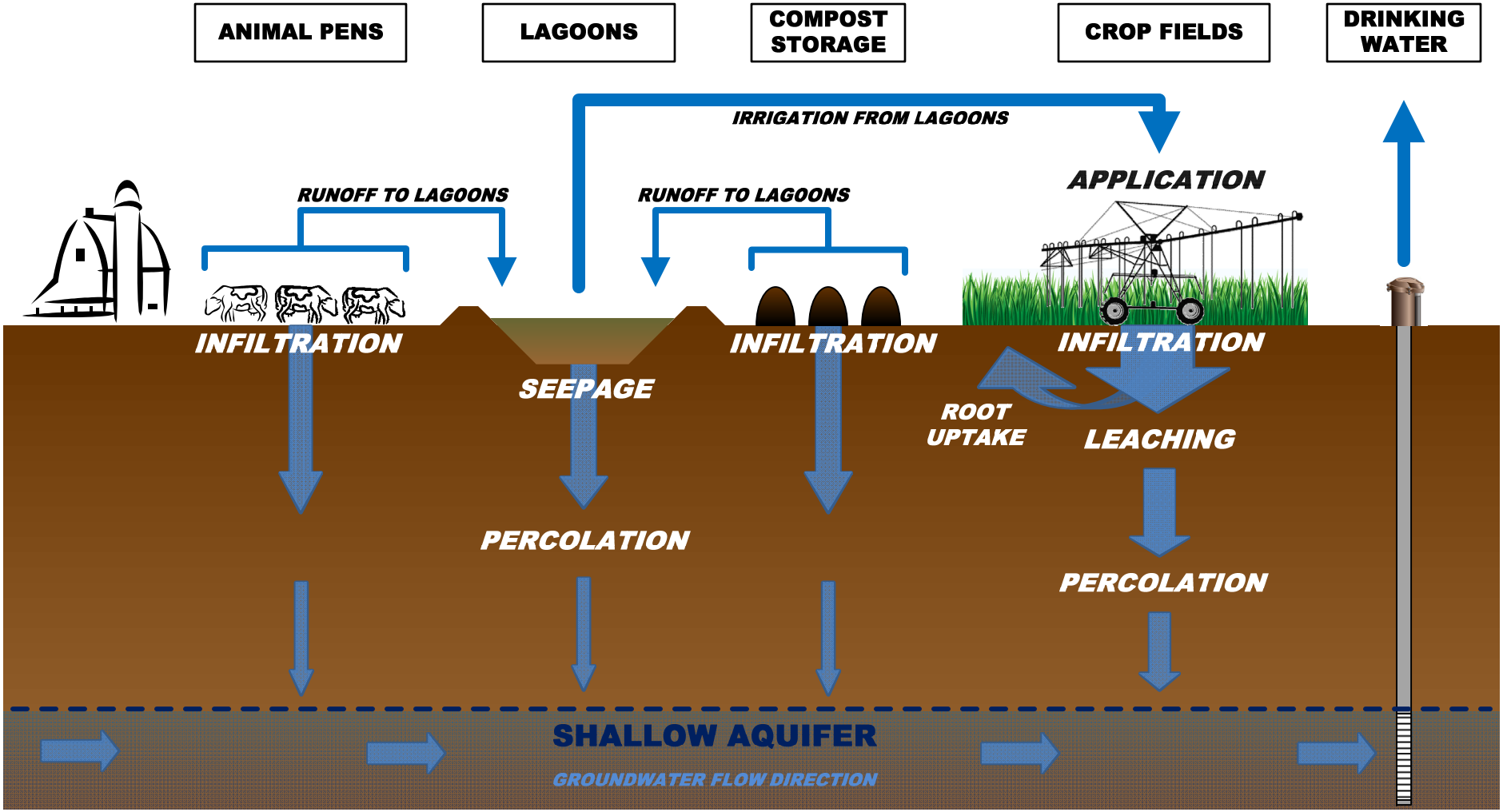
YAKIMA VALLEY DAIRIES
SDWA-10-2013-0080
QUARTERLY GROUNDWATER MONITORING REPORT

CONCEPTUAL SITE MODEL FLOW CHART

ARCADIS

FIGURE
4

The information included on this graphic representation has been compiled from a variety of sources and is subject to change without notice. ARCADIS makes no representations or warranties, express or implied, as to accuracy, completeness, timeliness, or rights to the use of such information. This document is not intended for use as a land survey product nor is it designed or intended as a construction design document. The use or misuse of the information contained on this graphic representation is at the sole risk of the party using or misusing the information.



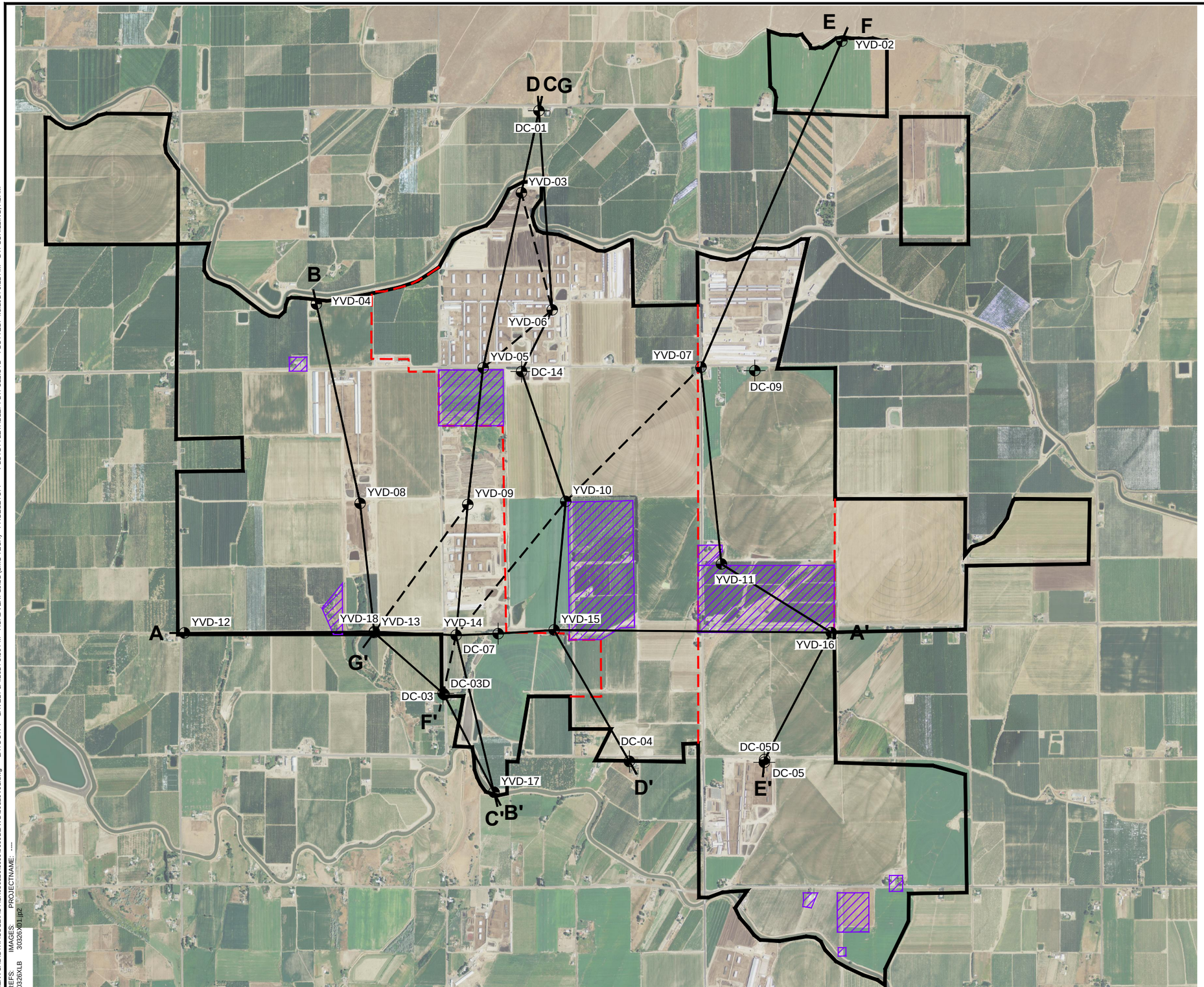
REPRESENTATION ONLY – NOT TO SCALE

YAKIMA VALLEY DAIRIES
SDWA-10-2013-0080
QUARERLY GROUNDWATER MONITORING REPORT

CONCEPTUAL SITE MODEL

ARCADIS

FIGURE
5



SOURCE: WASHINGTON 2011 NAIP ORTHO-IMAGERY-18 INCH DATA, WASHINGTON STATE ORTHOIMAGE PORTAL [HTTP://GEOGRAPHY.WA.GOV/ORTHO]

LEGEND:

- DC-01 — EPA SHALLOW SURFICIAL AQUIFER MONITORING WELL
- YVD-10 — YVD SHALLOW SURFICIAL AQUIFER MONITORING WELL
- DC-03D — YVD DEEP SURFICIAL AQUIFER MONITORING WELL
- APPROXIMATE BOUNDARY OF DAIRY FACILITIES
- RESPONDENTS OWNERSHIP BOUNDARIES
- A——A' CROSS-SECTION ALIGNMENT
- F— — —F' ADDITIONAL CROSS-SECTION ALIGNMENT
- LAND WITHIN BOUNDARY NOT OWNED OR OPERATED BY RESPONDENTS

0 2000' 4000'
GRAPHIC SCALE

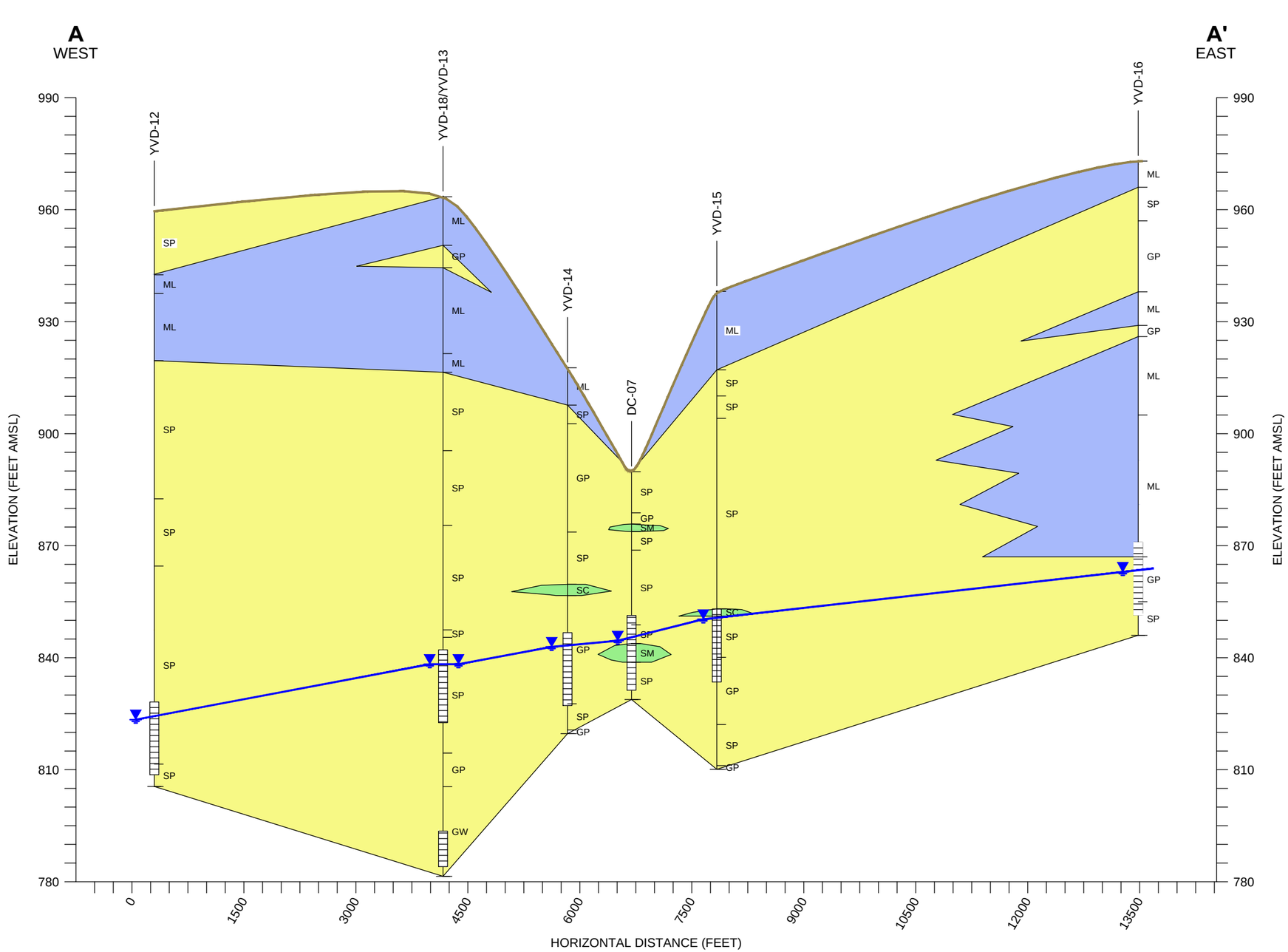
YAKIMA VALLEY DAIRIES
SDWA-10-2013-0080
QUARTERLY GROUNDWATER MONITORING REPORT

CROSS-SECTION LOCATION MAP

ARCADIS

FIGURE
6

CITY: SYRACUSE, NY DIV/GROUP: ENVCAD DB: J. HARRIS LD: A. SCHILLING PIC:(Opt) PM:(Reqd) TM:(Opt) LYR:(Opt)ON=*;OFF=REF*
G:\ENVCAD\SYRACUSE\ACT\SK030326\0000\00001\DWG\030326V01.dwg LAYOUT: 7 SAVED: 3/4/2014 3:30 PM ACADVER: 18.1S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: PLTFULL.CTB PLOTTED: 4/3/2014 9:21 AM BY: SCHILLING, ADAM
XREFS: 30326XLB IMAGES: 30326X01.jpg PROJECTNAME: ----



LEGEND:

YVD-12 — WELL/BORING ID

GROUND SURFACE

LITHOLOGIC CONTACT (DASHED WHERE INFERRED)

WELL SCREEN

WELL/BORING BOTTOM

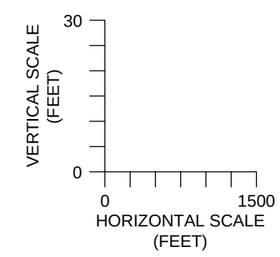
MEASURED GROUNDWATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL (AMSL) 9/16/2013

INFERRED POTENTIOMETRIC SURFACE

SAND / GRAVEL / SANDY GRAVEL / GRAVELLY SAND (GW, GP, SP)

SILTY SAND / CLAYEY SAND (SM, SC)

SILT LOAM (ML)



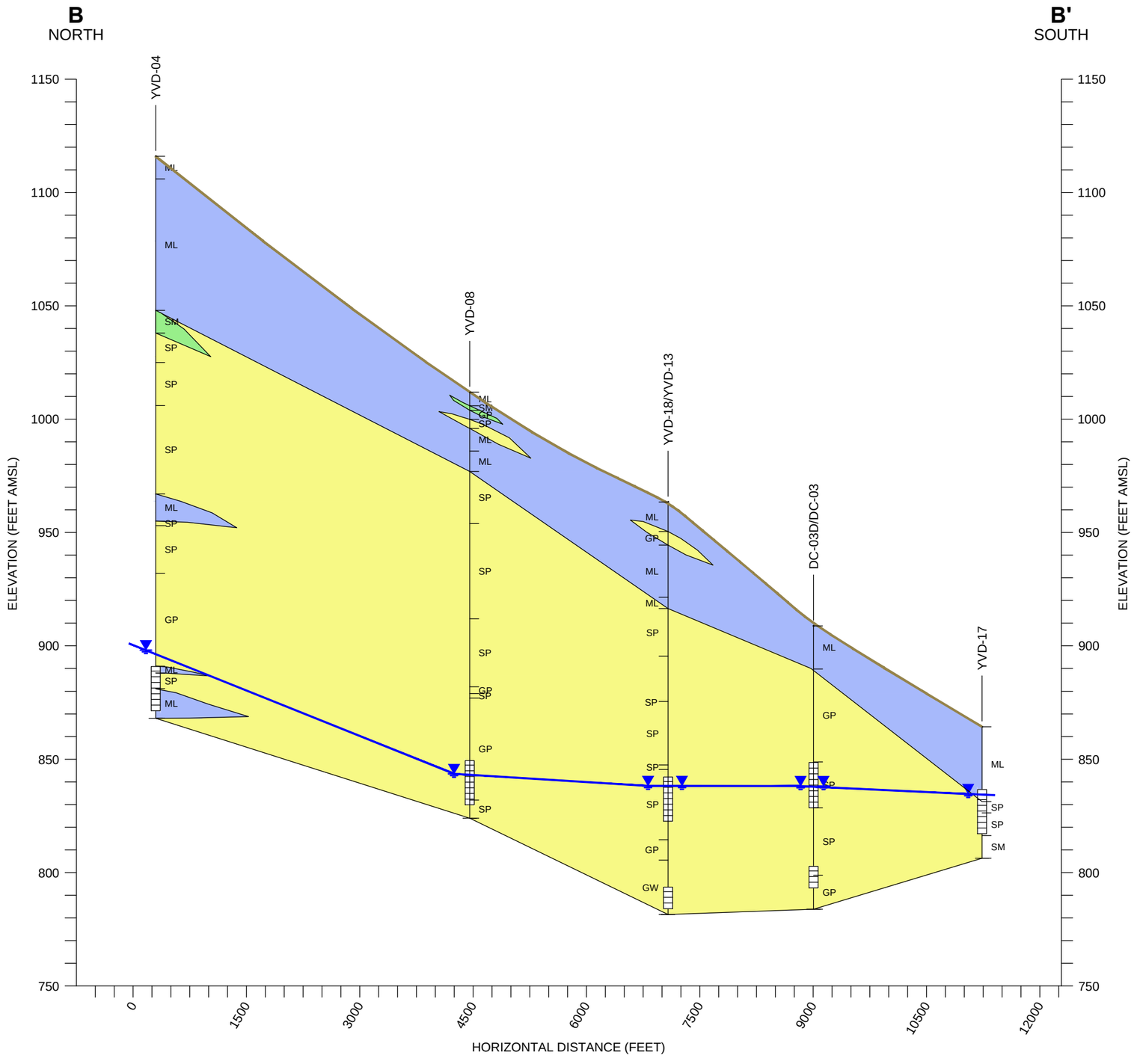
YAKIMA VALLEY DAIRIES
SDWA-10-2013-0080
QUARTERLY GROUNDWATER MONITORING REPORT

CROSS-SECTION A-A'

ARCADIS

FIGURE
7

CITY: SYRACUSE, NY DIV/GROUP: ENVCAD DB: J. HARRIS LD: A. SCHILLING PIC:(Opt) PM:(Reqd) TM:(Opt) LYR:(Opt)ON=*;OFF=*REF*
G:\ENVCAD\SYRACUSE\ACT\SK030326\0000\0001\DWG\TH-QTR30326V01.dwg LAYOUT: 8 SAVED: 4/3/2014 12:23 PM ACADVER: 18.1S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: PLTFULL.CTB PLOTTED: 4/22/2014 2:48 PM BY: SCHILLING, ADAM
XREFS: 30326XLB IMAGES: 30326X01.jpg PROJECTNAME: ----



LEGEND:

YVD-04 — WELL/BORING ID

GROUND SURFACE

LITHOLOGIC CONTACT (DASHED WHERE INFERRED)

WELL SCREEN

WELL/BORING BOTTOM

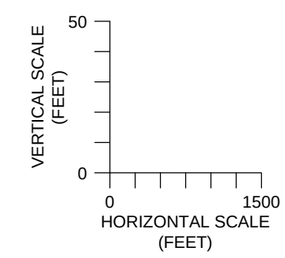
MEASURED GROUNDWATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL (AMSL) 9/16/2013

INFERRED POTENTIOMETRIC SURFACE

SAND / GRAVEL / SANDY GRAVEL / GRAVELLY SAND (GW, GP, SP)

SILTY SAND / CLAYEY SAND (SM)

SILT LOAM (ML)



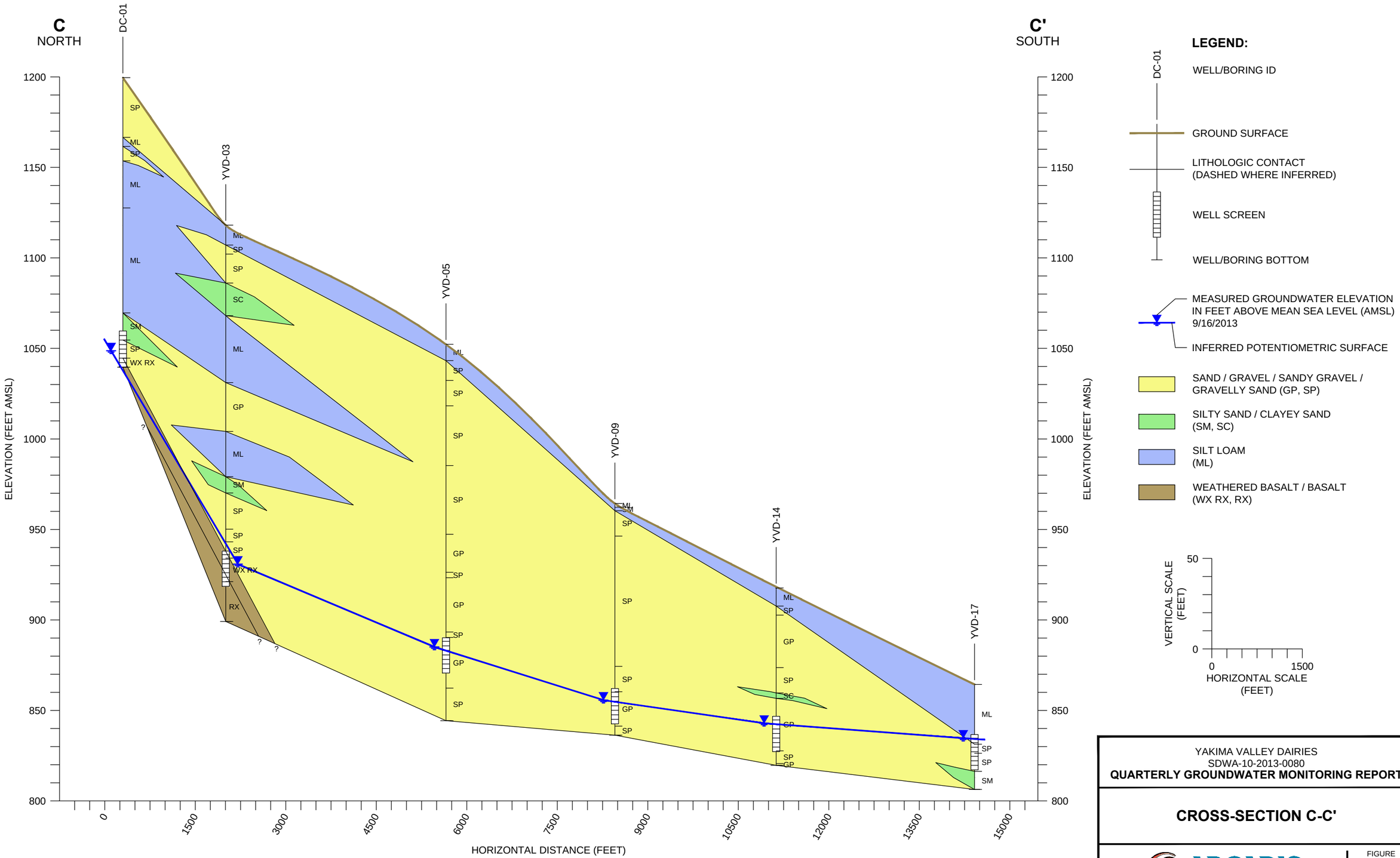
YAKIMA VALLEY DAIRIES
SDWA-10-2013-0080
QUARTERLY GROUNDWATER MONITORING REPORT

CROSS-SECTION B-B'

ARCADIS

FIGURE
8

CITY: SYRACUSE, NY DIV/GROUP: ENVCAD DB: J. HARRIS LD: A. SCHILLING PIC:(Opt) PM:(Reqd) TM:(Opt) LYR:(Opt)ON=*;OFF=*REF*
G:\ENVCAD\SYRACUSE\ACT\SK030326\0000\0001\DWG\TH-QTR\30326V01.dwg LAYOUT: 9 SAVED: 4/3/2014 12:23 PM ACADVER: 18.1S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: PLTFULL.CTB PLOTTED: 4/22/2014 2:48 PM BY: SCHILLING, ADAM
XREFS: 30326XLB IMAGES: 30326X01.jpg PROJECTNAME: ----



