

ACTION REQUIRED

FROM: J. Westra

TO: _____

Tim Luke's Group
Water Measurement

ND

File annual report.

RECEIVED

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DEPARTMENT OF
WATER RESOURCES

COCOA – Nederend Dairy Groundwater Monitoring Project 2007 Annual Report

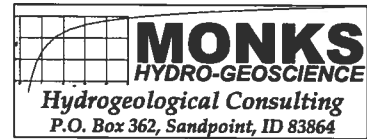
March 20, 2008

Prepared by:
John Monks, P.G.



20 March, 2008

John F. Westra
Western Regional Manager
Western Regional Office
Idaho Department of Water Resources
2735 Airport Way
Boise, ID 83705-5082



RE: COCOA-Nederend Dairy Ground Water Monitoring Annual Report for 2007

Dear Mr. Westra:

The Conditions of Approval and Remarks for Transfer No. 5313 of Water Right No. 57-07045 require COCOA and Nederend Dairy to jointly conduct a water quality monitoring program, and to annually report analyses and conclusions. The Transfer of Water Right was signed October 30, 1998, and water quality monitoring began in February 1999. This report summarizes the water quality monitoring activities and water quality data collected during calendar year 2007.

Area Hydrogeology

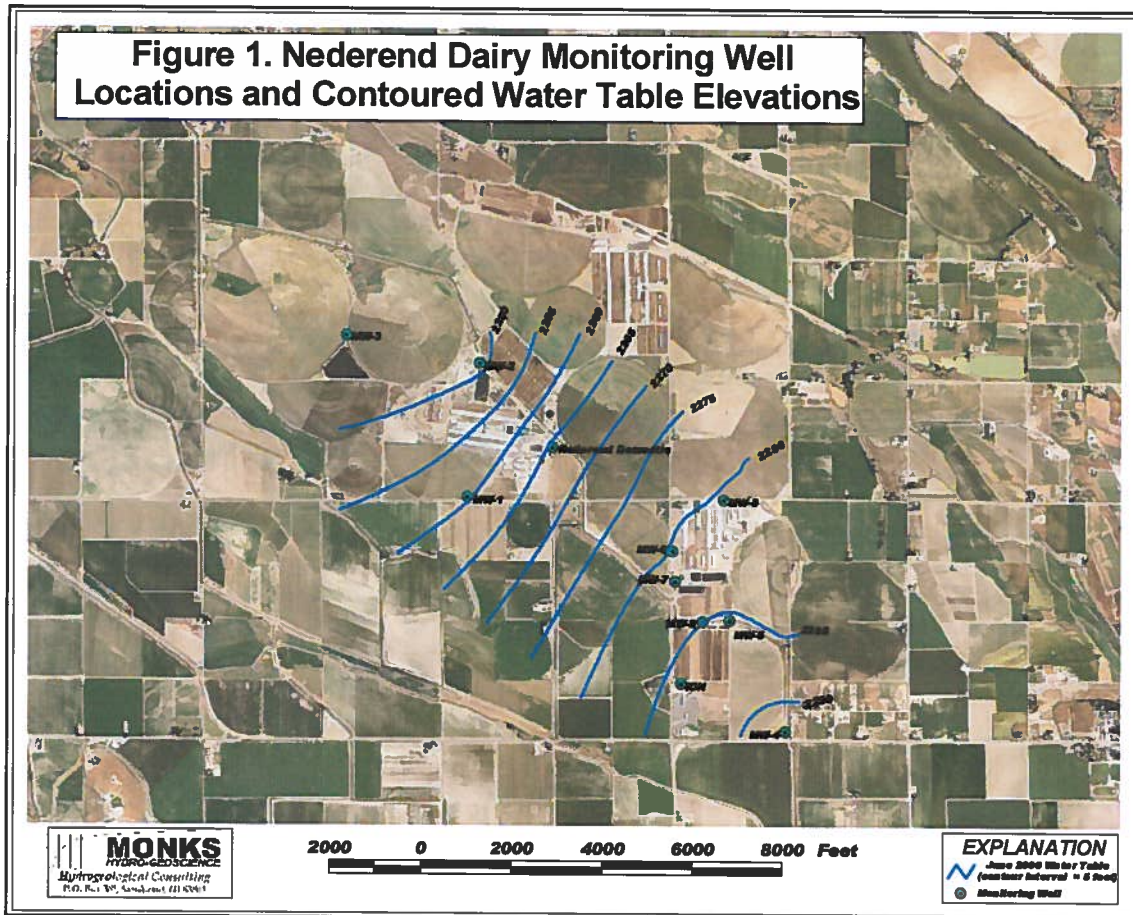
The hydrogeology of the area is described in "2001 Annual Ground Water Quality Monitoring Summary Results for Northwest Owyhee County, Idaho" (Boyles et al., 2002):

"Sediments underlying the project area are classified within the Idaho Group geologic formation (Lindholm, 1993). Sources of these sediments are believed to originate from prehistoric Lake Idaho and from more recent deposition from the Snake River. A characteristic "blue clay" is found on well drillers' reports from Idaho Department of Water Resources (IDWR) for many of the wells in the study area. These blue clays are within the Glens Ferry Formation (Othberg, 1994) and their low permeability characteristics can produce confined aquifer conditions. The blue clays also serve as an indicator of depositional anaerobic conditions.

Ground water used for domestic purposes in this project area appears to come from two sources: (1) a shallow system consisting of gravels and coarse grained sands, and (2) a deep system consisting of black sand that is separated from the shallow system by a blue-colored clay of varying thickness (Figure 2). Aquifer conditions appear to vary from unconfined to confined at different locations and different depths. Well driller reports indicate the presence of shallow ground water gravels and sands within 50 of the land surface. Well driller reports and the geologic cross section indicate the deep system is found at varying depths, generally less than 300 feet from the land surface (Figure 2 and Table 1). Static water levels are typically less than 60 feet."

Ground water monitoring activities at Nederend Dairies have improved our understanding of the hydrogeology of the area. Continuous water level and temperature monitoring has shown that the shallow aquifer system and surface water features are interconnected. In particular, water in the Horstman Drain, which runs through Dairy #2 and forms the north boundary of Dairy #1, flows into and out of the shallow aquifer. At well MW-6, water level and temperature responded to the beginning of the 2006 irrigation season (COCOA-Nederend Dairy Ground Water Monitoring Annual Report for 2006).

The shallow aquifer system is also affected by pumping at dairy production wells. Water levels in the shallow aquifer fluctuate on a daily basis in response to varying production rates at dairy wells. Continuous monitoring at wells MW-6 and MW-8 in 2006 showed a response to pumping at dairy production wells (COCOA-Nederend Dairy Ground Water Monitoring Annual Report for 2006). A similar response was observed at MW-1 and MW-3 in 2007.



Changes to Monitoring Well Network

No new monitoring wells were constructed in the shallow aquifer in 2007. The pressure transducer/data loggers that monitored water levels in wells MW-1 and MW-3 during 2007 were moved to wells MW-2 and MW-6 on February 8, 2008 to begin gathering a years worth of water level data at those wells. Water level measuring access has been added to wells Nederend #1, Nederend #3, and Mirada #2.

Changes in Nutrient Management Practices & Facilities

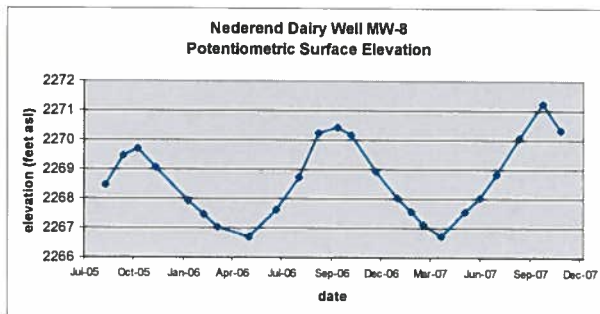
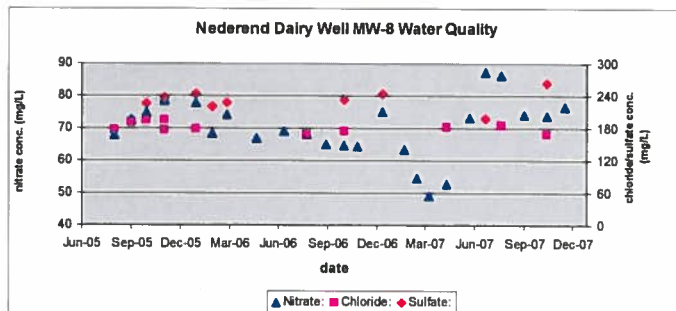
Improvements were made to the nutrient management facilities at Nederend Dairies during 2007. The manure drying area on the south side of the Horstman Drain was expanded and the wastewater storage ponds at Dairy #2 were reconstructed.

Water Quality Data

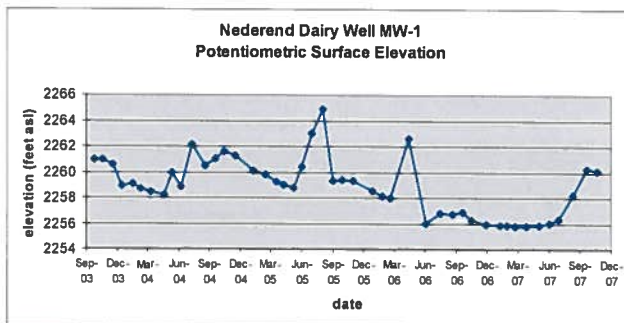
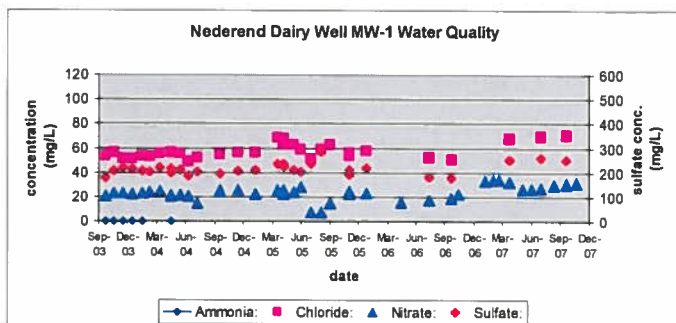
Nitrate water quality data from wells completed in the shallow aquifer are shown graphically and discussed in the following section. The average nitrate concentration at all of the monitoring wells exceeded the Idaho Ground Water Quality Rule standard of 10 mg/L during 2007. The highest nitrate concentrations occur at MW-8. Average nitrate concentrations increased in six and decreased

in two monitoring wells during 2007. The average sulfate concentration at six monitoring wells exceeded the Idaho Ground Water Quality Rule secondary standard of 250 mg/L during 2007.

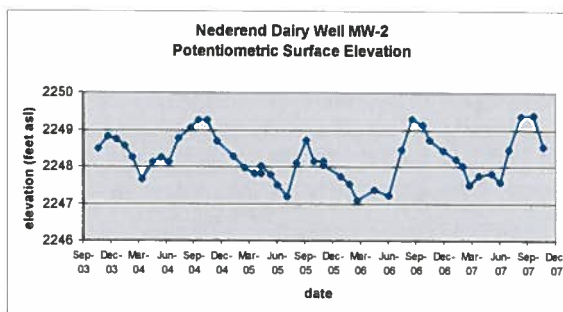
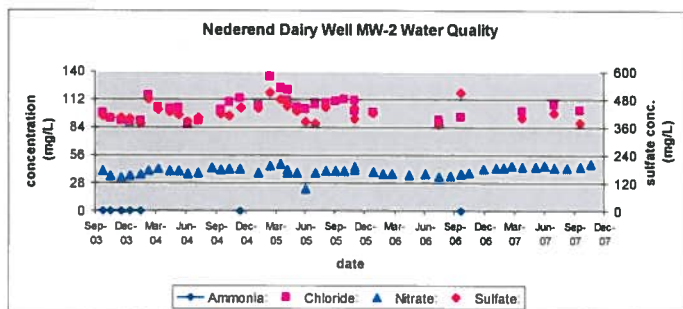
The average nitrate concentration at MW-8 changed very little from 2006 (69.48 mg/L) to 2007 (69.25 mg/L). The highest nitrate levels at MW-8 occurred in June (87.2 mg/L) and July (86.5 mg/L). The lowest nitrate concentrations measured at MW-8 occurred over the February – April time period and coincided with the lowest water table elevations. Nitrate data from MW-8 suggests some seasonal variation, with higher concentrations of nitrate occurring during the winter months.



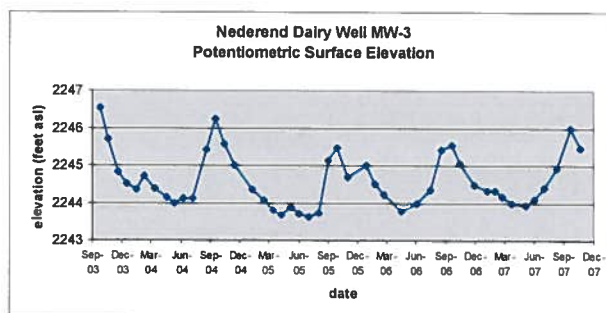
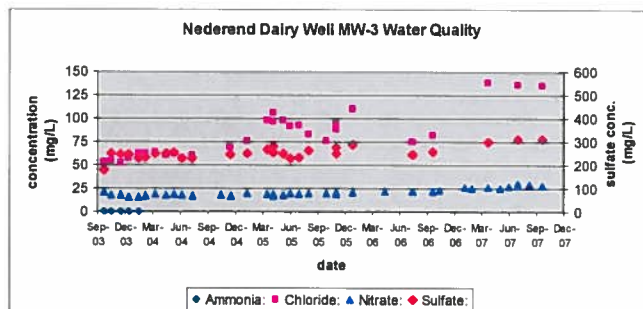
Nitrate concentrations at well MW-1 ranged from 26.8 mg/L in May and June to 34.0 mg/L in March. Average nitrate at MW-1 increased from 19.48 mg/L in 2006 to 30.58 mg/L in 2007.



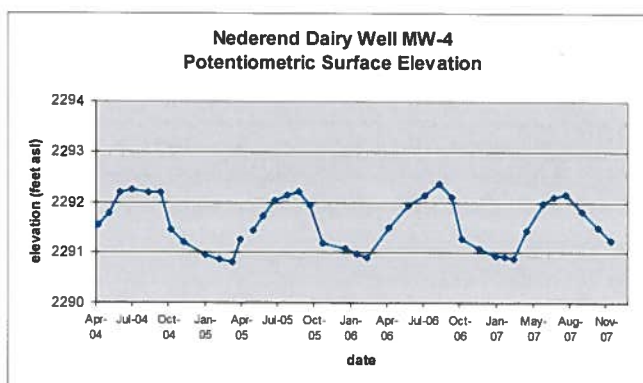
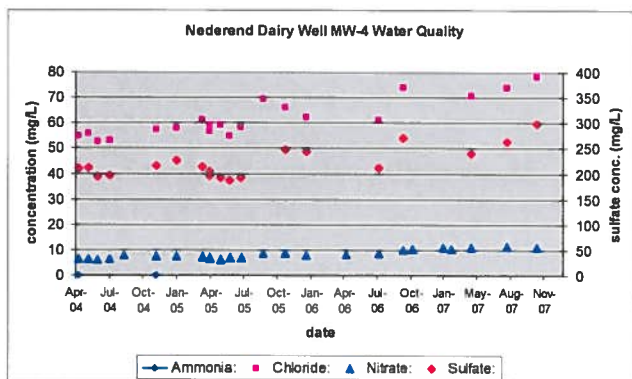
Well MW-2 continues to have the 2nd highest nitrate concentrations. At MW-2 nitrate levels ranged from 47.5 mg/L in November to 43.4 mg/L in February. Average nitrate at MW-2 increased from 37.93 mg/L in 2006 to 44.57 mg/L in 2007, reversing a downward trend that began in 2004.



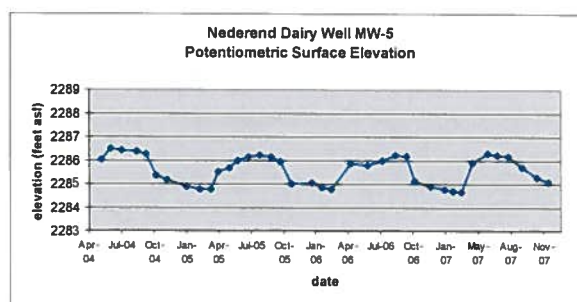
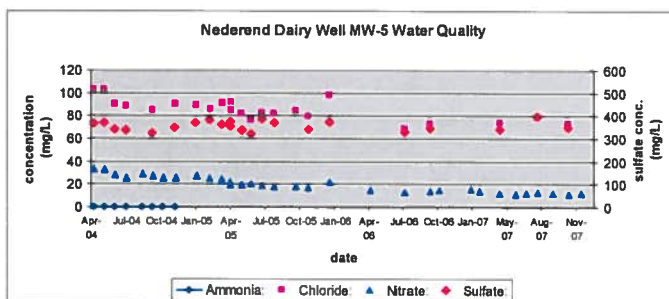
At well MW-3 nitrate concentrations ranged from 24.8 mg/L in May 2007 to 30.0 mg/L in July 2007. Average nitrate at MW-3 increased from 21.78 mg/L in 2006 to 27.03 mg/L in 2007, continuing an upward trend from 17.32 mg/L in 2004.



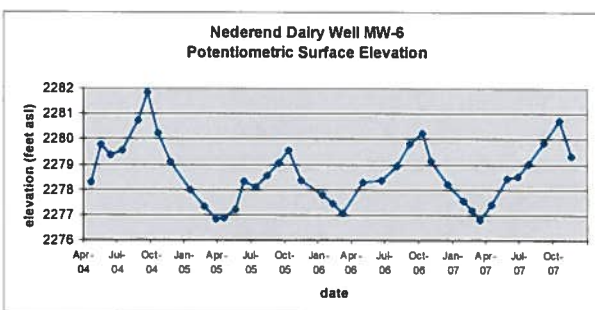
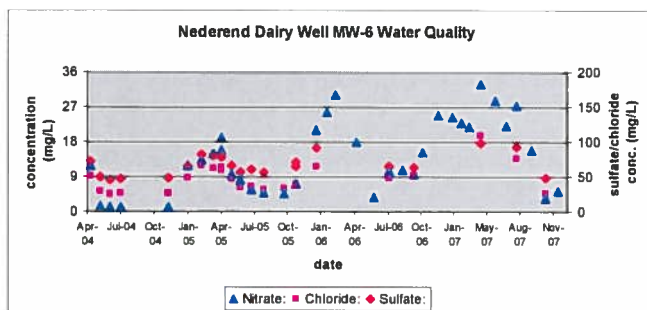
Nitrate concentrations at well MW-4 ranged from 10.4 mg/L in February to 11.4 mg/L in July. Average nitrate at MW-4 increased from 8.91 mg/L in 2006 to 11.00 mg/L in 2007. Nitrate concentrations at MW-4, upgradient of most dairy nutrient management areas, are gradually increasing over time.



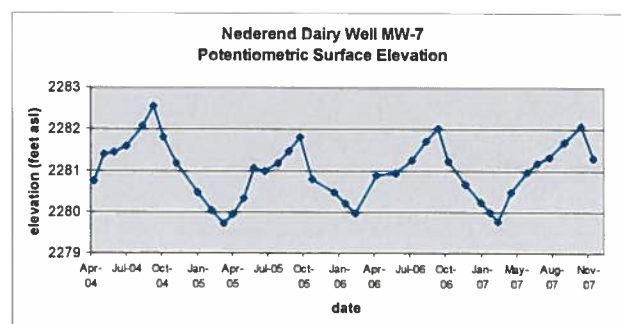
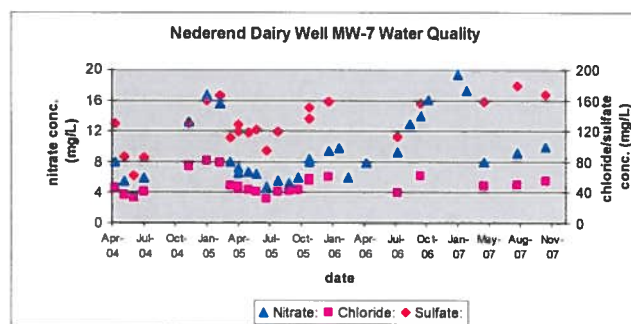
At well MW-5 nitrate concentrations ranged from 11.0 mg/L in October to 15.6 mg/L in January. Average nitrate at MW-5 decreased from 15.78 mg/L in 2006 to 12.70 mg/L in 2007. Nitrate concentrations at MW-5 have been decreasing steadily since monitoring began in April 2004.



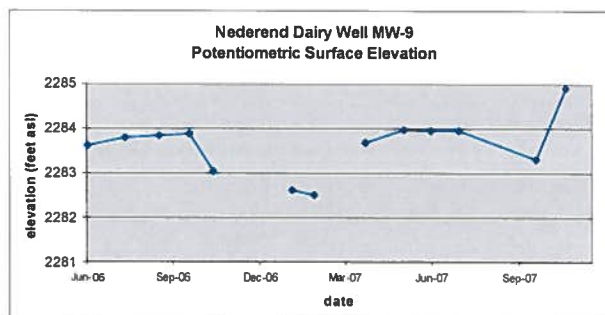
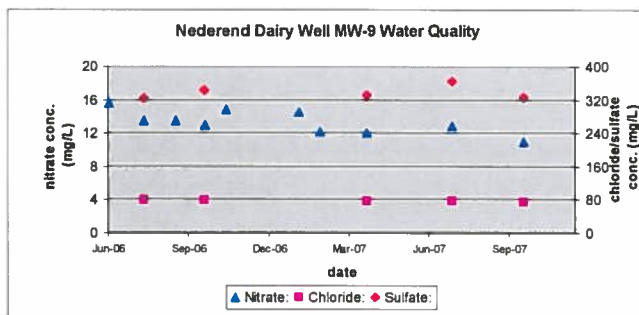
Nitrate concentrations at well MW-6 ranged from 3.6 mg/L in October to 33 mg/L in April. Average nitrate at MW-6 increased from 17.13 mg/L in 2006 to 20.63 mg/L in 2007. The largest seasonal fluctuations in nitrate concentrations occur at MW-6.



At well MW-7 nitrate concentrations ranged from 8.0 mg/L in April to 19.4 mg/L in January. Average nitrate at MW-7 increased from 10.68 mg/L in 2006 to 12.77 mg/L in 2007.



At well MW-9 nitrate concentrations ranged from 11.0 mg/L in October to 14.5 mg/L in January. Average nitrate at MW-9 decreased from 14.04 mg/L in 2006 to 12.48 mg/L in 2007. Water temperature at MW-9 ranged from 13.41° to 15.64° C, with warmer temperatures occurring during winter months.



The pump in well Nederend Domestic was repaired and sampling of the well resumed in March 2007. The well pump had been disabled in December 2005 when the residences the well served were connected to the main dairy water supply. At well Nederend Domestic nitrate concentrations ranged from 11.0 mg/L in October to 14.5 mg/L in January.

Water quality statistics from 2007 are summarized in Tables 1-3 below. The bottom row of each table shows the change in the statistical average from the previous year. Red, positive values indicate an increase in the average. Blue, negative values indicate a decrease in the average.

Water quality parameters collected using a YSI 556 multi-parameter water quality meter are summarized in table 4. The average TDS at all of the monitoring wells exceeded the Idaho Ground Water Quality Rule Secondary Constituent Standard of 500 mg/L during 2007.