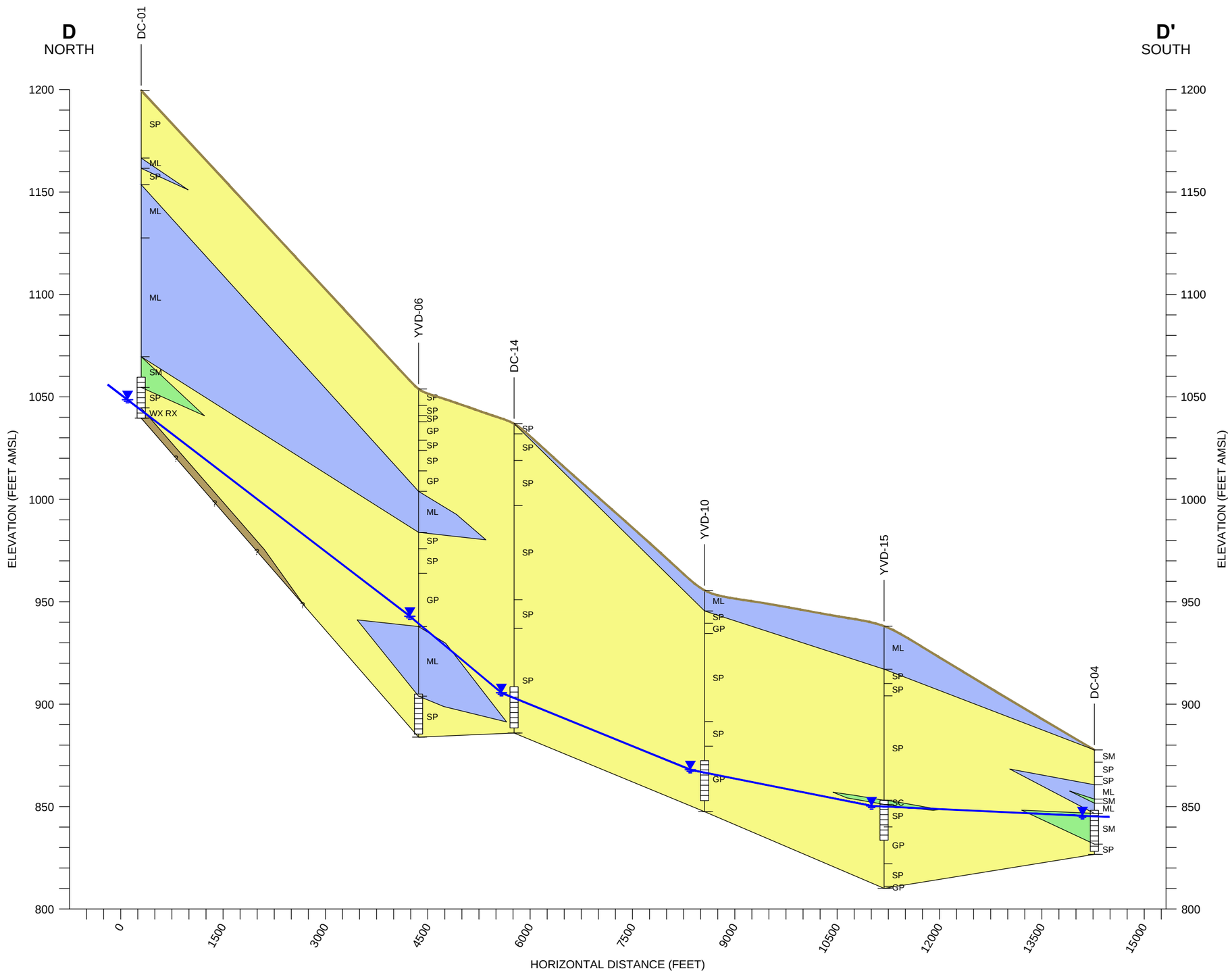
YAKIMA VALLEY DAIRIES
SDWA-10-2013-0080
QUARTERLY GROUNDWATER MONITORING REPORT

CROSS-SECTION C-C'

ARCADIS

FIGURE
9

CITY: SYRACUSE, NY DIV/GROUP: ENVCAD DB: J. HARRIS LD: A. SCHILLING PIC:(Opt) PM:(Reqd) TM:(Opt) LYR:(Opt)ON=*;OFF=*REF*
G:\ENVCAD\SYRACUSE\ACT\SK030326\0000\0001\DWG\4TH-QTR\30326V01.dwg LAYOUT: 10 SAVED: 4/3/2014 12:23 PM ACADVER: 18.1S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: PLTFULL.CTB PLOTTED: 4/22/2014 2:49 PM BY: SCHILLING, ADAM
XREFS: 30326XLB IMAGES: 30326X01.jp2 PROJECTNAME: ----



LEGEND:

DC-01 — WELL/BORING ID

GROUND SURFACE

LITHOLOGIC CONTACT (DASHED WHERE INFERRED)

WELL SCREEN

WELL/BORING BOTTOM

MEASURED GROUNDWATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL (AMSL) 9/16/2013

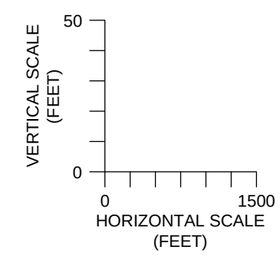
INFERRED POTENTIOMETRIC SURFACE

SAND / GRAVEL / SANDY GRAVEL / GRAVELLY SAND (GP, SP)

SILTY SAND / CLAYEY SAND (SM, SC)

SILT LOAM (ML)

WEATHERED BASALT / BASALT (WX RX)



YAKIMA VALLEY DAIRIES
SDWA-10-2013-0080
QUARTERLY GROUNDWATER MONITORING REPORT

CROSS-SECTION D-D'

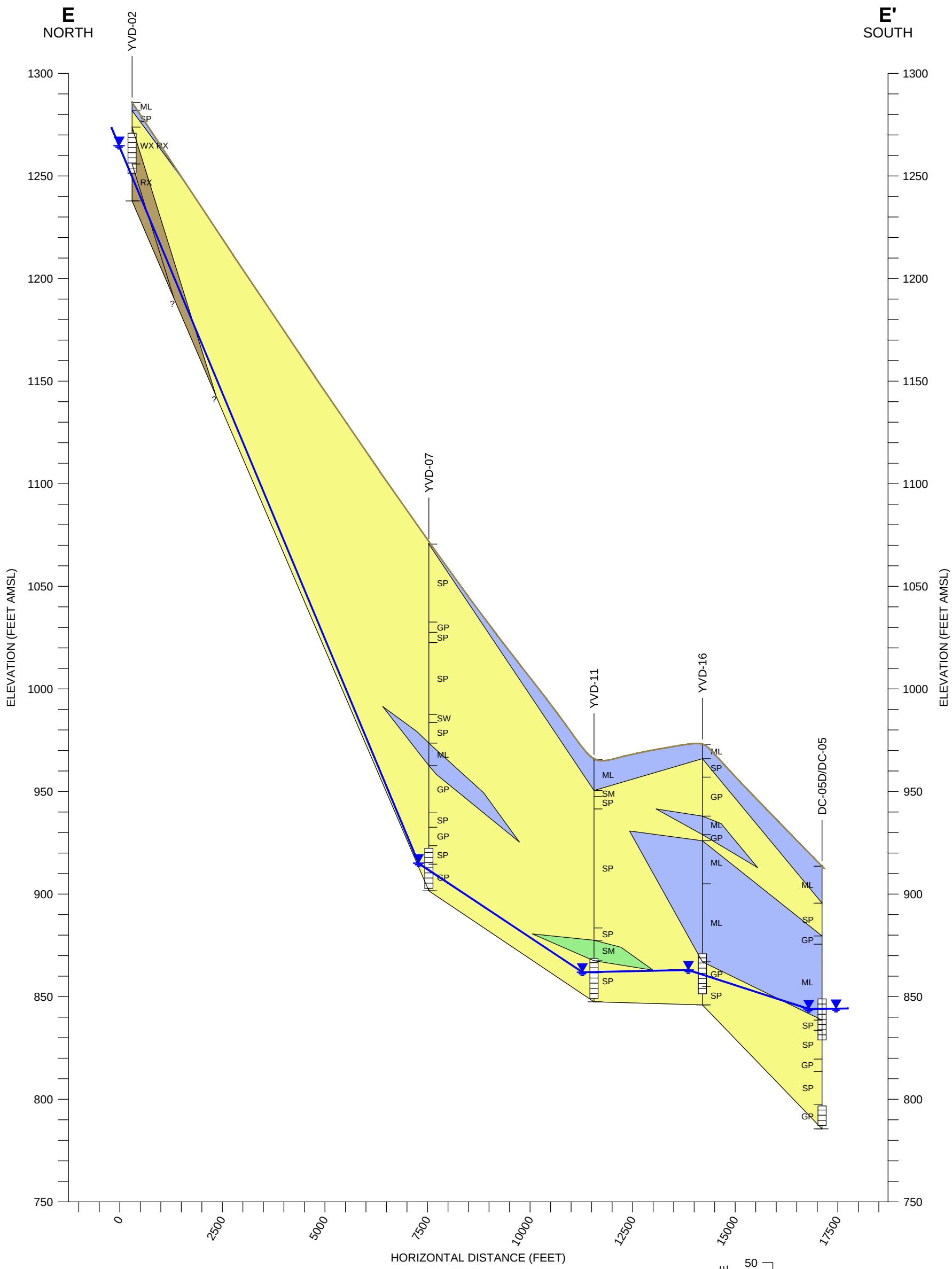
ARCADIS

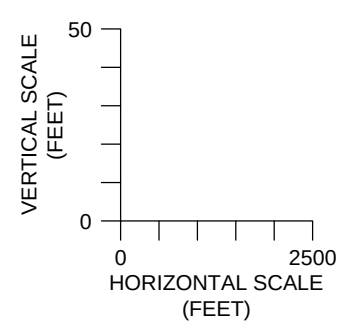
FIGURE
10

CITY: SYRACUSE, NY DIV/GROUP: ENVCAD DB: J. HARRIS LD: A. SCHILLING PIC:(Opt) PM:(Reqd) TM:(Opt) LYR:(Opt)ON=*;OFF=REF*
G:\ENVCAD\SYRACUSE\ACT\SK030326\0000\00001\DWG\4TH-QTR\30326V01.dwg LAYOUT: 11 SAVED: 4/3/2014 12:23 PM ACADVER: 18.1S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: PLTFULL.CTB PLOTTED: 4/22/2014 2:49 PM BY: SCHILLING, ADAM
XREFS: 30326XLB IMAGES: 30326X01.jpg PROJECTNAME: ----

CITY: SYRACUSE, NY DIV/GROUP: ENVCAD DB: J. HARRIS LD: A. SCHILLING PIC:(Opt) PM:(Reqd) TM:(Opt) LYR:(Opt)ON=*;OFF=*REF*
G:\ENVCAD\SYRACUSE\ACT\SK030326\0000\00001\DWG\4TH-QTR\30326V01.dwg LAYOUT: 12 SAVED: 4/22/2014 2:54 PM ACADVER: 18.1S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: PLTFULL.CTB PLOTTED: 4/22/2014 3:03 PM BY: SCHILLING, ADAM

XREFS: IMAGES: PROJECTNAME: ----
30326XLB 30326X01.jp2





LEGEND:

YVD-02 — WELL/BORING ID

GROUND SURFACE

LITHOLOGIC CONTACT (DASHED WHERE INFERRED)

WELL SCREEN

WELL/BORING BOTTOM

MEASURED GROUNDWATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL (AMSL) 9/16/2013

INFERRED POTENTIOMETRIC SURFACE

SAND / GRAVEL / SANDY GRAVEL / GRAVELLY SAND (GP, SW, SP)

SILTY SAND / CLAYEY SAND (SM, SC)

SILT LOAM (ML)

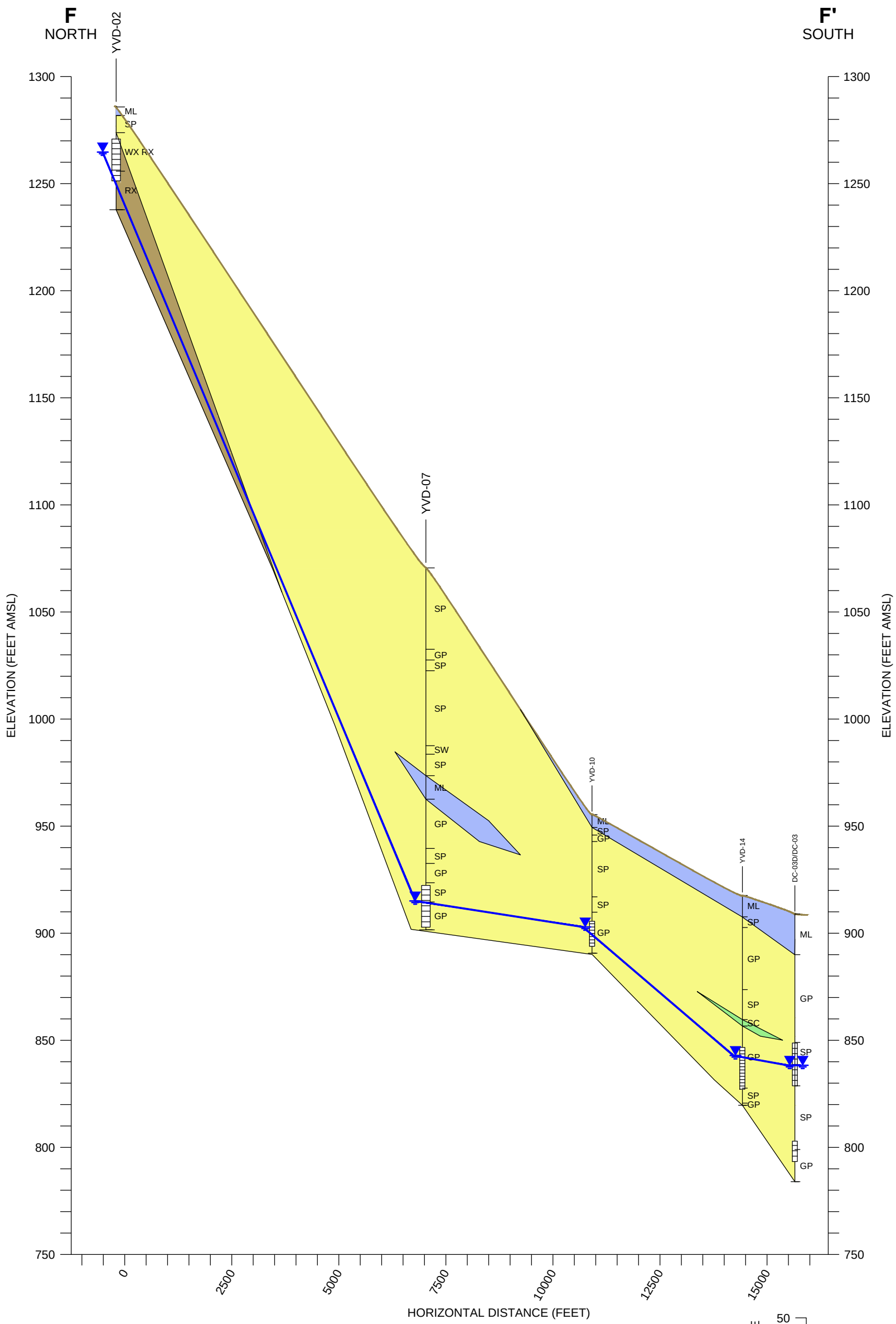
WEATHERED BASALT / BASALT (WX RX)

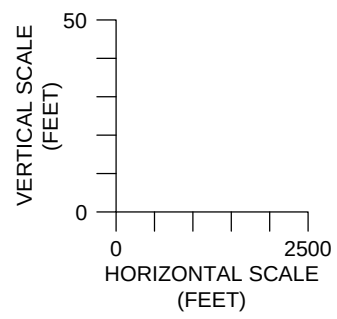
YAKIMA VALLEY DAIRIES
SDWA-10-2013-0080
QUARTERLY GROUNDWATER MONITORING REPORT

CROSS-SECTION E-E'

ARCADIS

FIGURE
11





LEGEND:

YVD-02 WELL/BORING ID

GROUND SURFACE

LITHOLOGIC CONTACT (DASHED WHERE INFERRED)

WELL SCREEN

WELL/BORING BOTTOM

MEASURED GROUNDWATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL (AMSL) 9/16/2013

INFERRED POTENTIOMETRIC SURFACE

SAND / GRAVEL / SANDY GRAVEL / GRAVELLY SAND (GP, SW, SP)

SILTY SAND / CLAYEY SAND (SM, SC)

SILT LOAM (ML)

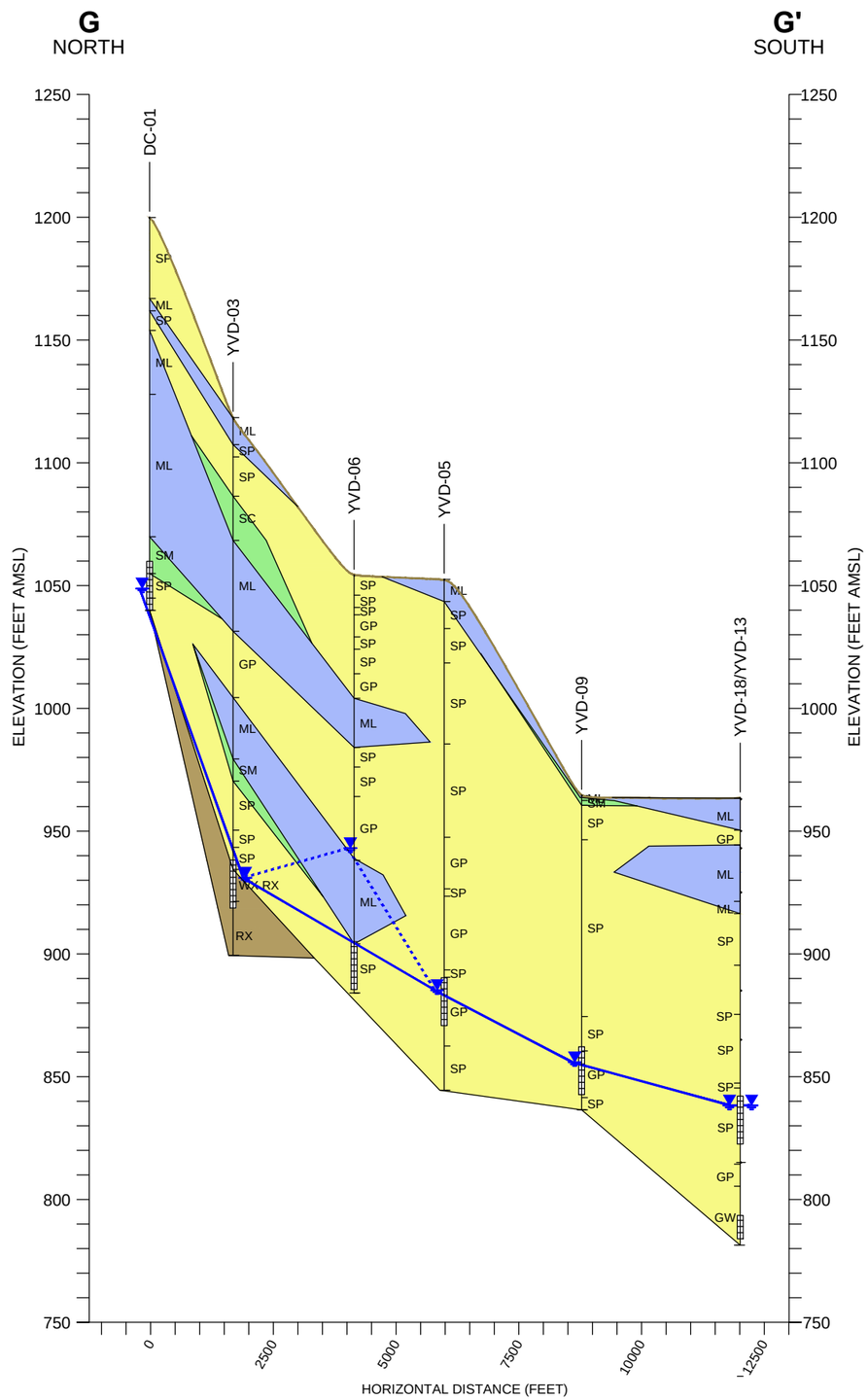
WEATHERED BASALT / BASALT (WX RX)

YAKIMA VALLEY DAIRIES
SDWA-10-2013-0080
QUARTERLY GROUNDWATER MONITORING REPORT

CROSS-SECTION F-F'

ARCADIS

FIGURE
12



LEGEND:

YVD-02

WELL/BORING ID

GROUND SURFACE

LITHOLOGIC CONTACT
(DASHED WHERE INFERRED)

WELL SCREEN

WELL/BORING BOTTOM

MEASURED GROUNDWATER ELEVATION
IN FEET ABOVE MEAN SEA LEVEL (AMSL)
9/16/2013

INFERRED POTENTIOMETRIC SURFACE

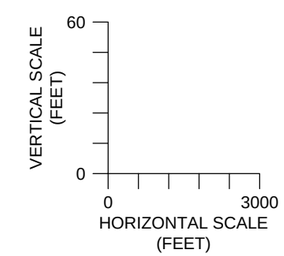
GROUNDWATER ELEVATION NOT USED
FOR CONTOURING

SAND / GRAVEL / SANDY GRAVEL /
GRAVELLY SAND (GP, SW, SP)

SILTY SAND / CLAYEY SAND
(SM, SC)

SILT LOAM
(ML)

WEATHERED BASALT / BASALT
(WX RX)



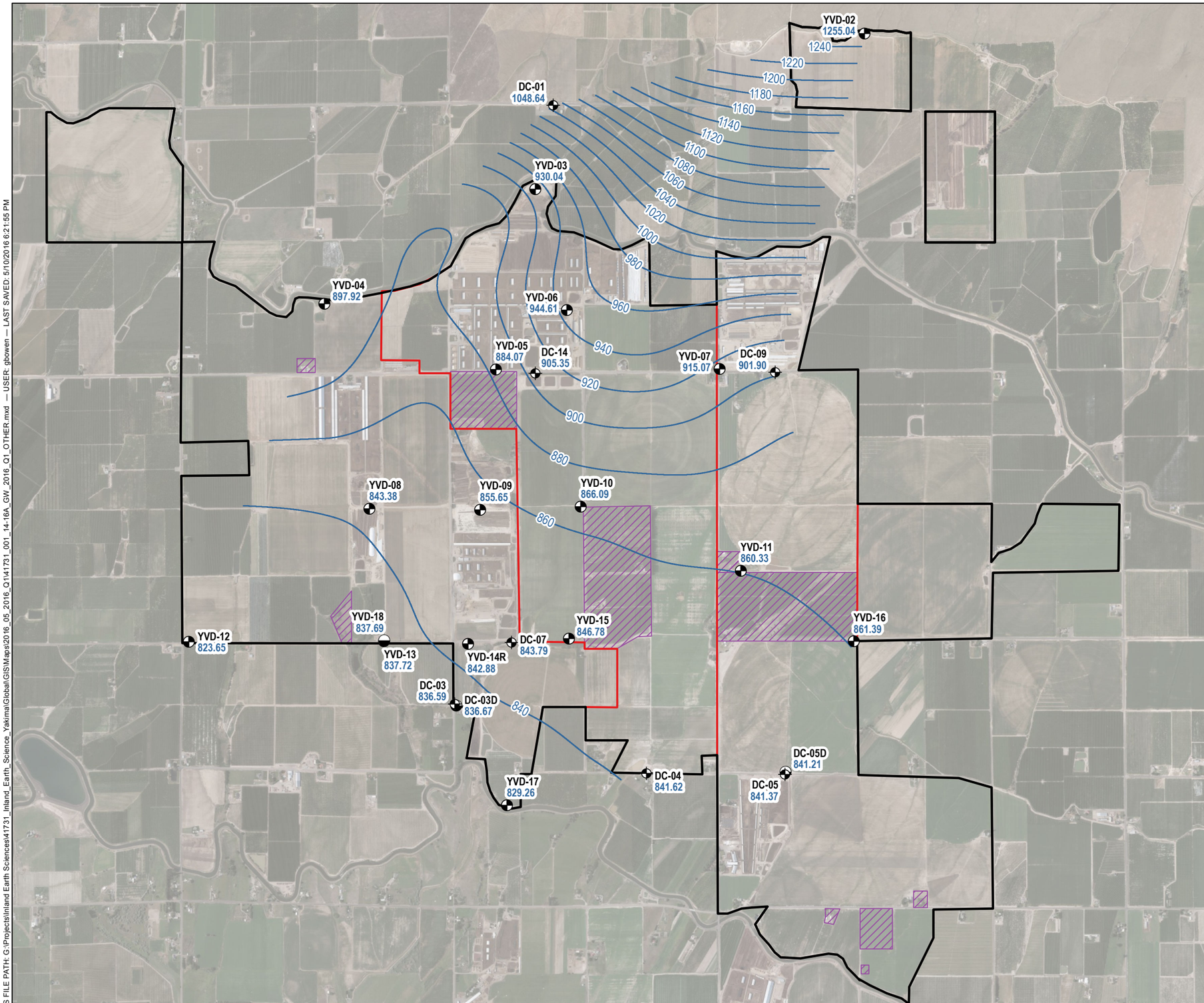
YAKIMA VALLEY DAIRIES
SDWA-10-2013-0080
QUARTERLY GROUNDWATER MONITORING REPORT

CROSS-SECTION G-G'

ARCADIS

FIGURE
13

CITY: SYRACUSE, NY DIV/GROUP: ENVCAD DB: J. HARRIS LD: A. SCHILLING PIC:(Opt) PM:(Reqd) TM:(Opt) LYR:(Opt)ON=*;OFF=*REF*
G:\ENVCAD\SYRACUSE\ACT\SK030326\0000\0001\DWG\4TH-QTR\30326V01.dwg LAYOUT: 14 SAVED: 4/3/2014 12:23 PM ACADVER: 18.1S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: PLTFULL.CTB PLOTTED: 4/22/2014 2:50 PM BY: SCHILLING, ADAM
XREFS: 30326XLB IMAGES: 30326X01.jpg PROJECTNAME: ----



LEGEND

- EPA SHALLOW SURFICIAL AQUIFER MONITORING WELL
- YVD SHALLOW SURFICIAL AQUIFER MONITORING WELL
- YVD DEEP SURFICIAL AQUIFER MONITORING WELL
- APPROXIMATE BOUNDARY OF DAIRY FACILITIES
- RESPONDENTS OWNERSHIP BOUNDARY
- LAND WITHIN BOUNDARY NOT OWNED OR OPERATED BY RESPONDENTS
- 905.35 GROUNDWATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL (FT AMSL)
- GROUNDWATER POTENTIOMETRIC CONTOUR (FT AMSL), CONTOUR INTERVAL = 20 FT

NOTES

1. GROUNDWATER ELEVATIONS COLLECTED ON 8 MARCH 2016.
2. AERIAL IMAGERY AND BASE MAP SOURCE: ESRI, 2013

N

0 2,000 4,000
SCALE IN FEET

INLAND EARTH SCIENCES

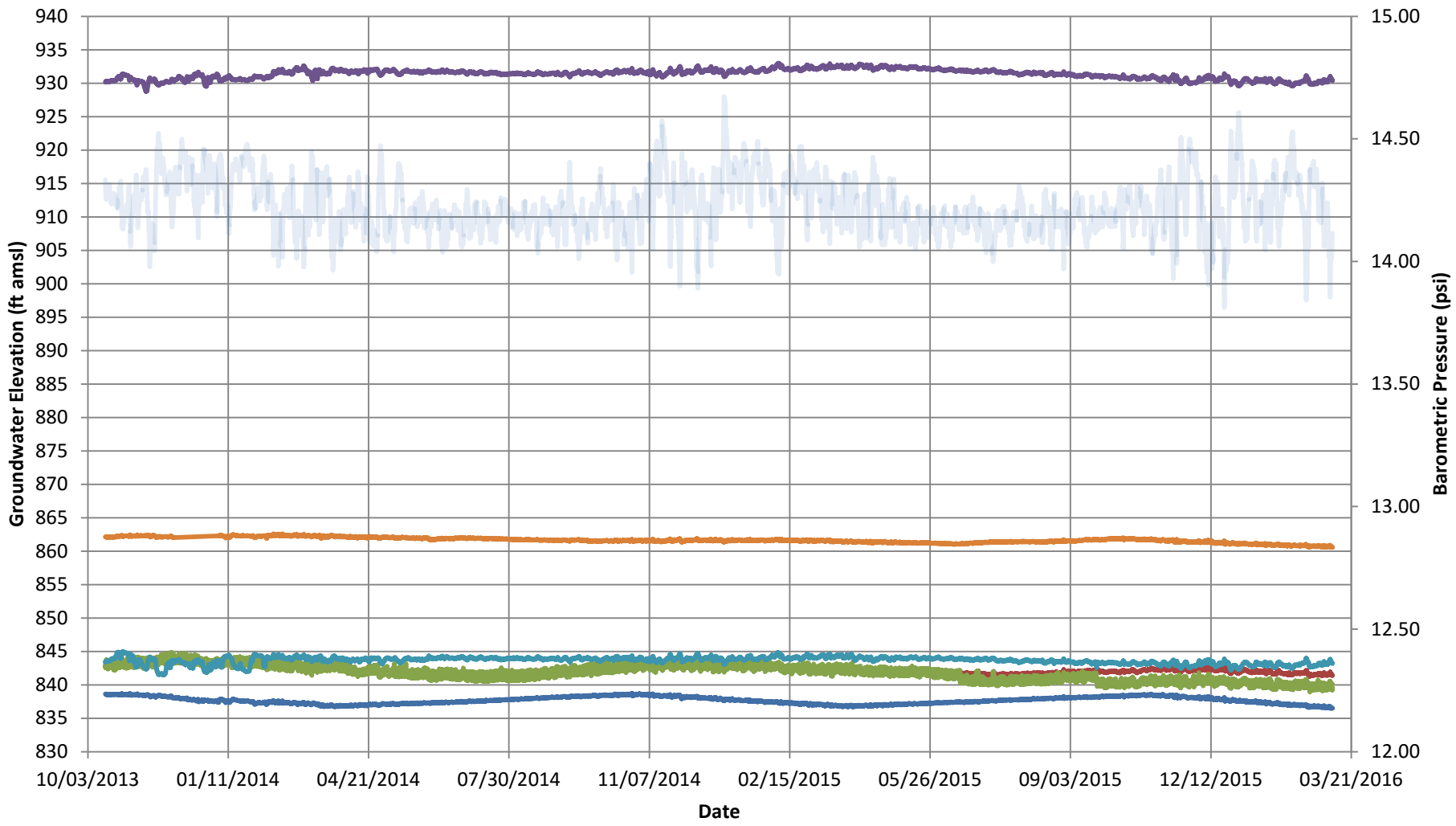
QUARTERLY GROUNDWATER MONITORING DATA REPORT
ADMINISTRATIVE ORDER ON CONSENT
YAKIMA VALLEY DAIRIES / SDWA-10-2013-0080
OUTLOOK, WASHINGTON

GROUNDWATER POTENTIOMETRIC CONTOUR MAP FIRST QUARTER 2016

MAY 2016

FIGURE 14

GIS FILE PATH: G:\Projects\Inland Earth Sciences\41731_Inland_Earth_Science_Yakima\Global\GIS\Maps\2016_05_2016_Q1\141731_001_14-16A_GW_2016_Q1_OTHER.mxd — USER: gbowen — LAST SAVED: 5/10/2016 6:21:55 PM



NOTES:

- WELL DC-03
- WELL DC-05
- WELL DC-05D
- BAROMETRIC PRESSURE
- WELL YVD-03
- WELL YVD-08
- WELL YVD-11*

* Transducer data from 12-3-13 to 1-4-14 unrecoverable due to firmware update

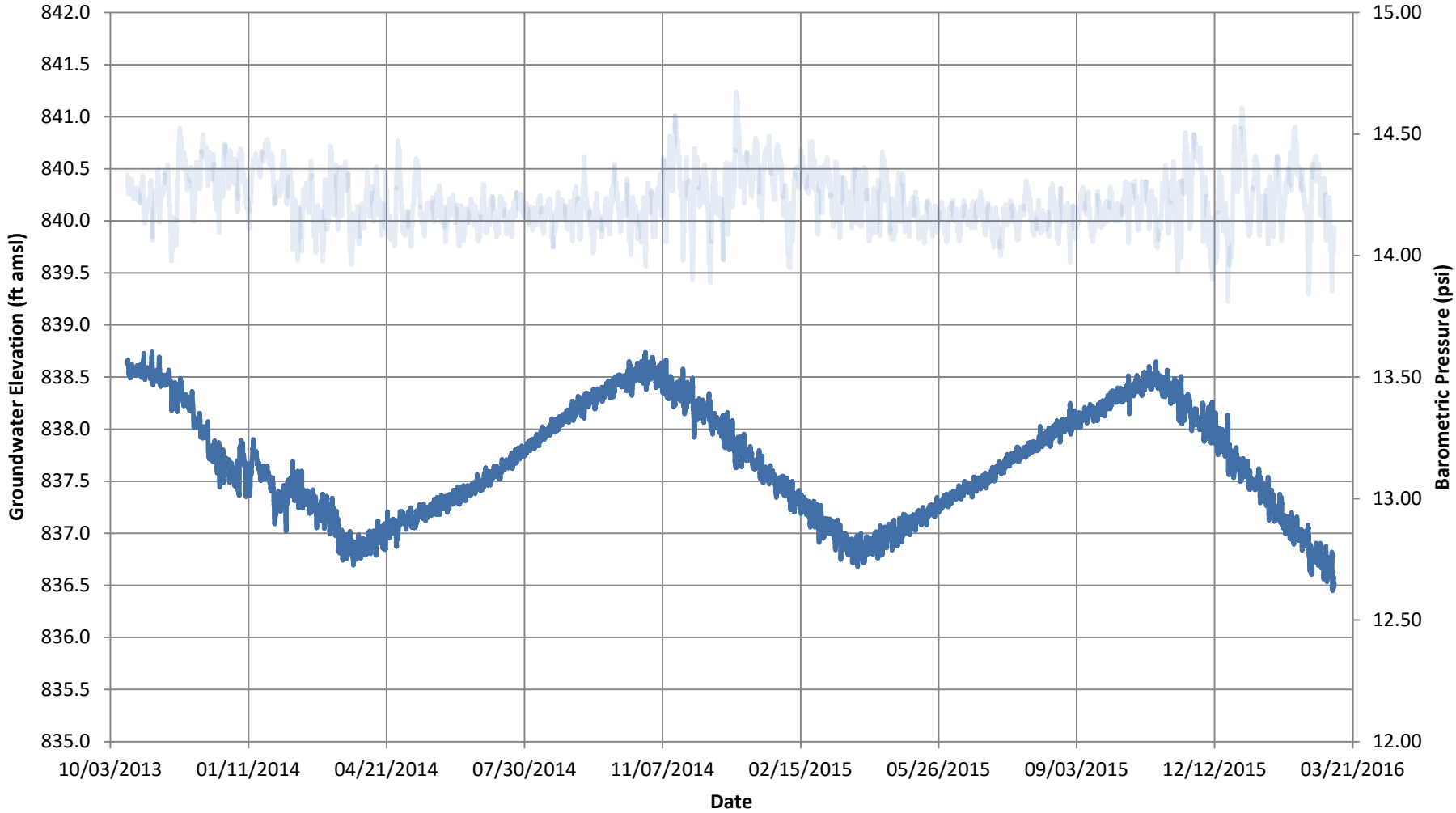
YAKIMA VALLEY DAIRIES
SDWA-10-2013-0080

GROUNDWATER MONITORING DATA REPORT

GROUNDWATER HYDROGRAPH
ALL WELLS AND BAROMETRIC PRESSURE
FIRST QUARTER 2016

INLAND EARTH SCIENCES

FIGURE
15A



NOTES:

WELL DC-03

BAROMETRIC PRESSURE

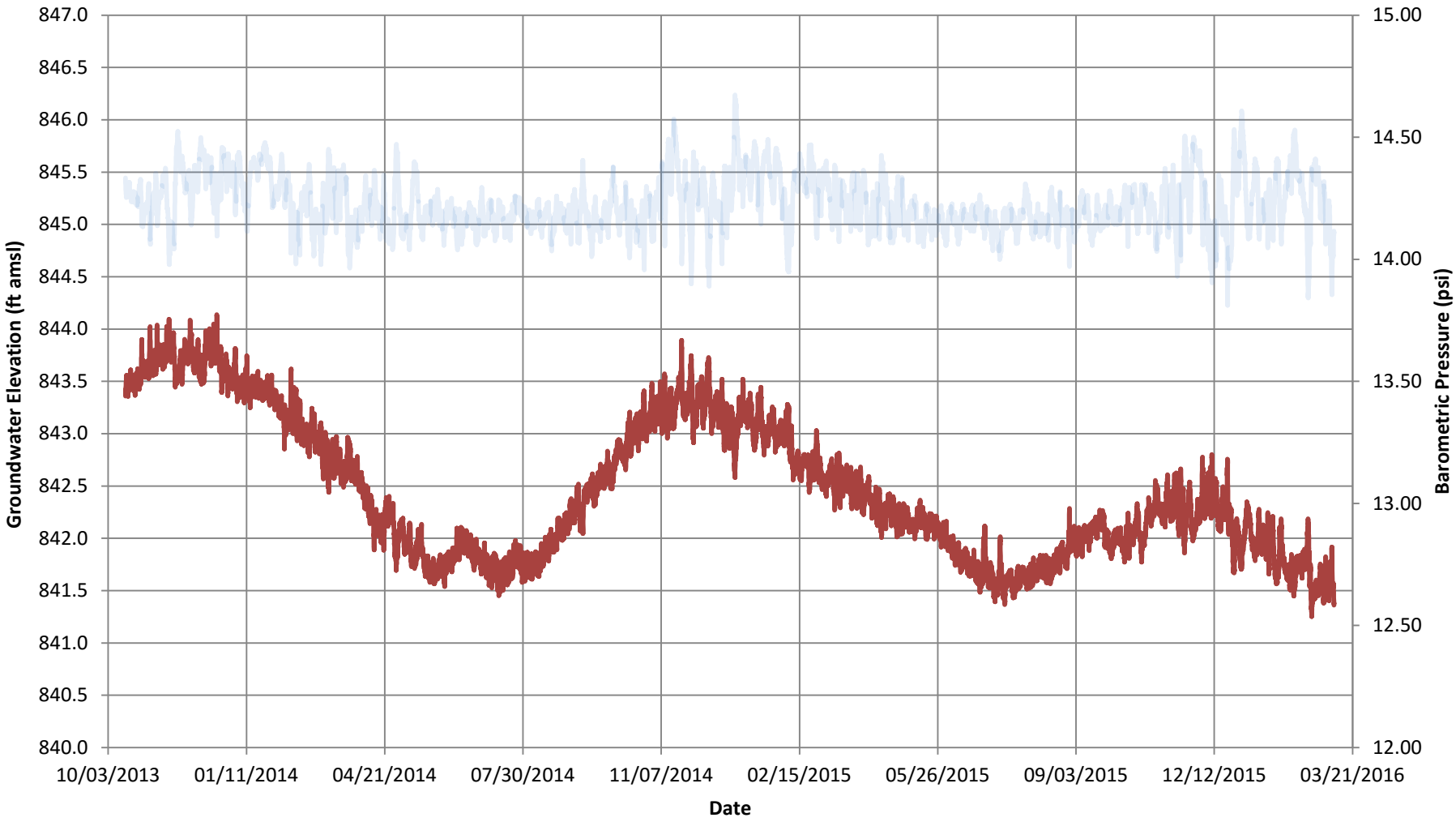
YAKIMA VALLEY DAIRIES
SDWA-10-2013-0080

GROUNDWATER MONITORING DATA REPORT

GROUNDWATER HYDROGRAPH
WELL DC-03
FIRST QUARTER 2016

INLAND EARTH SCIENCES

FIGURE
15B



NOTES:

WELL DC-05

BAROMETRIC PRESSURE

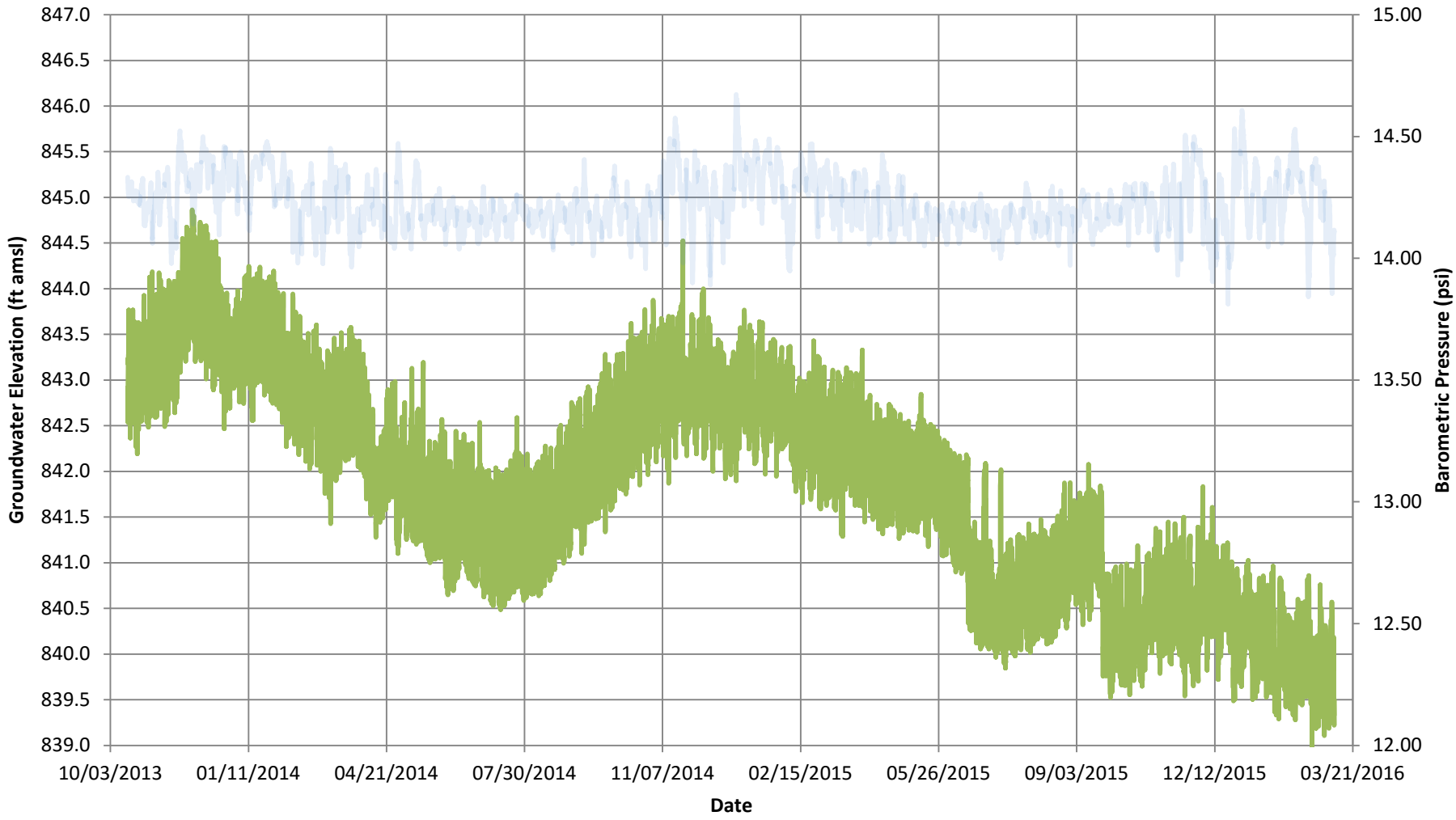
YAKIMA VALLEY DAIRIES
SDWA-10-2013-0080

GROUNDWATER MONITORING DATA REPORT

GROUNDWATER HYDROGRAPH
WELL DC-05
FIRST QUARTER 2016

INLAND EARTH SCIENCES

FIGURE
15C



NOTES:

WELL DC-05D

BAROMETRIC PRESSURE

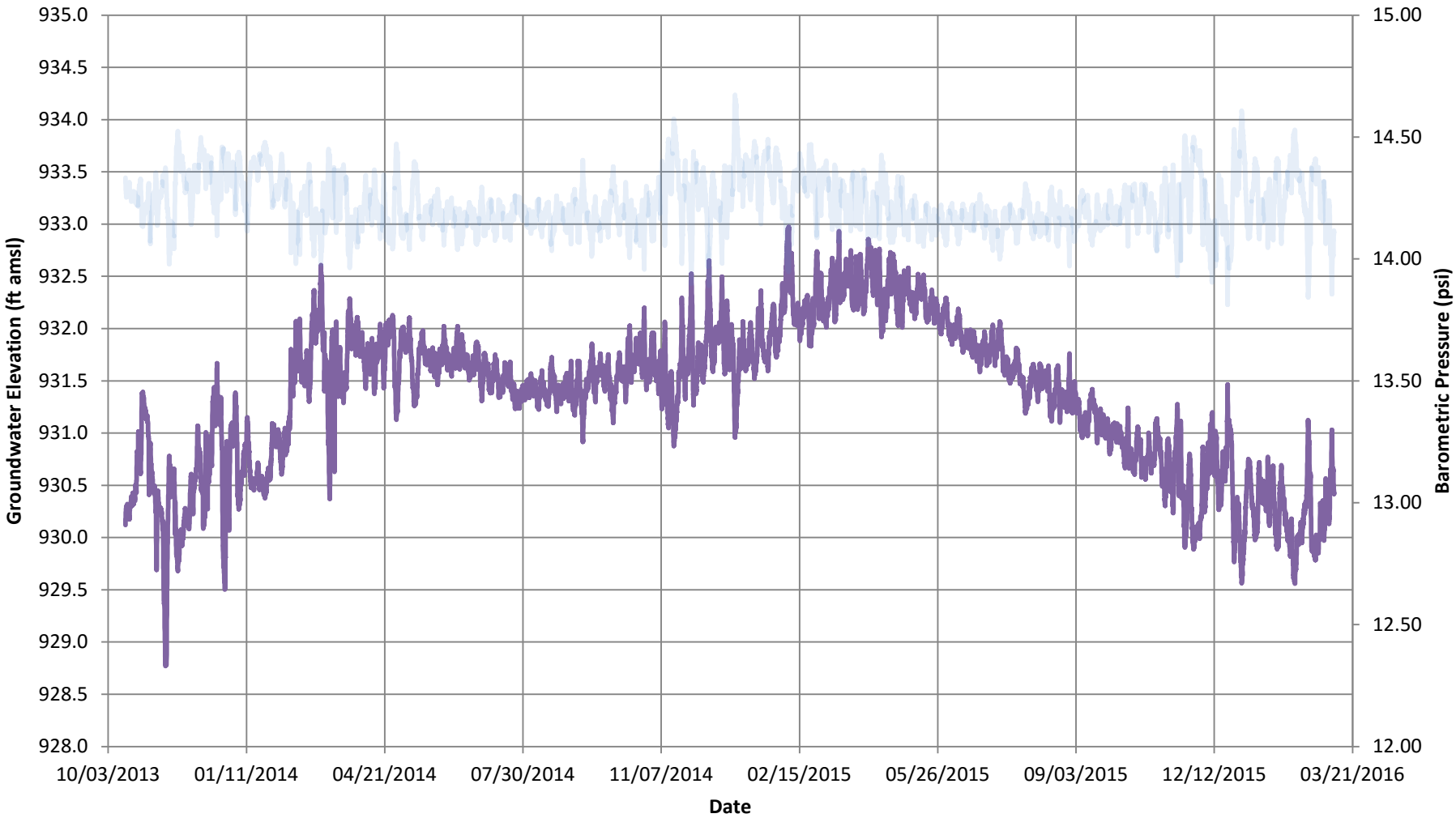
YAKIMA VALLEY DAIRIES
SDWA-10-2013-0080

GROUNDWATER MONITORING DATA REPORT

GROUNDWATER HYDROGRAPH
WELL DC-05D
FIRST QUARTER 2016

INLAND EARTH SCIENCES

FIGURE
15D



NOTES:

WELL YVD-03

BAROMETRIC PRESSURE

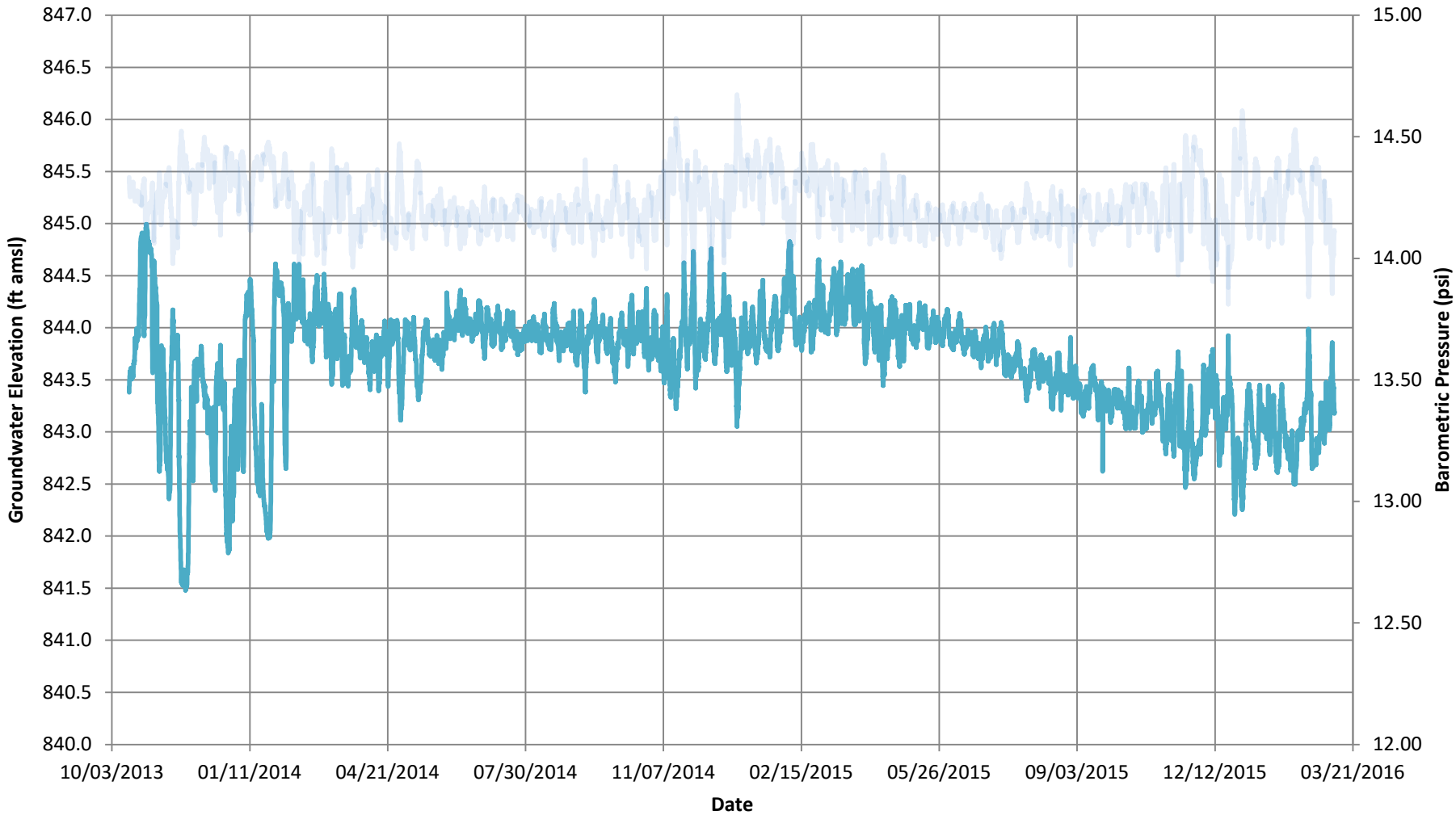
YAKIMA VALLEY DAIRIES
SDWA-10-2013-0080

GROUNDWATER MONITORING DATA REPORT

GROUNDWATER HYDROGRAPH
WELL YVD-03
FIRST QUARTER 2016

INLAND EARTH SCIENCES

FIGURE
15E



NOTES:

WELL YVD-08

BAROMETRIC PRESSURE

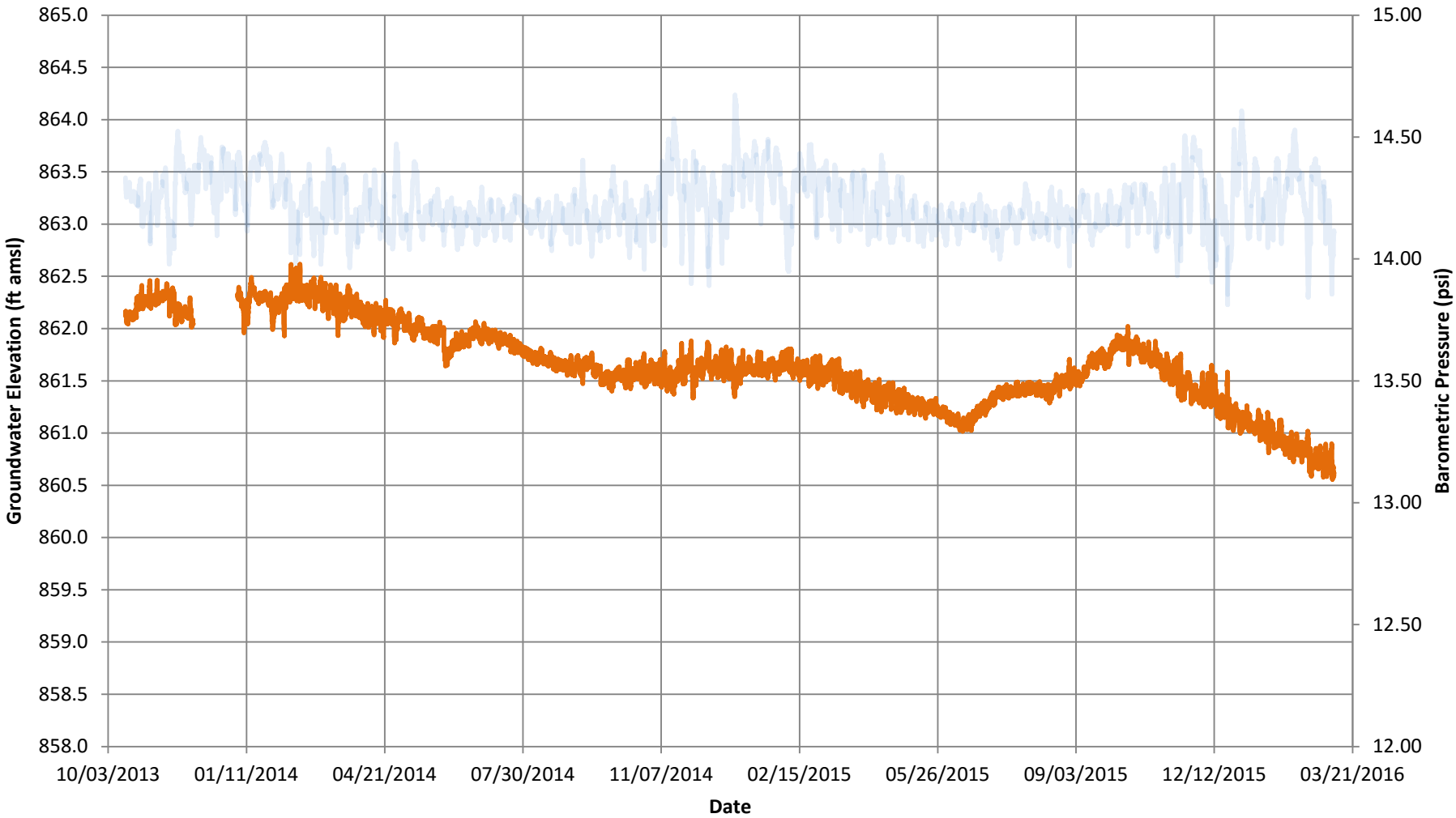
YAKIMA VALLEY DAIRIES
SDWA-10-2013-0080

GROUNDWATER MONITORING DATA REPORT

GROUNDWATER HYDROGRAPH
WELL YVD-08
FIRST QUARTER 2016

INLAND EARTH SCIENCES

FIGURE
15F



NOTES:

WELL YVD-11*

BAROMETRIC PRESSURE

* Transducer data from 12-3-13 to 1-4-14 unrecoverable due to firmware update

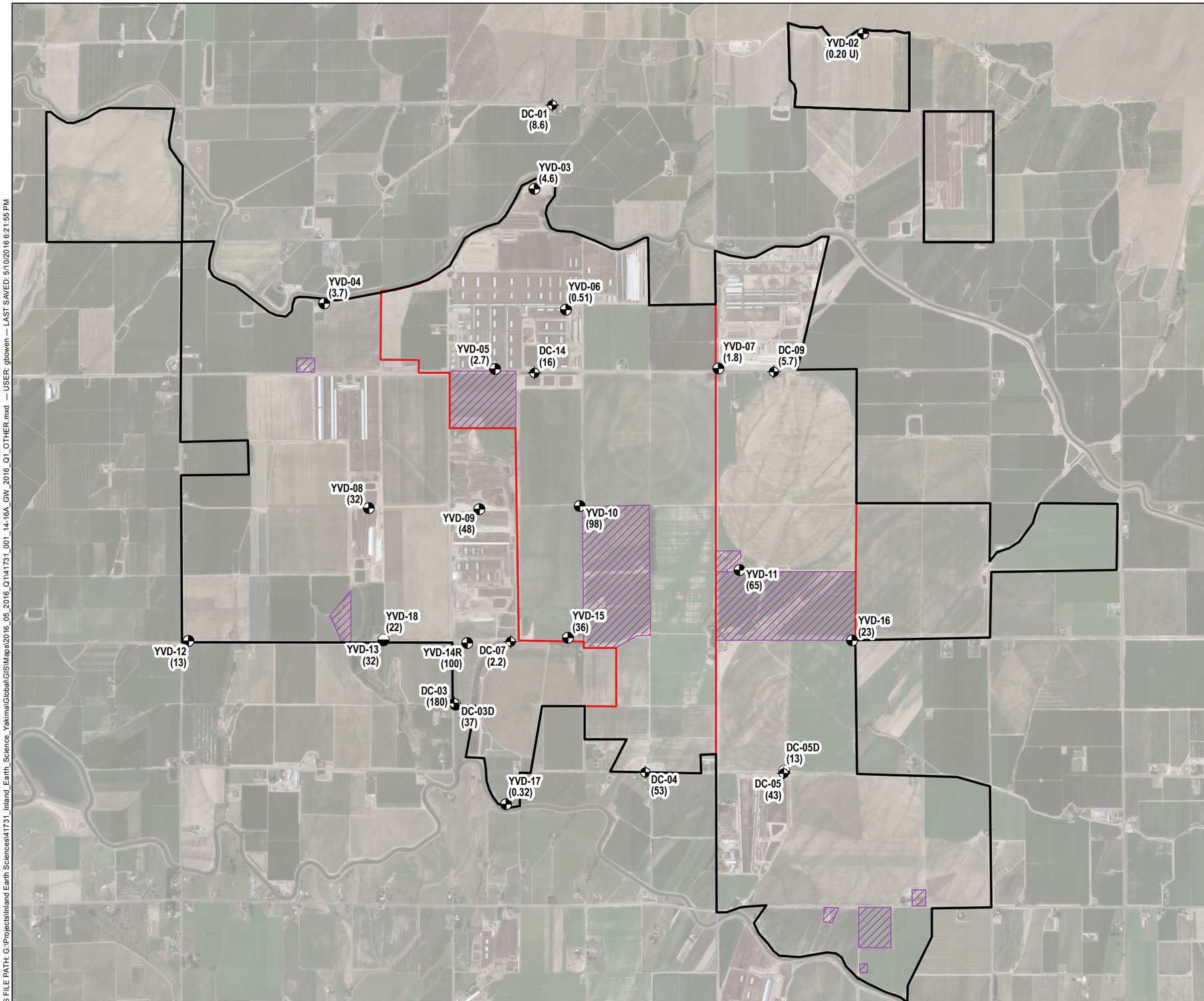
YAKIMA VALLEY DAIRIES
SDWA-10-2013-0080

GROUNDWATER MONITORING DATA REPORT

GROUNDWATER HYDROGRAPH
WELL YVD-11
FIRST QUARTER 2016

INLAND EARTH SCIENCES

FIGURE
15G



LEGEND

- EPA SHALLOW SURFICIAL AQUIFER MONITORING WELL
- YVD SHALLOW SURFICIAL AQUIFER MONITORING WELL
- YVD DEEP SURFICIAL AQUIFER MONITORING WELL
- APPROXIMATE BOUNDARY OF DAIRY FACILITIES
- RESPONDENTS OWNERSHIP BOUNDARY
- LAND WITHIN BOUNDARY NOT OWNED OR OPERATED BY RESPONDENTS
- (4.6) NITRATE-NITROGEN CONCENTRATION IN MILLIGRAMS PER LITER (mg/L)

NOTES

1. QUALIFIERS AND NOTATIONS (MAY NOT APPEAR ON ALL FIGURES):

U = THE COMPOUND WAS ANALYZED FOR BUT NOT DETECTED. THE ASSOCIATED VALUE IS THE COMPOUND REPORTING LIMIT OR THE COMPOUND IS CONSIDERED NON-DETECT AT THE LISTED VALUE DUE TO ASSOCIATED BLANK CONTAMINATION.

UJ = THE COMPOUND WAS NOT DETECTED ABOVE THE REPORTED SAMPLE REPORTING LIMIT; HOWEVER, THE REPORTING LIMIT IS APPROXIMATE AND MAY OR MAY NOT REPRESENT THE ACTUAL LIMIT OF QUANTITATION.

R = THE SAMPLE RESULTS ARE REJECTED AS UNUSABLE. THE COMPOUND MAY OR MAY NOT BE PRESENT IN THE SAMPLE.

J = THE COMPOUND WAS POSITIVELY IDENTIFIED; HOWEVER, THE ASSOCIATED NUMERICAL VALUE IS AN ESTIMATED CONCENTRATION.

J- = THE RESULT IS AN ESTIMATED QUANTITY, BUT THE RESULT MAY BE BIASED LOW.

J+ = THE RESULT IS AN ESTIMATED QUANTITY, BUT THE RESULT MAY BE BIASED HIGH.

2. ANALYTICAL RESULTS ARE FOR SAMPLES COLLECTED MARCH 7-10, 2016.

3. AERIAL IMAGERY AND BASE MAP SOURCE: ESRI, 2013

N

0 2,000 4,000
SCALE IN FEET

INLAND EARTH SCIENCES

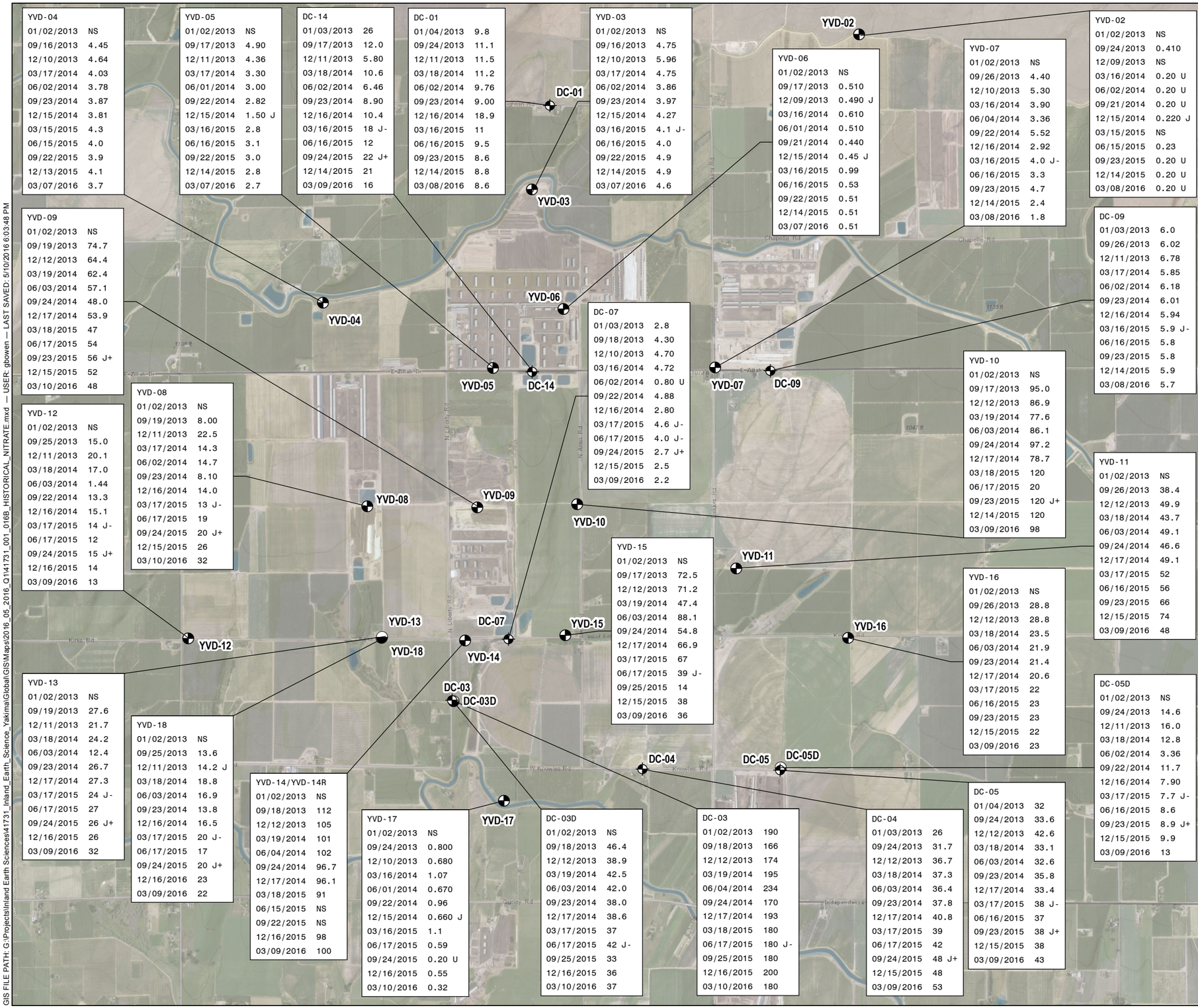
QUARTERLY GROUNDWATER MONITORING DATA REPORT
ADMINISTRATIVE ORDER ON CONSENT
YAKIMA VALLEY DAIRIES / SDWA-10-2013-0080
OUTLOOK, WASHINGTON

NITRATE CONCENTRATIONS FIRST QUARTER 2016

MAY 2016

FIGURE 16A

GIS FILE PATH: G:\Projects\Inland Earth Sciences\41731_Inland_Earth_Science_Yakima\Global\GIS\Maps\2016_05_2016_Q1\41731_001_14-16A_GW_2016_Q1_OTHER.mxd — USER: gbowen — LAST SAVED: 5/10/2016 6:21:55 PM



YVD-04	
01/02/2013	NS
09/16/2013	4.45
12/10/2013	4.64
03/17/2014	4.03
06/02/2014	3.78
09/23/2014	3.87
12/15/2014	3.81
03/15/2015	4.3
06/15/2015	4.0
09/22/2015	3.9
12/13/2015	4.1
03/07/2016	3.7

YVD-05	
01/02/2013	NS
09/17/2013	4.90
12/11/2013	4.36
03/17/2014	3.30
06/01/2014	3.00
09/22/2014	2.82
12/15/2014	1.50 J
03/16/2015	2.8
06/16/2015	3.1
09/22/2015	3.0
12/14/2015	2.8
03/07/2016	2.7

DC-14	
01/03/2013	26
09/17/2013	12.0
12/11/2013	5.80
03/18/2014	10.6
06/02/2014	6.46
09/23/2014	8.90
12/16/2014	10.4
03/16/2015	18 J-
06/16/2015	12
09/24/2015	22 J+
12/14/2015	21
03/09/2016	16

DC-01	
01/04/2013	9.8
09/24/2013	11.1
12/11/2013	11.5
03/18/2014	11.2
06/02/2014	9.76
09/23/2014	9.00
12/16/2014	18.9
03/16/2015	11
06/16/2015	9.5
09/23/2015	8.6
12/14/2015	8.8
03/08/2016	8.6

YVD-03	
01/02/2013	NS
09/16/2013	4.75
12/10/2013	5.96
03/17/2014	4.75
06/02/2014	3.86
09/23/2014	3.97
12/15/2014	4.27
03/16/2015	4.1 J-
06/16/2015	4.0
09/22/2015	4.9
12/14/2015	4.9
03/07/2016	4.6

YVD-06	
01/02/2013	NS
09/17/2013	0.510
12/09/2013	0.490 J
03/16/2014	0.610
06/01/2014	0.510
09/21/2014	0.440
12/15/2014	0.45 J
03/16/2015	0.99
06/16/2015	0.53
09/22/2015	0.51
12/14/2015	0.51
03/07/2016	0.51

YVD-07	
01/02/2013	NS
09/26/2013	4.40
12/10/2013	5.30
03/16/2014	3.90
06/04/2014	3.36
09/22/2014	5.52
12/16/2014	2.92
03/16/2015	4.0 J-
06/16/2015	3.3
09/23/2015	4.7
12/14/2015	2.4
03/08/2016	1.8

YVD-02	
01/02/2013	NS
09/24/2013	0.410
12/09/2013	NS
03/16/2014	0.20 U
06/02/2014	0.20 U
09/21/2014	0.20 U
12/15/2014	0.220 J
03/15/2015	NS
06/15/2015	0.23
09/23/2015	0.20 U
12/14/2015	0.20 U
03/08/2016	0.20 U

YVD-09	
01/02/2013	NS
09/19/2013	74.7
12/12/2013	64.4
03/19/2014	62.4
06/03/2014	57.1
09/24/2014	48.0
12/17/2014	53.9
03/18/2015	47
06/17/2015	54
09/23/2015	56 J+
12/15/2015	52
03/10/2016	48

DC-07	
01/03/2013	2.8
09/18/2013	4.30
12/10/2013	4.70
03/16/2014	4.72
06/02/2014	0.80 U
09/22/2014	4.88
12/16/2014	2.80
03/17/2015	4.6 J-
06/17/2015	4.0 J-
09/24/2015	2.7 J+
12/15/2015	2.5
03/09/2016	2.2

DC-09	
01/03/2013	6.0
09/26/2013	6.02
12/11/2013	6.78
03/17/2014	5.85
06/02/2014	6.18
09/23/2014	6.01
12/16/2014	5.94
03/16/2015	5.9 J-
06/16/2015	5.8
09/23/2015	5.8
12/14/2015	5.9
03/08/2016	5.7

YVD-10	
01/02/2013	NS
09/17/2013	95.0
12/12/2013	86.9
03/19/2014	77.6
06/03/2014	86.1
09/24/2014	97.2
12/17/2014	78.7
03/18/2015	120
06/17/2015	20
09/23/2015	120 J+
12/14/2015	120
03/09/2016	98

YVD-11	
01/02/2013	NS
09/26/2013	38.4
12/12/2013	49.9
03/18/2014	43.7
06/03/2014	49.1
09/24/2014	46.6
12/17/2014	49.1
03/17/2015	52
06/16/2015	56
09/23/2015	66
12/15/2015	74
03/09/2016	48

YVD-12	
01/02/2013	NS
09/25/2013	15.0
12/11/2013	20.1
03/18/2014	17.0
06/03/2014	1.44
09/22/2014	13.3
12/16/2014	15.1
03/17/2015	14 J-
06/17/2015	12
09/24/2015	15 J+
12/16/2015	14
03/09/2016	13

YVD-08	
01/02/2013	NS
09/19/2013	8.00
12/11/2013	22.5
03/17/2014	14.3
06/02/2014	14.7
09/23/2014	8.10
12/16/2014	14.0
03/17/2015	13 J-
06/17/2015	19
09/24/2015	20 J+
12/15/2015	26
03/10/2016	32

YVD-15	
01/02/2013	NS
09/17/2013	72.5
12/12/2013	71.2
03/19/2014	47.4
06/03/2014	88.1
09/24/2014	54.8
12/17/2014	66.9
03/17/2015	67
06/17/2015	39 J-
09/25/2015	14
12/15/2015	38
03/09/2016	36

YVD-16	
01/02/2013	NS
09/26/2013	28.8
12/12/2013	28.8
03/18/2014	23.5
06/03/2014	21.9
09/23/2014	21.4
12/17/2014	20.6
03/17/2015	22
06/16/2015	23
09/23/2015	23
12/15/2015	22
03/09/2016	23

YVD-13	
01/02/2013	NS
09/19/2013	27.6
12/11/2013	21.7
03/18/2014	24.2
06/03/2014	12.4
09/23/2014	26.7
12/17/2014	27.3
03/17/2015	24 J-
06/17/2015	27
09/24/2015	26 J+
12/16/2015	26
03/09/2016	32

YVD-18	
01/02/2013	NS
09/25/2013	13.6
12/11/2013	14.2 J
03/18/2014	18.8
06/03/2014	16.9
09/23/2014	13.8
12/16/2014	16.5
03/17/2015	20 J-
06/17/2015	17
09/24/2015	20 J+
12/16/2016	23
03/09/2016	22

YVD-14/YVD-14R	
01/02/2013	NS
09/18/2013	112
12/12/2013	105
03/19/2014	101
06/04/2014	102
09/24/2014	96.7
12/17/2014	96.1
03/18/2015	91
06/15/2015	NS
09/22/2015	NS
12/16/2015	98
03/09/2016	100

YVD-17	
01/02/2013	NS
09/24/2013	0.800
12/10/2013	0.680
03/16/2014	1.07
06/01/2014	0.670
09/22/2014	0.96
12/15/2014	0.660 J
03/16/2015	1.1
06/17/2015	0.59
09/24/2015	0.20 U
12/16/2015	0.55
03/10/2016	0.32

DC-03D	
01/02/2013	NS
09/18/2013	46.4
12/12/2013	38.9
03/19/2014	42.5
06/03/2014	42.0
09/23/2014	38.0
12/17/2014	38.6
03/17/2015	37
06/17/2015	42 J-
09/25/2015	33
12/16/2015	36
03/10/2016	37

DC-03	
01/02/2013	190
09/18/2013	166
12/12/2013	174
03/19/2014	195
06/04/2014	234
09/24/2014	170
12/17/2014	193
03/18/2015	180
06/17/2015	180 J-
09/25/2015	180
12/16/2015	200
03/10/2016	180

DC-04	
01/03/2013	26
09/24/2013	31.7
12/12/2013	36.7
03/18/2014	37.3
06/03/2014	36.4
09/23/2014	37.8
12/17/2014	40.8
03/17/2015	39
06/17/2015	42
09/24/2015	48 J+
12/15/2015	48
03/09/2016	53

DC-05	
01/04/2013	32
09/24/2013	33.6
12/12/2013	42.6
03/18/2014	33.1
06/03/2014	32.6
09/23/2014	35.8
12/17/2014	33.4
03/17/2015	38 J-
06/16/2015	37
09/23/2015	38 J+
12/15/2015	38
03/09/2016	43

DC-05D	
01/02/2013	NS
09/24/2013	14.6
12/11/2013	16.0
03/18/2014	12.8
06/02/2014	3.36
09/22/2014	11.7
12/16/2014	7.90
03/17/2015	7.7 J-
06/16/2015	8.6
09/23/2015	8.9 J+
12/15/2015	9.9
03/09/2016	13

LEGEND

- EPA SHALLOW SURFICIAL AQUIFER MONITORING WELL
- YVD SHALLOW SURFICIAL AQUIFER MONITORING WELL
- YVD DEEP SURFICIAL AQUIFER MONITORING WELL

NOTES

1. ALL CONCENTRATIONS ARE IN MILLIGRAMS PER LITER (mg/L).

2. ANALYTICAL RESULTS ARE FOR SAMPLES COLLECTED PRIOR TO MARCH 10 2016

3. FIRST QUARTER 2013 SAMPLES COLLECTED BY USEPA.

4. WELL YVD-14R REPLACED DAMAGED WELL YVD-14 PRIOR TO FOURTH QUARTER 2015

5. QUALIFIERS AND NOTATIONS (MAY NOT APPEAR ON ALL FIGURES):

NS = NOT SAMPLED.

U = THE COMPOUND WAS ANALYZED FOR BUT NOT DETECTED. THE ASSOCIATED VALUE IS THE COMPOUND REPORTING LIMIT OR THE COMPOUND IS CONSIDERED NON-DETECT AT THE LISTED VALUE DUE TO ASSOCIATED BLANK CONTAMINATION.

UJ = THE COMPOUND WAS NOT DETECTED ABOVE THE REPORTED SAMPLE REPORTING LIMIT; HOWEVER, THE REPORTED LIMIT IS APPROXIMATE AND MAY OR MAY NOT REPRESENT THE ACTUAL LIMIT OF QUANTITATION.

R = THE SAMPLE RESULTS ARE REJECTED AS UNUSABLE. THE COMPOUND MAY OR MAY NOT BE PRESENT IN THE SAMPLE.

J = THE COMPOUND WAS POSITIVELY IDENTIFIED; HOWEVER, THE ASSOCIATED NUMERICAL VALUE IS AN ESTIMATED CONCENTRATION.

J- = THE RESULT IS AN ESTIMATED QUANTITY, BUT THE RESULT MAY BE BIASED LOW.

J+ = THE RESULT IS AN ESTIMATED QUANTITY, BUT THE RESULT MAY BE BIASED HIGH.