Table 1: 2007 Nederend Dairy Nitrate Water Quality Statistics

	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9
<i>Average:</i>	69.25	44.57	27.03	11.00	12.70	20.63	12.77	69.25	12.48
<i>Std dev:</i>	13.54	1.26	1.90	0.37	1.39	9.63	5.20	13.54	1.30
<i>Count:</i>	10.00	10.00	8.00	5.00	9.00	10.00	5.00	10.00	5.00
<i>Min:</i>	49.20	43.40	24.80	10.40	11.00	3.60	8.00	49.20	11.00
<i>Max:</i>	87.20	47.50	30.00	11.40	15.60	33.00	19.40	87.20	14.50
<i>Average +/-:</i>	11.10	6.64	5.25	2.09	-3.08	3.50	2.08	-0.23	-1.56
IDAPA 58.01.11 WQ STANDARD EXCEEDED?	YES	YES	YES	YES	YES	YES	YES	YES	YES

Table 2: 2007 Nederend Dairy Chloride Water Quality Statistics

	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9
<i>Average:</i>	69.17	102.67	136.67	74.30	75.00	70.60	51.20	178.67	75.37
<i>Std dev:</i>	1.23	3.79	2.08	3.76	2.91	42.42	3.83	8.50	0.81
<i>Count:</i>	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
<i>Min:</i>	67.80	100.00	135.00	70.70	72.80	25.70	47.90	169.00	74.50
<i>Max:</i>	70.20	107.00	139.00	78.20	78.30	110.00	55.40	185.00	76.10
<i>Average +/-:</i>	15.40	7.23	47.60	8.40	-5.03	15.30	-2.63	4.67	-2.98
IDAPA 58.01.11 WQ STANDARD EXCEEDED?	NO	NO	NO	NO	NO	NO	NO	NO	NO

Table 3: 2007 Nederend Dairy Sulfate Water Quality Statistics

	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9
<i>Average:</i>	255.00	400.67	308.67	267.67	362.33	80.10	168.00	237.00	340.00
<i>Std dev:</i>	3.61	22.01	7.57	29.67	30.44	27.62	10.54	33.65	20.88
<i>Count:</i>	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
<i>Min:</i>	252.00	379.00	300.00	240.00	340.00	48.40	158.00	199.00	326.00
<i>Max:</i>	259.00	423.00	314.00	299.00	397.00	99.00	179.00	263.00	364.00
<i>Average +/-:</i>	61.33	-32.33	44.67	25.67	14.67	6.33	25.67	2.00	6.50
IDAPA 58.01.11 WQ STANDARD EXCEEDED?	YES	YES	YES	YES	YES	NO	NO	NO	YES

Table 4. Summary of YSI Water Quality Parameters								
		Temp C°	SpCond (µS/cm)	DO (mg/L)	pH	TDS (mg/L)	ORP	DO%
MW-1	Average:	14.19	1473.64	1.26	7.50	957.85	114.38	12.39
	Std Sev.:	0.45	26.05	0.08	0.27	16.93	26.92	0.83
	max:	14.81	1509.10	1.41	7.75	980.91	144.00	13.90
	min:	13.31	1442.50	1.16	7.07	937.61	67.00	11.10
	count:	8	8	8	8	8	8	8
MW-2	Average:	14.72	1784.01	0.96	7.56	1159.60	112.00	9.49
	Std Sev.:	0.49	309.74	0.08	0.28	201.34	25.80	0.64
	max:	15.36	1937.70	1.09	7.79	1259.51	164.00	10.60
	min:	13.86	1023.90	0.88	7.10	665.51	86.00	8.90
	count:	8	8	8	8	8	8	8
MW-3	Average:	14.88	1601.11	0.39	7.54	1222.29	99.57	3.87
	Std Sev.:	0.30	697.60	0.43	0.22	29.83	28.63	4.29
	max:	15.45	1903.60	1.35	7.71	1283.70	145.00	13.50
	min:	14.43	19.70	0.17	7.06	1195.77	54.00	1.70
	count:	7	7	7	7	7	7	7
MW-4	Average:	13.48	1388.14	0.60	7.63	902.28	100.71	5.83
	Std Sev.:	0.22	35.00	0.12	0.28	22.76	8.92	1.18
	max:	13.73	1442.10	0.81	7.81	937.35	116.00	7.80
	min:	13.02	1351.90	0.47	7.02	878.71	92.00	4.50
	count:	7	7	7	7	7	7	7
MW-5	Average:	13.81	1657.18	0.18	7.47	1077.16	115.88	1.68
	Std Sev.:	0.39	36.05	0.19	0.28	23.44	13.68	1.88
	max:	14.40	1689.20	0.51	7.71	1098.00	143.00	5.00
	min:	13.36	1594.40	0.03	7.02	1036.35	106.00	0.30
	count:	8	8	8	8	8	8	8
MW-6	Average:	16.27	1014.58	0.80	7.59	659.48	104.13	8.09
	Std Sev.:	0.44	286.57	0.44	0.18	186.28	8.81	4.42
	max:	16.85	1242.90	1.51	7.76	807.90	118.00	15.30
	min:	15.48	538.60	0.54	7.29	350.07	94.00	5.50
	count:	8	8	8	8	8	8	8
MW-7	Average:	14.82	1189.41	0.26	7.49	773.14	115.43	2.56
	Std Sev.:	0.15	224.85	0.30	0.23	146.15	12.79	2.94
	max:	15.02	1558.00	0.86	7.72	1012.73	143.00	8.50
	min:	14.59	894.40	0.02	7.01	581.38	105.00	0.20
	count:	7	7	7	7	7	7	7
MW-8	Average:	15.90	2274.78	0.10	7.41	1478.60	119.50	0.99
	Std Sev.:	0.43	52.33	0.13	0.28	34.02	20.91	1.28
	max:	16.52	2351.10	0.34	7.64	1528.22	163.00	3.40
	min:	15.31	2203.30	-0.01	6.97	1432.13	101.00	-0.10
	count:	8	8	8	8	8	8	8
MW-9	Average:	14.45	1663.63	0.42	7.49	1081.37	114.83	4.12
	Std Sev.:	0.50	26.51	0.21	0.25	17.23	9.77	2.09
	max:	15.09	1691.80	0.76	7.70	1099.70	134.00	7.60
	min:	13.77	1617.60	0.21	6.99	1051.45	108.00	2.00
	count:	6	6	6	6	6	6	6

Water Level Measurements

Contoured water table elevations from June 2006 are shown in Figure 1. Groundwater flow direction in the shallow aquifer is to the northwest. The water table is closest to the land surface at MW-4, MW-5, and MW-9, all located next to the drain, where the water table is ~13-14 feet below

ground surface. The separation between the land surface and water table at wells distant from the drain is on the order of ~30-35 feet.

Depth to water at MD-2 ranged from 254.71 feet in June when the well was providing all of the water for Dairy #2 to 48.93 feet February when the well was off and well MD-1 was providing all of the water for Dairy #2. Well MD-2 is 500 feet deep and screened in the deep aquifer over two intervals: 388-428 and 462-492 feet.

Depth to water at Nederend #1 was measured in May, June and July and varied from 32.21 feet in June to 36.20 feet in July. Nederend #1 is 520 feet deep and is open in the deep aquifer from 300 to 520 feet.

Seasonal variations in the water table occur in the shallow aquifer. The largest fluctuations occur at MW-1 (6.97 feet), in response to pumping at Nederend #2. The water table at Nederend Domestic fluctuated 3.90 feet, probably in response to recharge from irrigation. At MW-6 the water table has fluctuated 2.72 feet. Smaller seasonal variations occur at MW-3 (1.83 feet), MW-7 (2.09 feet), MW-2 (1.53 feet), MW-5 (1.45 feet) and MW-4 (1.41 feet).

Figure 2 shows water table elevation (blue) and water temperature (red) data from the Levellogger™ installed in Mirada #1. The water table at well Mirada #1 is affected by variations in the pumping rate in the well. During January through the beginning of April Mirada #1 provided water to Dairy #2. Well Mirada #2 was not used during this time. During this period, the water table fluctuated approximately 40 feet on a daily basis due to variations in water demand at the dairy. The Levellogger™ was removed from Mirada #1 on April 18th to replace a corroded cable and then placed back in the well on June 27th. From June 27th through September 14th Mirada #1 and Mirada #2 were both pumping at varying rates. Well Mirada #1 was shut off from September 14th until October 17th. Mirada #1 was then used in conjunction with Mirada #2 for the remainder of the year, apparently with a brief “Christmas Break”.

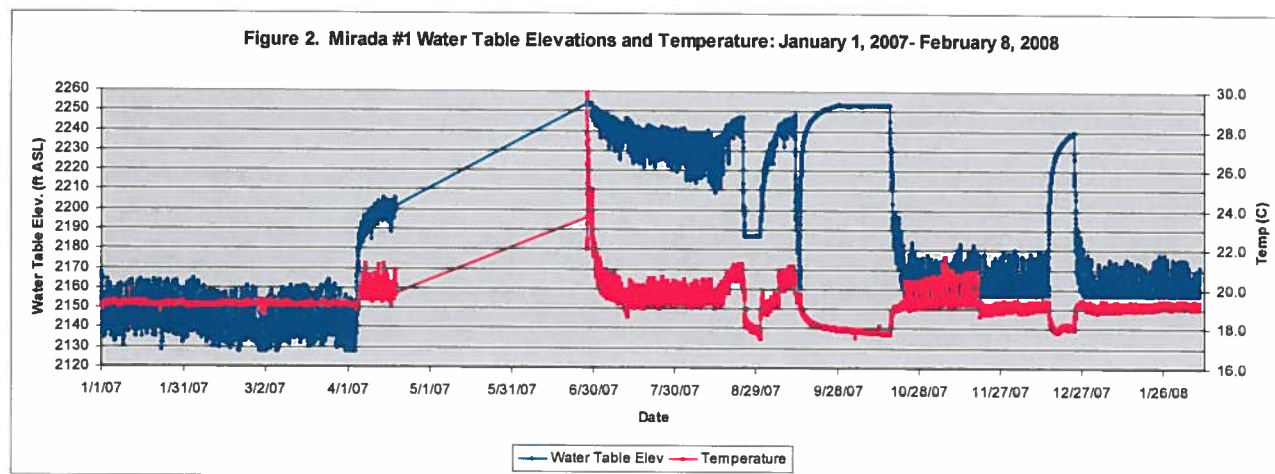


Figure 3 shows water table elevation (blue) and water temperature (red) data from the Levellogger™ installed in MW-1. The water table at MW-1 responds to variations in the pumping rate at Nederend #2. Water levels at MW-1 had been declining steadily since water level monitoring began, reaching its lowest level in May 2007. In late February, Nederend #2, which is completed in both aquifers, began to break suction and shut down. Water levels in the shallow aquifer would recover while the well was shut off, then be drawn back down when the well restarted.

In June well Nederend #3 was equipped with a constant pressure, variable speed motor control to allow Nederend #2 & #3 to operate simultaneously. Prior to this modification, both wells could not operate simultaneously. Prior to this modification, Nederend #2 typically provided water from September through June and Nederend #3 operated in June and July. With water production shared between both wells, water levels at MW-1 began to recover. The water temperature at MW-1 varied by only ~0.2 degrees, between ~13.7° and ~13.9° Celsius, with an average of 13.79° Celsius.

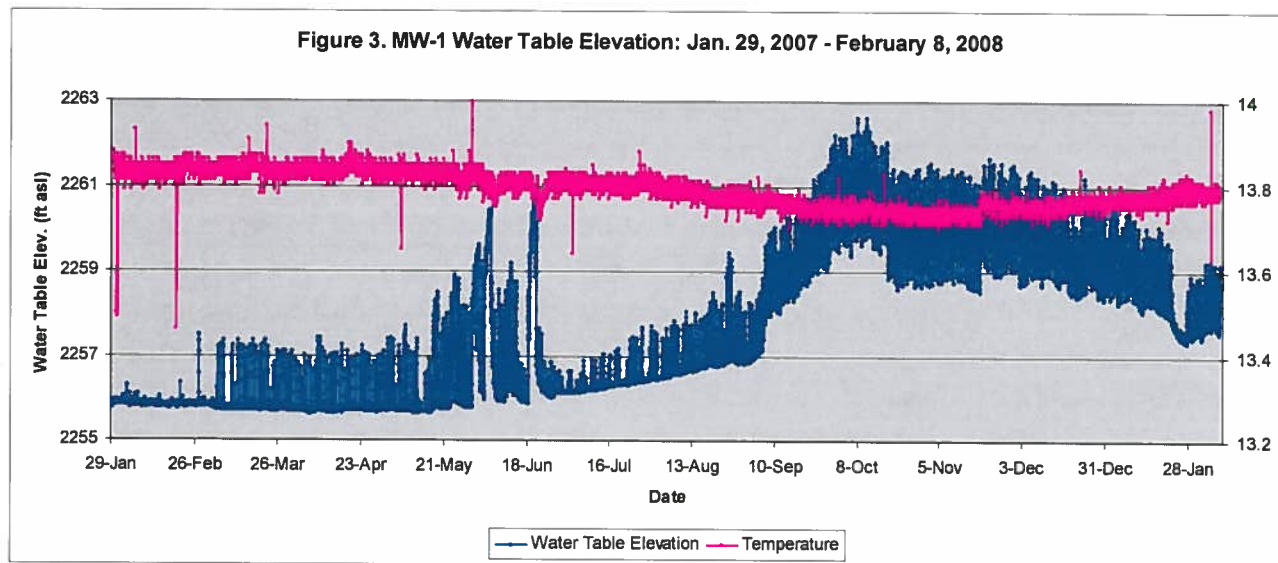
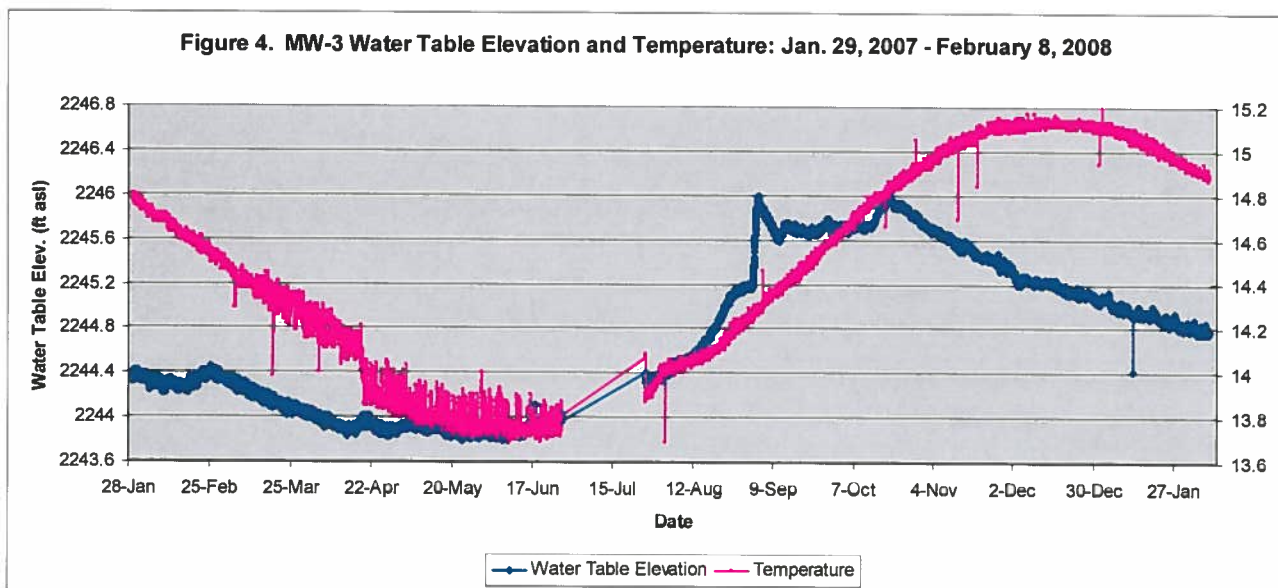
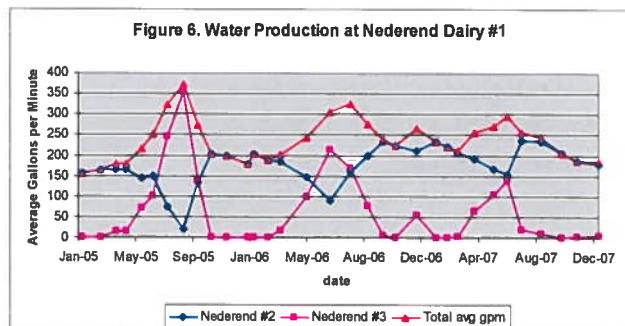
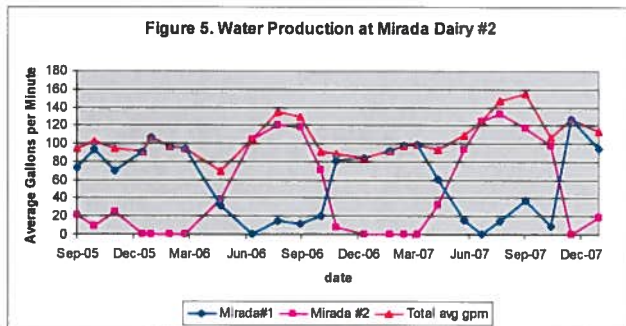


Figure 4 shows water table elevation and water temperature data from the Levellogger™ installed in MW-3. The water table at MW-3 responds to recharge from irrigation and pumping from Nederend #2 and Nederend #3. From January through mid-June, when Nederend #2 was providing all of the water at Nederend Dairy, water levels and temperatures at MW-3 fluctuated over a narrow range on a daily basis. The water level and temperature variations at MW-3 were smaller after the modifications to Nederend #3 took place and water production was spread more evenly between Nederend #2 and Nederend #3.



Water production from Nederend Dairy production wells over the past two years is shown graphically in figures 5 and 6 below. Peak summer water use at Dairy #1 has decreased over the last three years while at Dairy #2 it has increased.



Conclusions

Water quality at wells MW-5 and MW-9 improved slightly during 2007, while at other wells it has deteriorated. Water quality improved slightly at MW-8, but nitrate levels at that well remain very high. Water quality in the shallow aquifer at Nederend Dairies in general is poor. Nutrient management practices at Nederend Dairies and on surrounding lands are affecting water quality in the shallow aquifer. Specific conclusions are that:

- Average nitrate concentrations at all monitoring wells exceed the Idaho Ground Water Quality Rule Primary Constituent Standard of 10 mg/L.
- Average nitrate concentrations increased at 6 wells (MW-1, MW-2, MW-3, MW-4, MW-6, and MW-7).
- Average nitrate concentrations decreased at 2 wells (MW-5 and MW-9) and remained essentially unchanged at MW-8.
- Average nitrate concentrations at MW-4, upgradient of Nederend Dairy's nutrient management areas, are increasing over time and now exceed the Idaho Ground Water Quality Rule Primary Constituent Standard of 10 mg/L.
- Average Sulfate concentrations at MW-1, MW-2, MW-3, MW-4, MW-5, MW-8 and MW-9 exceed the Idaho Ground Water Quality Rule Secondary Constituent Standard of 250 mg/L.
- The average TDS at all of the monitoring wells exceeded the Idaho Ground Water Quality Rule Secondary Constituent Standard of 500 mg/L during 2007.
- Modifications to well Nederend #3 and balancing water production between Nederend #2 and Nederend #3 has reversed the declining water levels in the shallow aquifer at MW-1.

Recommendations

Monks Hydro-Geoscience recommends that monthly water quality and depth to water data continue to be collected at wells as outlined in the matrix below. Quarterly sampling will take place during the months of January, April, July and October. More frequent nitrate analyses may occur at some wells. It is hoped that ISDA will continue the semi-annual sampling of Nederend Dairy's shallow aquifer monitoring wells.

Nederend Dairy 2008 Water Quality Monitoring Program Proposed parameter measurement Frequency				
Well Name:	Water level measurements:	pH, T, TDS, Conductivity, Ox-Red potential, Dissolved O2:	Nitrate:	Sulfate, chloride, coliform bacteria:
MW-1	Continuous	Monthly	Monthly	ISDA semi-annually
MW-2	Monthly	Monthly	Monthly	ISDA semi-annually
MW-3	Continuous	Monthly	Quarterly	ISDA semi-annually
MW-4	Monthly	Monthly	Quarterly	ISDA semi-annually
MW-5	Monthly	Monthly	Quarterly	ISDA semi-annually
MW-6	Monthly	Monthly	Quarterly	ISDA semi-annually
MW-7	Monthly	Monthly	Monthly	ISDA semi-annually
MW-8	Monthly	Monthly	Monthly	ISDA semi-annually
MW-9	Monthly	Monthly	Quarterly	ISDA semi-annually
Nederend Domestic	Monthly	Monthly	Quarterly	ISDA semi-annually

If you have any questions or comments, please give me a call at 208-263-1991.

Sincerely,

John Monks, P.G.

March 30, 2008

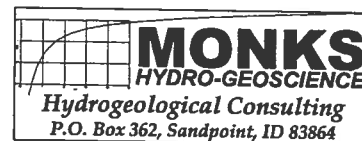


Cc: Hans Nederend - Nederend Dairy, Ilene Dobbin – COCOA, Craig Tesch – ISDA

Monthly Monitoring Reports

18 December, 2007

Hans Nederend
Nederend Dairy
4998 Hogg Road
Homedale, ID 83628



RE: November 2007 water quality report

Dear Hans:

This letter reports water quality data collected at Nederend Dairies #1 and #2 on November 19th of 2007. Wells MW-1, MW-2, MW-5, MW-6 and MW-8 were sampled during this event, and depths to water measurements were made at all monitoring wells. Data from the data loggers in wells MW-1 and MW-3 were downloaded. I was able to retrieve the data logger in MD-1 in November and download data from it also.

Water Quality

Water quality data from November 19th are summarized in Tables 1 and 2 below.

Table 1. November 2007 Water Chemistry Analytical Results

Well name:	Date:	Chloride (mg/L):	Nitrate (mg/L):	Sulfate (mg/L):	Coliform Bacteria
Nederend Domestic	11/19/07	NS	NS	NS	NS
MW-1	11/19/07	NA	31.5	NA	NA
MW-2	11/19/07	NA	47.5	NA	NA
MW-3	11/19/07	NS	NS	NS	NS
MW-4	11/19/07	NS	NS	NS	NS
MW-5	11/19/07	NA	12.3	NA	NA
MW-6	11/19/07	NA	5.4	NA	NA
MW-7	11/19/07	NS	NS	NS	NS
MW-8	11/19/07	NA	76.8	NA	NA
MW-9	11/19/07	NS	NS	NS	NS

Table 2. November 2007 Field Measured Water Quality Parameters

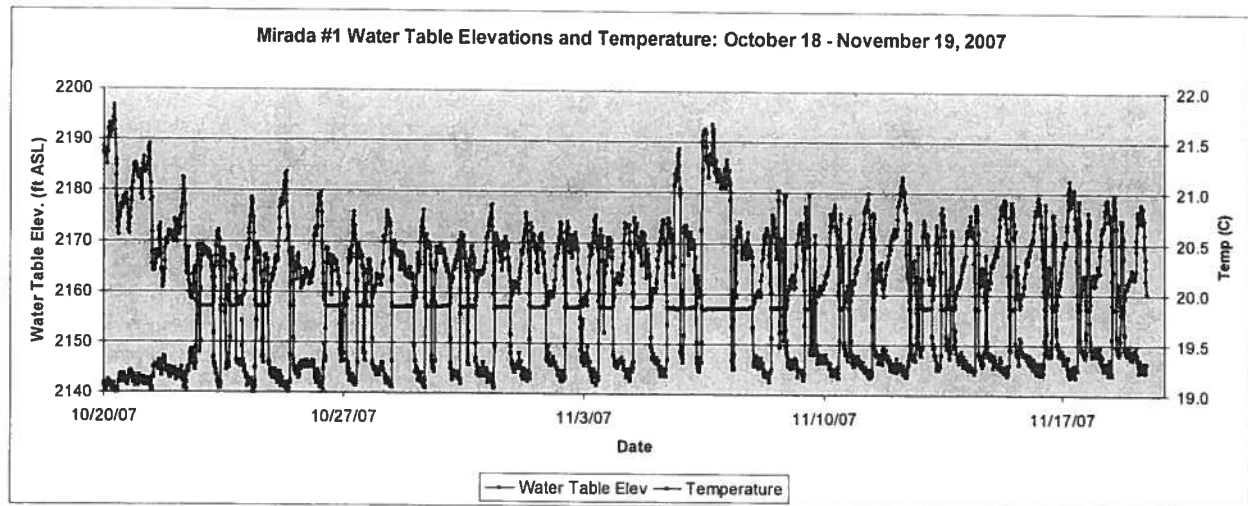
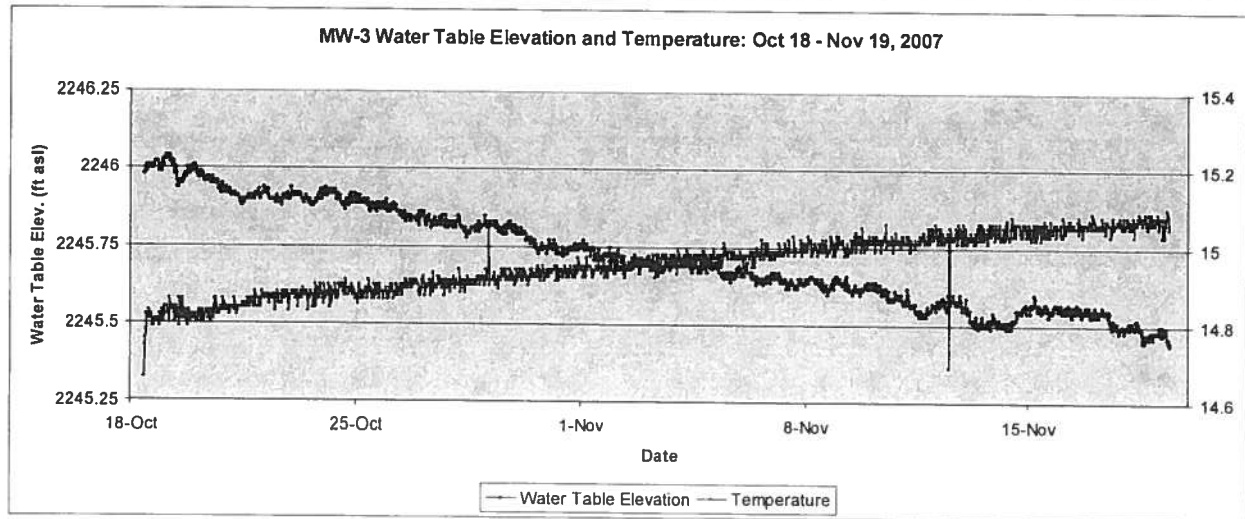
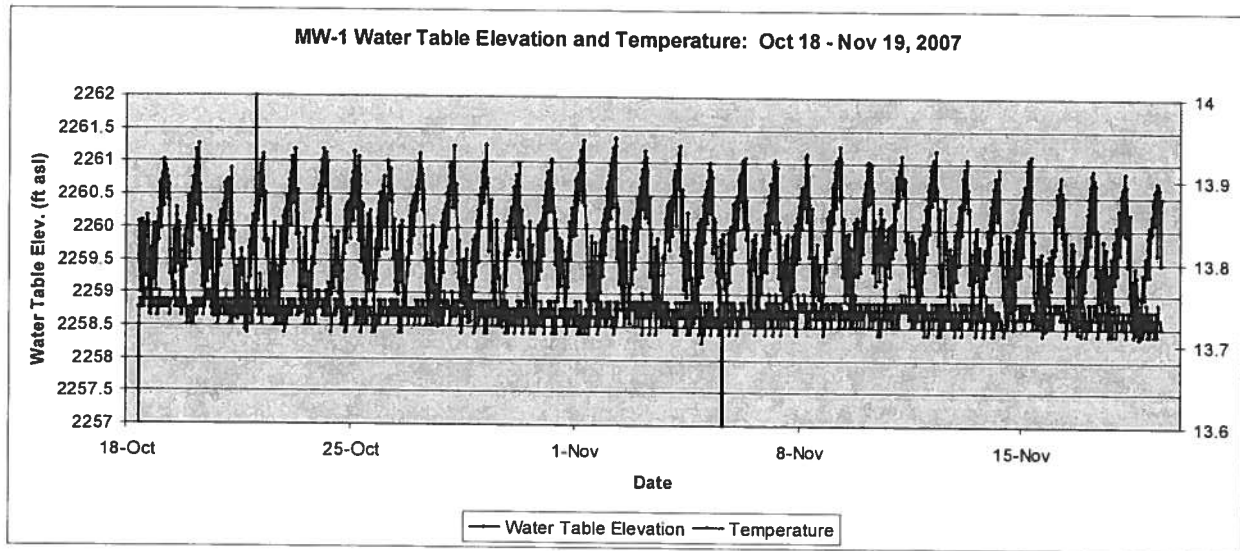
Well#	Temp C	SpCond (uS/cm)	DO Conc (mg/L)	pH	TDS (g/L)	ORP (mV)
MW-1	13.94	1461.2	1.2	7.07	949.785	136
MW-2	14.24	1865.2	1.06	7.1	1212.379	132
MW-3	NS	NS	NS	NS	NS	NS
MW-4	NS	NS	NS	NS	NS	NS
MW-5	14.4	1607.4	0.51	7.02	1044.802	131
MW-6	16.01	583.8	1.51	7.29	379.477	115
MW-7	NS	NS	NS	NS	NS	NS
MW-8	15.51	2351.1	0.34	6.98	1528.22	137
MW-9	NS	NS	NS	NS	NS	NS
Nederend Dom	NS	NS	NS	NS	NS	NS
Nederend #2	NS	NS	NS	NS	NS	NS

Water Level Measurements

Water table elevations and temperature at MW-1 and MW-3 are shown on the graphs on the following page. The water level at MW-1 continues to fluctuate on a daily basis over a range of ~1.5 to ~3 feet. Minus the daily fluctuations, the water table at MW-1 remained more or less unchanged.

Water table elevations at MW-3 declined steadily over the measurement period, while water temperature at MW-3 steadily declined.

At Mirada #1 the water table and temperature fluctuated on a daily basis in response to varying water demand.



Water Meter Measurements

Water meter measurements and average water use at each Nederend Dairy production well are summarized in Table 3 below.

Table 3. Water Meter Readings and Production Information: Oct 18 – Nov 19, 2007				
Well Name:	Meter Reading:	Gallons used between readings:	Average Gallons/day:	Average Production Rate (gpm):
MD-1	63994600	5,834,300	182322	127
MD-2	62440200	4,000	125	0
Nederend #2	545454500	8,536,800	266,775	185
Nederend #3	200921400	76,800	2400	1.7

Discussion

The nitrate level at well MW-8 was up slightly from October. The nitrate level at MW-1 was up slightly again. At MW-2 the nitrate level in November was the highest measured since monitoring began. At wells MW-5 and MW-6 nitrate levels increased.

Craig Tesch provided me with nitrogen isotope data that ISDA collected in April and November of 2005. The results are summarized in the table below.

ISDA Nitrogen Isotope Data		
Well #:	April 2005 $\delta^{15}\text{N}$	November 2005 $\delta^{15}\text{N}$
MW-1	4.65	5.95
MW-2	3.02	4.53
MW-3	6.40	11.01
MW-4	5.78	NS
MW-5	7.50	NS
MW-6	12.35	NS
MW-7	12.13	15.59
MW-8	NS	11.32

A discussion of nitrogen isotope data and its use in identifying sources of nitrogen contamination from ISDA Technical Results Summary #14 is copied below:

“The ratio of the common nitrogen isotope ^{14}N to its less abundant counterpart ^{15}N relative to a known standard (denoted $\delta^{15}\text{N}$) can be useful in determining sources of $\text{NO}_3\text{-N}$. Common sources of $\text{NO}_3\text{-N}$ in ground water are applied commercial fertilizers, animal or human waste, and organic nitrogen within the soil. Each of these $\text{NO}_3\text{-N}$ source categories has a potentially distinguishable nitrogen isotopic signature. The typical $\delta^{15}\text{N}$ range for fertilizer is -5 per mil (‰) to $+5$ ‰, while typical values for waste sources are greater than $+10$ ‰. $\delta^{15}\text{N}$ values between $+5$ ‰ and $+10$ ‰ can indicate an organic or mixed source (Kendall and McDonnell, 1998).

Use of nitrogen isotopes as the sole means to determine $\text{NO}_3\text{-N}$ sources should be done with great care. $\delta^{15}\text{N}$ values in ground water can be complicated by several reactions (e.g., ammonia volatilization, nitrification, denitrification, plant uptake, etc.) that can modify the $\delta^{15}\text{N}$ values (Kendall and McDonnell, 1998). Furthermore, mixing of sources along shallow flowpaths makes determination of sources and extent of denitrification very difficult (Kendall and McDonnell, 1998).”

The $\delta^{15}\text{N}$ values from wells MW-6, MW-7 and MW-8 are indicative of an animal or human waste source. The $\delta^{15}\text{N}$ values from wells MW-4 and MW-5 in April 2005 are indicative of an organic or mixed

source. The $\delta_{15}\text{N}$ values from well MW-3 were in the animal or human waste source range in November and the organic or mixed range in April. At MW-2 the $\delta_{15}\text{N}$ values are in the fertilizer range, which is somewhat surprising given the nearly constant high nitrate values and the proximity to wastewater storage lagoons with a high likelihood of leakage. At MW-1 the $\delta_{15}\text{N}$ values are in the fertilizer/organic or mixed range.

Sincerely,

John Monks, P.G.

Hydrogeologist

Cc: Ilene Dobbin (COCOA), Craig Tesch (ISDA)



www.alchemlabs.com
EMAIL: alchem@alchemlabs.com

NAME	Mok's Hydro-Decks Inc.						
ATTENTION	Jim Monts						
ADDRESS	PO Box 362						
CITY	Sandpoint		STATE	ID	ZIP CODE	83862	
PHONE #	208-263-1974		FAX #				
SAMPLER(S)	Monts						
PROJECT OR SITE	Node vents					P.N./P.O. NUMBER	

Chain of Custody Form

[illegible]



Alchem Laboratories, Inc.

104 West 31st Street
Boise, Idaho 83714

Phone (208) 336-1172
FAX (208) 336-7124

Water, Soil and
Waste Water Analysis

LABORATORY REPORT

MONKS HYDRO-GEOSCIENCE
PO BOX 362
SANDPOINT, IDAHO 83864

ATTENTION: JOHN MONKS
SOURCE -: MW-1 / PROJ: NEDEREND

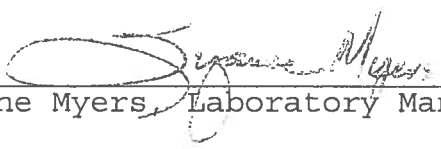
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TIME COLLECTED 12:10
DATE RECEIVED 11/19/2007
DATE REPORTED 12/04/2007
SUBMITTED : MONKS

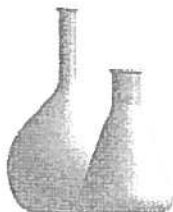
LAB SAMPLE NUMBER - 23145

Results reported unless noted: (Chemistry Analysis as mg/l) (Bacteria as organisms/100 ml)

ANALYSIS	RESULTS	DATE ANALYZED	ANALYST
NITRATE as N	31.5	11/30/2007	TK

This report for the exclusive use of the client(s) to whom it is addressed. Its disclosure to others for use in advertising is not authorized. These results refer only to the specific sample tested and no interpretation is intended or implied.


Suzanne Myers, Laboratory Manager





Alchem Laboratories, Inc.

104 West 31st Street
Boise, Idaho 83714

Phone (208) 336-1172
FAX (208) 336-7124

Water, Soil and
Waste Water Analysis

LABORATORY REPORT

MONKS HYDRO-GEOSCIENCE
PO BOX 362
SANDPOINT, IDAHO 83864

ATTENTION: JOHN MONKS
SOURCE -: MW-2 / PROJ: NEDEREND

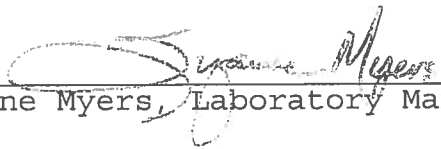
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DATE REPORTED 12/04/2007
SUBMITTED : MONKS

LAB SAMPLE NUMBER - 23146

Results reported unless noted: (Chemistry Analysis as mg/l) (Bacteria as organisms/100 ml)

ANALYSIS	RESULTS	DATE ANALYZED	ANALYST
NITRATE as N	47.5	11/30/2007	TK

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Suzanne Myers, Laboratory Manager





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Water, Soil and
Waste Water Analysis

LABORATORY REPORT

MONKS HYDRO-GEOSCIENCE
PO BOX 362
SANDPOINT, IDAHO 83864

ATTENTION: JOHN MONKS
SOURCE -: MW-8 / PROJ: NEDEREND

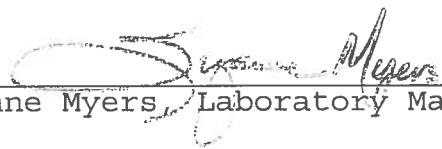
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TIME COLLECTED 12:42
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DATE REPORTED 12/04/2007
SUBMITTED : MONKS

LAB SAMPLE NUMBER - 23147

Results reported unless noted: (Chemistry Analysis as mg/l) (Bacteria as organisms/100 ml)

ANALYSIS	RESULTS	DATE ANALYZED	ANALYST
NITRATE as N	76.8	11/30/2007	TK

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Suzanne Myers, Laboratory Manager





Alchem Laboratories, Inc.

104 West 31st Street
Boise, Idaho 83714

Phone (208) 336-1172
FAX (208) 336-7124

Water, Soil and
Waste Water Analysis

LABORATORY REPORT

MONKS HYDRO-GEOSCIENCE
PO BOX 362
SANDPOINT, IDAHO 83864

ATTENTION: JOHN MONKS
SOURCE -: MW-5 / PROJ: NEDEREND

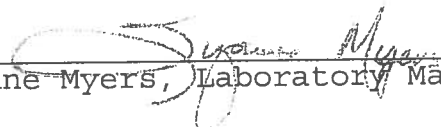
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TIME COLLECTED 12:58
DATE RECEIVED 11/19/2007
DATE REPORTED 11/30/2007
SUBMITTED : MONKS

LAB SAMPLE NUMBER - 23148

Results reported unless noted: (Chemistry Analysis as mg/l) (Bacteria as organisms/100 ml)

ANALYSIS	RESULTS	DATE ANALYZED	ANALYST
NITRATE as N	12.3	11/28/2007	TK

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Suzanne Myers, Laboratory Manager





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Boise, Idaho 83714

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FAX (208) 336-7124

Water, Soil and
Waste Water Analysis

LABORATORY REPORT

MONKS HYDRO-GEOSCIENCE
PO BOX 362
SANDPOINT, IDAHO 83864

DATE COLLECTED 11/19/2007
TIME COLLECTED 13:10
DATE RECEIVED 11/19/2007
DATE REPORTED 11/30/2007
SUBMITTED : MONKS

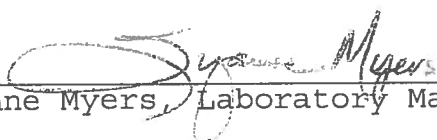
ATTENTION: JOHN MONKS
SOURCE -: MW-6 / PROJ: NEDEREND

LAB SAMPLE NUMBER - 23149

Results reported unless noted: (Chemistry Analysis as mg/l) (Bacteria as organisms/100 ml)

ANALYSIS	RESULTS	DATE ANALYZED	ANALYST
NITRATE as N	5.40	11/28/2007	TK

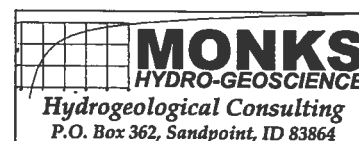
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Suzanne Myers, Laboratory Manager



28 November, 2007

Hans Nederend
Nederend Dairy
4998 Hogg Road
Homedale, ID 83628



RE: October 2007 water quality report

Dear Hans:

This letter reports water quality data collected at Nederend Dairies #1 and #2 on October 18th of 2007. All of the wells were sampled by ISDA during this event, and depth to water measurements resumed. Data from the data loggers in wells MW-1, MW-3 and MD-1 were downloaded.

Water Quality

Water quality data from October 18th is summarized in Table 1 below.

Table 1. October 2007 Water Chemistry Analytical Results					
Well name:	Date:	Chloride (mg/L):	Nitrate (mg/L):	Sulfate (mg/L):	Coliform Bacteria
Nederend #2	10/18/07	61.8	14	254	NA
Nederend Domestic	10/18/07	56.6	10	218	NA
MW-1	10/18/07	70.2	31	254	NA
MW-2	10/18/07	101	44	379	NA
MW-3	10/18/07	135	28	312	NA
MW-4	10/18/07	78.2	11	299	NA
MW-5	10/18/07	72.8	11	350	NA
MW-6	10/18/07	25.7	3.6	48.4	NA
MW-7	10/18/07	55.4	10	167	NA
MW-8	10/18/07	169	74	249	NA
MW-9	10/18/07	74.5	11	326	NA

Table 2. October 2007 Field Measured Water Quality Parameters						
Well#	Temp C	SpCond (uS/cm)	DO Conc (mg/L)	pH	TDS (g/L)	ORP (mV)
MW-1	13.31	1451.8	1.16	7.08	943.646	144
MW-2	13.86	1814.6	1.09	7.12	1179.496	164
MW-3	14.43	1861.1	0.31	7.06	1209.729	145
MW-4	13.02	1442.1	0.7	7.02	937.348	116
MW-5	13.71	1594.4	0.46	7.02	1036.348	143
MW-6	15.48	538.6	1.51	7.35	350.073	118
MW-7	14.59	1173.9	0.37	7.01	763.062	143
MW-8	15.31	2289.8	0.25	6.97	1488.348	163
MW-9	15.09	1617.6	0.76	6.99	1051.45	134
Nederend Dom	NM	NM	NM	NM	NM	NM
Nederend #2	NM	NM	NM	NM	NM	NM

Water Level Measurements

Water table elevations and temperature at MW-1, MW-3 and MD-1 are shown on the graphs on the following page. The water level at MW-1 fluctuates on a daily basis over a range of ~1.5 to ~3 feet while continuing to rise slowly. The water temperature at MW-1 is declining very slowly.

At MW-3 water levels were fairly consistent over most of the measurement period, fluctuating less than 0.5 feet over the measurement period. Water temperature at MW-3 continued to rise steadily over the measurement period.

At MD-1 water levels fluctuated over a small range for the first few days of the measurement period. Apparently MD-1 and MD-2 were both in production during this time period. Water levels then declined steeply for a couple of days, probably because well MD-2 was shut off. Well MD-1 was then

shut off and water levels recovered between October 14th and October 18th. MD-1 then went back into production and water levels declined steeply.

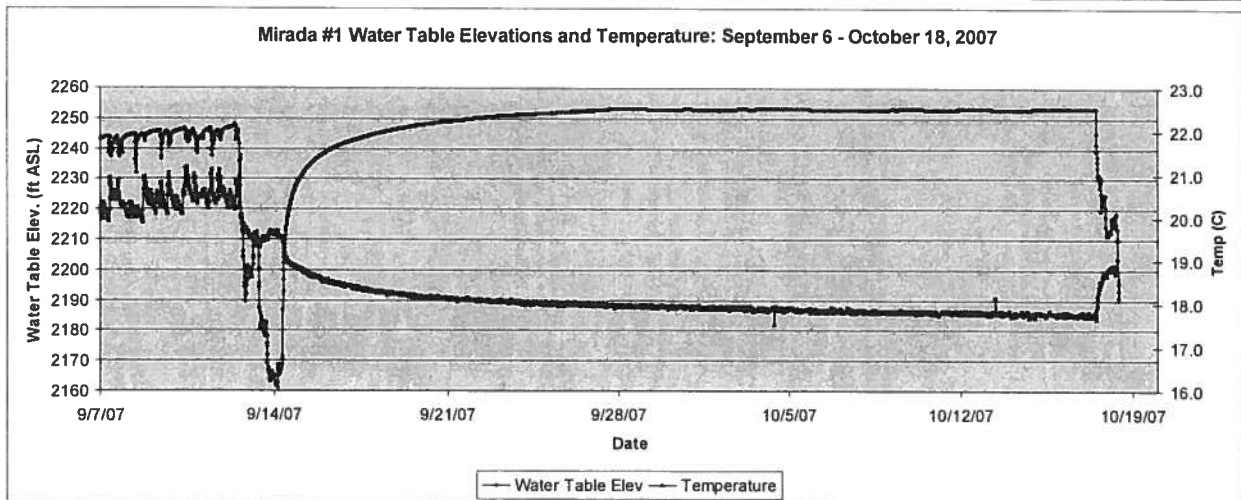
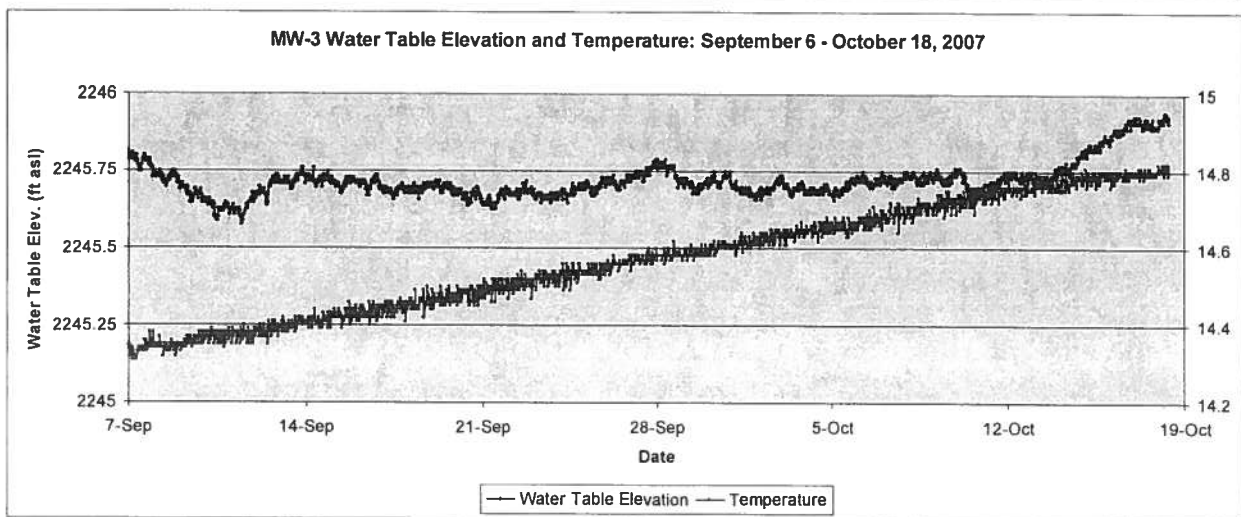
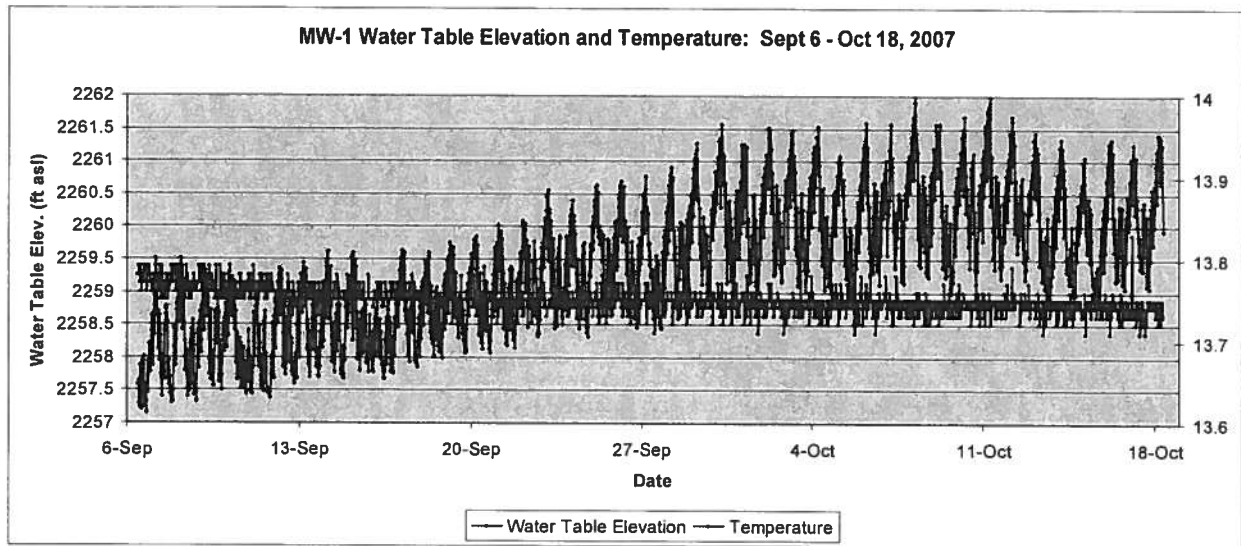


Table 3. October 2007 Water Level Data

Well Name:	Measuring point elevation:	Depth to Water:	Water Table Elevation:	Change from Previous month:
Nederend Domestic	2290.13	NM		
MW-1	2294.59	34.35	2260.24	2.02
MW-2	2276.31	26.93	2249.38	0.90
MW-3	2265.33	19.35	2245.98	1.05
MW-4	2305.73	14.24	2291.49	-0.33
MW-5	2298.90	13.63	2285.27	-0.45
MW-6	2300.41	19.67	2280.74	0.86
MW-7	2300.23	18.15	2282.08	0.38
MW-8	~2306	34.75	2271.25	1.20
MW-9	~2296	12.68	2283.32	-0.63
NEDEREND #3	~2300	NM		
NEDEREND #1	~2292	NM		
MD-1	~2305	NM		
MD-2	~2304	NM		

Water Meter Measurements

Water meter measurements and average water use at each Nederend Dairy production well are summarized in Table 4 below. About 90% of the water production at Dairy #2 was from the new well (MD-2) with the remaining 10% coming from the old well (MD-1). At Dairy #1 almost all of the production was from well Nederend #2.

Table 4. Water Meter Readings and Production Information: Sept 6 – Oct 18, 2007

Well Name:	Meter Reading:	Gallons used between readings:	Average Gallons/day:	Average Production Rate (gpm):
MD-1	58160300	549900	13093	9
MD-2	62436200	5931700	141231	98
Nederend #2	536917700	12431800	295,995	206
Nederend #3	200844600	11400	271	0.2

Discussion

Changes in water quality between the October 2206 and October 2007 ISDA sample events are summarized in Table 5 below. The concentrations of chloride, nitrate and sulfate have all increased at wells MW-1, MW-2, MW-3, and MW-4. At MW-8 nitrate and sulfate increased while chloride went down. At MW-6 and MW-9 chloride, nitrate and sulfate all decreased. AT MW-5 and MW-7 chloride and nitrate declined while sulfate increased.

Table 5. Water Quality Changes between ISDA October 2006 and October 2007 Sampling Events

Well name:	Chloride (mg/L):	Nitrate (mg/L):	Sulfate (mg/L):
MW-1	19.5	12	76
MW-2	5.9	6	128
MW-3	52.6	6	54
MW-4	4.2	1	29
MW-5	-0.1	-3	7
MW-6	-26.4	-6.2	-16.1
MW-7	-5.8	-4	11
MW-8	-5	9	5
MW-9	-4.7	-2	-17

Nitrate levels at well MW-8 in October were essentially unchanged from September, while at MW-1 nitrate levels increased, continuing an upward trend. Nitrate at MW-3 went down slightly. At MW-2 nitrate levels remain high with very little seasonal variation. At wells MW-1, MW-2, and MW-3 nitrate levels continue to be at or near the highest levels measured at these wells.

ISDA sample results from well 8501801 (Edison Road and Hwy 55) show elevated concentrations of chloride (130 mg/L), sulfate (837 mg/L) and nitrate (33 mg/L). This well is upgradient of Nederend Dairies. The water quality data from well 8501801 suggest that there are upgradient sources of contamination that have the potential to impact ground water quality at Nederend Dairies.

Sincerely,

John Monks, P.G.