6. AERIAL IMAGERY AND BASE MAP SOURCE: ESRI, 2013

N

0 2,000 4,000
SCALE IN FEET

INLAND EARTH SCIENCES

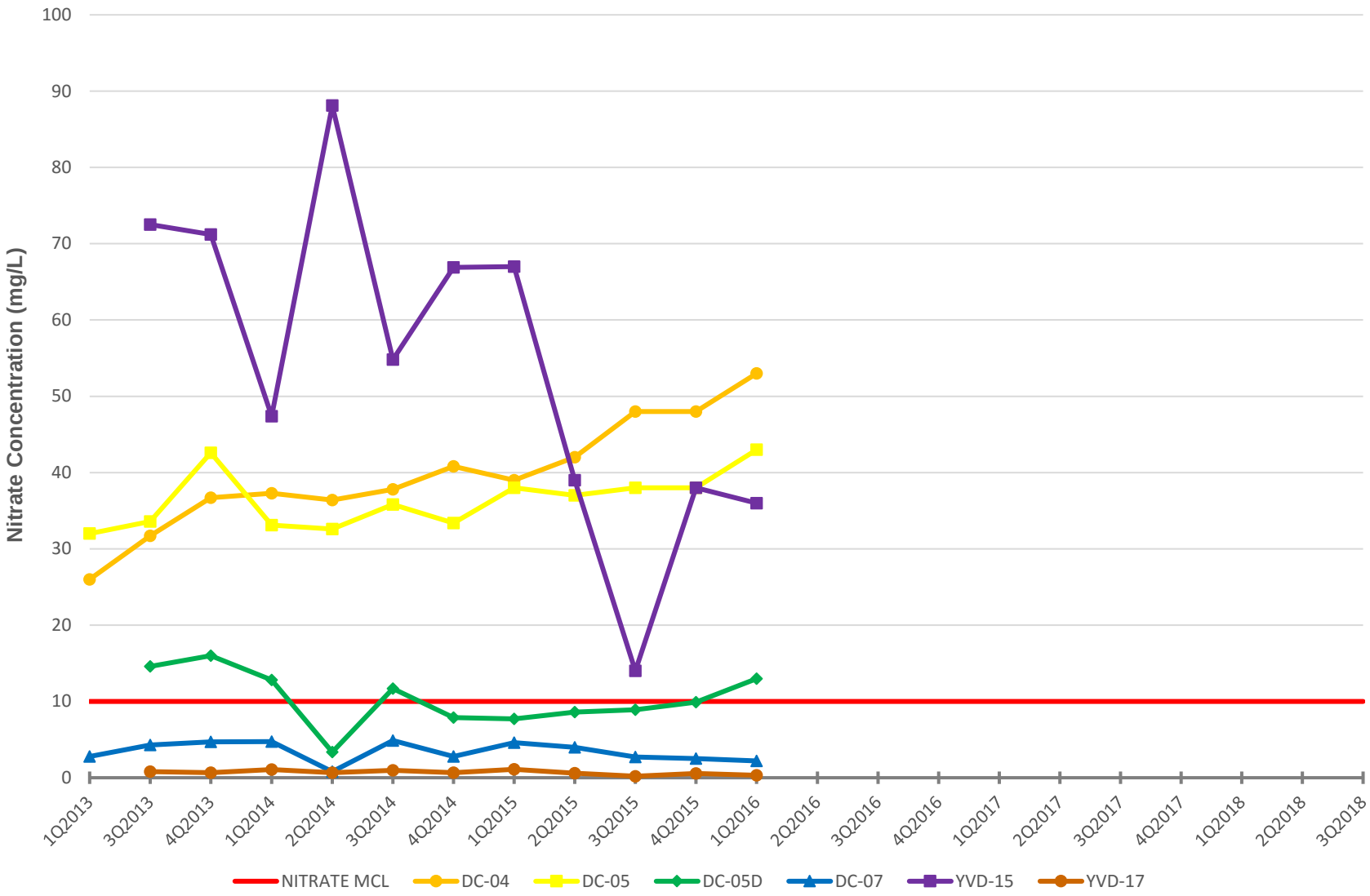
QUARTERLY GROUNDWATER MONITORING DATA REPORT
ADMINISTRATIVE ORDER ON CONSENT
YAKIMA VALLEY DAIRIES / SDWA-10-2013-0080
OUTLOOK, WASHINGTON

HISTORICAL NITRATE

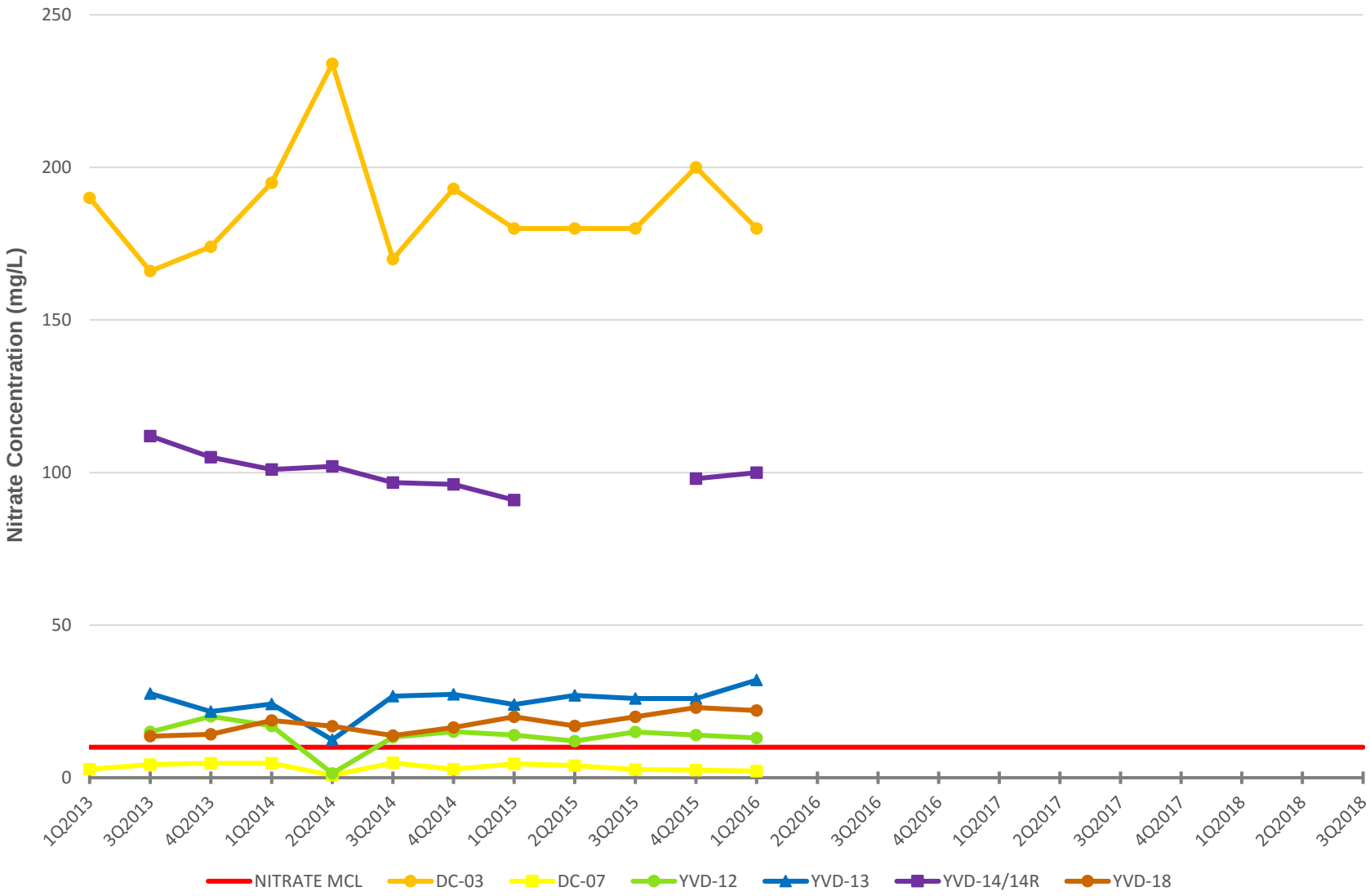
MAY 2016

FIGURE 16B

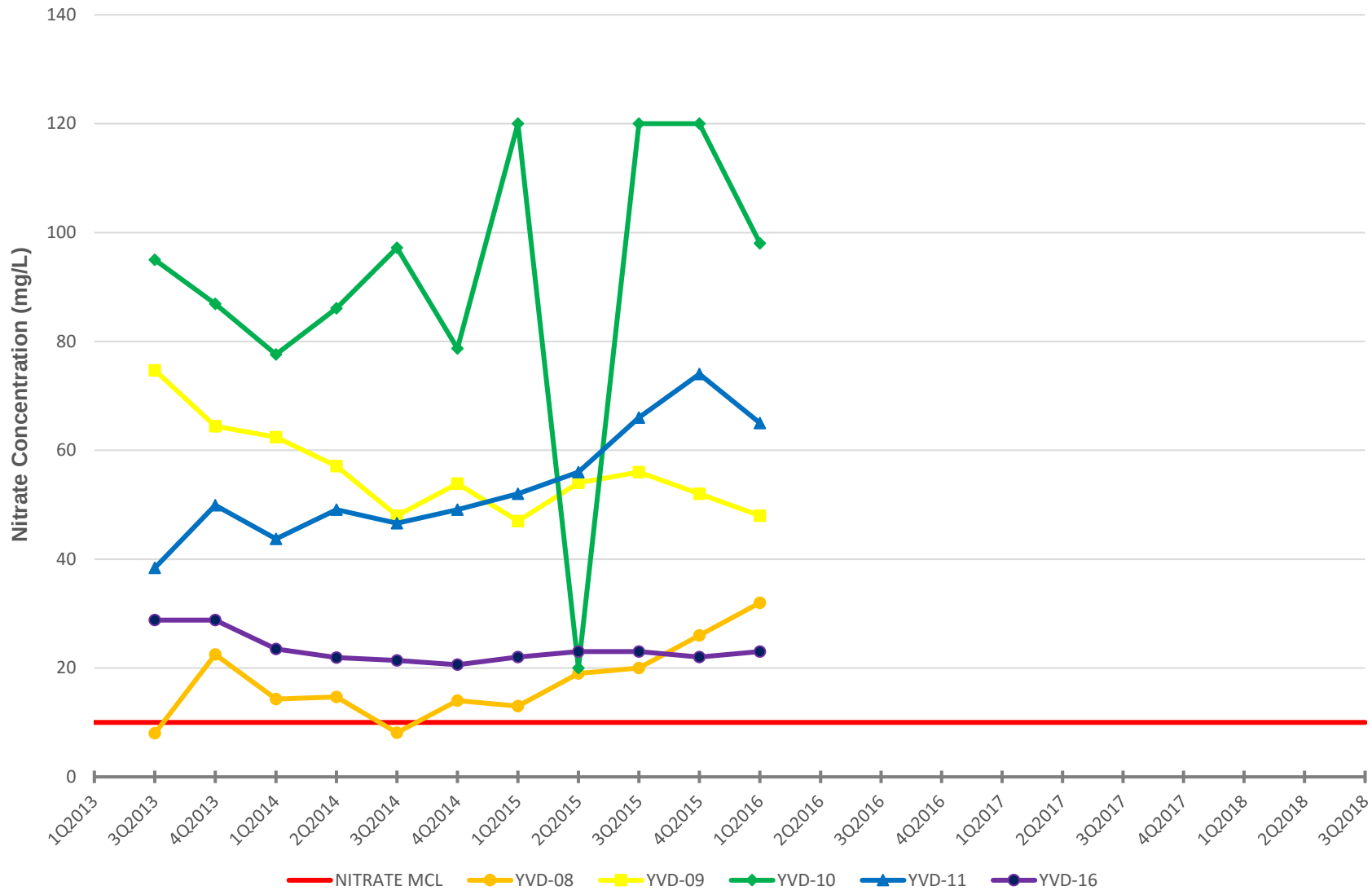
GIS FILE PATH: G:\Projects\Inland Earth Sciences\41731_Inland_Earth_Science_Yakima\Global\GIS\Maps\2016_05_2016_Q1\41731_001_016B_HISTORICAL_NITRATE.mxd — USER: gbowen — LAST SAVED: 5/10/2016 6:03:48 PM



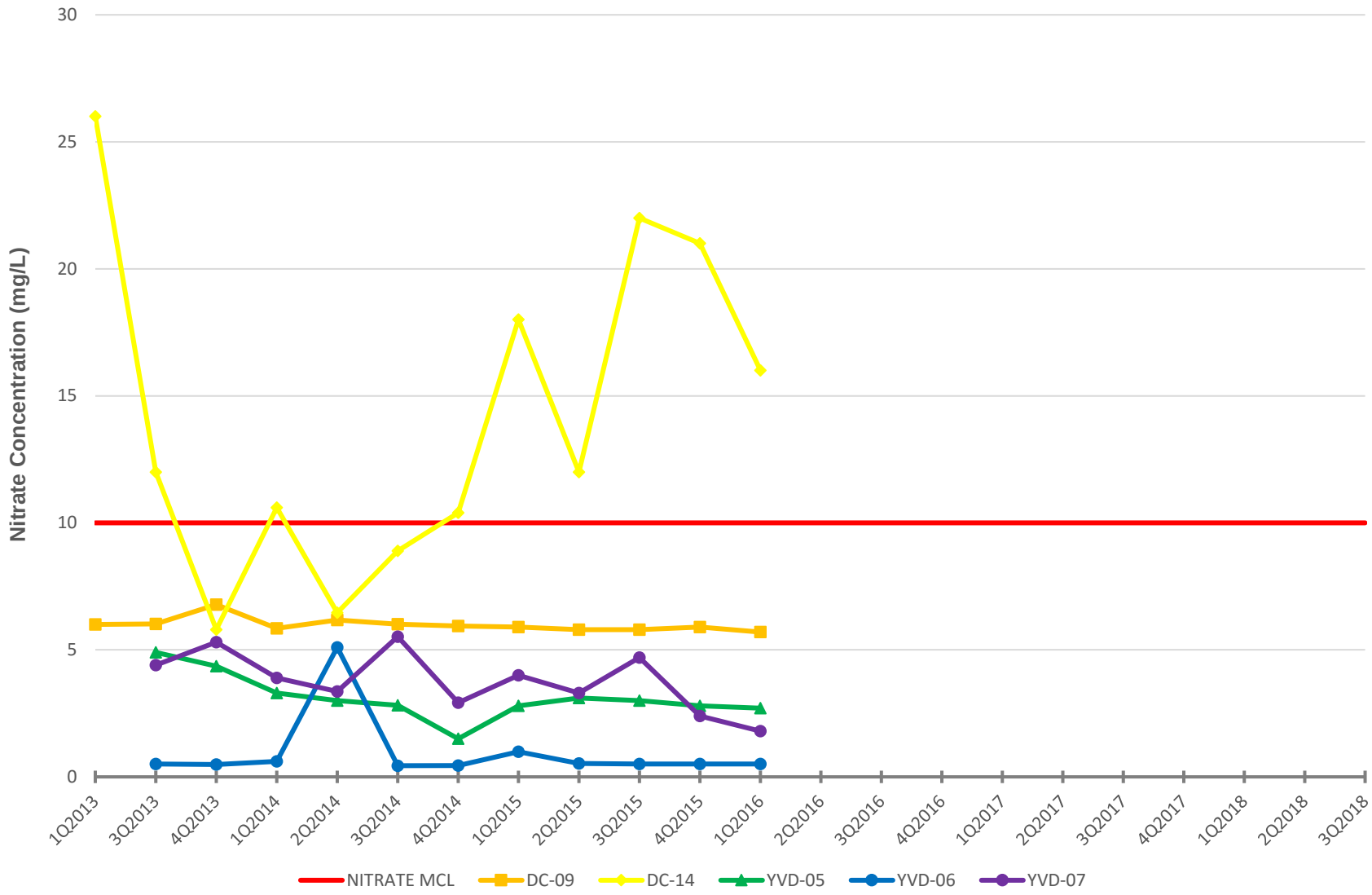
INLAND EARTH SCIENCES		**NITRATE CONCENTRATIONS** **EAST DOWNGRADIENT WELLS** **FIRST QUARTER 2016**	**FIGURE**
1408-0010-003	May 2016	**QUARTERLY GROUNDWATER MONITORING DATA REPORT** YAKIMA VALLEY DAIRIES SDWA-10-2013-0080	**17**



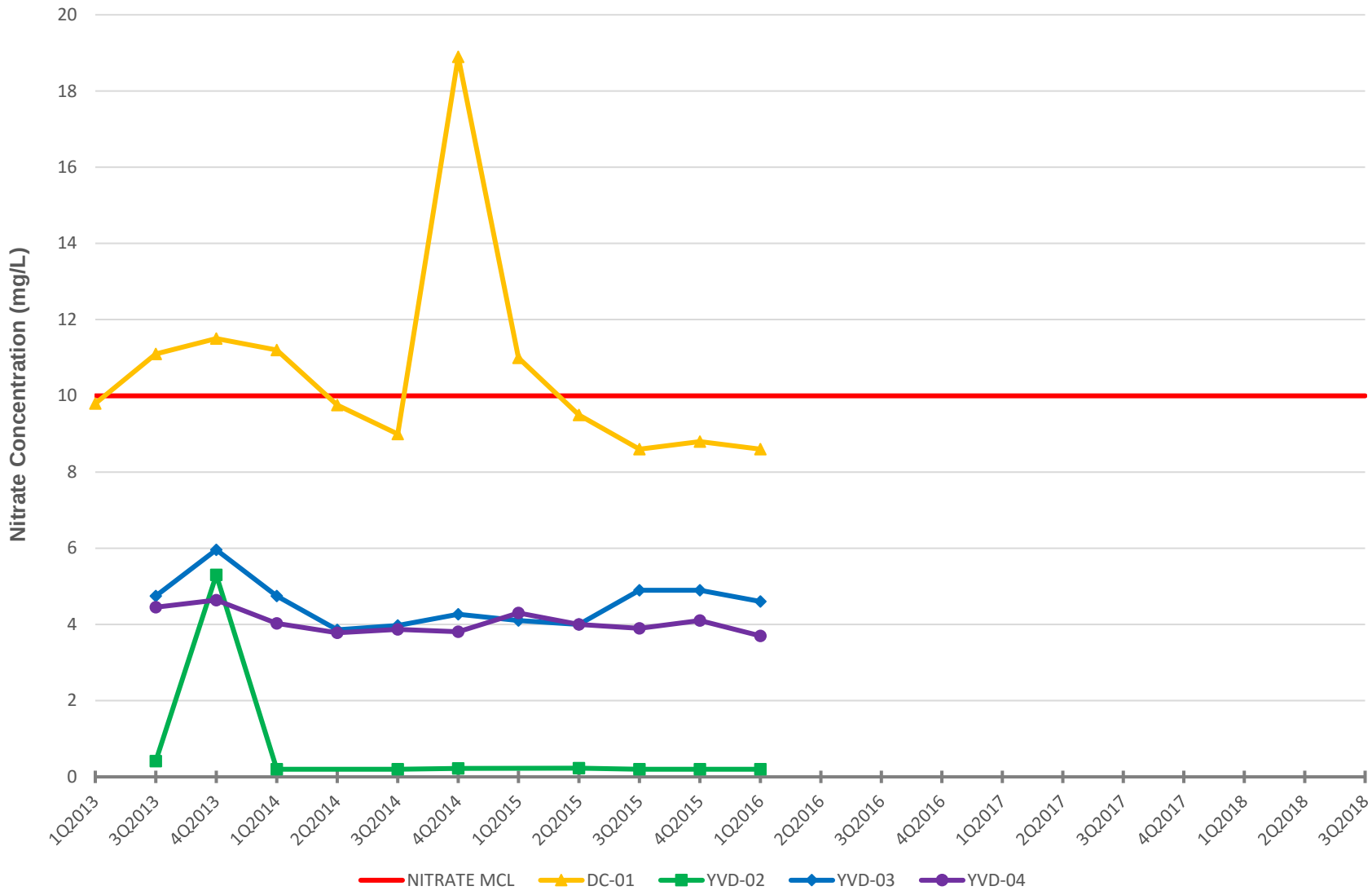
INLAND EARTH SCIENCES		**NITRATE CONCENTRATIONS** **WEST DOWNGRADIENT WELLS** **FIRST QUARTER 2016**	**FIGURE**
1408-0010-003	May 2016	**QUARTERLY GROUNDWATER MONITORING DATA REPORT** YAKIMA VALLEY DAIRIES SDWA-10-2013-0080	**18**



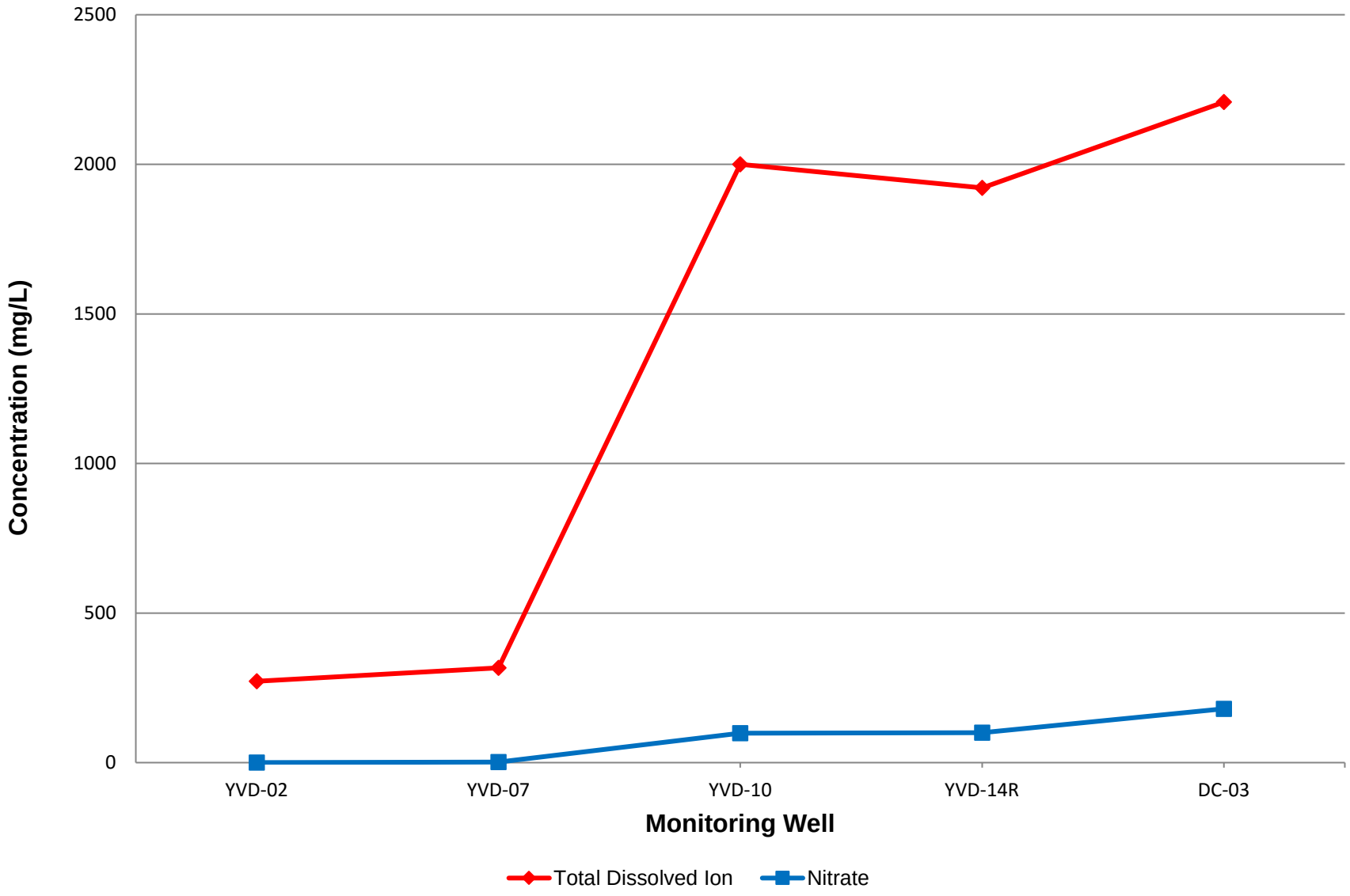
INLAND EARTH SCIENCES		**NITRATE CONCENTRATIONS** **CENTRAL WELLS** **FIRST QUARTER 2016**	**FIGURE**
1408-0010-003	May 2016	**QUARTERLY GROUNDWATER MONITORING DATA REPORT** YAKIMA VALLEY DAIRIES SDWA-10-2013-0080	**19**



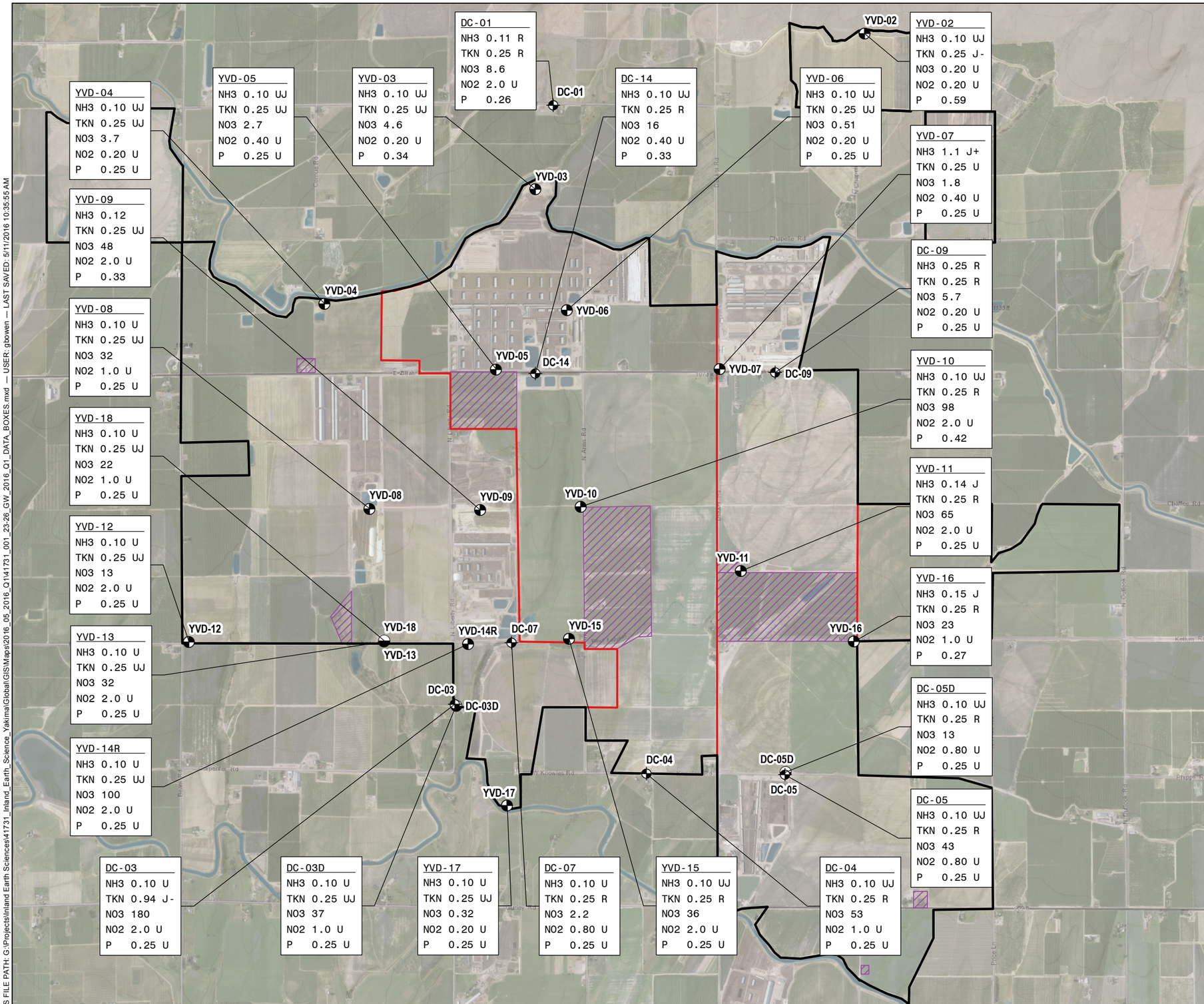
INLAND EARTH SCIENCES		**NITRATE CONCENTRATIONS** **NORTHERN WELLS** **FIRST QUARTER 2016**	**FIGURE**
1408-0010-003	May 2016	**QUARTERLY GROUNDWATER MONITORING DATA REPORT** YAKIMA VALLEY DAIRIES SDWA-10-2013-0080	**20**



INLAND EARTH SCIENCES		**NITRATE CONCENTRATIONS** **UPGRADIENT WELLS** **FIRST QUARTER 2016**	**FIGURE**
1408-0010-003	May 2016	**QUARTERLY GROUNDWATER MONITORING DATA REPORT** YAKIMA VALLEY DAIRIES SDWA-10-2013-0080	**21**



INLAND EARTH SCIENCES		NITRATE AND TOTAL DISSOLVED ION CONCENTRATION ALONG TRANSECT F-F' FIRST QUARTER 2016	FIGURE 22
1408-0010-003	May 2016	QUARTERLY GROUNDWATER MONITORING DATA REPORT YAKIMA VALLEY DAIRIES SDWA-10-2013-0080	



LEGEND

- EPA SHALLOW SURFICIAL AQUIFER MONITORING WELL
- YVD SHALLOW SURFICIAL AQUIFER MONITORING WELL
- YVD DEEP SURFICIAL AQUIFER MONITORING WELL
- APPROXIMATE BOUNDARY OF DAIRY FACILITIES
- RESPONDENTS OWNERSHIP BOUNDARY
- LAND WITHIN BOUNDARY NOT OWNED OR OPERATED BY RESPONDENTS

NH3 = AMMONIA (AS N)

TKN = TOTAL KJELDAHL NITROGEN (AS N)

NO3 = NITRATE-NITROGEN

NO2 = NITRITE-NITROGEN

P = PHOSPHORUS, TOTAL

NOTES

1. ALL CONCENTRATIONS ARE IN MILLIGRAMS PER LITER (mg/L).

2. ANALYTICAL RESULTS ARE FOR SAMPLES COLLECTED MARCH 7-10, 2016.

3. QUALIFIERS AND NOTATIONS (MAY NOT APPEAR ON ALL FIGURES):

U = THE COMPOUND WAS ANALYZED FOR BUT NOT DETECTED. THE ASSOCIATED VALUE IS THE COMPOUND REPORTING LIMIT OR THE COMPOUND IS CONSIDERED NON-DETECT AT THE LISTED VALUE DUE TO ASSOCIATED BLANK CONTAMINATION.