Hydrogeologist

Cc: Ilene Dobbin (COCOA), Craig Tesch (ISDA)



IDAHO DEPARTMENT OF HEALTH & WELFARE

C.L. "BUTCH" OTTER - Governor
RICHARD M. ARMSTRONG - Director

BUREAU OF LABORATORIES
RICHARD F. HUDSON, Ph.D., Chief
2220 Old Penitentiary Road
Boise, ID 83712
PHONE 208-334-2235
FAX 208-334-2382

Idaho Dept. of Agriculture
Attention: Rick Carlson
PO Box 790
2270 Old Penitentiary Rd
Boise, ID 83701

Laboratory Order ID

101907 08

(Please refer to this number when contacting the lab)

Customer ID:	ISDA	Date Collected:	10/18/2007
Project ID:	850	Time Collected:	10:17 AM
Site:	850MW1	Date/Time Received:	10/18/2007
Matrix:	Ground Water	Collected By:	Rick Carlson

Customer Sample ID: 28MW1

Lab Sample Number: 0710 0544

Test	Method	Result	Units	Analysis Date	Analyst
Ammonia as N	SM 4500 NH3 H.	<0.01	mg/L	10/31/2007	B.Orde
Chloride	EPA 300.0	70.2	mg/L	10/30/2007	II.Elder
Nitrogen, Nitrate-Nitrite	EPA 353.2	31	mg/L	11/1/2007	B.Orde
Sulfate	EPA 300.0	254	mg/L	10/30/2007	II.Elder



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Laboratory Supervisor



IDAHO DEPARTMENT OF HEALTH & WELFARE

C.L. "BUTCH" OTTER - Governor
RICHARD M. ARMSTRONG - Director

BUREAU OF LABORATORIES
RICHARD F. HUDSON, Ph.D., Chief
2220 Old Penitentiary Road
Boise, ID 83712
PHONE 208-334-2235
FAX 208-334-2382

Idaho Dept. of Agriculture
Attention: Rick Carlson
PO Box 790
2270 Old Penitentiary Rd
Boise, ID 83701

Laboratory Order ID

101907_08

(Please refer to this number when contacting the lab)

Customer ID:	ISDA	Date Collected:	10/18/2007
Project ID:	850	Time Collected:	10:27 AM
Site:	850MW81	Date/Time Received:	10/18/2007
Matrix:	Ground Water	Collected By:	Rick Carlson

Customer Sample ID: 81MW1

Lab Sample Number: 0710 0545

Test	Method	Result	Units	Analysis Date	Analyst
Ammonia as N	SM 4500 NH3 H.	<0.01	mg/L	10/31/2007	B.Orde
Chloride	EPA 300.0	70.3	mg/L	10/25/2007	II.Elder
Nitrogen, Nitrate-Nitrite	EPA 353.2	31	mg/L	11/1/2007	B.Orde
Sulfate	EPA 300.0	251	mg/L	10/25/2007	II.Elder



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Laboratory Supervisor



IDAHO DEPARTMENT OF HEALTH & WELFARE

C.L. "BUTCH" OTTER - Governor
RICHARD M. ARMSTRONG - Director

BUREAU OF LABORATORIES
RICHARD F. HUDSON, Ph.D., Chief
2220 Old Penitentiary Road
Boise, ID 83712
PHONE 208-334-2235
FAX 208-334-2382

Idaho Dept. of Agriculture
Attention: Rick Carlson
PO Box 790
2270 Old Penitentiary Rd
Boise, ID 83701

Laboratory Order ID

101907_08

(Please refer to this number when contacting the lab)

Customer ID:	ISDA	Date Collected:	10/18/2007
Project ID:	850	Time Collected:	11:04 AM
Site:	850MW2	Date/Time Received:	10/18/2007
Matrix:	Ground Water	Collected By:	Rick Carlson

Customer Sample ID: 28MW2

Lab Sample Number: 0710 0547

Test	Method	Result	Units	Analysis Date	Analyst
Ammonia as N	SM 4500 NH3 H.	<0.01	mg/L	10/31/2007	B.Orde
Chloride	EPA 300.0	101	mg/L	10/25/2007	Il.Elder
Nitrogen, Nitrate-Nitrite	EPA 353.2	44	mg/L	11/1/2007	B.Orde
Sulfate	EPA 300.0	379	mg/L	10/26/2007	Il.Elder



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BUREAU OF LABORATORIES
RICHARD F. HUDSON, Ph.D., Chief
2220 Old Penitentiary Road
Boise, ID 83712
PHONE 208-334-2235
FAX 208-334-2382

Idaho Dept. of Agriculture
Attention: Rick Carlson
PO Box 790
2270 Old Penitentiary Rd
Boise, ID 83701

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Customer ID:	ISDA	Date Collected:	10/18/2007
Project ID:	850	Time Collected:	10:42 AM
Site:	850MW3	Date/Time Received:	10/18/2007
Matrix:	Ground Water	Collected By:	Rick Carlson

Customer Sample ID:	28MW3	Lab Sample Number:	0710 0546
----------------------------	-------	---------------------------	-----------

Test	Method	Result	Units	Analysis Date	Analyst
Ammonia as N	SM 4500 NH3 H.	<0.01	mg/L	10/31/2007	B.Orde
Chloride	EPA 300.0	135	mg/L	10/26/2007	II.Elder
Nitrogen, Nitrate-Nitrite	EPA 353.2	28	mg/L	11/1/2007	B.Orde
Sulfate	EPA 300.0	312	mg/L	10/26/2007	II.Elder



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2220 Old Penitentiary Road
Boise, ID 83712
PHONE 208-334-2235
FAX 208-334-2382

Idaho Dept. of Agriculture
Attention: Rick Carlson
PO Box 790
2270 Old Penitentiary Rd
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Customer ID:	ISDA	Date Collected:	10/18/2007
Project ID:	850	Time Collected:	11:26 AM
Site:	850MW4	Date/Time Received:	10/18/2007
Matrix:	Ground Water	Collected By:	Rick Carlson

Customer Sample ID: 28MW4

Lab Sample Number: 0710 0548

Test	Method	Result	Units	Analysis Date	Analyst
Ammonia as N	SM 4500 NH3 H.	<0.01	mg/L	10/31/2007	B.Orde
Chloride	EPA 300.0	78.2	mg/L	10/25/2007	II.Elder
Nitrogen, Nitrate-Nitrite	EPA 353.2	11	mg/L	11/1/2007	B.Orde
Sulfate	EPA 300.0	299	mg/L	10/26/2007	II.Elder



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RICHARD F. HUDSON, Ph.D., Chief
2220 Old Penitentiary Road
Boise, ID 83712
PHONE 208-334-2235
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Idaho Dept. of Agriculture
Attention: Rick Carlson
PO Box 790
2270 Old Penitentiary Rd
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Customer ID:	ISDA	Date Collected:	10/18/2007
Project ID:	850	Time Collected:	11:45 AM
Site:	850MW5	Date/Time Received:	10/18/2007
Matrix:	Ground Water	Collected By:	Rick Carlson

Customer Sample ID: 28MW5

Lab Sample Number: 0710 0549

Test	Method	Result	Units	Analysis Date	Analyst
Ammonia as N	SM 4500 NH3 H.	<0.01	mg/L	10/31/2007	B.Orde
Chloride	EPA 300.0	72.8	mg/L	10/25/2007	II.Elder
Nitrogen, Nitrate-Nitrite	EPA 353.2	11	mg/L	11/1/2007	B.Orde
Sulfate	EPA 300.0	350	mg/L	10/26/2007	II.Elder



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BUREAU OF LABORATORIES
RICHARD F. HUDSON, Ph.D., Chief
2220 Old Penitentiary Road
Boise, ID 83712
PHONE 208-334-2235
FAX 208-334-2382

Idaho Dept. of Agriculture
Attention: Rick Carlson
PO Box 790
2270 Old Penitentiary Rd
Boise, ID 83701

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Customer ID:	ISDA	Date Collected:	10/18/2007
Project ID:	850	Time Collected:	12:44 PM
Site:	850MW6	Date/Time Received:	10/18/2007
Matrix:	Ground Water	Collected By:	Rick Carlson

Customer Sample ID:	28MW6	Lab Sample Number:	0710 0552
---------------------	-------	--------------------	-----------

Test	Method	Result	Units	Analysis Date	Analyst
Ammonia as N	SM 4500 NH3 H.	<0.01	mg/L	10/31/2007	B.Orde
Chloride	EPA 300.0	25.7	mg/L	10/25/2007	II.Elder
Nitrogen, Nitrate-Nitrite	EPA 353.2	3.6	mg/L	11/1/2007	B.Orde
Sulfate	EPA 300.0	48.4	mg/L	10/25/2007	II.Elder



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RICHARD M. ARMSTRONG - Director

BUREAU OF LABORATORIES
RICHARD F. HUDSON, Ph.D., Chief
2220 Old Penitentiary Road
Boise, ID 83712
PHONE 208-334-2235
FAX 208-334-2382

Idaho Dept. of Agriculture
Attention: Rick Carlson
PO Box 790
2270 Old Penitentiary Rd
Boise, ID 83701

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Customer ID:	ISDA	Date Collected:	10/18/2007
Project ID:	850	Time Collected:	12:27 PM
Site:	850MW7	Date/Time Received:	10/18/2007
Matrix:	Ground Water	Collected By:	Rick Carlson

Customer Sample ID:	28MW7	Lab Sample Number:	0710 0551
----------------------------	-------	---------------------------	-----------

Test	Method	Result	Units	Analysis Date	Analyst
Ammonia as N	SM 4500 NH3 H.	<0.01	mg/L	10/31/2007	B.Orde
Chloride	EPA 300.0	55.4	mg/L	10/25/2007	II.Elder
Nitrogen, Nitrate-Nitrite	EPA 353.2	10	mg/L	11/1/2007	B.Orde
Sulfate	EPA 300.0	167	mg/L	10/25/2007	II.Elder



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BUREAU OF LABORATORIES
RICHARD F. HUDSON, Ph.D., Chief
2220 Old Penitentiary Road
Boise, ID 83712
PHONE 208-334-2235
FAX 208-334-2382

Idaho Dept. of Agriculture
Attention: Rick Carlson
PO Box 790
2270 Old Penitentiary Rd
Boise, ID 83701

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Customer ID:	ISDA	Date Collected:	10/18/2007
Project ID:	850	Time Collected:	1:08 PM
Site:	850MW8	Date/Time Received:	10/18/2007
Matrix:	Ground Water	Collected By:	Rick Carlson

Customer Sample ID:	28MW8	Lab Sample Number:	0710 0553
----------------------------	-------	---------------------------	-----------

Test	Method	Result	Units	Analysis Date	Analyst
Ammonia as N	SM 4500 NH3 H.	<0.01	mg/L	10/31/2007	B.Orde
Chloride	EPA 300.0	169	mg/L	10/26/2007	II.Elder
Nitrogen, Nitrate-Nitrite	EPA 353.2	74	mg/L	11/1/2007	B.Orde
Sulfate	EPA 300.0	249	mg/L	10/26/2007	II.Elder



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BUREAU OF LABORATORIES
RICHARD F. HUDSON, Ph.D., Chief
2220 Old Penitentiary Road
Boise, ID 83712
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FAX 208-334-2382

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Attention: Rick Carlson
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Customer ID:	ISDA	Date Collected:	10/18/2007
Project ID:	850	Time Collected:	11:56 AM
Site:	850MW9	Date/Time Received:	10/18/2007
Matrix:	Ground Water	Collected By:	Rick Carlson

Customer Sample ID: 28MW9

Lab Sample Number: 0710 0550

Test	Method	Result	Units	Analysis Date	Analyst
Ammonia as N	SM 4500 NH3 H.	0.01	mg/L	10/31/2007	B.Orde
Chloride	EPA 300.0	74.5	mg/L	10/25/2007	II.Elder
Nitrogen, Nitrate-Nitrite	EPA 353.2	11	mg/L	11/1/2007	B.Orde
Sulfate	EPA 300.0	326	mg/L	10/26/2007	II.Elder



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FAX 208-334-2382

Idaho Dept. of Agriculture
Attention: Craig Tesch

PO Box 790
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Boise, ID 83701

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Customer ID:	ISDA	Date Collected:	10/18/2007
Project ID:	850	Time Collected:	1:17 PM
Site:	8501401	Date/Time Received:	10/18/2007
Matrix:	Ground Water	Collected By:	

Customer Sample ID: 280714

Lab Sample Number: 0710 0535

Test	Method	Result	Units	Analysis Date	Analyst
Ammonia as N	SM 4500 NH3 H.	1.4	mg/L	10/31/2007	B.Orde
Chloride	EPA 300.0	9.64	mg/L	10/24/2007	II.Elder
Nitrogen, Nitrate-Nitrite	EPA 353.2	<0.01	mg/L	10/25/2007	B.Orde
Sulfate	EPA 300.0	171	mg/L	10/24/2007	II.Elder



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RICHARD F. HUDSON, Ph.D., Chief
2220 Old Penitentiary Road
Boise, ID 83712
PHONE 208-334-2235
FAX 208-334-2382

Idaho Dept. of Agriculture
Attention: Craig Tesch
PO Box 790
2270 Old Penitentiary Rd
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Customer ID:	ISDA	Date Collected:	10/18/2007
Project ID:	850	Time Collected:	12:17 PM
Site:	8503001	Date/Time Received:	10/18/2007
Matrix:	Ground Water	Collected By:	

Customer Sample ID: 280730

Lab Sample Number: 0710 0536

Test	Method	Result	Units	Analysis Date	Analyst
Ammonia as N	SM 4500 NH3 H.	<0.01	mg/L	10/31/2007	B.Orde
Chloride	EPA 300.0	56.6	mg/L	10/24/2007	II.Elder
Nitrogen, Nitrate-Nitrite	EPA 353.2	10	mg/L	10/25/2007	B.Orde
Sulfate	EPA 300.0	218	mg/L	10/26/2007	II.Elder



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FAX 208-334-2382

Idaho Dept. of Agriculture
Attention: Craig Tesch
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Customer ID:	ISDA	Date Collected:	10/18/2007
Project ID:	850	Time Collected:	11:37 AM
Site:	8501101	Date/Time Received:	10/18/2007
Matrix:	Ground Water	Collected By:	

Customer Sample ID: 280711

Lab Sample Number: 0710 0537

Test	Method	Result	Units	Analysis Date	Analyst
Ammonia as N	SM 4500 NH3 H.	0.11	mg/L	10/31/2007	B.Orde
Chloride	EPA 300.0	106	mg/L	10/24/2007	II.Elder
Nitrogen, Nitrate-Nitrite	EPA 353.2	36	mg/L	10/25/2007	B.Orde
Sulfate	EPA 300.0	242	mg/L	10/26/2007	II.Elder



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RICHARD F. HUDSON, Ph.D., Chief
2220 Old Penitentiary Road
Boise, ID 83712
PHONE 208-334-2235
FAX 208-334-2382

Idaho Dept. of Agriculture
Attention: Craig Tesch
PO Box 790
2270 Old Penitentiary Rd
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Customer ID:	ISDA	Date Collected:	10/18/2007
Project ID:	850	Time Collected:	11:11 AM
Site:	8501601	Date/Time Received:	10/18/2007
Matrix:	Ground Water	Collected By:	

Customer Sample ID: 280716

Lab Sample Number: 0710 0538

Test	Method	Result	Units	Analysis Date	Analyst
Ammonia as N	SM 4500 NH3 H.	4.4	mg/L	10/31/2007	B.Orde
Chloride	EPA 300.0	63.7	mg/L	10/24/2007	II.Elder
Nitrogen, Nitrate-Nitrite	EPA 353.2	<0.01	mg/L	10/25/2007	B.Orde
Sulfate	EPA 300.0	210	mg/L	10/26/2007	II.Elder



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2220 Old Penitentiary Road
Boise, ID 83712
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Idaho Dept. of Agriculture
Attention: Craig Tesch
PO Box 790
2270 Old Penitentiary Rd
Boise, ID 83701

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Customer ID:	ISDA	Date Collected:	10/18/2007
Project ID:	850	Time Collected:	9:59 AM
Site:	8501801	Date/Time Received:	10/18/2007
Matrix:	Ground Water	Collected By:	

Customer Sample ID: 280718

Lab Sample Number: 0710 0539

Test	Method	Result	Units	Analysis Date	Analyst
Ammonia as N	SM 4500 NH3 H.	<0.01	mg/L	10/31/2007	B.Orde
Chloride	EPA 300.0	130	mg/L	10/24/2007	II.Elder
Nitrogen, Nitrate-Nitrite	EPA 353.2	33	mg/L	10/25/2007	B.Orde
Sulfate	EPA 300.0	837	mg/L	10/26/2007	II.Elder



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2220 Old Penitentiary Road
Boise, ID 83712
PHONE 208-334-2235
FAX 208-334-2382

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Attention: Craig Tesch
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2270 Old Penitentiary Rd
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Customer ID:	ISDA	Date Collected:	10/18/2007
Project ID:	850	Time Collected:	9:00 AM
Site:	8501301	Date/Time Received:	10/18/2007
Matrix:	Ground Water	Collected By:	

Customer Sample ID: 280713

Lab Sample Number: 0710 0540

Test	Method	Result	Units	Analysis Date	Analyst
Ammonia as N	SM 4500 NH3 H.	5.6	mg/L	10/31/2007	B.Orde
Chloride	EPA 300.0	14.7	mg/L	10/24/2007	II.Elder
Nitrogen, Nitrate-Nitrite	EPA 353.2	0.10	mg/L	10/25/2007	B.Orde
Sulfate	EPA 300.0	11.1	mg/L	10/24/2007	II.Elder



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Attention: Rick Carlson
PO Box 790
2270 Old Penitentiary Rd
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Customer ID:	ISDA	Date Collected:	10/18/2007
Project ID:	850	Time Collected:	9:22 AM
Site:	8501901	Date/Time Received:	10/18/2007
Matrix:	Ground Water	Collected By:	Rick Carlson

Customer Sample ID: 280719

Lab Sample Number: 0710 0543

Test	Method	Result	Units	Analysis Date	Analyst
Ammonia as N	SM 4500 NH3 H.	0.09	mg/L	10/31/2007	B.Orde
Chloride	EPA 300.0	61.8	mg/L	10/24/2007	II.Elder
Nitrogen, Nitrate-Nitrite	EPA 353.2	14	mg/L	11/1/2007	B.Orde
Sulfate	EPA 300.0	254	mg/L	10/26/2007	II.Elder



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RICHARD F. HUDSON, Ph.D., Chief
2220 Old Penitentiary Road
Boise, ID 83712
PHONE 208-334-2235
FAX 208-334-2382

Idaho Dept. of Agriculture
Attention: Craig Tesch
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2270 Old Penitentiary Rd
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Customer ID:	ISDA	Date Collected:	10/18/2007
Project ID:	850	Time Collected:	9:30 AM
Site:	8508001	Date/Time Received:	10/18/2007
Matrix:	Ground Water	Collected By:	

Customer Sample ID: 280780

Lab Sample Number: 0710 0541

Test	Method	Result	Units	Analysis Date	Analyst
Ammonia as N	SM 4500 NH3 H.	5.5	mg/L	10/31/2007	B.Orde
Chloride	EPA 300.0	14.6	mg/L	10/24/2007	II.Elder
Nitrogen, Nitrate-Nitrite	EPA 353.2	0.09	mg/L	11/1/2007	B.Orde
Sulfate	EPA 300.0	11.2	mg/L	10/24/2007	II.Elder



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Boise, ID 83712
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FAX 208-334-2382

Idaho Dept. of Agriculture
Attention: Craig Tesch
PO Box 790
2270 Old Penitentiary Rd
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Customer ID:	ISDA	Date Collected:	10/18/2007
Project ID:	850	Time Collected:	8:30 AM
Site:	8509001	Date/Time Received:	10/18/2007
Matrix:	Ground Water	Collected By:	

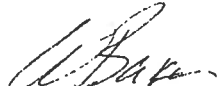
Customer Sample ID: 280790

Lab Sample Number: 0710 0542

Test	Method	Result	Units	Analysis Date	Analyst
Ammonia as N	SM 4500 NH3 H.	<0.01	mg/L	10/31/2007	B.Orde
Chloride	EPA 300.0	< 1.00	mg/L	10/24/2007	II.Elder
Nitrogen, Nitrate-Nitrite	EPA 353.2	<0.01	mg/L	11/1/2007	B.Orde
Sulfate	EPA 300.0	< 1.00	mg/L	10/24/2007	II.Elder

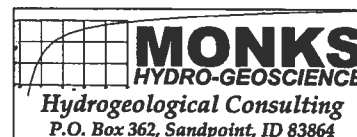


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26 September, 2007

Hans Nederend
Nederend Dairy
4998 Hogg Road
Homedale, ID 83628



RE: September 2007 water quality report

Dear Hans:

This letter reports water quality data collected at Nederend Dairies #1 and #2 on September 6th of 2007. My depth to water tape measure was stuck in a well near Sandpoint so measurements of depth to water were not made during this sampling event. Wells MW-1, MW-2, MW-3, MW-5, MW-6 and MW-8 were sampled and analyzed for nitrate, and data from the data loggers in wells MW-1, MW-3 and MD-1 were downloaded.

Water Quality

Water quality data from September 6th are summarized below in Tables 1 and 2. The arrows in the columns indicate whether levels have gone up or down since the previous analysis for these constituents.

Table 1. September 2007 Water Chemistry Analytical Results

Well name:	Date:	Chloride (mg/L):	Nitrate (mg/L):	Sulfate (mg/L):	Coliform Bacteria
Nederend Domestic	9/6/07	NA	NA	NA	NA
MW-1	9/6/07	NA	29.5	NA	NA
MW-2	9/6/07	NA	43.9	NA	NA
MW-3	9/6/07	NA	28.9	NA	NA
MW-4	9/6/07	NA	NA	NA	NA
MW-5	9/6/07	NA	12.3	NA	NA
MW-6	9/6/07	NA	16.1	NA	NA
MW-7	9/6/07	NA	NA	NA	NA
MW-8	9/6/07	NA	74.1	NA	NA
MW-9	9/6/07	NA	NA	NA	NA

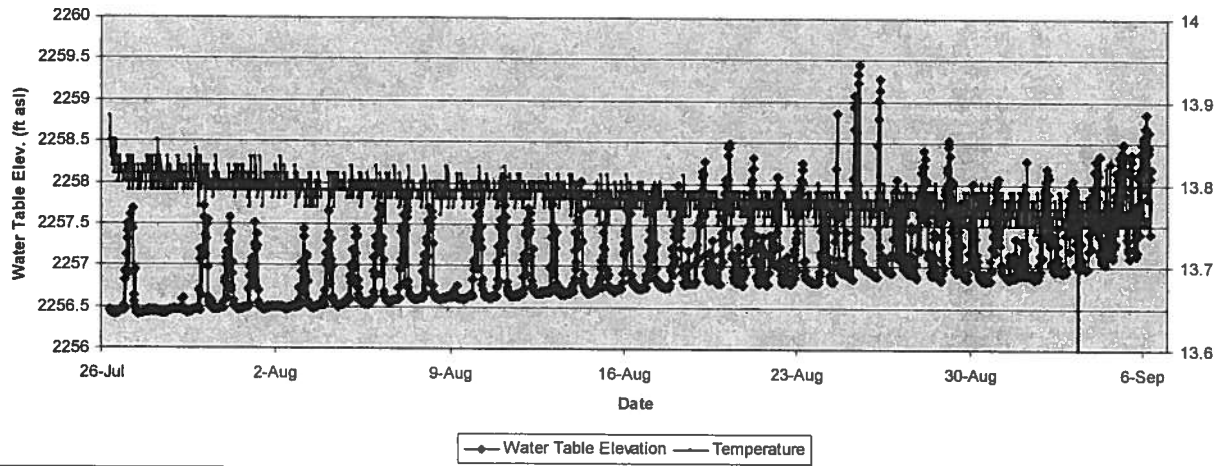
Water Level Measurements

Water table elevations and temperature at MW-1, MW-3 and MD-1 are shown on the graphs on the following page. The water level at MW-1 fluctuates on a daily basis over a range of ~1.5 to ~3 feet. The water table at MW-1 continues to rise.

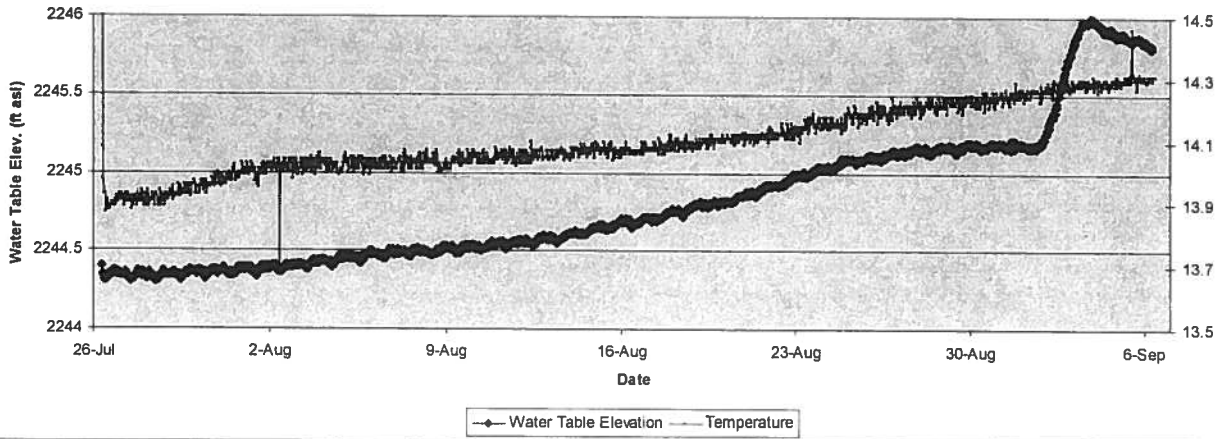
Water table elevations at MW-3 rose steadily over most of the measurement period, then rose steeply from ~September 1st – 3rd, before beginning to decline again. Water temperature at MW-3 also rose steadily over the measurement period.

Production from well MD-1 was fairly constant, with daily fluctuations due to varying water use, through August 17th. Production apparently decreased on August 17th. Water levels began to recover and daily fluctuations decreased. On August 24th production was increased, and the water levels in the well fell to below the level of the pressure transducer until August 30th, when production from the well decreased and water levels rose.

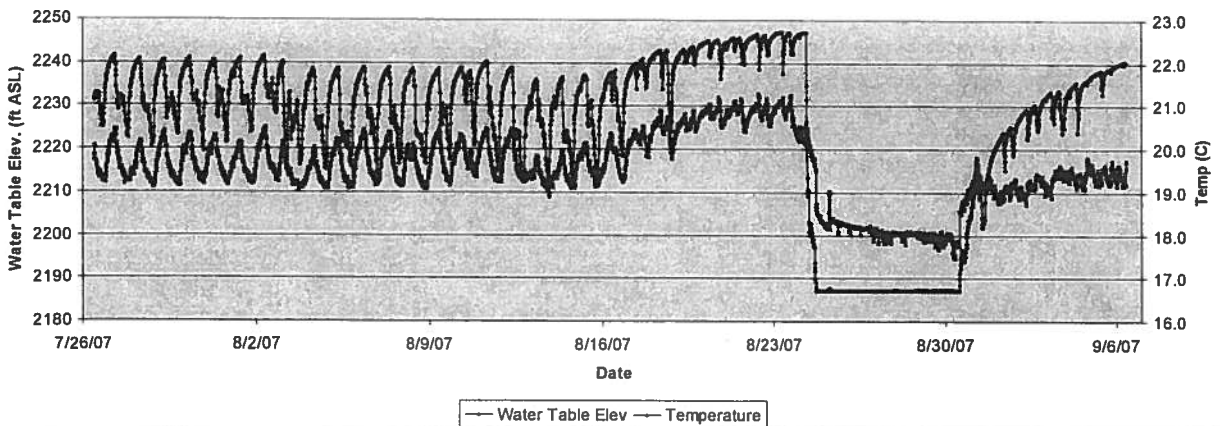
MW-1 Water Table Elevation and Temperature: July 26 - September 6, 2007



MW-3 Water Table Elevation and Temperature: July 26 - September 6, 2007



Mirada #1 Water Table Elevations and Temperature: July 26 - September 6, 2007



Water Meter Measurements

Water meter measurements and average water use at each Nederend Dairy production well are summarized in Table 3 below. The data for well Nederend #3 presented in Table 3 of the July 2007 report appears to have been in error. The corrected table appears below.

Table 3. Water Meter Readings and Production Information: July 26 - Sept 6, 2007				
Well Name:	Meter Reading:	Gallons used between readings:	Average Gallons/day:	Average Production Rate (gpm):
MD-1	57610400	2,208,400	53863	37
MD-2	56504500	6,937,800	169215	118
Nederend #2	524485900	14,158,300	337102	234
Nederend #3	200833200	598,900	14260	9.9
Table 3. Water Meter Readings and Production Information: June 27 – July 26, 2007				
Well Name:	Meter Reading:	Gallons used between readings:	Average Gallons/day:	Average Production Rate (gpm):
MD-1	55402000	615,450	20515	14
MD-2	49566700	5,753,200	191773	133
Nederend #2	510327600	9,898,000	341310	237
Nederend #3	200234300	835,400	28807	20.0

Discussion

Nitrate levels at well MW-8 declined but are still quite high. Nitrate levels at MW-1 were up slightly again. At MW-3 nitrate levels continue to increase, continuing an upward trend. Nitrate at MW-3 declined slightly from the high value measured in July. At MW-2 nitrate levels remain high. At wells MW-1, MW-2, and MW-3 nitrate levels continue to be at or near the highest levels measured at these wells. At well MW-5 nitrate levels declined slightly. At MW-6 nitrate levels went down.

My next sampling trip is scheduled for the week of Oct. 8-12. ISDA will also be sampling that week. If possible, I would like to have a COCOA/Nederend Dairy meeting on that date to discuss plans for the joint COCOA/Nederend Dairy ground water monitoring project.

Sincerely,

John Monks, P.G.

Hydrogeologist

Cc: Ilene Dobbin (COCOA), Craig Tesch (ISDA)



Alchem Laboratories, Inc.

104 West 31st Street
 Boise, Idaho 83714
 Phone (208) 336-117

NAME Monks Hydro-Geoscience		CITY Sandpoint		STATE ID	ZIP CODE 83864
ATTENTION John Monks		PHONE # 208-263-1991		FAX #	
ADDRESS PO Box 362		PROJECT OR SITE Monks			
CITY		P.N. / P.O. NUMBER			

Chain of Custody Form

LAB NUMBER	DATE	TIME	SAMPLE IDENTIFICATION
20805	9/6/07	1000	MW-1
20806	11	1020	MW-8
20807	11	1045	MW-3
20808	11	1100	MW-2
20809	11	1115	MW-6
20810	11	1130	MW-5

RELINQUISHED BY (Signature)		DATE

Relinquished By (Signature)	Date/Time	Received for Lat
	9-6-07 1300	

[illegible]

	TIME	RECEIVED BY (Signature)	
Laboratory By (Signature) <i>S. C. Kline</i>	Date/Time 9-60-07 117	Received With Seal Intact? Label Tag, COC Agree?	☐ Yes ☒ No ☐ Yes ☒ No



Alchem Laboratories, Inc.

104 West 31st Street

Boise, Idaho 83714

Phone (208) 336-1172

NAME	Moulks Hydro-Geosurveys		
ATTENTION	John Moulks		
ADDRESS	PO Box 362		
CITY	Sanford	STATE	IN
PHONE #	708-263-1994	ZIP CODE	46384
SAMPLER(S)	Moulks		
PROJECT OR SITE	Korpevenen		
	P.N. / P.O. NUMBER		

Chain of Custody Form

LAB NUMBER	DATE	TIME	SAMPLE IDENTIFICATION
	7/16/07	1000	MW-1
	"	1020	MW-8
	"	1045	MW-3
	"	1100	MW-2
	"	1115	MW-6
	"	1130	MW-5

RELINQUISHED BY (Signature)		DATE
Relinquished By (Signature)	Date/Time	Received for Lab
<i>[Signature]</i>	9:00 13D	<i>[Signature]</i>

MATRIX	TESTS (CIRCLE METHOD)	NUMBER OF CONTAINERS
	WATER	-
	SOIL	-
	OTHER	-
	TPH - (418.1 / 8015M)	-
	BTEX (602 / 8020 / 8260) (+N+M)	-
	CL. SOLVENTS (601 / 8010)	-
	VOC's (601-602 / 8021)	-
	GC-MS VOC's (624 / 8260)	-
	PAH's (8270)	-
	PHENOLS (604 / 8040 / 8270)	-
	PESTICIDES (608 / 8081 / 8270)	-
	PCB's (608 / 8081)	-
	SEMI-VOLATILES (625 / 8270)	-
	TCLP-(DESIGNATE	-
	8 RCRA METALS	-
	RBCA - NO LEAD GAS BTX+N+M (8020 / 8260)	-
	RBCA - LEADED GAS EDB (8011) BTX+N+M, EDC (8021 / 8260)	-
	RBCA - FUEL OILS BTX (8020 / 8260), PAH (8270)	-
	RBCA - MOTOR OILS BTX (8020 / 8260), PAH (8270)	-
	SEE ATTACHED LIST	-
	418.1	-
		-
		-
		-
		-
		-

[illegible]



Alchem Laboratories, Inc.

104 West 31st Street
Boise, Idaho 83714

Phone (208) 336-1172
FAX (208) 336-7124

Water, Soil and
Waste Water Analysis

LABORATORY REPORT

MONKS HYDRO-GEOSCIENCE
PO BOX 362
SANDPOINT, IDAHO 83864

ATTENTION: JOHN MONKS
SOURCE -: MW-1 / PROJ: NEDEREND

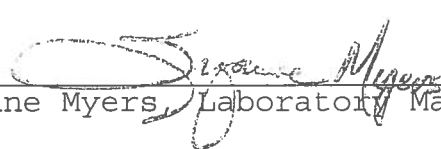
DATE COLLECTED 09/06/2007
TIME COLLECTED 10:00
DATE RECEIVED 09/06/2007
DATE REPORTED 09/20/2007
SUBMITTED : JOHN MONKS

LAB SAMPLE NUMBER - 20805

Results reported unless noted: (Chemistry Analysis as mg/l) (Bacteria as organisms/100 ml)

ANALYSIS	RESULTS	DATE ANALYZED	ANALYST
NITRATE as N	29.5	09/14/2007	TK

This report for the exclusive use of the client(s) to whom it is addressed. Its disclosure to others for use in advertising is not authorized. These results refer only to the specific sample tested and no interpretation is intended or implied.


Suzanne Myers, Laboratory Manager





Alchem Laboratories, Inc.

104 West 31st Street
Boise, Idaho 83714

Phone (208) 336-1172
FAX (208) 336-7124

Water, Soil and
Waste Water Analysis

LABORATORY REPORT

MONKS HYDRO-GEOSCIENCE
PO BOX 362
SANDPOINT, IDAHO 83864

ATTENTION: JOHN MONKS
SOURCE -: MW-8 / PROJ: NEDEREND

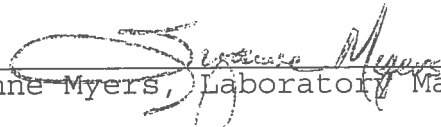
DATE COLLECTED 09/06/2007
TIME COLLECTED 10:20
DATE RECEIVED 09/06/2007
DATE REPORTED 09/20/2007
SUBMITTED : JOHN MONKS

LAB SAMPLE NUMBER - 20806

Results reported unless noted: (Chemistry Analysis as mg/l) (Bacteria as organisms/100 ml)

ANALYSIS	RESULTS	DATE ANALYZED	ANALYST
NITRATE as N	74.1	09/14/2007	TK

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Suzanne Myers, Laboratory Manager





Alchem Laboratories, Inc.

104 West 31st Street
Boise, Idaho 83714

Phone (208) 336-1172
FAX (208) 336-7124

Water, Soil and
Waste Water Analysis

LABORATORY REPORT

MONKS HYDRO-GEOSCIENCE
PO BOX 362
SANDPOINT, IDAHO 83864

ATTENTION: JOHN MONKS
SOURCE -: MW-3 / PROJ: NEDEREND

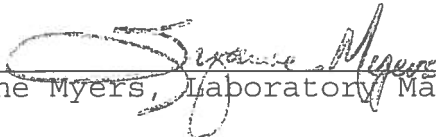
DATE COLLECTED 09/06/2007
TIME COLLECTED 10:45
DATE RECEIVED 09/06/2007
DATE REPORTED 09/20/2007
SUBMITTED : JOHN MONKS

LAB SAMPLE NUMBER - 20807

Results reported unless noted: (Chemistry Analysis as mg/l) (Bacteria as organisms/100 ml)

ANALYSIS	RESULTS	DATE ANALYZED	ANALYST
NITRATE as N	28.9	09/14/2007	TK

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Suzanne Myers, Laboratory Manager





Alchem Laboratories, Inc.

104 West 31st Street
Boise, Idaho 83714

Phone (208) 336-1172
FAX (208) 336-7124

Water, Soil and
Waste Water Analysis

LABORATORY REPORT

MONKS HYDRO-GEOSCIENCE
PO BOX 362
SANDPOINT, IDAHO 83864

ATTENTION: JOHN MONKS
SOURCE -: MW-2 / PROJ: NEDEREND

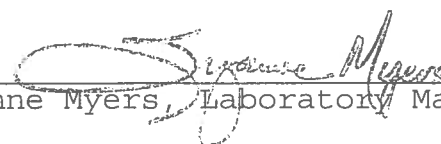
DATE COLLECTED 09/06/2007
TIME COLLECTED 11:00
DATE RECEIVED 09/06/2007
DATE REPORTED 09/20/2007
SUBMITTED : JOHN MONKS

LAB SAMPLE NUMBER - 20808

Results reported unless noted: (Chemistry Analysis as mg/l) (Bacteria as organisms/100 ml)

ANALYSIS	RESULTS	DATE ANALYZED	ANALYST
NITRATE as N	43.9	09/14/2007	TK

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Suzanne Myers, Laboratory Manager





Alchem Laboratories, Inc.

104 West 31st Street
Boise, Idaho 83714

Phone (208) 336-1172
FAX (208) 336-7124

Water, Soil and
Waste Water Analysis

LABORATORY REPORT

MONKS HYDRO-GEOSCIENCE
PO BOX 362
SANDPOINT, IDAHO 83864

ATTENTION: JOHN MONKS
SOURCE -: MW-6 / PROJ: NEDEREND

DATE COLLECTED 09/06/2007
TIME COLLECTED 11:15
DATE RECEIVED 09/06/2007
DATE REPORTED 09/20/2007
SUBMITTED : JOHN MONKS

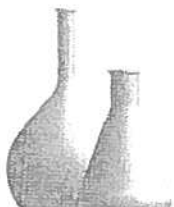
LAB SAMPLE NUMBER - 20809

Results reported unless noted: (Chemistry Analysis as mg/l) (Bacteria as organisms/100 ml)

ANALYSIS	RESULTS	DATE ANALYZED	ANALYST
NITRATE as N	16.1	09/14/2007	TK

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Suzanne Myers, Laboratory Manager





Alchem Laboratories, Inc.

104 West 31st Street
Boise, Idaho 83714

Phone (208) 336-1172
FAX (208) 336-7124

Water, Soil and
Waste Water Analysis

LABORATORY REPORT

MONKS HYDRO-GEOSCIENCE
PO BOX 362
SANDPOINT, IDAHO 83864

ATTENTION: JOHN MONKS
SOURCE -: MW-5 / PROJ: NEDEREND

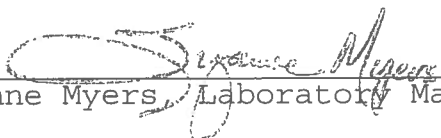
DATE COLLECTED 09/06/2007
TIME COLLECTED 11:30
DATE RECEIVED 09/06/2007
DATE REPORTED 09/20/2007
SUBMITTED : JOHN MONKS

LAB SAMPLE NUMBER - 20810

Results reported unless noted: (Chemistry Analysis as mg/l) (Bacteria as organisms/100 ml)

ANALYSIS	RESULTS	DATE ANALYZED	ANALYST
NITRATE as N	12.3	09/14/2007	TK

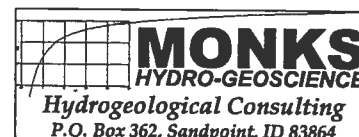
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Suzanne Myers, Laboratory Manager



14 August, 2007

Hans Nederend
Nederend Dairy
4998 Hogg Road
Homedale, ID 83628



RE: July 2007 water quality report

Dear Hans:

This letter reports water quality data collected at Nederend Dairies #1 and #2 on July 26th of 2007. Depth to water was measured in all of the monitoring wells during this sampling event, and all of the wells were sampled and analyzed for nitrate, chloride, sulfate and bacteriology.

Water Quality

Water quality data from July are summarized below in Tables 1 and 2. The arrows in the columns indicate whether levels have gone up or down since the previous analysis for these constituents.

Table 1. July 2007 Water Chemistry Analytical Results

Well name:	Date:	Chloride (mg/L):	Nitrate (mg/L):	Sulfate (mg/L):	Coliform Bacteria
Nederend Domestic	7/26/07	54.2↑	11.6	184↑	ABSENT
MW-1	7/26/07	69.5↑	27.1	259↑	ABSENT
MW-2	7/26/07	107↑	43.7	423↑	ABSENT
MW-3	7/26/07	136↓	30	314↑	ABSENT
MW-4	7/26/07	74↑	11.4	264↑	ABSENT
MW-5	7/26/07	78.3↑	13.1	397↑	ABSENT
MW-6	7/26/07	76.1↓	27.5	92.8↓	NA
MW-7	7/26/07	50.3↑	9.14	179↑	NA
MW-8	7/26/07	185↑	86.5	263↑	ABSENT
MW-9	7/26/07	75.5↓	12.8	364↑	COLIFORM & E. COLI

Table 2. July 2007 Field Measured Water Quality Parameters

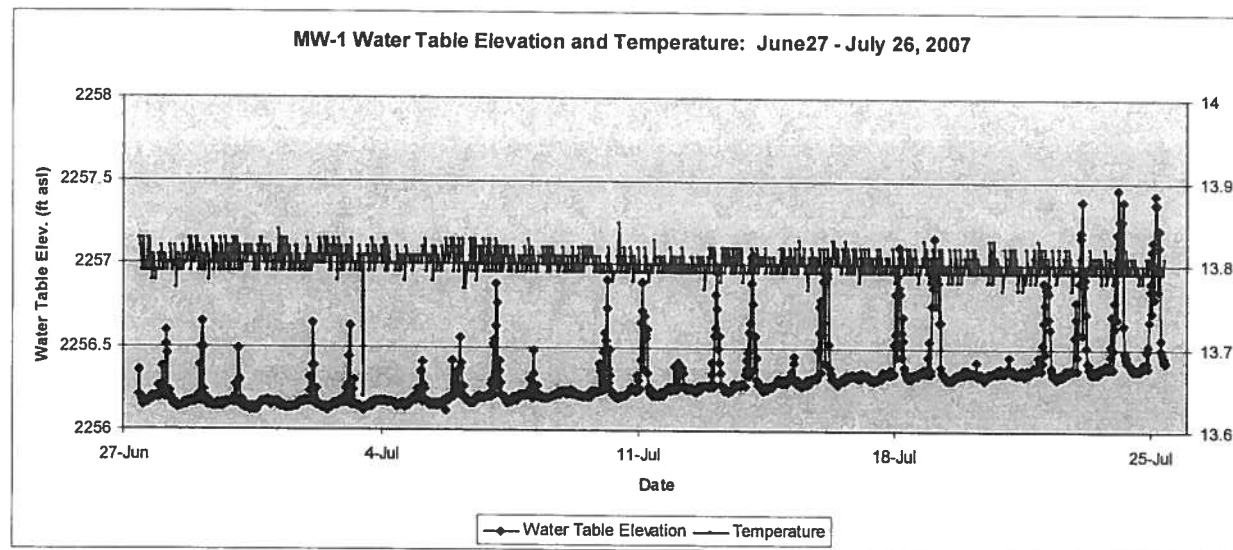
Well#	Temp C	SpCond (uS/cm)	DO Conc (mg/L)	pH	TDS (g/L)	ORP (mV)
MW-1	14.51	1442.5	1.25	7.59	937.607	144
MW-2	14.98	1893.3	0.92	7.66	1230.636	113
MW-3	14.81	1865.7	0.17	7.55	1212.69	116
MW-4	13.42	1424.3	0.47	7.66	925.827	94
MW-5	14.28	1664	0.08	7.52	1081.571	114
MW-6	16.73	1138.8	0.54	7.67	740.195	102
MW-7	14.92	1121.3	0.3	7.54	728.873	112
MW-8	16.42	2312.8	0.06	7.51	1503.35	101
MW-9	14.75	1674.3	0.33	7.52	1088.278	110
Nederend Dom	14.6	1184.2	0.58	7.71	769.715	72
Nederend #2	NM	NM	NM	NM	NM	NM

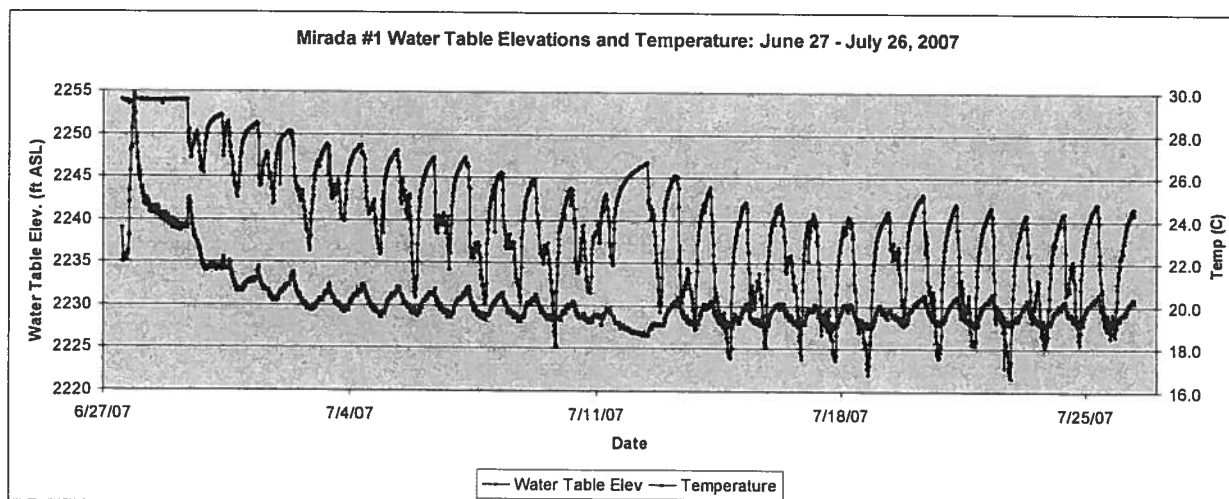
Water Level Measurements

July 2007 depth to water measurements for the shallow aquifer wells are summarized in the tables below. In July the water table at most wells continued to rise in response to irrigation season recharge. The exceptions were at MW-2, MW-5 and MW-9, where water levels declined slightly. The water level fluctuations at MW-5 and MW-9 may be caused by variations in the water level in Horstman Drain.

July 2007 Water Level Data				
Well Name:	Measuring point elevation:	Depth to Water:	Water Table Elevation:	Change from Previous month:
Nederend Domestic	2290.13	25.3	2264.83	0.68
MW-1	2294.59	38.23	2256.36	0.33
MW-2	2276.31	28.73	2247.58	-0.23
MW-3	2265.33	20.93	2244.40	0.32
MW-4	2305.73	13.58	2292.15	0.05
MW-5	2298.90	12.73	2286.17	-0.05
MW-6	2300.41	21.4	2279.01	0.47
MW-7	2300.23	18.91	2281.32	0.14
MW-8	~2306	37.15	2268.85	0.82
MW-9	~2296	12.05	2283.95	-0.01
NEDEREND #3	~2300	39.96	2260.04	+3.74
NEDEREND #1	~2292	36.60	2259.79	+2.23
MD-1	~2305	72.75	2232.25	-21.86
MD-2	~2304	252	2052	+2.71

Water table elevations and temperature at MW-1 and MD-1 are shown on the graphs below and on the following page. The water level at MW-1 varied over a narrower range during the last month. During the May to June time period the water level fluctuations were on the order of ~3+ feet. From June to July the fluctuations were ~1 foot or less.





Production from well MD-1 resumed on June 29th and averaged ~14 gallons per minute throughout the month. Water levels fluctuate on a daily basis due to variations in production rate. The water temperature spiked up to 29.72° C (85° F) for unknown reasons.

Water Meter Measurements

Water meter measurements and average water use at each Nederend Dairy production well are summarized in Table 3 below.

Table 3. Nederend Dairies Water Meter Readings and Production Information – July 2007				
Well Name:	Meter Reading:	Gallons used between readings:	Average Gallons/day:	Average Production Rate (gpm):
MD-1	55402000	615,450	20515	14
MD-2	49566700	5,753,200	191773	133
Nederend #2	510327600	9,898,000	341310	237
Nederend #3	210327600	10,928,700	376852	261.7

Discussion

Nitrate levels at well MW-8 continue to be near the highest levels recorded, 86.5 mg/L. At MW-1 nitrate levels were up slightly. At MW-3 nitrate levels continue to increase, continuing an upward trend. The nitrate level at MW-3 in July was the highest ever measured, 30 mg/L. At MW-2 nitrate levels remain high. At wells MW-1, MW-2, and MW-3 nitrate levels continue to be at or near the highest levels measured at these wells. At well MW-5 nitrate levels continue to increase slightly each month. At MW-6 nitrate levels went up. Chloride and sulfate levels at most of the wells have increased since these constituents were analyzed in April of 2007. E. Coli bacteria were present in well MW-9, at the north end of the manure drying yard, in July.

The depth to water measurements from MD-1, MD-2 and MW-8 indicate that there is a strong downward hydraulic gradient between the shallow aquifer and the deeper aquifer. Well MD-1, with no surface seal and perforations in both the shallow and deeper aquifer, is most likely acting as a conduit for contaminated ground water to flow from the shallow aquifer into the deeper aquifer.

My next sampling trip is scheduled for around August 24th. If possible, I would like to have a COCOA/Nederend Dairy meeting on that date to discuss plans for the joint COCOA/Nederend Dairy ground water monitoring project.

Sincerely,

John Monks, P.G.

Hydrogeologist

Cc: Ilene Dobbin (COCOA), Craig Tesch (ISDA)

NAME <u>Monks Hydro-Geo science</u>	
ATTENTION <u>John Monks</u>	
ADDRESS <u>PO Box 362</u>	
CITY <u>Sandpoint</u>	STATE <u>ID</u> ZIP CODE <u>83861</u>
PHONE <u>208-263-6941</u>	FAX #
SAMPLER (S) <u>Monks</u>	
PROJECT OR SITE <u>Klejenic</u>	
P.N. / P.O. NUMBER	

Chain of Custody Form

LAB NUMBER	DATE	TIME	SAMPLE IDENTIFICATION
	7/26/14	0818	MW-1
	7/26/14	0920	MW-3
	7/26/14	0950	MW-2
	7/26/14	1025	Domestic
	7/26/14	1050	MW-4
	7/26/14	1112	MW-5
	7/26/14	1123	MW-9
	7/26/14	1155	MW-7
	7/26/14	1155	MW-6
	7/26/14	1220	MW-8

RELINQUISHED BY (Signature)	DATE
<i>[Signature]</i>	7/26/14 1520
Received for Laboratory By (Signature)	Date/Time
<i>[Signature]</i>	7/26/14 1520



Alchem Laboratories, Inc.
104 West 31st Street
Boise, Idaho 83714
Phone (208) 336-1172

www.alchemlabs.com EMAIL: alchem@alchemlabs.com

MATRIX	TESTS (CIRCLE METHOD)																							NUMBER OF CONTAINERS	
	WATER	SOIL	OTHER	TPH - (418.1/ 8015M)	BTEX (+N+M+EDC) 8260	CL. SOLVENTS (8260)	VOC's (8260)	PAH's (8270)	Landfill Appendix I - VOC (8260)	Landfill Appendix II - VOC (8260)	SEMI-VOLATILES (625 / 8270)	RBGA - NO LEAD GAS	BTEX + N + M (8260)	RBGA - LEADED GAS	EDB (8011) BTEX+N+M, EDC (8260)	RBGA - FUEL OILS	BTEX 98260) PAH (8270)	RBGA - MOTOR OILS	BTEX (8260) PAH (8270)	8 RCRA METALS	TCLP EXTRACTION	(DESIGNATE ANALYSIS)	SEE ATTACHED LIST		
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RECEIVED BY (Signature)	TIME	DATE
<i>[Signature]</i>		7/26/14 1520
Received With Seal Intact?	Yes ☐ No ☐	Date/Time
Label Tag, COC Agree?	Yes ☐ No ☐	

CLIENT



Alchem Laboratories, Inc.