UJ = THE COMPOUND WAS NOT DETECTED ABOVE THE REPORTED SAMPLE REPORTING LIMIT; HOWEVER, THE REPORTING LIMIT IS APPROXIMATE AND MAY OR MAY NOT REPRESENT THE ACTUAL LIMIT OF QUANTITATION.

R = THE SAMPLE RESULTS ARE REJECTED AS UNUSABLE. THE COMPOUND MAY OR MAY NOT BE PRESENT IN THE SAMPLE.

J = THE COMPOUND WAS POSITIVELY IDENTIFIED; HOWEVER, THE ASSOCIATED NUMERICAL VALUE IS AN ESTIMATED CONCENTRATION.

J- = THE RESULT IS AN ESTIMATED QUANTITY, BUT THE RESULT MAY BE BIASED LOW.

J+ = THE RESULT IS AN ESTIMATED QUANTITY, BUT THE RESULT MAY BE BIASED HIGH.

4. AERIAL IMAGERY AND BASE MAP SOURCE: ESRI, 2013

N

0 2,000 4,000

SCALE IN FEET

INLAND EARTH SCIENCES

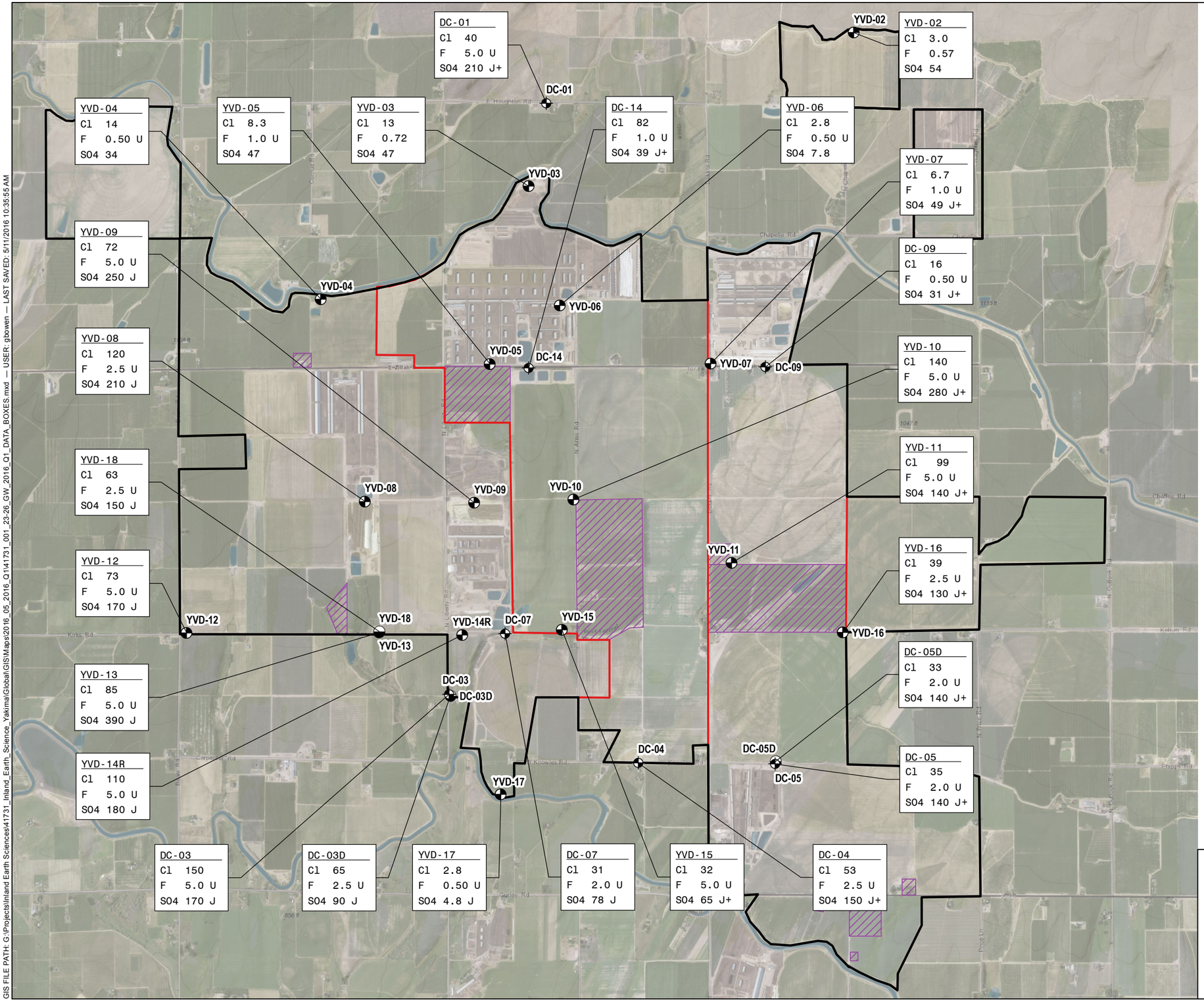
QUARTERLY GROUNDWATER MONITORING DATA REPORT
ADMINISTRATIVE ORDER ON CONSENT
YAKIMA VALLEY DAIRIES / SDWA-10-2013-0080
OUTLOOK, WASHINGTON

NUTRIENT CONCENTRATIONS FIRST QUARTER 2016

MAY 2016

FIGURE 23

GIS FILE PATH: G:\Projects\Inland Earth Sciences\41731_Inland_Earth_Science_Yakima\Global\GIS\Maps\2016_05_2016_Q1\41731_001_23-26_GW_2016_Q1_DATA_BOXES.mxd — USER: gbowen — LAST SAVED: 5/11/2016 10:35:55 AM



LEGEND

- EPA SHALLOW SURFICIAL AQUIFER MONITORING WELL
- YVD SHALLOW SURFICIAL AQUIFER MONITORING WELL
- YVD DEEP SURFICIAL AQUIFER MONITORING WELL
- APPROXIMATE BOUNDARY OF DAIRY FACILITIES
- RESPONDENTS OWNERSHIP BOUNDARY
- LAND WITHIN BOUNDARY NOT OWNED OR OPERATED BY RESPONDENTS

Cl = CHLORIDE

F = FLUORIDE

SO4 = SULFATE

NOTES

1. ALL CONCENTRATIONS ARE IN MILLIGRAMS PER LITER (mg/L).

2. ANALYTICAL RESULTS ARE FOR SAMPLES COLLECTED MARCH 7-10, 2016.

3. QUALIFIERS AND NOTATIONS (MAY NOT APPEAR ON ALL FIGURES):

U = THE COMPOUND WAS ANALYZED FOR BUT NOT DETECTED. THE ASSOCIATED VALUE IS THE COMPOUND REPORTING LIMIT OR THE COMPOUND IS CONSIDERED NON-DETECT AT THE LISTED VALUE DUE TO ASSOCIATED BLANK CONTAMINATION.

UJ = THE COMPOUND WAS NOT DETECTED ABOVE THE REPORTED SAMPLE REPORTING LIMIT; HOWEVER, THE REPORTING LIMIT IS APPROXIMATE AND MAY OR MAY NOT REPRESENT THE ACTUAL LIMIT OF QUANTITATION.

R = THE SAMPLE RESULTS ARE REJECTED AS UNUSABLE. THE COMPOUND MAY OR MAY NOT BE PRESENT IN THE SAMPLE.

J = THE COMPOUND WAS POSITIVELY IDENTIFIED; HOWEVER, THE ASSOCIATED NUMERICAL VALUE IS AN ESTIMATED CONCENTRATION.

J- = THE RESULT IS AN ESTIMATED QUANTITY, BUT THE RESULT MAY BE BIASED LOW.

J+ = THE RESULT IS AN ESTIMATED QUANTITY, BUT THE RESULT MAY BE BIASED HIGH.

4. AERIAL IMAGERY AND BASE MAP SOURCE: ESRI, 2013

N

0 2,000 4,000

SCALE IN FEET

INLAND EARTH SCIENCES

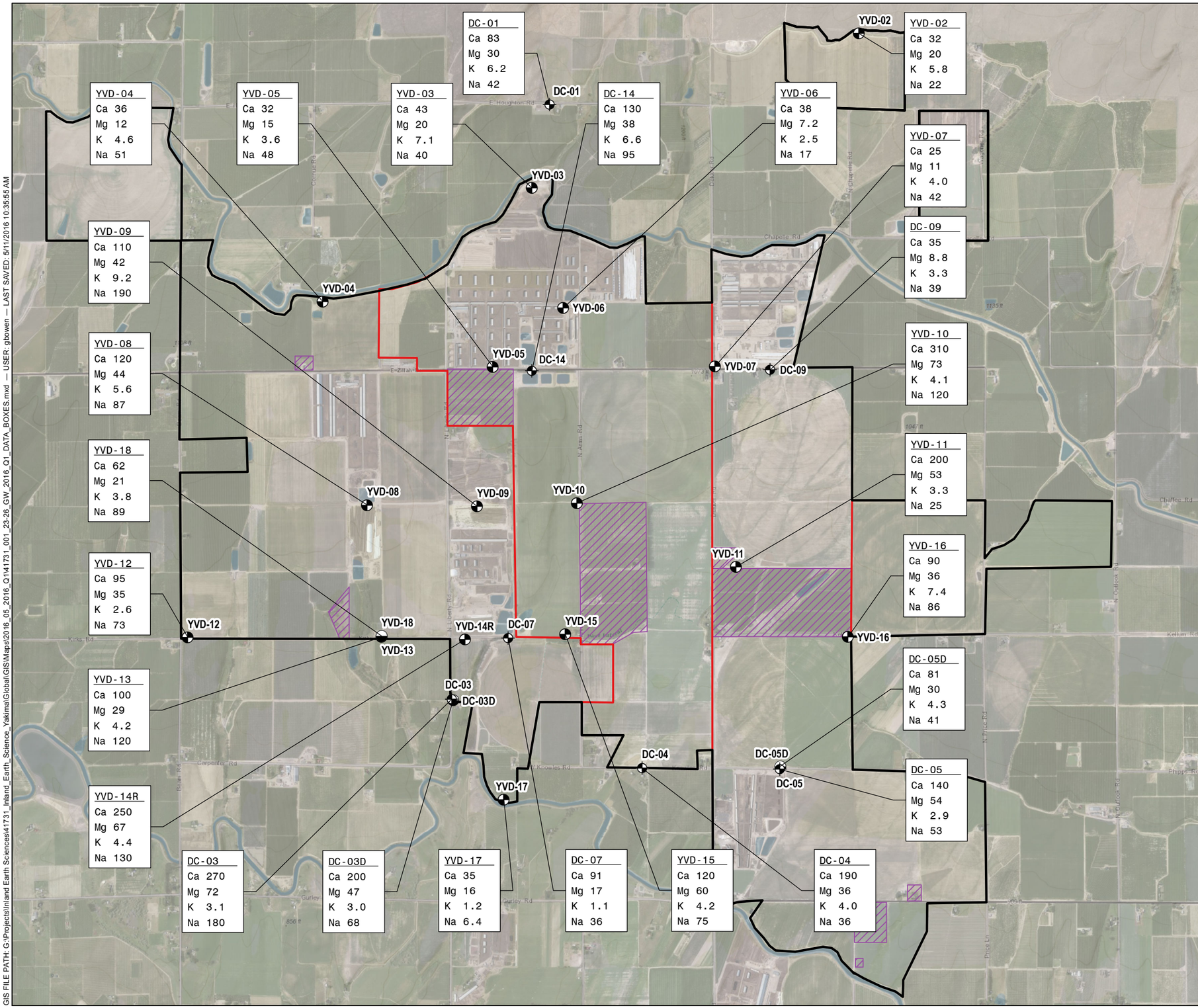
QUARTERLY GROUNDWATER MONITORING DATA REPORT
ADMINISTRATIVE ORDER ON CONSENT
YAKIMA VALLEY DAIRIES / SDWA-10-2013-0080
OUTLOOK, WASHINGTON

ANION CONCENTRATIONS FIRST QUARTER 2016

MAY 2016

FIGURE 24

GIS FILE PATH: G:\Projects\Inland Earth Sciences\41731_Inland_Earth_Science_Yakima\Global\GIS\Maps\2016_05_2016_Q1\41731_001_23-26_GW_2016_Q1_DATA_BOXES.mxd — USER: gbowen — LAST SAVED: 5/11/2016 10:35:55 AM



LEGEND

- EPA SHALLOW SURFICIAL AQUIFER MONITORING WELL
- YVD SHALLOW SURFICIAL AQUIFER MONITORING WELL
- YVD DEEP SURFICIAL AQUIFER MONITORING WELL
- APPROXIMATE BOUNDARY OF DAIRY FACILITIES
- RESPONDENTS OWNERSHIP BOUNDARY
- LAND WITHIN BOUNDARY NOT OWNED OR OPERATED BY RESPONDENTS

Ca = CALCIUM

Mg = MAGNESIUM

K = POTASSIUM

Na = SODIUM

NOTES

1. ALL CONCENTRATIONS ARE IN MILLIGRAMS PER LITER (mg/L).

2. ANALYTICAL RESULTS ARE FOR SAMPLES COLLECTED MARCH 7-10, 2016.

3. QUALIFIERS AND NOTATIONS (MAY NOT APPEAR ON ALL FIGURES):

U = THE COMPOUND WAS ANALYZED FOR BUT NOT DETECTED. THE ASSOCIATED VALUE IS THE COMPOUND REPORTING LIMIT OR THE COMPOUND IS CONSIDERED NON-DETECT AT THE LISTED VALUE DUE TO ASSOCIATED BLANK CONTAMINATION.

UJ = THE COMPOUND WAS NOT DETECTED ABOVE THE REPORTED SAMPLE REPORTING LIMIT; HOWEVER, THE REPORTING LIMIT IS APPROXIMATE AND MAY OR MAY NOT REPRESENT THE ACTUAL LIMIT OF QUANTITATION.

R = THE SAMPLE RESULTS ARE REJECTED AS UNUSABLE. THE COMPOUND MAY OR MAY NOT BE PRESENT IN THE SAMPLE.

J = THE COMPOUND WAS POSITIVELY IDENTIFIED; HOWEVER, THE ASSOCIATED NUMERICAL VALUE IS AN ESTIMATED CONCENTRATION.

J- = THE RESULT IS AN ESTIMATED QUANTITY, BUT THE RESULT MAY BE BIASED LOW.

J+ = THE RESULT IS AN ESTIMATED QUANTITY, BUT THE RESULT MAY BE BIASED HIGH.

4. AERIAL IMAGERY AND BASE MAP SOURCE: ESRI, 2013

N

0 2,000 4,000

SCALE IN FEET

INLAND EARTH SCIENCES

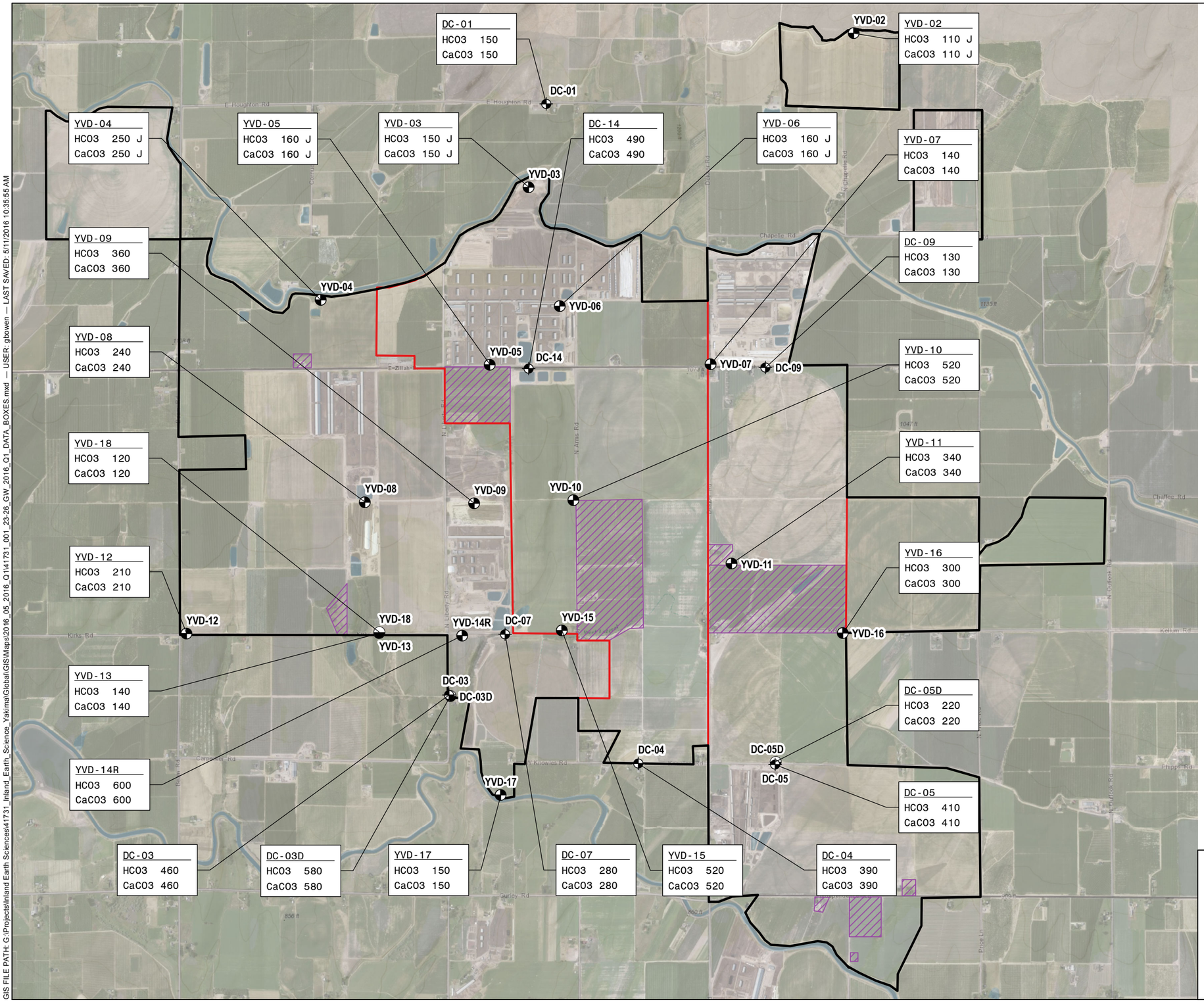
QUARTERLY GROUNDWATER MONITORING DATA REPORT
ADMINISTRATIVE ORDER ON CONSENT
YAKIMA VALLEY DAIRIES / SDWA-10-2013-0080
OUTLOOK, WASHINGTON

METALS CONCENTRATIONS FIRST QUARTER 2016

MAY 2016

FIGURE 25

GIS FILE PATH: G:\Projects\Inland Earth Sciences\41731_Inland_Earth_Science_Yakima\Global\GIS\Maps\2016_05_2016_Q1\41731_001_23-26_GW_2016_Q1_DATA_BOXES.mxd — USER: gbowen — LAST SAVED: 5/11/2016 10:35:55 AM



LEGEND

- EPA SHALLOW SURFICIAL AQUIFER MONITORING WELL
- YVD SHALLOW SURFICIAL AQUIFER MONITORING WELL
- YVD DEEP SURFICIAL AQUIFER MONITORING WELL
- APPROXIMATE BOUNDARY OF DAIRY FACILITIES
- RESPONDENTS OWNERSHIP BOUNDARY
- LAND WITHIN BOUNDARY NOT OWNED OR OPERATED BY RESPONDENTS

HCO3 = BICARBONATE ALKALINITY AS CaCO3

CaCO3 = TOTAL ALKALINITY AS CaCO3

NOTES

1. ALL CONCENTRATIONS ARE IN MILLIGRAMS PER LITER (mg/L).

2. ANALYTICAL RESULTS ARE FOR SAMPLES COLLECTED MARCH 7-10, 2016.

3. QUALIFIERS AND NOTATIONS (MAY NOT APPEAR ON ALL FIGURES):

U = THE COMPOUND WAS ANALYZED FOR BUT NOT DETECTED. THE ASSOCIATED VALUE IS THE COMPOUND REPORTING LIMIT OR THE COMPOUND IS CONSIDERED NON-DETECT AT THE LISTED VALUE DUE TO ASSOCIATED BLANK CONTAMINATION.

UJ = THE COMPOUND WAS NOT DETECTED ABOVE THE REPORTED SAMPLE REPORTING LIMIT; HOWEVER, THE REPORTING LIMIT IS APPROXIMATE AND MAY OR MAY NOT REPRESENT THE ACTUAL LIMIT OF QUANTITATION.

R = THE SAMPLE RESULTS ARE REJECTED AS UNUSABLE. THE COMPOUND MAY OR MAY NOT BE PRESENT IN THE SAMPLE.

J = THE COMPOUND WAS POSITIVELY IDENTIFIED; HOWEVER, THE ASSOCIATED NUMERICAL VALUE IS AN ESTIMATED CONCENTRATION.

J- = THE RESULT IS AN ESTIMATED QUANTITY, BUT THE RESULT MAY BE BIASED LOW.

J+ = THE RESULT IS AN ESTIMATED QUANTITY, BUT THE RESULT MAY BE BIASED HIGH.