104 West 31st Street
Boise, Idaho 83714

Phone (208) 336-1172
FAX (208) 336-7124

Water, Soil and
Waste Water Analysis

LABORATORY REPORT

MONKS HYDRO-GEOSCIENCE
PO BOX 362
SANDPOINT, IDAHO 83864

ATTENTION: JOHN MONKS
SOURCE -: MW-1 / PROJ: NEDEREND

DATE COLLECTED 07/26/2007
TIME COLLECTED 08:48
DATE RECEIVED 07/26/2007
DATE REPORTED 08/02/2007
SUBMITTED : MONKS

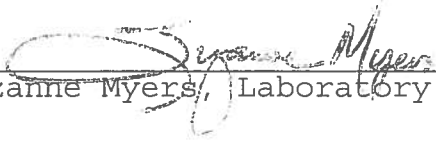
LAB SAMPLE NUMBER - 19466

Results reported unless noted: (Chemistry Analysis as mg/l) (Bacteria as organisms/100 ml)

ANALYSIS	RESULTS	DATE ANALYZED	ANALYST
CHLORIDE	69.5	07/27/2007	TK
NITRATE as N	27.1	07/27/2007	TK
SULFATE	259.0	07/27/2007	TK
TOTAL COLIFORM	ABSENT	07/26/2007	CE

COMMENTS: NO COLIFORM BACTERIA WERE FOUND IN SAMPLE.

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Suzanne Myers, Laboratory Manager





Alchem Laboratories, Inc.

104 West 31st Street
Boise, Idaho 83714

Phone (208) 336-1172
FAX (208) 336-7124

Water, Soil and
Waste Water Analysis

LABORATORY REPORT

MONKS HYDRO-GEOSCIENCE
PO BOX 362
SANDPOINT, IDAHO 83864

ATTENTION: JOHN MONKS
SOURCE -: MW-2 / PROJ: NEDEREND

DATE COLLECTED 07/26/2007
TIME COLLECTED 09:50
DATE RECEIVED 07/26/2007
DATE REPORTED 08/02/2007
SUBMITTED : MONKS

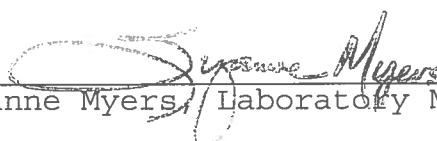
LAB SAMPLE NUMBER - 19468

Results reported unless noted: (Chemistry Analysis as mg/l) (Bacteria as organisms/100 ml)

ANALYSIS	RESULTS	DATE ANALYZED	ANALYST
CHLORIDE	107.0	07/27/2007	TK
NITRATE as N	43.7	07/27/2007	TK
SULFATE	423.0	07/27/2007	TK
TOTAL COLIFORM	ABSENT	07/26/2007	CE

COMMENTS:NO COLIFORM BACTERIA WERE FOUND IN SAMPLE.

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Suzanne Myers, Laboratory Manager





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PO BOX 362
SANDPOINT, IDAHO 83864

ATTENTION: JOHN MONKS
SOURCE -: MW-3 / PROJ: NEDEREND

DATE COLLECTED 07/26/2007
TIME COLLECTED 09:20
DATE RECEIVED 07/26/2007
DATE REPORTED 08/02/2007
SUBMITTED : MONKS

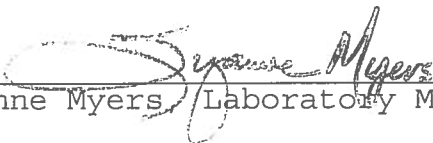
LAB SAMPLE NUMBER - 19467

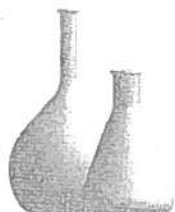
Results reported unless noted: (Chemistry Analysis as mg/l) (Bacteria as organisms/100 ml)

ANALYSIS	RESULTS	DATE ANALYZED	ANALYST
CHLORIDE	136.0	07/27/2007	TK
NITRATE as N	30.0	07/27/2007	TK
SULFATE	314.0	07/27/2007	TK
TOTAL COLIFORM	ABSENT	07/26/2007	CE

COMMENTS:NO COLIFORM BACTERIA WERE FOUND IN SAMPLE.

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Suzanne Myers Laboratory Manager





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PO BOX 362
SANDPOINT, IDAHO 83864

ATTENTION: JOHN MONKS
SOURCE -: MW-4 / PROJ: NEDEREND

DATE COLLECTED 07/26/2007
TIME COLLECTED 10:50
DATE RECEIVED 07/26/2007
DATE REPORTED 08/02/2007
SUBMITTED : MONKS

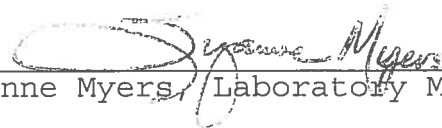
LAB SAMPLE NUMBER - 19470

Results reported unless noted: (Chemistry Analysis as mg/l) (Bacteria as organisms/100 ml)

ANALYSIS	RESULTS	DATE ANALYZED	ANALYST
CHLORIDE	74.0	07/27/2007	TK
NITRATE as N	11.4	07/27/2007	TK
SULFATE	264.0	07/27/2007	TK
TOTAL COLIFORM	ABSENT	07/26/2007	CE

COMMENTS: NO COLIFORM BACTERIA WERE FOUND IN SAMPLE.

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Suzanne Myers, Laboratory Manager





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Boise, Idaho 83714

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FAX (208) 336-7124

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PO BOX 362
SANDPOINT, IDAHO 83864

DATE COLLECTED 07/26/2007
TIME COLLECTED 10:25
DATE RECEIVED 07/26/2007
DATE REPORTED 08/02/2007
SUBMITTED : MONKS

ATTENTION: JOHN MONKS
SOURCE -: DOMESTIC / PROJ: NEDEREND

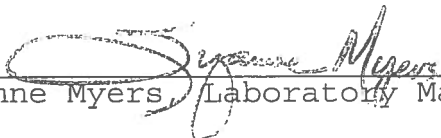
LAB SAMPLE NUMBER - 19469

Results reported unless noted: (Chemistry Analysis as mg/l) (Bacteria as organisms/100 ml)

ANALYSIS	RESULTS	DATE ANALYZED	ANALYST
CHLORIDE	54.2	07/27/2007	TK
NITRATE as N	11.6	07/27/2007	TK
SULFATE	184.0	07/27/2007	TK
TOTAL COLIFORM	PRESENT	07/26/2007	CE

COMMENTS: COLIFORM BACTERIA WERE FOUND IN THE SAMPLE.

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Suzanne Myers, Laboratory Manager





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Boise, Idaho 83714

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FAX (208) 336-7124

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SANDPOINT, IDAHO 83864

ATTENTION: JOHN MONKS
SOURCE -: MW-5 / PROJ: NEDEREND

DATE COLLECTED 07/26/2007
TIME COLLECTED 11:12
DATE RECEIVED 07/26/2007
DATE REPORTED 08/02/2007
SUBMITTED : MONKS

LAB SAMPLE NUMBER - 19471

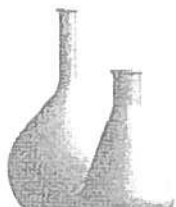
Results reported unless noted: (Chemistry Analysis as mg/l) (Bacteria as organisms/100 ml)

ANALYSIS	RESULTS	DATE ANALYZED	ANALYST
CHLORIDE	78.3	07/27/2007	TK
NITRATE as N	13.1	07/27/2007	TK
SULFATE	397.0	07/27/2007	TK
TOTAL COLIFORM	ABSENT	07/26/2007	CE

COMMENTS:NO COLIFORM BACTERIA WERE FOUND IN SAMPLE.

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PO BOX 362
SANDPOINT, IDAHO 83864

ATTENTION: JOHN MONKS
SOURCE -: MW-9 / PROJ: NEDEREND

DATE COLLECTED 07/26/2007
TIME COLLECTED 11:23
DATE RECEIVED 07/26/2007
DATE REPORTED 08/02/2007
SUBMITTED : MONKS

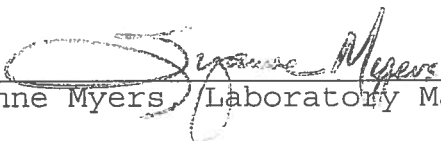
LAB SAMPLE NUMBER - 19472

Results reported unless noted: (Chemistry Analysis as mg/l) (Bacteria as organisms/100 ml)

ANALYSIS	RESULTS	DATE ANALYZED	ANALYST
CHLORIDE	75.5	07/27/2007	TK
NITRATE as N	12.8	07/27/2007	TK
SULFATE	364.0	07/27/2007	TK
TOTAL COLIFORM	PRESENT	07/26/2007	CE

COMMENTS: COLIFORM AND E. COLI BACTERIA WERE FOUND IN THE SAMPLE.

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Suzanne Myers Laboratory Manager





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104 West 31st Street
Boise, Idaho 83714

Phone (208) 336-1172
FAX (208) 336-7124

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MONKS HYDRO-GEOSCIENCE
PO BOX 362
SANDPOINT, IDAHO 83864

ATTENTION: JOHN MONKS
SOURCE -: MW-7 / PROJ: NEDEREND

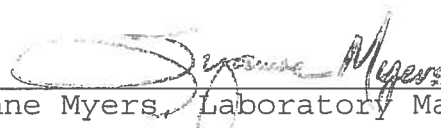
DATE COLLECTED 07/26/2007
TIME COLLECTED 11:42
DATE RECEIVED 07/26/2007
DATE REPORTED 08/02/2007
SUBMITTED : MONKS

LAB SAMPLE NUMBER - 19473

Results reported unless noted: (Chemistry Analysis as mg/l) (Bacteria as organisms/100 ml)

ANALYSIS	RESULTS	DATE ANALYZED	ANALYST
CHLORIDE	50.3	07/27/2007	TK
NITRATE as N	9.14	07/27/2007	TK
SULFATE	179.0	07/27/2007	TK

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Suzanne Myers, Laboratory Manager





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PO BOX 362
SANDPOINT, IDAHO 83864

DATE COLLECTED 07/26/2007
TIME COLLECTED 11:55
DATE RECEIVED 07/26/2007
DATE REPORTED 08/02/2007
SUBMITTED : MONKS

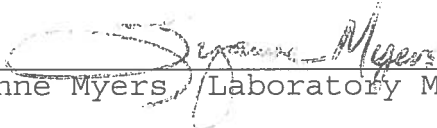
ATTENTION: JOHN MONKS
SOURCE -: MW-6 / PROJ: NEDEREND

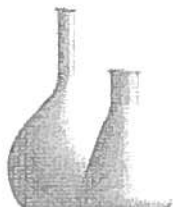
LAB SAMPLE NUMBER - 19474

Results reported unless noted: (Chemistry Analysis as mg/l) (Bacteria as organisms/100 ml)

ANALYSIS	RESULTS	DATE ANALYZED	ANALYST
CHLORIDE	76.1	07/27/2007	TK
NITRATE as N	27.5	07/27/2007	TK
SULFATE	92.9	07/27/2007	TK

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Suzanne Myers, Laboratory Manager





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ATTENTION: JOHN MONKS
SOURCE -: MW-8 / PROJ: NEDEREND

DATE COLLECTED 07/26/2007
TIME COLLECTED 12:20
DATE RECEIVED 07/26/2007
DATE REPORTED 08/02/2007
SUBMITTED : MONKS

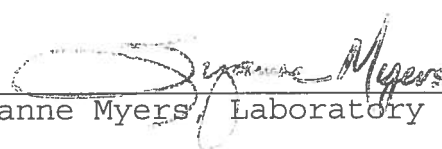
LAB SAMPLE NUMBER - 19475

Results reported unless noted: (Chemistry Analysis as mg/l) (Bacteria as organisms/100 ml)

ANALYSIS	RESULTS	DATE ANALYZED	ANALYST
CHLORIDE	185.0	07/27/2007	TK
NITRATE as N	86.5	07/27/2007	TK
SULFATE	263.0	07/27/2007	TK
TOTAL COLIFORM	ABSENT	07/26/2007	CE

COMMENTS:NO COLIFORM BACTERIA WERE FOUND IN SAMPLE.

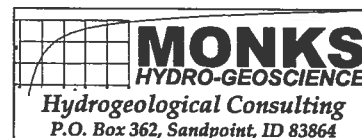
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Suzanne Myers, Laboratory Manager



30 July, 2007

Hans Nederend
Nederend Dairy
4998 Hogg Road
Homedale, ID 83628



RE: June 2007 water quality report

Dear Hans:

This letter reports water quality data collected at Nederend Dairies #1 and #2 on June 27th of 2007. Depth to water was measured in all of the monitoring wells during this sampling event. Wells MW-1, MW-2, MW-3, MW-5, MW-6 and MW-8 were sampled and analyzed for nitrate.

Water Quality

Water quality data from June are summarized below in Tables 1 and 2.

Table 1. June 2007 Water Chemistry Analytical Results					
Well name:	Date:	Chloride (mg/L):	Nitrate (mg/L):	Sulfate (mg/L):	Coliform Bacteria
Nederend Domestic	6/27/07	NA	NM	NA	NA
MW-1	6/27/07	NA	26.8	NA	NA
MW-2	6/27/07	NA	45.8	NA	NA
MW-3	6/27/07	NA	27.6	NA	NA
MW-4	6/27/07	NA	NM	NA	NA
MW-5	6/27/07	NA	12.5	NA	NA
MW-6	6/27/07	NA	22.3	NA	NA
MW-7	6/27/07	NA	NM	NA	NA
MW-8	6/27/07	NA	87.2	NA	NA
MW-9	6/27/07	NA	NM	NA	NA

Table 2. June 2007 Field Measured Water Quality Parameters						
Well#	Temp C	SpCond (uS/cm)	DO Conc (mg/L)	pH	TDS (g/L)	ORP (mV)
MW-1	14.81	1452.1	1.29	7.66	943.847	109
MW-2	15.36	1916.8	0.88	7.74	1245.901	108
MW-3	14.98	1858.2	0.17	7.65	1207.842	92
MW-4	13.73	1352.7	0.48	7.77	879.227	93
MW-5	14.08	1665.4	0.06	7.63	1082.49	110
MW-6	16.85	1045.6	0.57	7.73	679.67	94
MW-7	14.86	1018.4	0.15	7.63	661.99	108
MW-8	16.52	2315.2	0	7.6	1504.864	121
MW-9	14.67	1648.9	0.21	7.62	1071.817	110
Nederend Dom	14.7	1191.9	0.58	7.73	774.717	83
Nederend #2	16.94	1245	3.23	7.78	809.232	77

Water Level Measurements

June 2007 depth to water measurements for the shallow aquifer wells are summarized in the tables below. In June the water table at most wells continued to rise in response to the irrigation season. The exceptions were at MW-5 and MW-9, where water levels declined slightly. The water level at MD-2 went down 21.31' between May and June. When the measurement at MD-2 was taken the well was pumping at ~140 gallons per minute, and well MD-1 was shut off. Depth to water in MD-1 was 50.89'. The water level at Nederend #1 rose 2.23' between May and June.

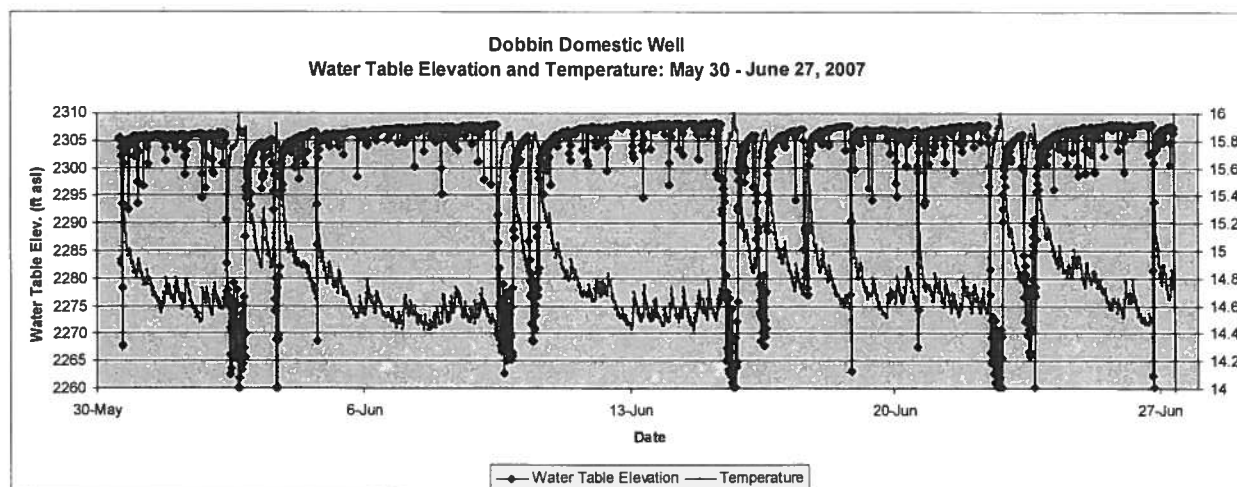
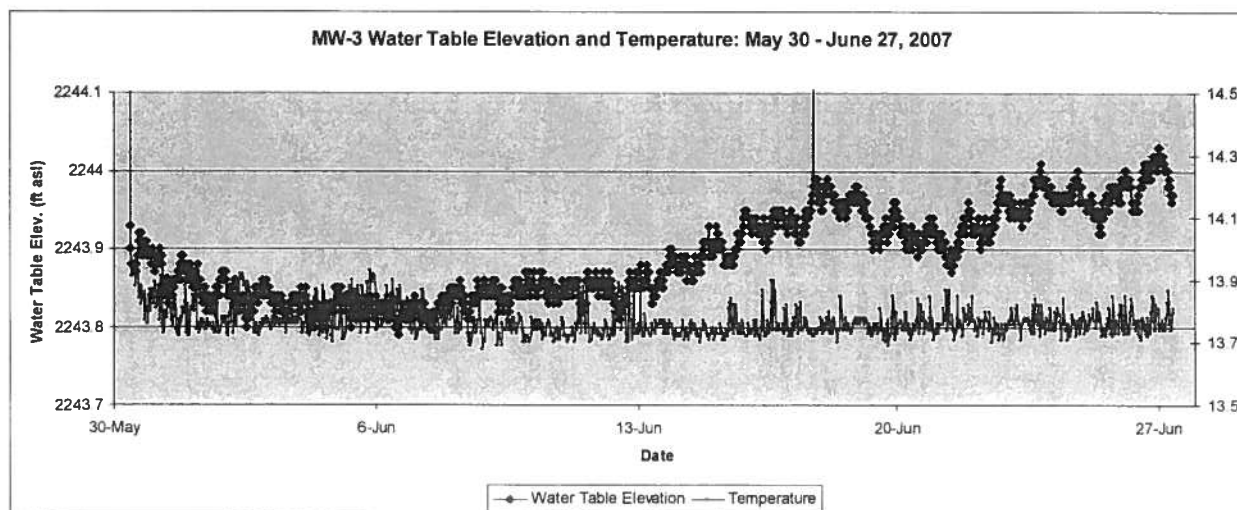
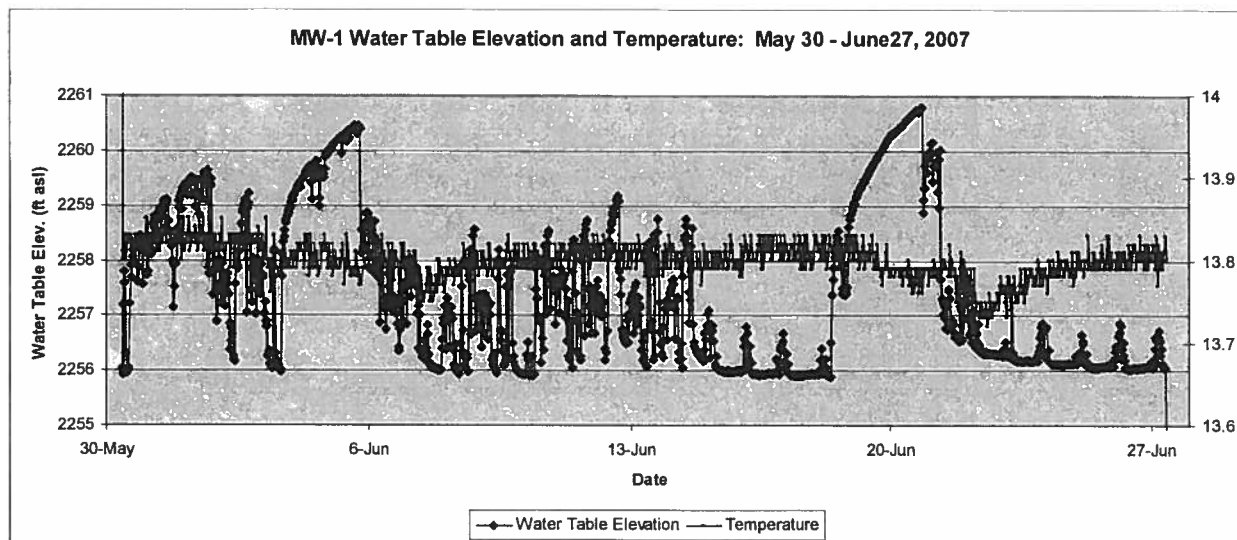
June 2007 Water Level Data				
Well Name:	Measuring point elevation:	Depth to Water:	Water Table Elevation:	Change from Previous month:
Nederend Domestic	2290.13	25.98	2264.15	0.75
MW-1	2294.59	38.56	2256.03	0.15
MW-2	2276.31	28.5	2247.81	0.05
MW-3	2265.33	21.25	2244.08	0.15
MW-4	2305.73	13.63	2292.1	0.12
MW-5	2298.90	12.68	2286.22	-0.06
MW-6	2300.41	21.87	2278.54	0.08
MW-7	2300.23	19.05	2281.18	0.21
MW-8	~2306	37.97	2268.03	0.48
MW-9	~2296	12.04	2283.96	-0.02
NEDEREND #3	~2300	43.7	2256.3	First measured
NEDEREND #1	~2292	32.21	2259.79	+2.23
MD-1	~2305	50.89	2254.11	+6.11
MD-2	~2304	254.71	2049.29	-21.31

Water table elevations and temperature at MW-1, MW-3 and the Dobbin well are shown on the graphs on the following page. The water level at MW-1 varied over a wide range as production demands from the well shifted due to changes in the well configuration at Nederend #3. The water table at MW-1 rose several feet when well Nederend #2 was shut off and production was shifted to Nederend #3. The water temperature at MW-1 fluctuates over a range of ~0.2 C on a daily basis but is not changing very much over longer time frame.

The water table at MW-3 also responds to pumping in a manner similar to MW-1. Water levels at MW-3 went down throughout most of the measurement period, then began to rise around mid-April, probably in response to the beginning of irrigation season and increased water levels in the drain. The water temperature at MW-3 also went down during the sample period. The water table at MW-3 began to go down beginning ~April 18th, probably in response to increased pumping at Nederend #3.

The pressure transducer had been removed from well MD-1 when I was there in May and the well was down for repairs. I moved the pressure transducer to the Dobbin well to gather data from another deeper aquifer well until well MD-1 was put back into service. In general, the water level at the Dobbin well rose slightly during the month the pressure transducer was installed in the well. I had hoped to be able to see if water levels at the Dobbin well fluctuate on a daily basis similar to the fluctuations seen at monitoring wells and at well MD-1. However, daily water use patterns masked any fluctuations that may be occurring.

The water level in well MD-2 (the new production well at Dairy #2) went down more than 21 feet in a month. It will be important to keep an eye on water levels in this well to make sure water levels don't continue to drop.



Water Meter Measurements

Water meter measurements and average water use at each Nederend Dairy production well are summarized in Table 3 below.

Nederend Dairies Water Meter Readings and Production Information				
Well Name:	Meter Reading:	Gallons used between readings:	Average Gallons/day:	Average Production Rate (gpm):
MD-1	54786550	200	7	0
MD-2	43813500	5,036,800	179,886	125
Nederend #2	500429600	6,232,600	222,593	155
Nederend #3	199398900	5,653,600	201,914	140.2

Discussion

Nitrate levels at well MW-8 have spiked upward to the highest level recorded, 87.2 mg/L. At MW-1 nitrate levels were unchanged. At MW-3 nitrate levels continue to increase, continuing an upward trend. At MW-2 nitrate levels remain high. At wells MW-1, MW-2, and MW-3 nitrate levels continue to be at or near the highest levels measured at these wells. At well MW-5 nitrate levels increased slightly. At MW-6 nitrate levels went down.

The depth to water measurements from MD-1, MD-2 and MW-8 indicate that there is a strong downward hydraulic gradient between the shallow aquifer and the deeper aquifer. Well MD-1, with no surface seal and perforations in both the shallow and deeper aquifer, is most likely acting as a conduit for contaminated ground water to flow from the shallow aquifer into the deeper aquifer.

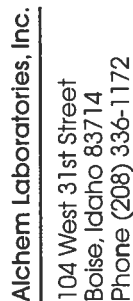
I have joined Golder Associates, Inc.'s Coeur d'Alene office as Senior Hydrogeologist. I am working on a proposal for Golder to continue the COCOA/Nederend Dairy ground water monitoring project under my supervision. My next sampling trip is scheduled for August 29th. If possible, I would like to have a COCOA/Nederend Dairy meeting on that date to discuss future plans for the joint COCOA/Nederend Dairy ground water monitoring project.

Sincerely,

John Monks, P.G.

Hydrogeologist

Cc: Ilene Dobbin (COCOA), Craig Tesch (ISDA)



EMAIL: alchemy@alchemylabs.com

www.alchemylabs.com

NAME Munks Hydro-Groscience		STATE ID		ZIP CODE 83864
ATTENTION John Munks				
ADDRESS PO Box 362				
CITY Sandfort	FAX #			
PHONE # 208263194				
SAMPLER (S) John Munks				
PROJECT OR SITE Needleand		P.N. P.O. NUMBER		

Chain of Custody Form

LAB NUMBER	DATE	TIME	SAMPLE IDENTIFICATION
18498	6/27	1043	VW-1
18499	11	1115	VW-3
18500	11	1155	VW-2
18501	11	1240	VW-5
18502	11	1335	VW-6
18503	11	1350	VW-E

ORIGINAL

RELINQUISHED BY (Signature)		DATE	TIME	RECEIVED BY (Signature)	
Relinquished By (Signature)	Date/Time	Received for Laboratory By (Signature)	Date/Time	Received With Seal Intact?	Label Tag, COC Agree?
	3:51 4/27/10		6:27.07 351	☐ Yes ☐ No	☐ Yes ☐ No



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Boise, Idaho 83714

Phone (208) 336-1172
FAX (208) 336-7124

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MONKS HYDRO-GEOSCIENCE
PO BOX 362
SANDPOINT, IDAHO 83864

ATTENTION: JOHN MONKS
SOURCE -: MW-1 / PROJ: NEDEREND

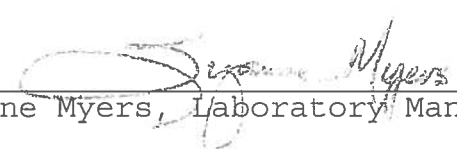
DATE COLLECTED 06/27/2007
TIME COLLECTED 10:43
DATE RECEIVED 06/27/2007
DATE REPORTED 07/06/2007
SUBMITTED :

LAB SAMPLE NUMBER - 18498

Results reported unless noted: (Chemistry Analysis as mg/l) (Bacteria as organisms/100 ml)

ANALYSIS	RESULTS	DATE ANALYZED	ANALYST
NITRATE as N	26.8	07/03/2007	TK

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Suzanne Myers, Laboratory Manager





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Boise, Idaho 83714

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FAX (208) 336-7124

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PO BOX 362
SANDPOINT, IDAHO 83864

ATTENTION: JOHN MONKS
SOURCE -: MW-2 / PROJ: NEDEREND

DATE COLLECTED 06/27/2007
TIME COLLECTED 11:55
DATE RECEIVED 06/27/2007
DATE REPORTED 07/17/2007
SUBMITTED :

LAB SAMPLE NUMBER - 18500

Results reported unless noted: (Chemistry Analysis as mg/l) (Bacteria as organisms/100 ml)

ANALYSIS	RESULTS	DATE ANALYZED	ANALYST
NITRATE as N	45.8	07/12/2007	TK

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Suzanne Myers Laboratory Manager





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PO BOX 362
SANDPOINT, IDAHO 83864

ATTENTION: JOHN MONKS
SOURCE -: MW-3 / PROJ: NEDEREND

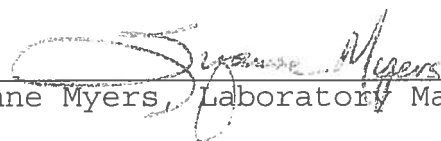
DATE COLLECTED 06/27/2007
TIME COLLECTED 11:15
DATE RECEIVED 06/27/2007
DATE REPORTED 07/06/2007
SUBMITTED :

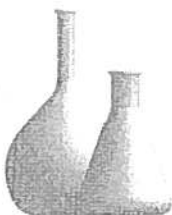
LAB SAMPLE NUMBER - 18499

Results reported unless noted: (Chemistry Analysis as mg/l) (Bacteria as organisms/100 ml)

ANALYSIS	RESULTS	DATE ANALYZED	ANALYST
NITRATE as N	27.6	07/03/2007	TK

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Suzanne Myers, Laboratory Manager





Alchem Laboratories, Inc.

104 West 31st Street
Boise, Idaho 83714

Phone (208) 336-1172
FAX (208) 336-7124

Water, Soil and
Waste Water Analysis

LABORATORY REPORT

MONKS HYDRO-GEOSCIENCE
PO BOX 362
SANDPOINT, IDAHO 83864

ATTENTION: JOHN MONKS
SOURCE -: MW-5 / PROJ: NEDEREND

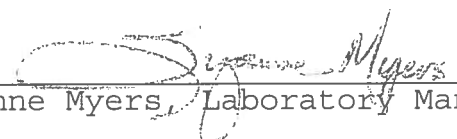
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TIME COLLECTED 12:40
DATE RECEIVED 06/27/2007
DATE REPORTED 07/06/2007
SUBMITTED :

LAB SAMPLE NUMBER - 18501

Results reported unless noted: (Chemistry Analysis as mg/l) (Bacteria as organisms/100 ml)

ANALYSIS	RESULTS	DATE ANALYZED	ANALYST
NITRATE as N	12.5	07/03/2007	TK

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Suzanne Myers, Laboratory Manager



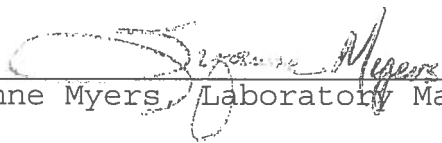
**Alchem Laboratories, Inc.**104 West 31st Street
Boise, Idaho 83714Phone (208) 336-1172
FAX (208) 336-7124*Water, Soil and
Waste Water Analysis***LABORATORY REPORT**MONKS HYDRO-GEOSCIENCE
PO BOX 362
SANDPOINT, IDAHO 83864ATTENTION: JOHN MONKS
SOURCE -: MW-6 / PROJ: NEDERENDDATE COLLECTED 06/27/2007
TIME COLLECTED 13:35
DATE RECEIVED 06/27/2007
DATE REPORTED 07/06/2007
SUBMITTED :

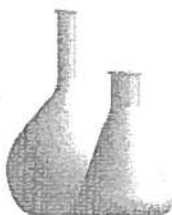
LAB SAMPLE NUMBER - 18502

Results reported unless noted: (Chemistry Analysis as mg/l) (Bacteria as organisms/100 ml)

ANALYSIS	RESULTS	DATE ANALYZED	ANALYST
NITRATE as N	22.3	07/03/2007	TK

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Suzanne Myers Laboratory Manager



Alchem Laboratories, Inc.

104 West 31st Street
Boise, Idaho 83714

Phone (208) 336-1172
FAX (208) 336-7124

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MONKS HYDRO-GEOSCIENCE
PO BOX 362
SANDPOINT, IDAHO 83864

ATTENTION: JOHN MONKS
SOURCE -: MW-8 / PROJ: NEDEREND

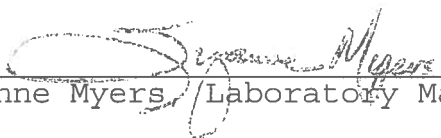
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TIME COLLECTED 13:50
DATE RECEIVED 06/27/2007
DATE REPORTED 07/17/2007
SUBMITTED :

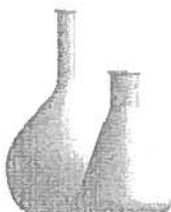
LAB SAMPLE NUMBER - 18503

Results reported unless noted: (Chemistry Analysis as mg/l) (Bacteria as organisms/100 ml)

ANALYSIS	RESULTS	DATE ANALYZED	ANALYST
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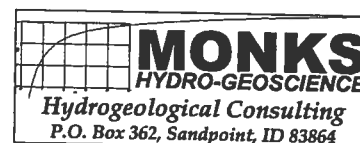
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Suzanne Myers / Laboratory Manager



14 June, 2007

Hans Nederend
Nederend Dairy
4998 Hogg Road
Homedale, ID 83628



RE: April and May 2007 water quality report

Dear Hans:

This letter reports water quality data collected at Nederend Dairies #1 and #2 on April 18th and May 30th of 2007. Depth to water was measured in all of the monitoring wells during both of these sampling events. In April ISDA sampled all of the wells and analyzed for nitrate, ammonia, chloride, sulfate and nitrogen isotopes. In May, wells MW-1, MW-2, MW-3, MW-5, MW-6 and MW-8 were sampled and analyzed for nitrate.

Water Quality

Water quality data from April and May are summarized in Table 1.

Table 1. April and May 2007 Water Chemistry Analytical Results					
Well name:	Date:	Chloride (mg/L):	Nitrate (mg/L):	Sulfate (mg/L):	Coliform Bacteria
Nederend	4/18/07	51.4	12	177	NA
MW-1	4/18/07	67.8	32	252	NA
MW-2	4/18/07	100	44	400	NA
MW-3	4/18/07	139	26	300	NA
MW-4	4/18/07	70.7	11	240	NA
MW-5	4/18/07	73.9	12	340	NA
MW-6	4/18/07	110	33	99	NA
MW-7	4/18/07	47.9	8	158	NA
MW-8	4/18/07	182	53	199	NA
MW-9	4/18/07	76.1	12	330	NA
ION	4/18/07	NS	NS	NS	NA
MW-1	5/30/07	NA	26.8	NA	NA
MW-2	5/30/07	NA	44.6	NA	NA
MW-3	5/30/07	NA	24.8	NA	NA
MW-5	5/30/07	NA	11.5	NA	NA
MW-6	5/30/07	NA	28.7	NA	NA
MW-8	5/30/07	NA	73.4	NA	NA

Water Level Measurements

April and May 2007 depth to water measurements for the shallow aquifer wells are summarized in the tables below. In April, the water table in wells adjacent to or downgradient from the drain rose in response to the drain filling for the irrigation season. The water table continued to go down at wells that are not adjacent to the drain. In May the water table was higher at all shallow aquifer wells except MW-3. The water table at MW-3 may have gone down due to increased use of well Nederend #3.

Water level measurements were made at wells MD-1 (the old production well at Dairy #2), MD-2 (the new production well at Dairy #2) and at Nederend #1 (the unused well next to the milking parlor at Dairy #1). Depth to water at MD-2 was 233.4'. When the measurement at MD-2 was taken the well was pumping at ~130 gallons per minute, and well MD-1 was shut off. Depth to water in MD-1 was 59'.

April 2007 Water Level Data

Well Name:	Measuring point elevation:	Depth to Water:	Water Table Elevation:	Change from Previous month:
Nederend Domestic	2290.13	27.27	2262.86	-0.47
MW-1	2294.59	38.81	2255.78	-0.06
MW-2	2276.31	28.81	2247.50	-0.52
MW-3	2265.33	21.35	2243.98	-0.20
MW-4	2305.73	14.30	2291.43	0.55
MW-5	2298.90	13.01	2285.89	1.26
MW-6	2300.41	22.98	2277.43	0.61
MW-7	2300.23	19.74	2280.49	0.72
MW-8	~2306	39.25	2266.75	-0.37
MW-9	~2296	12.32	2283.68	1.16

May 2007 Water Level Data

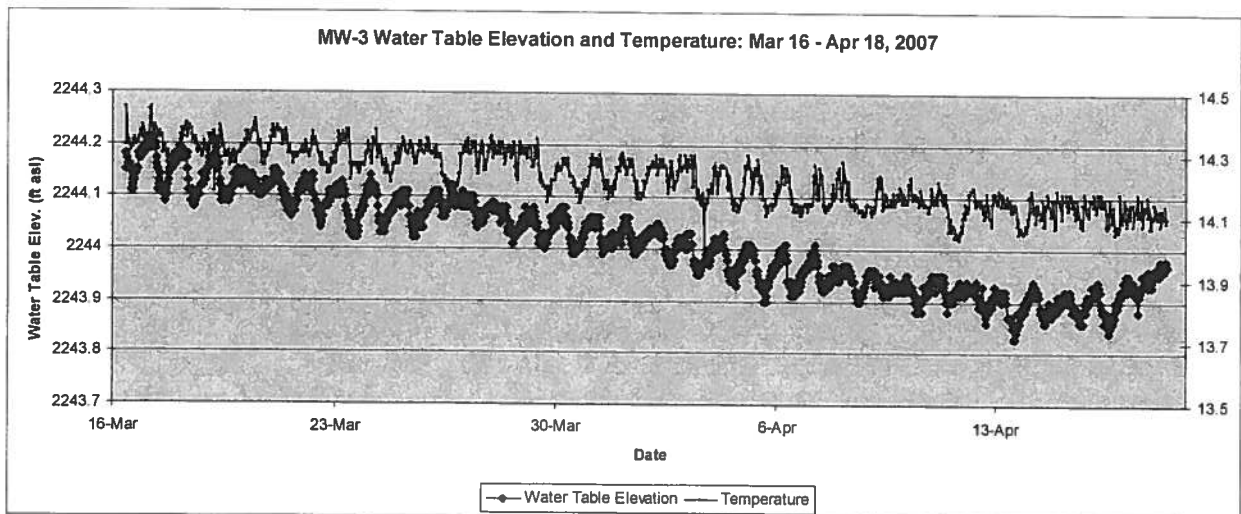
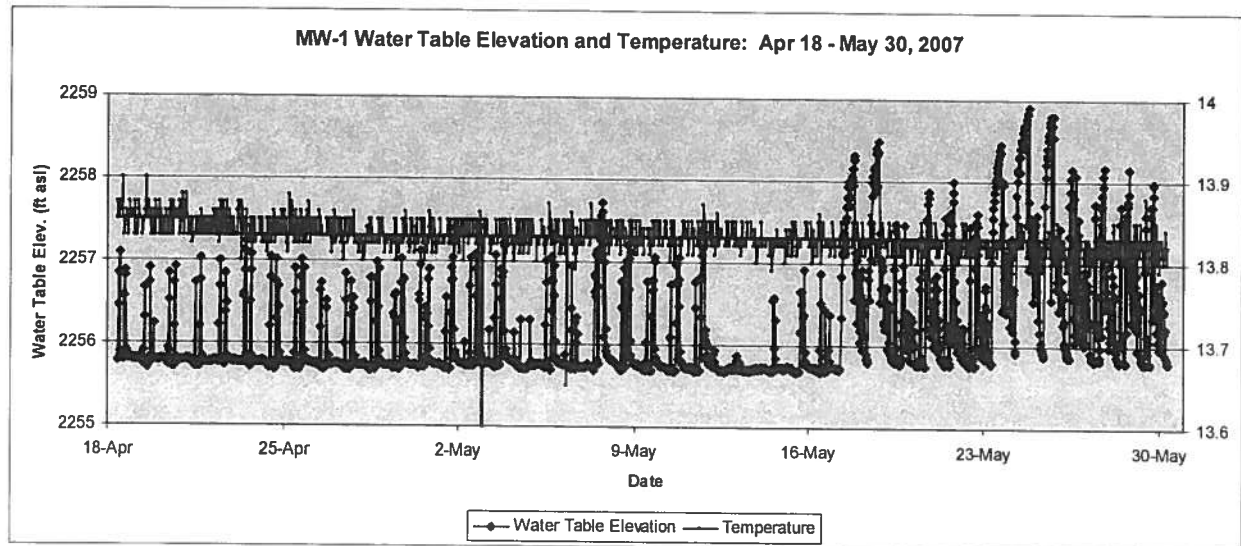
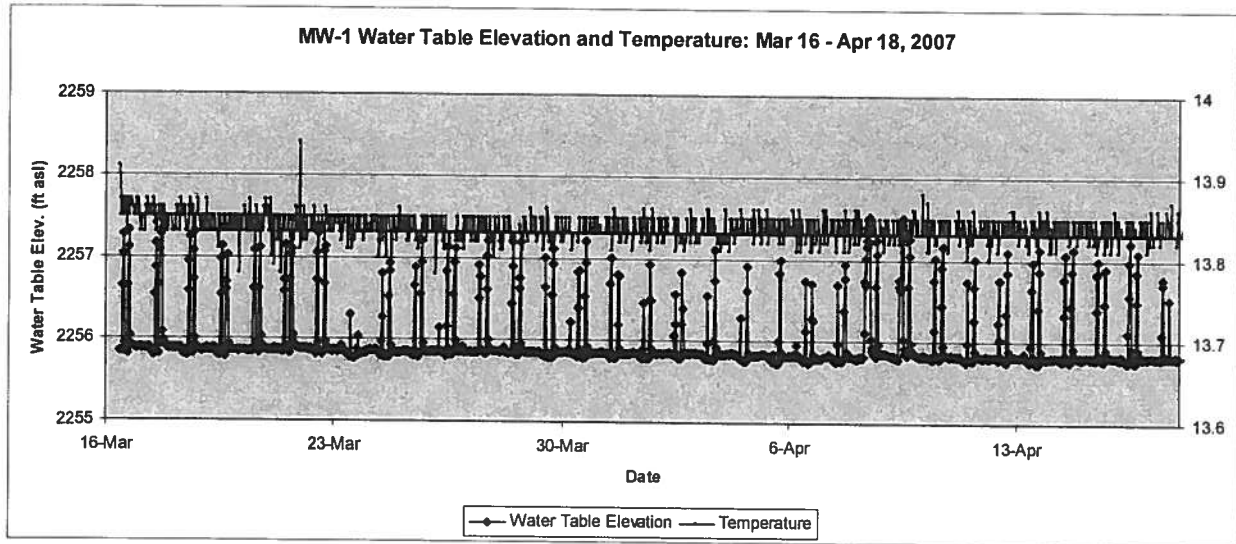
Well Name:	Measuring point elevation:	Depth to Water:	Water Table Elevation:	Change from Previous month:
Nederend Domestic	2290.13	26.73	2263.40	0.97
MW-1	2294.59	38.71	2255.88	0.10
MW-2	2276.31	28.55	2247.76	0.26
MW-3	2265.33	21.40	2243.93	-0.05
MW-4	2305.73	13.75	2291.98	0.55
MW-5	2298.90	12.62	2286.28	0.39
MW-6	2300.41	21.95	2278.46	1.03
MW-7	2300.23	19.26	2280.97	0.48
MW-8	~2306	38.45	2267.55	0.80
MW-9	~2296	12.02	2283.98	0.30
MD-1	~2306	57.00	~2246	
MD-2	~2306	233.4	~1973	
NED #1	~2290	34.44	~2256	

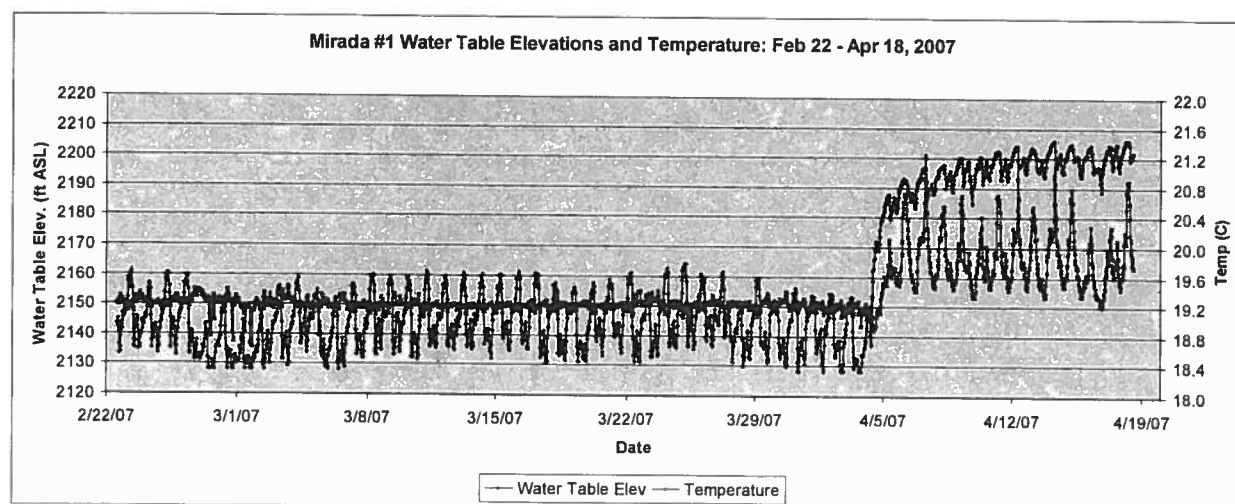
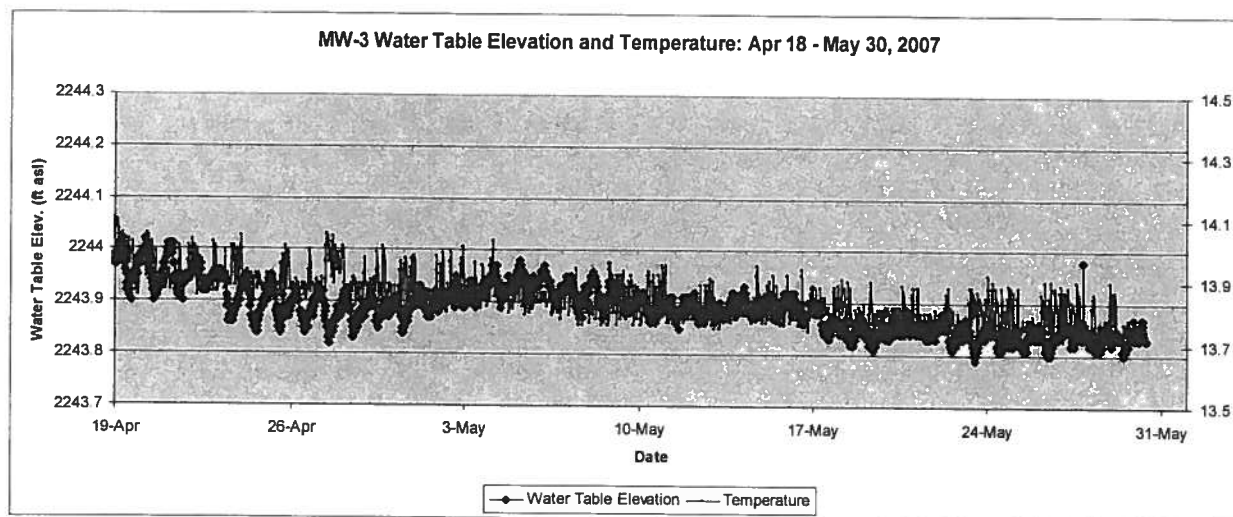
Water table elevations and temperature at MW-1 and MW-3 are shown on the graphs below and on the following page. The water table at MW-1 continued to drop slowly until around May 18th, when the well was shut off for longer periods of time. Between March 16th and April 18th, the average production rates from wells Nederend #2 and Nederend #3 were 192 and 64 gpm, respectively. Between April 18th and May 30th the average production rates from wells Nederend #2 and Nederend #3 were 166 and 105 gpm, respectively.

The water level at MW-1 spikes upward when well Nederend #2 is shut off. Well Nederend #2 apparently was shut off on a daily basis during the measurement period due to the water level in the well dropping to the point where the pump begins to break suction. The water temperature at MW-1 fluctuates over a range of ~0.2 C on a daily basis but is not changing very much over longer time frame.

The water table at MW-3 also responds to pumping in a manner similar to MW-1. Water levels at MW-3 went down throughout most of the measurement period, then began to rise around mid-April, probably in response to the beginning of irrigation season and increased water levels in the drain. The

water temperature at MW-3 also went down during the sample period. The water table at MW-3 began to go down beginning ~April 18th, probably in response to increased pumping at Nederend #3.





Water levels in Mirada #1 fluctuated over a ~27' range in response to varying water use at Dairy #2 from February 22nd through early April. On April 4th, well MD-2 was apparently brought back on-line, production at MD-1 decreased, and water levels rose. The water temperature at MD-1 was fairly stable while MD-1 was the only well pumping and water levels were drawn down. When production at MD-1 decreased in early April, water temperatures began to fluctuate, apparently in response to varying mixtures of shallow and deeper aquifer water. The Levellogger in well MD-1 was removed from the well when the pump was pulled.

Discussion

April and May 2007 nitrate levels at most of the monitoring wells did not change significantly from March. The one exception was MW-6, where nitrate levels went from 22.1 mg/L in March to 33 mg/L in April and 28.7 mg/L in May. In previous years nitrate levels at MW-6 have decreased from March to April and April to May as low nitrate water from Horstman Drain recharges the shallow aquifer. At wells MW-1, MW-2, and MW-3 nitrate levels continue to be at or near the highest levels measured at these wells. At well MW-5 nitrate levels continue to decline.