4. AERIAL IMAGERY AND BASE MAP SOURCE: ESRI, 2013

N

0 2,000 4,000
SCALE IN FEET

INLAND EARTH SCIENCES

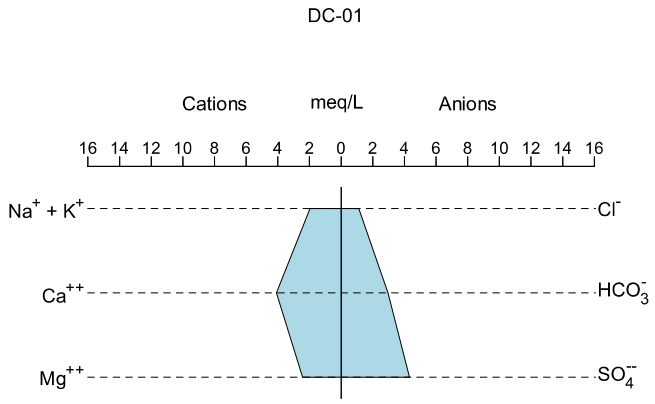
QUARTERLY GROUNDWATER MONITORING DATA REPORT
ADMINISTRATIVE ORDER ON CONSENT
YAKIMA VALLEY DAIRIES / SDWA-10-2013-0080
OUTLOOK, WASHINGTON

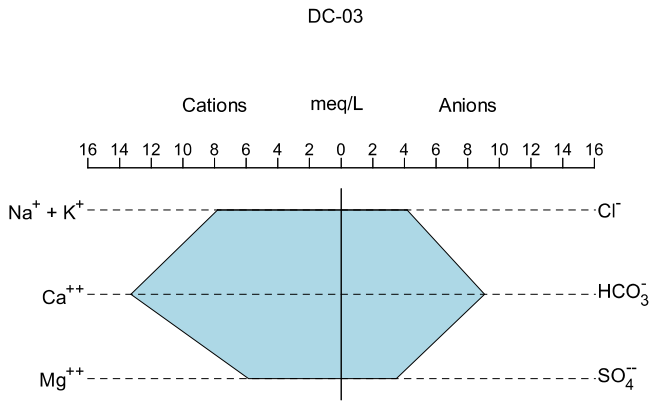
ALKALINITY CONCENTRATIONS FIRST QUARTER 2016

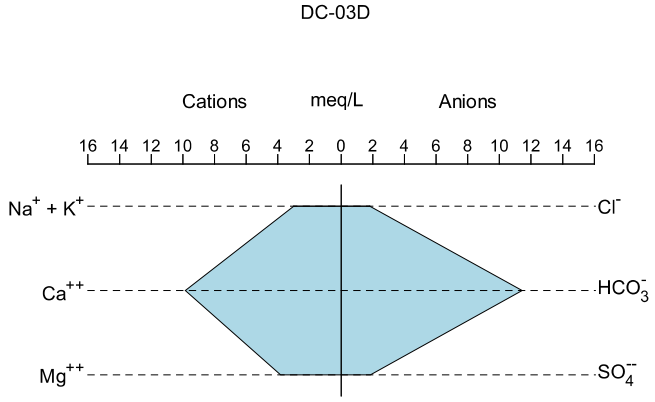
MAY 2016

FIGURE 26

GIS FILE PATH: G:\Projects\Inland Earth Sciences\41731_Inland_Earth_Science_Yakima\Global\GIS\Maps\2016_05_2016_Q1\41731_001_23-26_GW_2016_Q1_DATA_BOXES.mxd — USER: gbowen — LAST SAVED: 5/11/2016 10:35:55 AM







NOTES

1. CATIONS - Magnesium (Mg), Calcium (Ca), Sodium (Na), Potassium (K)
2. ANIONS - Sulfate (SO4), Bicarbonate (HCO3), Chloride (Cl)
3. meq/L - Milliequivalents per liter

INLAND EARTH SCIENCES

QUARTERLY GROUNDWATER MONITORING DATA REPORT
ADMINISTRATIVE ORDER ON CONSENT
YAKIMA VALLEY DAIRIES / SDW A-10-2013-0080
OUTLOOK, WASHINGTON

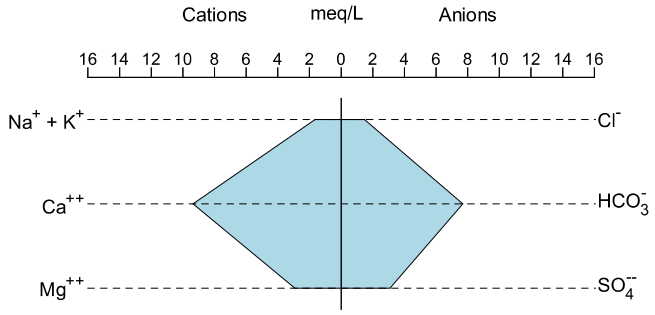
STIFF DIAGRAMS
FIRST QUARTER 2016

MAY 2016

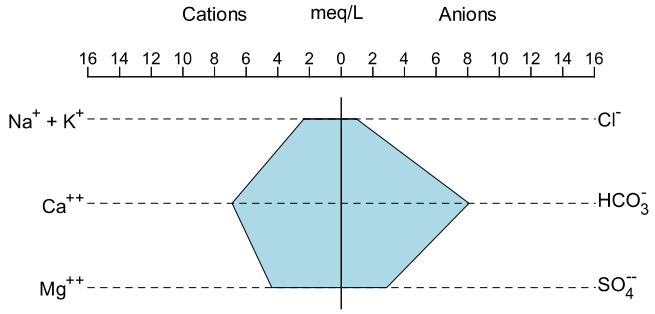
FIGURE 27-1

GIS FILE PATH: G:\Projects\Inland Earth Sciences\41731_Inland_Earth_Science_Yakima\Global\GIS\Maps\2016_05_2016_Q1\41731_001_0027_GW_2015_Q4_STIFF_DIAGRAMS.mxd — USER: gbowen — LAST SAVED: 5/9/2016 5:08:05 PM

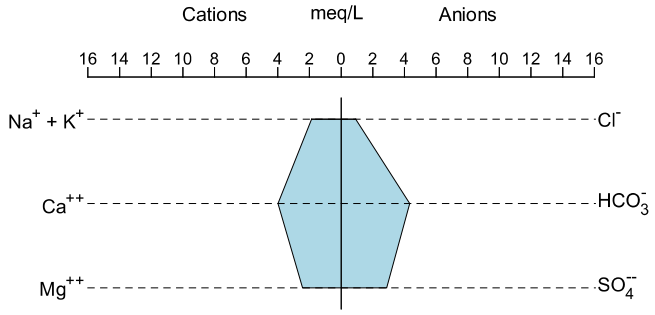
DC-04



DC-05



DC-05D



NOTES

1. CATIONS - Magnesium (Mg), Calcium (Ca), Sodium (Na), Potassium (K)
2. ANIONS - Sulfate (SO4), Bicarbonate (HCO3), Chloride (Cl)
3. meq/L - Milliequivalents per liter

INLAND EARTH SCIENCES

QUARTERLY GROUNDWATER MONITORING DATA REPORT
ADMINISTRATIVE ORDER ON CONSENT
YAKIMA VALLEY DAIRIES / SDW A-10-2013-0080
OUTLOOK, WASHINGTON

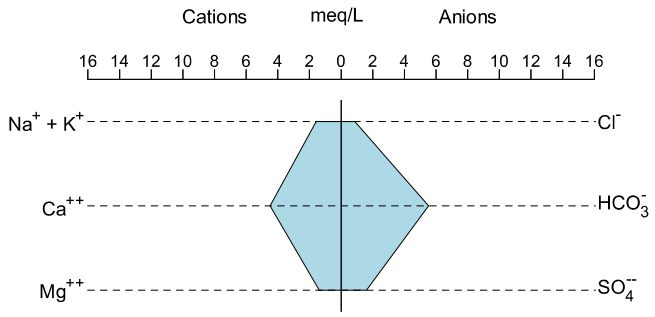
STIFF DIAGRAMS
FIRST QUARTER 2016

MAY 2016

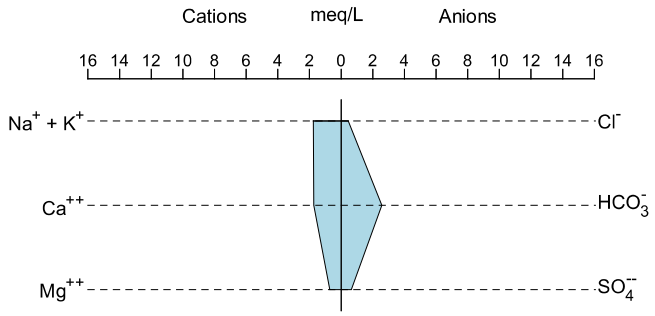
FIGURE 27-2

GIS FILE PATH: G:\Projects\Inland Earth Sciences\41731_Inland_Earth_Science_Yakima\Global\GIS\Maps\2016_05_2016_Q1\41731_001_0027_GW_2015_Q4_STIFF_DIAGRAMS.mxd — USER: gbowen — LAST SAVED: 5/9/2016 5:08:05 PM

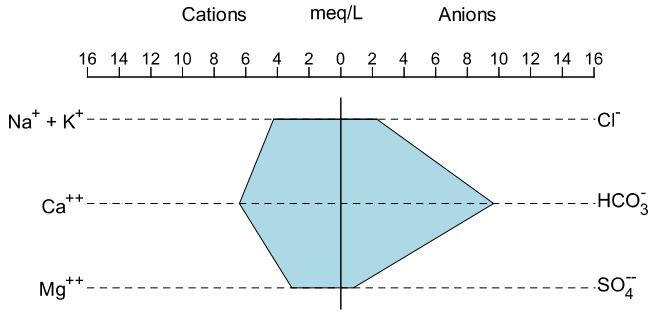
DC-07



DC-09



DC-14



NOTES

1. CATIONS - Magnesium (Mg), Calcium (Ca), Sodium (Na), Potassium (K)
2. ANIONS - Sulfate (SO4), Bicarbonate (HCO3), Chloride (Cl)
3. meq/L - Milliequivalents per liter

INLAND EARTH SCIENCES

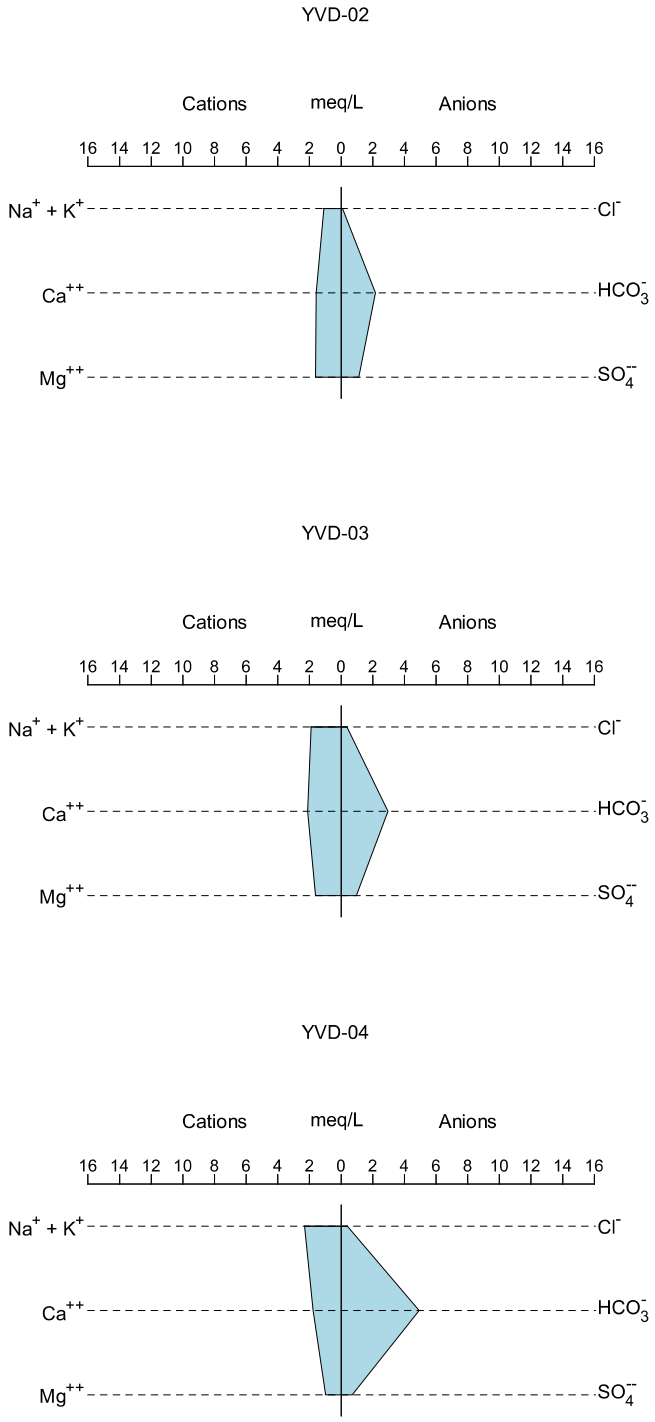
QUARTERLY GROUNDWATER MONITORING DATA REPORT
ADMINISTRATIVE ORDER ON CONSENT
YAKIMA VALLEY DAIRIES / SDW A-10-2013-0080
OUTLOOK, WASHINGTON

STIFF DIAGRAMS
FIRST QUARTER 2016

MAY 2016

FIGURE 27-3

GIS FILE PATH: G:\Projects\Inland Earth Sciences\41731_Inland_Earth_Science_Yakima\Global\GIS\Maps\2016_05_2016_Q1\41731_001_0027_GW_2015_Q4_STIFF_DIAGRAMS.mxd — USER: gbowen — LAST SAVED: 5/9/2016 5:08:05 PM



NOTES

1. CATIONS - Magnesium (Mg), Calcium (Ca), Sodium (Na), Potassium (K)
2. ANIONS - Sulfate (SO4), Bicarbonate (HCO3), Chloride (Cl)
3. meq/L - Milliequivalents per liter

INLAND EARTH SCIENCES

QUARTERLY GROUNDWATER MONITORING DATA REPORT
ADMINISTRATIVE ORDER ON CONSENT
YAKIMA VALLEY DAIRIES / SDW A-10-2013-0080
OUTLOOK, WASHINGTON

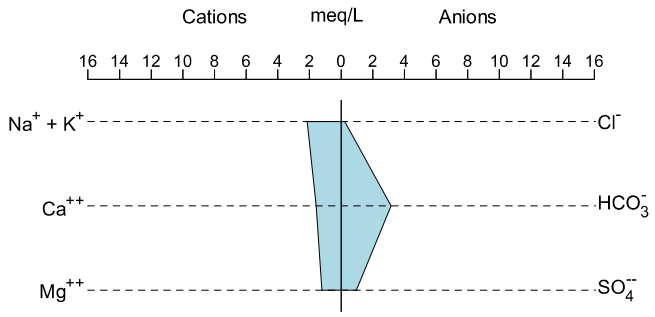
STIFF DIAGRAMS
FIRST QUARTER 2016

MAY 2016

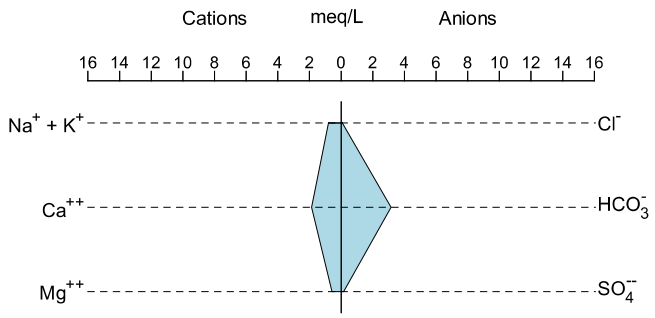
FIGURE 27-4

GIS FILE PATH: G:\Projects\Inland Earth Sciences\41731_Inland_Earth_Science_Yakima\Global\GIS\Maps\2016_05_2016_Q1\41731_001_0027_GW_2015_Q4_STIFF_DIAGRAMS.mxd — USER: gbowen — LAST SAVED: 5/9/2016 5:08:05 PM

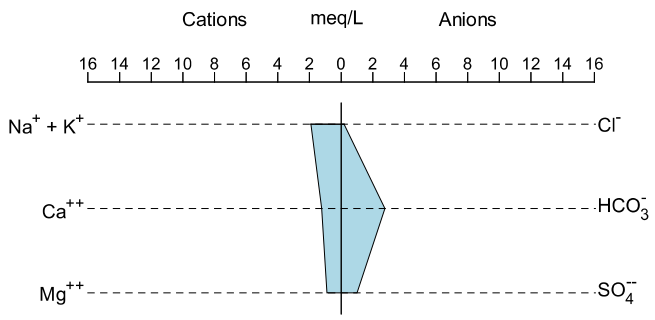
YVD-05



YVD-06



YVD-07



NOTES

1. CATIONS - Magnesium (Mg), Calcium (Ca), Sodium (Na), Potassium (K)
2. ANIONS - Sulfate (SO4), Bicarbonate (HCO3), Chloride (Cl)
3. meq/L - Milliequivalents per liter

INLAND EARTH SCIENCES

QUARTERLY GROUNDWATER MONITORING DATA REPORT
ADMINISTRATIVE ORDER ON CONSENT
YAKIMA VALLEY DAIRIES / SDW A-10-2013-0080
OUTLOOK, WASHINGTON

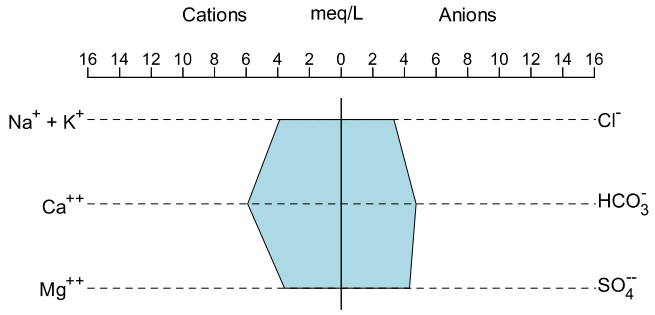
STIFF DIAGRAMS
FIRST QUARTER 2016

MAY 2016

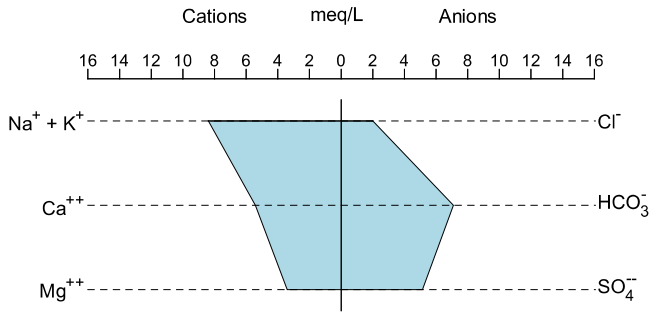
FIGURE 27-5

GIS FILE PATH: G:\Projects\Inland Earth Sciences\41731_Inland_Earth_Science_Yakima\Global\GIS\Maps\2016_05_2016_Q1\41731_001_0027_GW_2015_Q4_STIFF_DIAGRAMS.mxd — USER: gbowen — LAST SAVED: 5/9/2016 5:08:05 PM

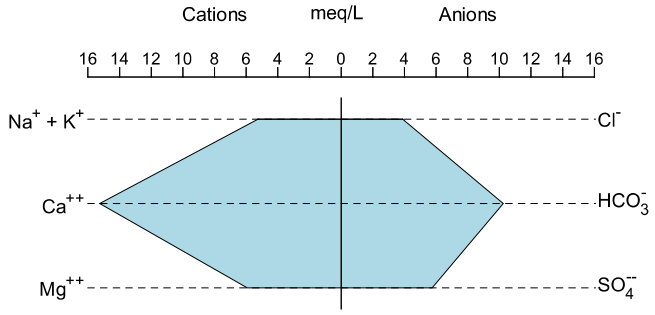
YVD-08



YVD-09



YVD-10



NOTES

1. CATIONS - Magnesium (Mg), Calcium (Ca), Sodium (Na), Potassium (K)
2. ANIONS - Sulfate (SO4), Bicarbonate (HCO3), Chloride (Cl)
3. meq/L - Milliequivalents per liter

INLAND EARTH SCIENCES

QUARTERLY GROUNDWATER MONITORING DATA REPORT
ADMINISTRATIVE ORDER ON CONSENT
YAKIMA VALLEY DAIRIES / SDW A-10-2013-0080
OUTLOOK, WASHINGTON

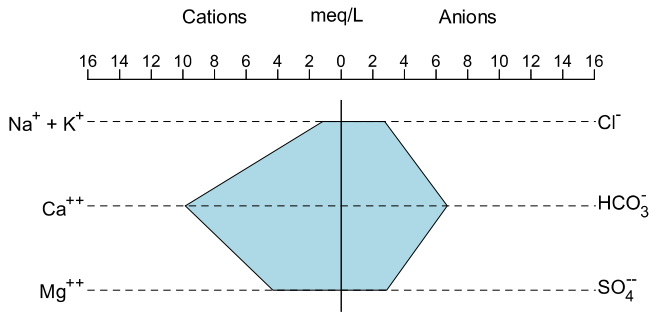
STIFF DIAGRAMS
FIRST QUARTER 2016

MAY 2016

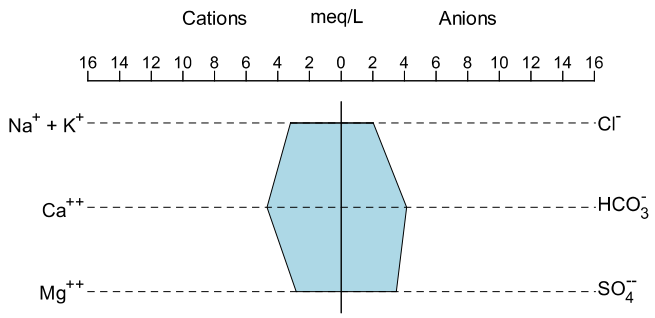
FIGURE 27-6

GIS FILE PATH: G:\Projects\Inland Earth Sciences\41731_Inland_Earth_Science_Yakima\Global\GIS\Maps\2016_05_2016_Q1\41731_001_0027_GW_2015_Q4_STIFF_DIAGRAMS.mxd — USER: gbowen — LAST SAVED: 5/9/2016 5:08:05 PM

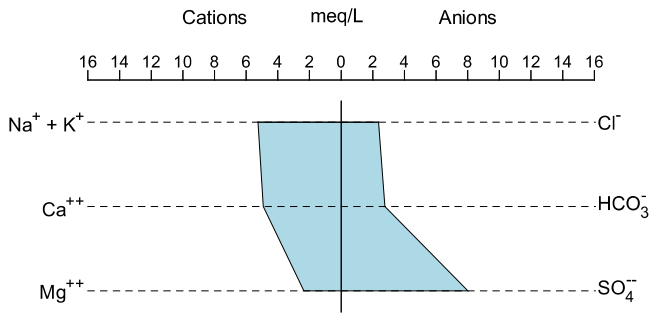
YVD-11



YVD-12



YVD-13



NOTES

1. CATIONS - Magnesium (Mg), Calcium (Ca), Sodium (Na), Potassium (K)
2. ANIONS - Sulfate (SO4), Bicarbonate (HCO3), Chloride (Cl)
3. meq/L - Milliequivalents per liter

INLAND EARTH SCIENCES

QUARTERLY GROUNDWATER MONITORING DATA REPORT
ADMINISTRATIVE ORDER ON CONSENT
YAKIMA VALLEY DAIRIES / SDW A-10-2013-0080
OUTLOOK, WASHINGTON

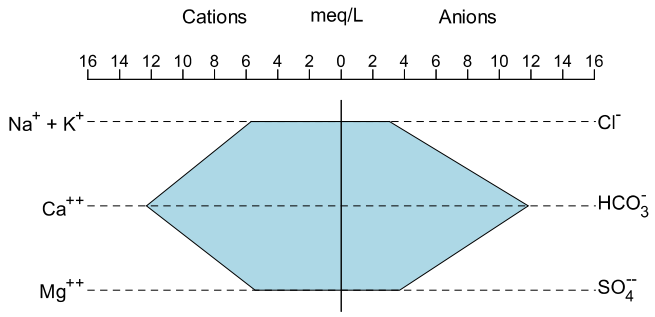
STIFF DIAGRAMS
FIRST QUARTER 2016

MAY 2016

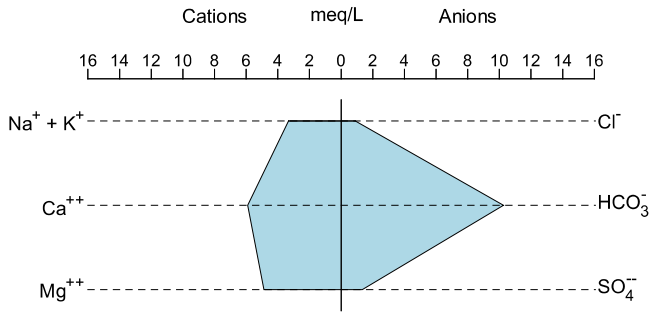
FIGURE 27-7

GIS FILE PATH: G:\Projects\Inland Earth Sciences\41731_Inland_Earth_Science_Yakima\Global\GIS\Maps\2016_05_2016_Q1\41731_001_0027_GW_2015_Q4_STIFF_DIAGRAMS.mxd — USER: gbowen — LAST SAVED: 5/9/2016 5:08:05 PM

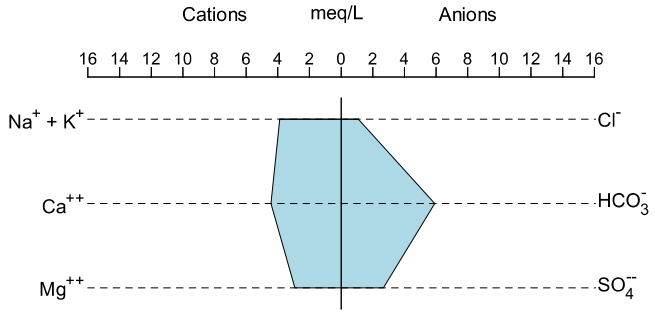
YVD-14R



YVD-15



YVD-16



NOTES

1. CATIONS - Magnesium (Mg), Calcium (Ca), Sodium (Na), Potassium (K)
2. ANIONS - Sulfate (SO4), Bicarbonate (HCO3), Chloride (Cl)
3. meq/L - Milliequivalents per liter

INLAND EARTH SCIENCES

QUARTERLY GROUNDWATER MONITORING DATA REPORT
ADMINISTRATIVE ORDER ON CONSENT
YAKIMA VALLEY DAIRIES / SDW A-10-2013-0080
OUTLOOK, WASHINGTON

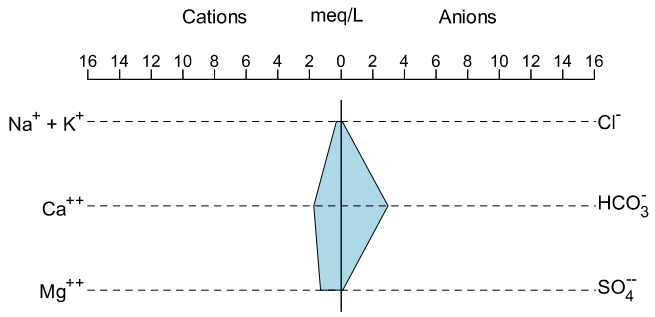
STIFF DIAGRAMS
FIRST QUARTER 2016

MAY 2016

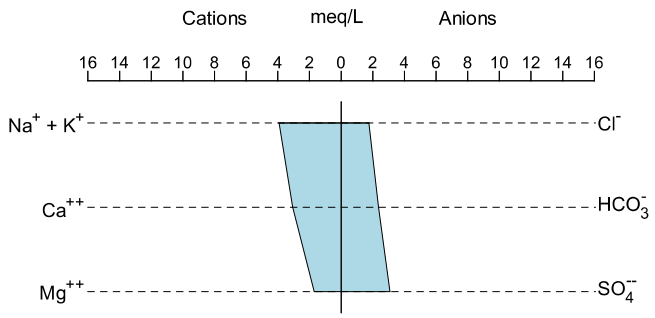
FIGURE 27-8

GIS FILE PATH: G:\Projects\Inland Earth Sciences\41731_Inland_Earth_Science_Yakima\Global\GIS\Maps\2016_05_2016_Q1\41731_001_0027_GW_2015_Q4_STIFF_DIAGRAMS.mxd — USER: gbowen — LAST SAVED: 5/9/2016 5:08:05 PM

YVD-17



YVD-18



NOTES

1. CATIONS - Magnesium (Mg), Calcium (Ca), Sodium (Na), Potassium (K)
2. ANIONS - Sulfate (SO4), Bicarbonate (HCO3), Chloride (Cl)
3. meq/L - Milliequivalents per liter

INLAND EARTH SCIENCES

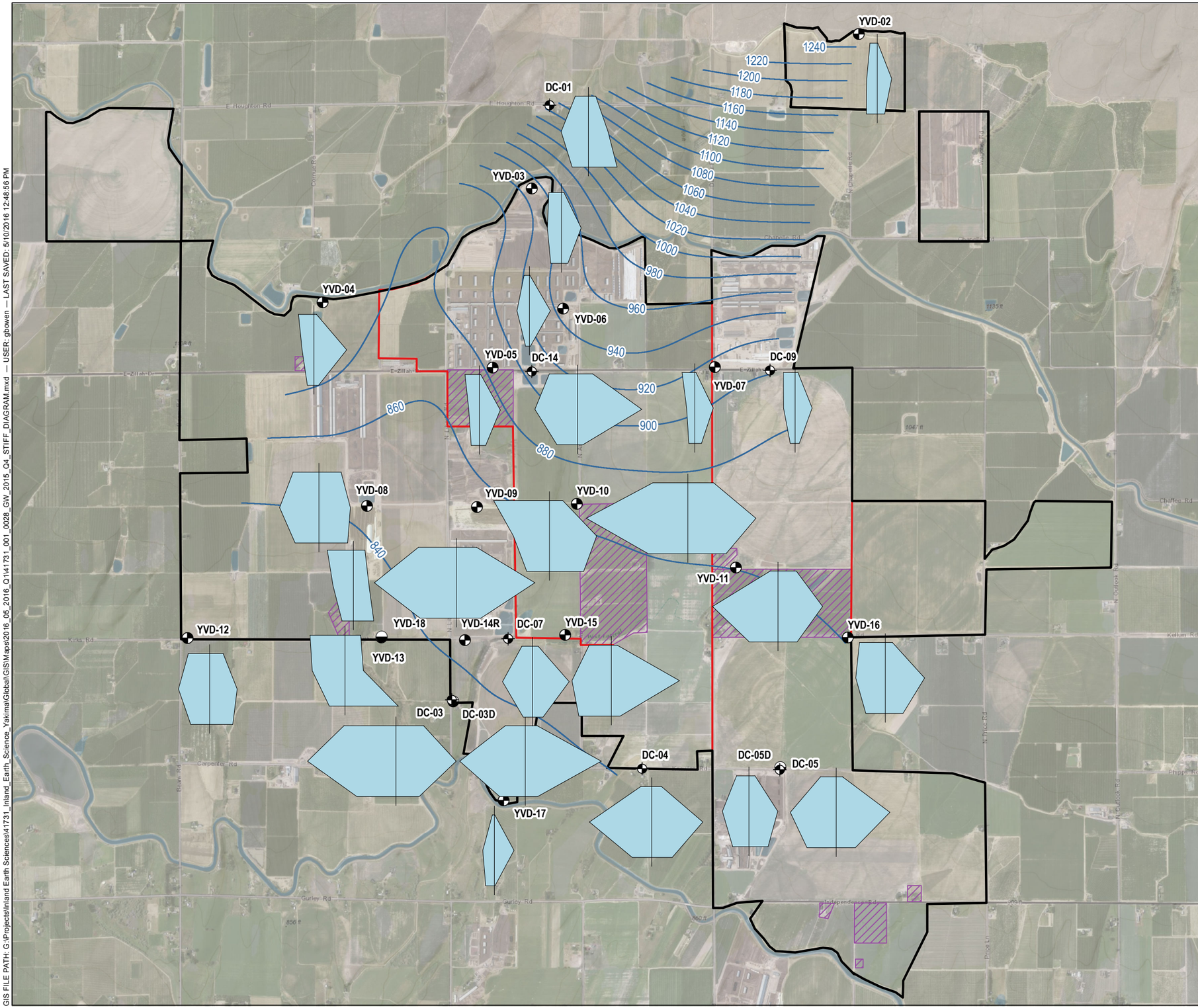
QUARTERLY GROUNDWATER MONITORING DATA REPORT
ADMINISTRATIVE ORDER ON CONSENT
YAKIMA VALLEY DAIRIES / SDW A-10-2013-0080
OUTLOOK, WASHINGTON

STIFF DIAGRAMS
FIRST QUARTER 2016

MAY 2016

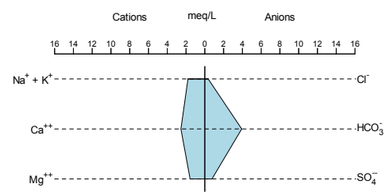
FIGURE 27-9

GIS FILE PATH: G:\Projects\Inland Earth Sciences\41731_Inland_Earth_Science_Yakima\Global\GIS\Maps\2016_05_2016_Q1\41731_001_0027_GW_2015_Q4_STIFF_DIAGRAMS.mxd — USER: gbowen — LAST SAVED: 5/9/2016 5:08:05 PM



LEGEND

- EPA SHALLOW SURFICIAL AQUIFER MONITORING WELL
- YVD SHALLOW SURFICIAL AQUIFER MONITORING WELL
- YVD DEEP SURFICIAL AQUIFER MONITORING WELL
- APPROXIMATE BOUNDARY OF DAIRY FACILITIES
- RESPONDENTS OWNERSHIP BOUNDARY
- LAND WITHIN BOUNDARY NOT OWNED OR OPERATED BY RESPONDENTS
- GROUNDWATER POTENTIOMETRIC CONTOUR (FT ABOVE MSL), CONTOUR INTERVAL = 20 FT



NOTES

1. AERIAL IMAGERY AND BASE MAP SOURCE: ESRI, 2013

N

0 2,000 4,000
SCALE IN FEET

INLAND EARTH SCIENCES

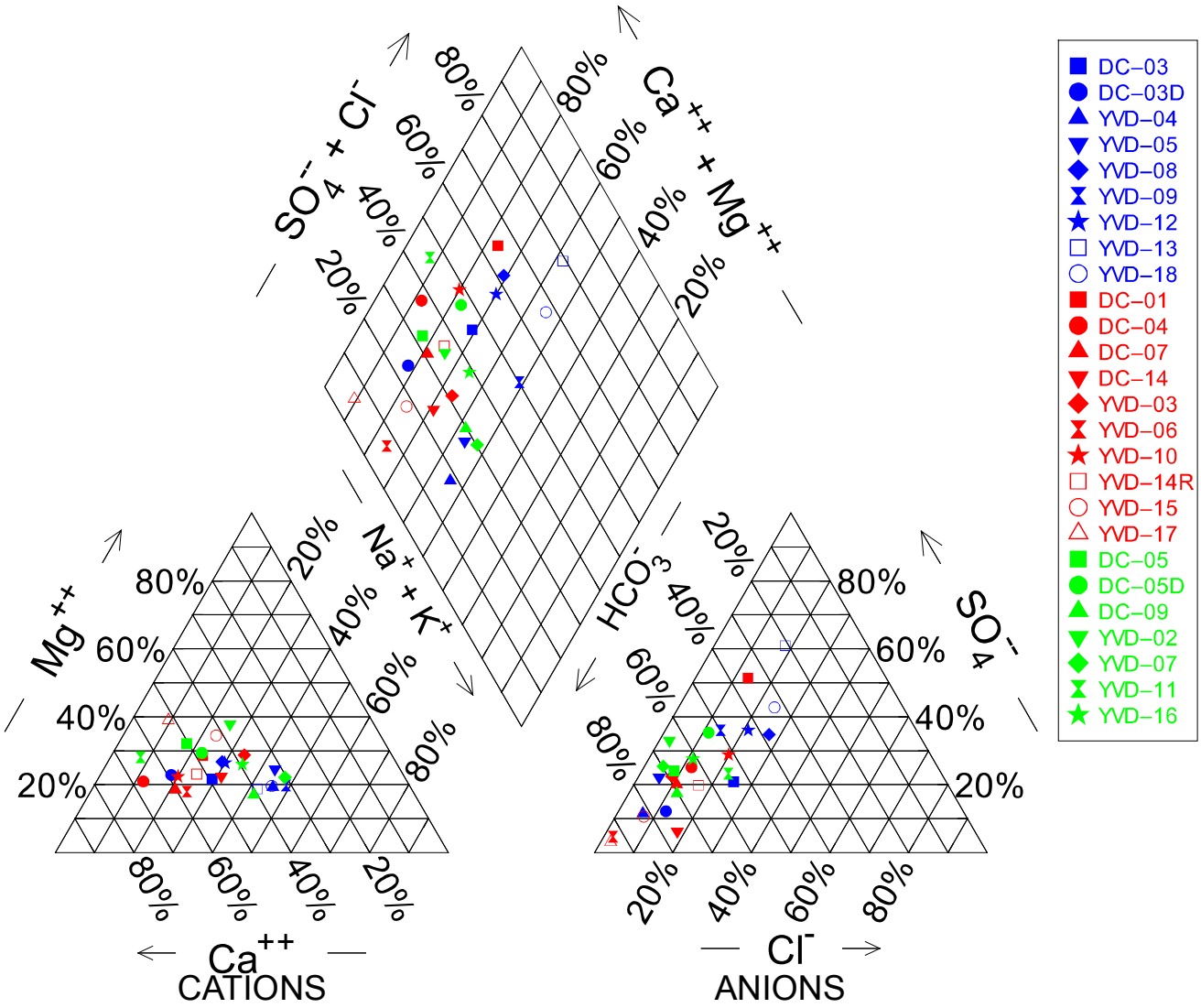
QUARTERLY GROUNDWATER MONITORING DATA REPORT
ADMINISTRATIVE ORDER ON CONSENT
YAKIMA VALLEY DAIRIES / SDWA-10-2013-0080
OUTLOOK, WASHINGTON

STIFF DIAGRAMS AND POTENTIOMETRIC CONTOUR MAP FIRST QUARTER 2016

MAY 2016

FIGURE 28

GIS FILE PATH: G:\Projects\Inland Earth Sciences\41731_Inland_Earth_Science_Yakima\Global\GIS\Maps\2016_05_2016_Q141731_001_0028_GW_2015_Q4_STIFF_DIAGRAM.mxd — USER: gbowen — LAST SAVED: 5/10/2016 12:48:56 PM



PERCENT OF TOTAL
MILLIEQUIVALENTS PER LITER

NOTES

1. CATIONS - Magnesium (Mg), Calcium (Ca), Sodium (Na), Potassium (K)

2. ANIONS - Sulfate (SO4), Bicarbonate (HCO3), Chloride (Cl)

INLAND EARTH SCIENCES

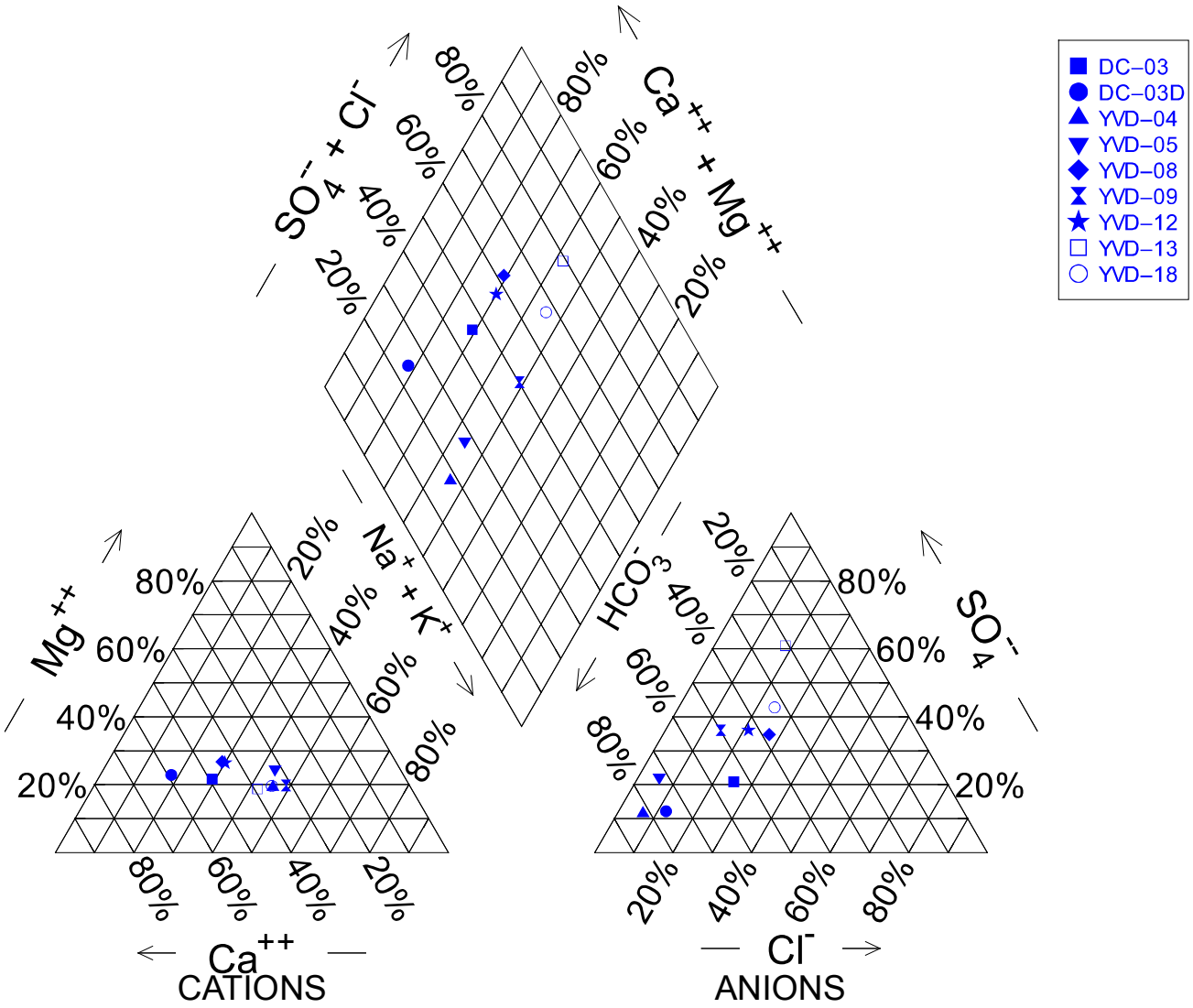
QUARTERLY GROUNDWATER MONITORING DATA REPORT
ADMINISTRATIVE ORDER ON CONSENT
YAKIMA VALLEY DAIRIES / SDW A-10-2013-0080
OUTLOOK, WASHINGTON

PIPER DIAGRAM - ALL WELLS
FIRST QUARTER 2016

MAY 2016

FIGURE 29

GIS FILE PATH: G:\Projects\Inland Earth Sciences\41731_Inland_Earth_Science_Yakima\Global\GIS\Maps\2016_05_2016_Q1\41731_001_29-32_GW_2015_Q4_PIPER_DIAGRAM.mxd — USER: gbowen — LAST SAVED: 5/9/2016 9:46:32 AM



PERCENT OF TOTAL
MILLIEQUIVALENTS PER LITER

NOTES

1. CATIONS - Magnesium (Mg), Calcium (Ca), Sodium (Na), Potassium (K)

2. ANIONS - Sulfate (SO4), Bicarbonate (HCO3), Chloride (Cl)

INLAND EARTH SCIENCES

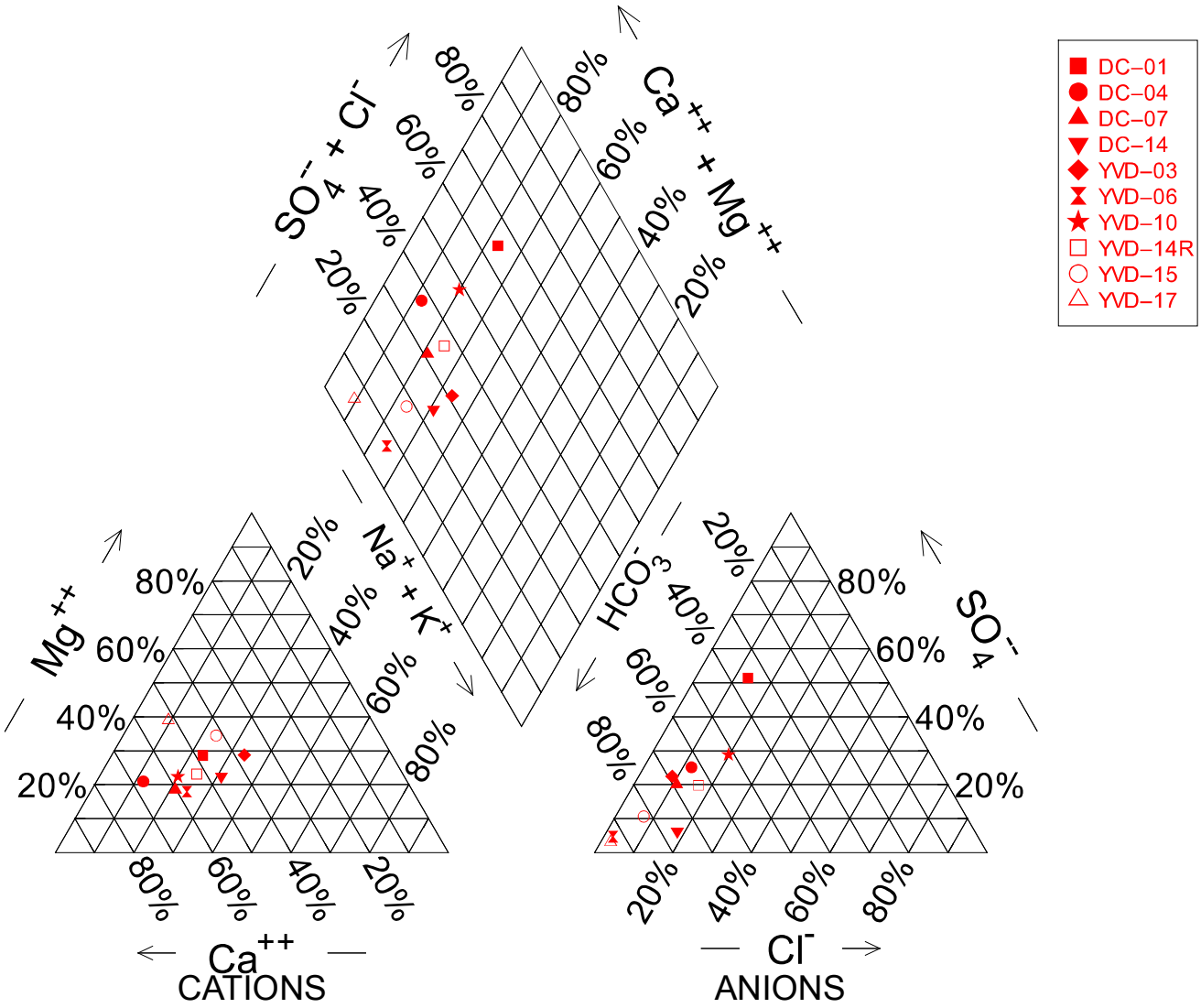
QUARTERLY GROUNDWATER MONITORING DATA REPORT
ADMINISTRATIVE ORDER ON CONSENT
YAKIMA VALLEY DAIRIES / SDW A-10-2013-0080
OUTLOOK, WASHINGTON

PIPER DIAGRAM - GROUP 1
FIRST QUARTER 2016

MAY 2016

FIGURE 30

GIS FILE PATH: G:\Projects\Inland Earth Sciences\41731_Inland_Earth_Science_Yakima\Global\GIS\Maps\2016_05_2016_Q1\41731_001_29-32_GW_2015_Q4_PIPER_DIAGRAM.mxd — USER: gbowen — LAST SAVED: 5/9/2016 9:46:32 AM



PERCENT OF TOTAL
MILLIEQUIVALENTS PER LITER

NOTES

1. CATIONS - Magnesium (Mg), Calcium (Ca), Sodium (Na), Potassium (K)

2. ANIONS - Sulfate (SO4), Bicarbonate (HCO3), Chloride (Cl)

INLAND EARTH SCIENCES

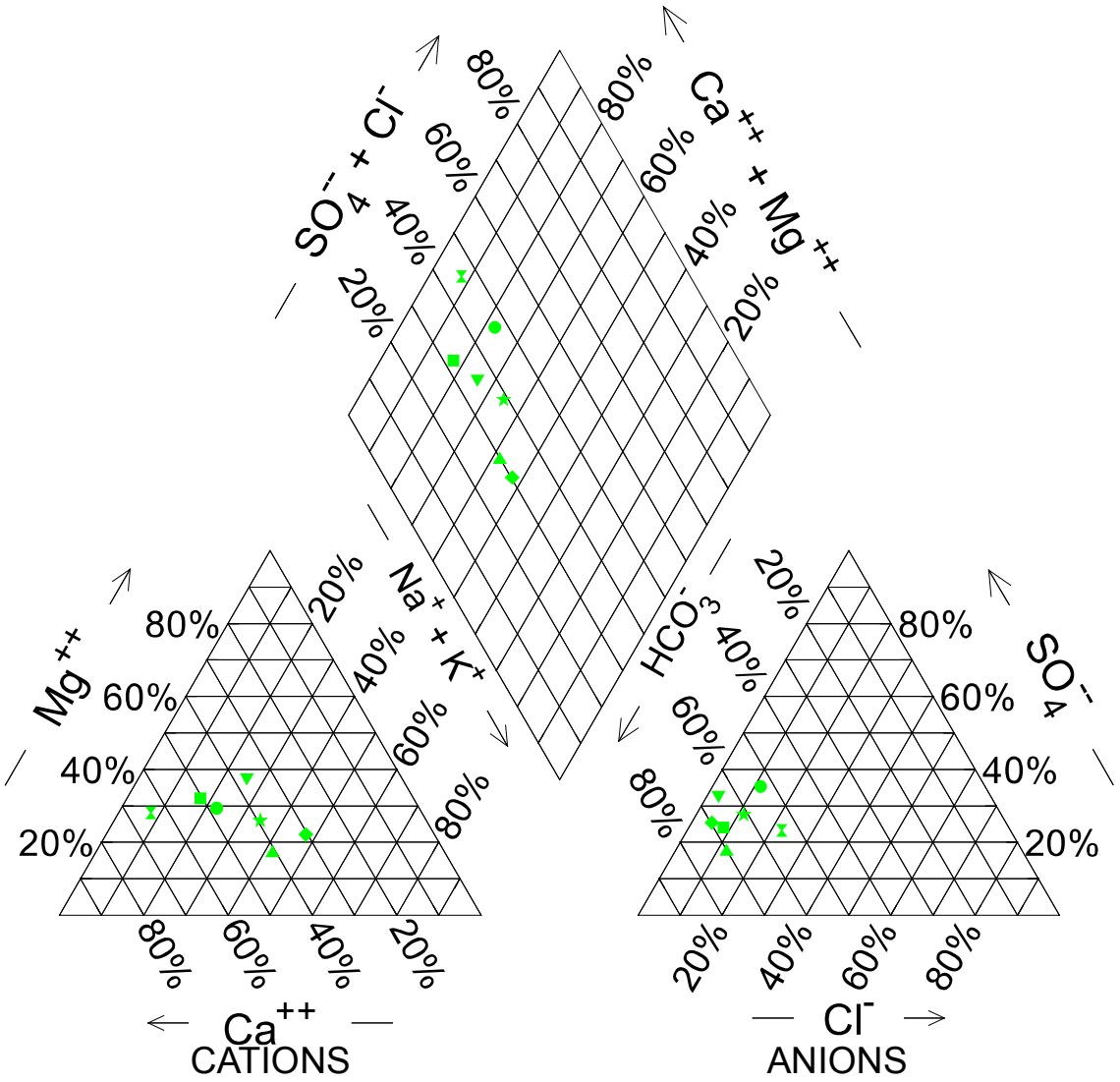
QUARTERLY GROUNDWATER MONITORING DATA REPORT
ADMINISTRATIVE ORDER ON CONSENT
YAKIMA VALLEY DAIRIES / SDW A-10-2013-0080
OUTLOOK, WASHINGTON

PIPER DIAGRAM - GROUP 2
FIRST QUARTER 2016

MAY 2016

FIGURE 31

GIS FILE PATH: G:\Projects\Inland Earth Sciences\41731_Inland_Earth_Science_Yakima\Global\GIS\Maps\2016_05_2016_Q1\41731_001_29-32_GW_2015_Q4_PIPER_DIAGRAM.mxd — USER: gbowen — LAST SAVED: 5/9/2016 9:46:32 AM



PERCENT OF TOTAL
MILLIEQUIVALENTS PER LITER

NOTES

1. CATIONS - Magnesium (Mg), Calcium (Ca), Sodium (Na), Potassium (K)

2. ANIONS - Sulfate (SO4), Bicarbonate (HCO3), Chloride (Cl)

INLAND EARTH SCIENCES

QUARTERLY GROUNDWATER MONITORING DATA REPORT
ADMINISTRATIVE ORDER ON CONSENT
YAKIMA VALLEY DAIRIES / SDW A-10-2013-0080
OUTLOOK, WASHINGTON

PIPER DIAGRAM - GROUP 3
FIRST QUARTER 2016

MAY 2016

FIGURE 32

GIS FILE PATH: G:\Projects\Inland Earth Sciences\41731_Inland_Earth_Science_Yakima\Global\GIS\Maps\2016_05_2016_Q1\41731_001_29-32_GW_2015_Q4_PIPER_DIAGRAM.mxd — USER: gbowen — LAST SAVED: 5/9/2016 9:46:32 AM