Comparing ISDA water quality results from April 2005 with the April 2007 results shows that during that two-year time period water quality has improved at wells Nederend Domestic and MW-5 and deteriorated at all other wells. The largest increases in nitrate levels have occurred at MW-6 (17.1 mg/L), MW-1 (9.7 mg/L) and MW-3 (9.1 mg/L). At MW-6 nitrate levels have more than doubled.

The wellheads at wells MD-2 and Nederend #1 have been modified and water level measurements can now be made at these wells. The depth to water measurements from MD-1, MD-2 and MW-8 indicate that there is a strong downward hydraulic gradient between the shallow aquifer and the deeper aquifer. Well MD-1, with no surface seal and perforations in both the shallow and deeper aquifer, is most likely acting as a conduit for contaminated ground water to flow from the shallow aquifer into the deeper aquifer.

If everything goes as planned, I will be joining Golder Associates, Inc.'s Coeur d'Alene office as Senior Hydrogeologist in July. If I am to continue work on the COCOA/Nederend Dairy ground water monitoring project, it will be necessary for me to submit a proposal for continued ground water monitoring and for Nederend Dairy to enter into an agreement with Golder for the work to continue. I've begun work on the proposal, which I will get to you sometime later this month. My next sampling trip is scheduled for June 27th. If possible, I would like to have a COCOA/Nederend Dairy meeting on that date to discuss future plans for the joint COCOA/Nederend Dairy ground water monitoring project.

Sincerely,

John Monks, P.G.

Hydrogeologist

Cc: Ilene Dobbin (COCOA), Craig Tesch (ISDA)



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FAX 208-334-2382

Idaho Dept. of Agriculture
Attention: Craig Tesch
PO Box 790
2270 Old Penitentiary Rd
Boise, ID 83701



(Please refer to this number when contacting the lab)

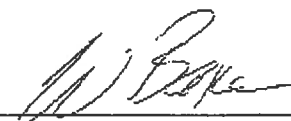
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Matrix:	Ground Water	Collected By:	Kathryn Dallas



Test	Method	Result	Units	Analysis Date	Analyst
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Chloride	EPA 300.0	67.8	mg/L	4/27/2007	II.Elder
Nitrogen, Nitrate-Nitrite	EPA 353.2	32	mg/L	4/23/2007	B.Orde
Sulfate	EPA 300.0	252	mg/L	4/27/2007	II.Elder



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2220 Old Penitentiary Road
Boise, ID 83712
PHONE 208-334-2236
FAX 208-334-2382

Idaho Dept. of Agriculture
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PO Box 790
2270 Old Penitentiary Rd
Boise, ID 83701

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208-334-2236

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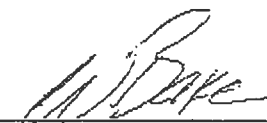
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Project ID:	850	Time Collected:	10:58 AM
Site:	850MW2	Date/Time Received:	4/18/2007
Matrix:	Ground Water	Collected By:	Kathryn Dallas

Customer Sample ID:	200704180002	Lab Sample Number:	0710410388
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Test	Method	Result	Units	Analysis Date	Analyst
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Chloride	EPA 300.0	100	mg/L	4/27/2007	II.Elder
Nitrogen, Nitrate-Nitrite	EPA 353.2	44	mg/L	4/23/2007	B.Orde
Sulfate	EPA 300.0	400	mg/L	4/27/2007	II.Elder



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Boise, ID 83712
PHONE 208-334-2235
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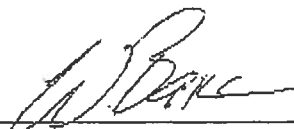
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Project ID:	850	Time Collected:	11:36 AM
Site:	850MW3	Date/Time Received:	4/18/2007
Matrix:	Ground Water	Collected By:	Kathryn Dallas



Test	Method	Result	Units	Analysis Date	Analyst
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Chloride	EPA 300.0	139	mg/L	4/30/2007	II.Elder
Nitrogen, Nitrate-Nitrite	EPA 353.2	26	mg/L	4/23/2007	B.Orde
Sulfate	EPA 300.0	300	mg/L	4/30/2007	II.Elder



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Boise, ID 83712
PHONE 208-334-2235
FAX 208-334-2382

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PO Box 790
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Customer ID:	ISDA	Date Collected:	4/18/2007
Project ID:	850	Time Collected:	12:20 PM
Site:	850MW4	Date/Time Received:	4/18/2007
Matrix:	Ground Water	Collected By:	Kathryn Dallas

Customer Sample ID:	0704-0390	Lab Sample Number:	0704-0390
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Test	Method	Result	Units	Analysis Date	Analyst
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Chloride	EPA 300.0	70.7	mg/L	4/30/2007	II.Elder
Nitrogen, Nitrate-Nitrite	EPA 353.2	11	mg/L	4/23/2007	B.Orde
Sulfate	EPA 300.0	240	mg/L	4/30/2007	II.Elder



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Boise, ID 83712
PHONE 208-334-2235
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Customer ID:	ISDA	Date Collected:	4/18/2007
Project ID:	850	Time Collected:	12:53 PM
Site:	850MW5	Date/Time Received:	4/18/2007
Matrix:	Ground Water	Collected By:	Kathryn Dallas



Test	Method	Result	Units	Analysis Date	Analyst
Ammonia as N	SM 4500 NH3 H.	<0.01	mg/L	4/24/2007	B.Orde
Chloride	EPA 300.0	73.9	mg/L	4/30/2007	Il.Elder
Nitrogen, Nitrate-Nitrite	EPA 353.2	12	mg/L	4/23/2007	B.Orde
Sulfate	EPA 300.0	340	mg/L	4/30/2007	Il.Elder



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RICHARD F. HUDSON, Ph.D., Chief
2220 Old Penitentiary Road
Boise, ID 83712
PHONE 208-334-2235
FAX 208-334-2382

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Attention: Craig Tesch
PO Box 790
2270 Old Penitentiary Rd
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Customer ID:	ISDA	Date Collected:	4/18/2007
Project ID:	850	Time Collected:	2:21 PM
Site:	850MW6	Date/Time Received:	4/18/2007
Matrix:	Ground Water	Collected By:	Kathryn Dallas



Test	Method	Result	Units	Analysis Date	Analyst
Ammonia as N	SM 4500 NH3 H.	<0.01	mg/L	4/24/2007	B.Orde
Chloride	EPA 300.0	110	mg/L	4/30/2007	II.Elder
Nitrogen, Nitrate-Nitrite	EPA 353.2	33	mg/L	4/23/2007	B.Orde
Sulfate	EPA 300.0	99.0	mg/L	4/30/2007	II.Elder



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Boise, ID 83712
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中國圖書集成

02-987-93

(Please refer to this number when contacting the lab)

System Sample ID: 27445232 Lab Sample Number: 07/02/2002-451

Test	Method	Result	Units	Analysis Date	Analyst
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Chloride	EPA 300.0	47.9	mg/L	4/30/2007	II.Elder
Nitrogen, Nitrate-Nitrite	EPA 353.2	8.0	mg/L	4/27/2007	B.Orde
Sulfate	EPA 300.0	158	mg/L	4/30/2007	II.Elder



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RICHARD F. HUDSON, Ph.D., Chief
2220 Old Penitentiary Road
Boise, ID 83712
PHONE 208-334-2235
FAX 208-334-2382

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PO Box 790
2270 Old Penitentiary Rd
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Customer ID:	ISDA	Date Collected:	4/18/2007
Project ID:	850	Time Collected:	2:51 PM
Site:	850MW8	Date/Time Received:	4/18/2007
Matrix:	Ground Water	Collected By:	Kathryn Dallas



Test	Method	Result	Units	Analysis Date	Analyst
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Chloride	EPA 300.0	182	mg/L	4/30/2007	Il.Elder
Nitrogen, Nitrate-Nitrite	EPA 353.2	53	mg/L	4/23/2007	B.Orde
Sulfate	EPA 300.0	199	mg/L	4/30/2007	Il.Elder



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2220 Old Penitentiary Road
Boise, ID 83712
PHONE 208-334-2235
FAX 208-334-2382

Idaho Dept. of Agriculture
Attention: Craig Tesch
PO Box 790
2270 Old Penitentiary Rd
Boise, ID 83701



(Please refer to this number when contacting the lab)

Customer ID:	ISDA	Date Collected:	4/18/2007
Project ID:	850	Time Collected:	1:32 PM
Site:	850MW9	Date/Time Received:	4/18/2007
Matrix:	Ground Water	Collected By:	Kathryn Dallas



Test	Method	Result	Units	Analysis Date	Analyst
Ammonia as N	SM 4500 NH3 H.	<0.01	mg/L	4/24/2007	B.Orde
Chloride	EPA 300.0	76.1	mg/L	4/30/2007	II.Elder
Nitrogen, Nitrate-Nitrite	EPA 353.2	12	mg/L	4/27/2007	B.Orde
Sulfate	EPA 300.0	330	mg/L	5/1/2007	II.Elder



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Laboratory Supervisor



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RICHARD M. ARMSTRONG - Director

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RICHARD F. HUDSON, Ph.D., Chief
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Boise, ID 83712
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FAX 208-334-2382

Idaho Dept. of Agriculture
Attention: Craig Tesch
PO Box 790
2270 Old Penitentiary Rd
Boise, ID 83701



(Please refer to this number when contacting the lab)

Customer ID:	ISDA	Date Collected:	4/18/2007
Project ID:	850	Time Collected:	1:15 AM
Site:	8503001 <i>Redwood</i>	Date/Time Received:	4/18/2007
Matrix:	Ground Water <i>Domestic</i>	Collected By:	Craig Tesch

Customer Sample ID:	207130	Lab Sample Number:	070418079
---------------------	--------	--------------------	-----------

Test	Method	Result	Units	Analysis Date	Analyst
Ammonia as N	SM 4500 NH3 H.	<0.01	mg/L	4/24/2007	B.Orde
Chloride	EPA 300.0	51.4	mg/L	4/24/2007	II.Elder
Nitrogen, Nitrate-Nitrite	EPA 353.2	12	mg/L	4/23/2007	B.Orde
Sulfate	EPA 300.0	177	mg/L	4/24/2007	II.Elder



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2220 Old Penitentiary Road
Boise, ID 83712
PHONE 208-334-2235
FAX 208-334-2382

Idaho Dept. of Agriculture
Attention: Craig Tesch
PO Box 790
2270 Old Penitentiary Rd
Boise, ID 83701

11-11-2006 10:07 AM

10-11-2006 10:07 AM

(Please refer to this number when contacting the lab)

Customer ID:	ISDA	Date Collected:	4/18/2007
Project ID:	850	Time Collected:	10:07 AM
Site:	8501901 <i>Nejereid #2</i>	Date/Time Received:	4/18/2007
Matrix:	Ground Water	Collected By:	Craig Tesch

Customer Sample ID	2707-1901-1	Lab Sample Number	0704-9886
--------------------	-------------	-------------------	-----------

Test	Method	Result	Units	Analysis Date	Analyst
Ammonia as N	SM 4500 NH3 H.	1.2	mg/L	4/24/2007	B.Orde
Chloride	EPA 300.0	47.3	mg/L	4/27/2007	II.Elder
Nitrogen, Nitrate-Nitrite	EPA 353.2	11	mg/L	4/23/2007	B.Orde
Sulfate	EPA 300.0	195	mg/L	4/27/2007	II.Elder



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Laboratory Supervisor

NAME	Monks Hydro - Geoscience		
ATTENTION	John Monks		
ADDRESS	PO Box 367		
CITY	State	ZIP CODE	
PHONE #	208-263-1894	FAX #	
SAMPLER (S)	Jm		
PROJECT OR SITE	Kladene		
P.N. / P.O. NUMBER			

Chain of Custody Form

LAB NUMBER	DATE	TIME	SAMPLE IDENTIFICATION
17411	5/30/06	1015	MW-1
17412	11	1045	MW-3
17413	11	1120	MW-2
17414	11	1200	MW-5
17415	11	1245	MW-6
17416	11	1245	MW-8

MATRIX	TESTS (CIRCLE METHOD)																		NUMBER OF CONTAINERS							
	WATER	SOIL	OTHER	TPH - (418.1 / 8015M)	BTEX (602 / 8020 / 8260) (+N+M)	CL. SOLVENTS (601 / 8010)	VOCs (601-602 / 8021)	GC-MS VOCs (624 / 8260)	PAHs (8270)	PHENOLS (604 / 8040 / 8270)	PESTICIDES (608 / 8081 / 8270)	PCBs (608 / 8081)	SEMI-VOLATILES (625 / 8270)	TCLP-(DESIGNATE)	8 RCRA METALS	RBGA - NO LEAD GAS	RBGA - LEADED GAS	EDB (8011) BTEX+N+M, EDC (8021 / 8260)		RBGA - FUEL OILS	BTEX (8020 / 8260), PAH (8270)	RBGA - MOTOR OILS	BTEX (8020 / 8260), PAH (8270)	CL. SOLVENTS (8010)	SEE ATTACHED LIST	
	✓																								✓	1
	✓																								✓	1
	✓																								✓	1
	✓																								✓	1
	✓																								✓	1
	✓																								✓	1

RELINQUISHED BY (Signature)		DATE	TIME	RECEIVED BY (Signature)
Relinquished By (Signature)		Date/Time	Received for Laboratory By (Signature)	
[Signature]		5/30/06 15:41	[Signature]	
Received With Seal Intact?		Date/Time		Received With Seal Intact?
☐ Yes ☐ No		5-30-06 3:11		☐ Yes ☐ No
Label Tag, COC Agree?				☐ Yes ☐ No



Alchem Laboratories, Inc.

104 West 31st Street
Boise, Idaho 83714
Phone (208) 336-1172



**ALCHEM
LABORATORIES**

Alchem Laboratories, Inc.

104 West 31st Street
Boise, Idaho 83714
Phone (208) 336-117

NAME	Markes Flyer - Gease, e.a.o.		
ATTENTION	John Marks		
ADDRESS	PO Box 362		
CITY	Good point	STATE	1D
PHONE #	208-203-1041	FAX #	208-203-1041
SAMPLER (S)	John		
PROJECT OR SITE	N60208-1		
	P.N. / P.O. NUMBER		

Chain of Custody Form

LAB NUMBER	DATE	TIME	SAMPLE IDENTIFICATION
	5/30/07	1015	MW-1
	11	1045	MW-3
	11	1120	MW-2
	11	1200	MW-5
	11	1245	MW-6
	11	1245	MW-8

RELINQUISHED BY (Signature)		DATE

Relinquished By (Signature)	Date/Time	Received
	5/20/15 11:11	

[illegible]

	TIME	RECEIVED BY (Signature)

Laboratory By (Signature)	Date/Time	Received With Seal Intact? Label Tag, COC Agree?	Yes ☐ No ☐	Yes ☐ No ☐
			☐ Yes ☐ No	☐ Yes ☐ No



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FAX (208) 336-7124

Water, Soil and
Waste Water Analysis

LABORATORY REPORT

MONKS HYDRO-GEOSCIENCE
PO BOX 362
SANDPOINT, IDAHO 83864

ATTENTION: JOHN MONKS
SOURCE -: MW-1 / PROJ: NEDEREND

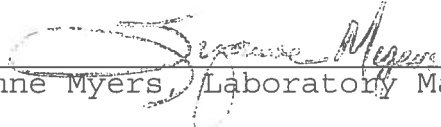
DATE COLLECTED 05/30/2007
TIME COLLECTED 10:15
DATE RECEIVED 05/30/2007
DATE REPORTED 06/08/2007
SUBMITTED : JOHN MONKS

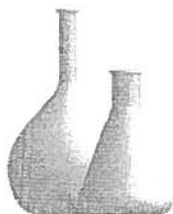
LAB SAMPLE NUMBER - 17411

Results reported unless noted: (Chemistry Analysis as mg/l) (Bacteria as organisms/100 ml)

ANALYSIS	RESULTS	DATE ANALYZED	ANALYST
NITRATE as N	26.8	06/07/2007	TK

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Suzanne Myers, Laboratory Manager





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Boise, Idaho 83714

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FAX (208) 336-7124

Water, Soil and
Waste Water Analysis

LABORATORY REPORT

MONKS HYDRO-GEOSCIENCE
PO BOX 362
SANDPOINT, IDAHO 83864

ATTENTION: JOHN MONKS
SOURCE -: MW-2 / PROJ: NEDEREND

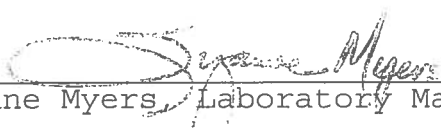
DATE COLLECTED 05/30/2007
TIME COLLECTED 11:20
DATE RECEIVED 05/30/2007
DATE REPORTED 06/08/2007
SUBMITTED : JOHN MONKS

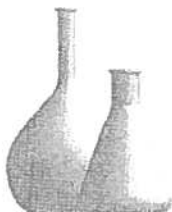
LAB SAMPLE NUMBER - 17413

Results reported unless noted: (Chemistry Analysis as mg/l) (Bacteria as organisms/100 ml)

ANALYSIS	RESULTS	DATE ANALYZED	ANALYST
NITRATE as N	44.6	06/07/2007	TK

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Suzanne Myers, Laboratory Manager





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Boise, Idaho 83714

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FAX (208) 336-7124

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LABORATORY REPORT

MONKS HYDRO-GEOSCIENCE
PO BOX 362
SANDPOINT, IDAHO 83864

ATTENTION: JOHN MONKS
SOURCE -: MW-3 / PROJ: NEDEREND

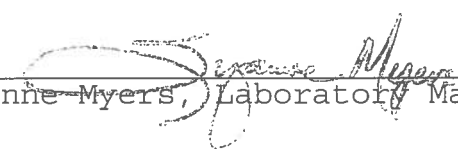
DATE COLLECTED 05/30/2007
TIME COLLECTED 10:45
DATE RECEIVED 05/30/2007
DATE REPORTED 06/08/2007
SUBMITTED : JOHN MONKS

LAB SAMPLE NUMBER - 17412

Results reported unless noted: (Chemistry Analysis as mg/l) (Bacteria as organisms/100 ml)

ANALYSIS	RESULTS	DATE ANALYZED	ANALYST
NITRATE as N	24.8	06/07/2007	TK

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Suzanne Myers, Laboratory Manager





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FAX (208) 336-7124

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MONKS HYDRO-GEOSCIENCE
PO BOX 362
SANDPOINT, IDAHO 83864

ATTENTION: JOHN MONKS
SOURCE -: MW-5 / PROJ: NEDEREND

DATE COLLECTED 05/30/2007
TIME COLLECTED 12:00
DATE RECEIVED 05/30/2007
DATE REPORTED 06/08/2007
SUBMITTED : JOHN MONKS

LAB SAMPLE NUMBER - 17414

Results reported unless noted: (Chemistry Analysis as mg/l) (Bacteria as organisms/100 ml)

ANALYSIS	RESULTS	DATE ANALYZED	ANALYST
NITRATE as N	11.5	06/07/2007	TK

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Suzanne Myers, Laboratory Manager





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Boise, Idaho 83714

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FAX (208) 336-7124

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LABORATORY REPORT

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PO BOX 362
SANDPOINT, IDAHO 83864

ATTENTION: JOHN MONKS
SOURCE -: MW-6 / PROJ: NEDEREND

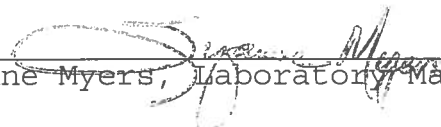
DATE COLLECTED 05/30/2007
TIME COLLECTED 12:15
DATE RECEIVED 05/30/2007
DATE REPORTED 06/08/2007
SUBMITTED : JOHN MONKS

LAB SAMPLE NUMBER - 17415

Results reported unless noted: (Chemistry Analysis as mg/l) (Bacteria as organisms/100 ml)

ANALYSIS	RESULTS	DATE ANALYZED	ANALYST
NITRATE as N	28.7	06/07/2007	TK

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Boise, Idaho 83714

Phone (208) 336-1172
FAX (208) 336-7124

Water, Soil and
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LABORATORY REPORT

MONKS HYDRO-GEOSCIENCE
PO BOX 362
SANDPOINT, IDAHO 83864

ATTENTION: JOHN MONKS
SOURCE -: MW-8 / PROJ: NEDEREND

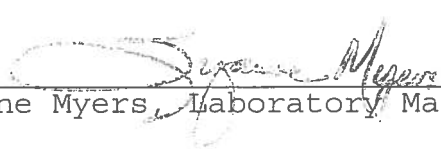
DATE COLLECTED 05/30/2007
TIME COLLECTED 12:45
DATE RECEIVED 05/30/2007
DATE REPORTED 06/08/2007
SUBMITTED : JOHN MONKS

LAB SAMPLE NUMBER - 17416

Results reported unless noted: (Chemistry Analysis as mg/l) (Bacteria as organisms/100 ml)

ANALYSIS	RESULTS	DATE ANALYZED	ANALYST
NITRATE as N	73.4	06/07/2007	TK

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Suzanne Myers, Laboratory Manager





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2220 Old Penitentiary Road
Boise, ID 83712
PHONE 208-334-2235
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PO Box 790
2270 Old Penitentiary Rd
Boise, ID 83701

Customer ID

210718

(Please refer to this number when contacting the lab)

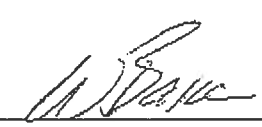
Customer ID:	ISDA	Date Collected:	4/18/2007
Project ID:	850	Time Collected:	10:44 AM
Site:	8501801	Date/Time Received:	4/18/2007
Matrix:	Ground Water	Collected By:	Craig Tesch

Customer Sample ID	210718	Lab Sample Number	07020388
--------------------	--------	-------------------	----------

Test	Method	Result	Units	Analysis Date	Analyst
Ammonia as N	SM 4500 NH3 H.	<0.01	mg/L	4/24/2007	B.Orde
Chloride	EPA 300.0	96.4	mg/L	4/24/2007	II.Elder
Nitrogen, Nitrate-Nitrite	EPA 353.2	12	mg/L	4/23/2007	B.Orde
Sulfate	EPA 300.0	360	mg/L	4/27/2007	II.Elder



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RICHARD F. HUDSON, Ph.D., Chief
2220 Old Penitentiary Road
Boise, ID 83712
PHONE 208-334-2235
FAX 208-334-2382

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Attention: Craig Tesch
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Boise, ID 83701

LABORATORY ORDER

101100790

(Please refer to this number when contacting the lab)

Customer ID:	ISDA	Date Collected:	4/18/2007
Project ID:	850	Time Collected:	11:10 AM
Site:	8501301	Date/Time Received:	4/18/2007
Matrix:	Ground Water	Collected By:	Craig Tesch

Customer Sample ID	210713	Lab Sample Number	07048884
--------------------	--------	-------------------	----------

Test	Method	Result	Units	Analysis Date	Analyst
Ammonia as N	SM 4500 NH3 H.	6.0	mg/L	4/24/2007	B.Orde
Chloride	EPA 300.0	13.1	mg/L	4/24/2007	Il.Elder
Nitrogen, Nitrate-Nitrite	EPA 353.2	<0.01	mg/L	4/23/2007	B.Orde
Sulfate	EPA 300.0	8.60	mg/L	4/27/2007	Il.Elder



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RICHARD F. HUDSON, Ph.D., Chief
2220 Old Penitentiary Road
Boise, ID 83712
PHONE 208-334-2235
FAX 208-334-2382

Idaho Dept. of Agriculture
Attention: Craig Tesch
PO Box 790
2270 Old Penitentiary Rd
Boise, ID 83701



(Please refer to this number when contacting the lab)

Customer ID:	ISDA	Date Collected:	4/18/2007
Project ID:	850	Time Collected:	11:34 AM
Site:	8500801	Date/Time Received:	4/18/2007
Matrix:	Ground Water	Collected By:	Craig Tesch

Customer Sample ID:	277203	Lab Sample Number:	07412038
----------------------------	--------	---------------------------	----------

Test	Method	Result	Units	Analysis Date	Analyst
Ammonia as N	SM 4500 NH3 H.	6.8	mg/L	4/24/2007	B.Orde
Chloride	EPA 300.0	7.43	mg/L	4/24/2007	Il.Elder
Nitrogen, Nitrate-Nitrite	EPA 353.2	<0.01	mg/L	4/23/2007	B.Orde
Sulfate	EPA 300.0	<2.00	mg/L	4/27/2007	Il.Elder



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PHONE 208-334-2235
FAX 208-334-2382

1998

Customer ID:	ISDA	Date Collected:	4/18/2007
Project ID:	850	Time Collected:	12:08 PM
Site:	8501601	Date/Time Received:	4/18/2007
Matrix:	Ground Water	Collected By:	Craig Tesch

Customer Sample No. 706-0382

Test	Method	Result	Units	Analysis Date	Analyst
Ammonia as N	SM 4500 NH3 H.	4.7	mg/L	4/24/2007	B.Orde
Chloride	EPA 300.0	61.1	mg/L	4/24/2007	Il.Elder
Nitrogen, Nitrate-Nitrite	EPA 353.2	<0.01	mg/L	4/23/2007	B.Orde
Sulfate	EPA 300.0	198	mg/L	4/27/2007	Il.Elder




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2220 Old Penitentiary Road
Boise, ID 83712
PHONE 208-334-2235
FAX 208-334-2382

Idaho Dept. of Agriculture
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PO Box 790
2270 Old Penitentiary Rd
Boise, ID 83701



(Please refer to this number when contacting the lab)

Customer ID:	ISDA	Date Collected:	4/18/2007
Project ID:	850	Time Collected:	12:33 PM
Site:	8501101	Date/Time Received:	4/18/2007
Matrix:	Ground Water	Collected By:	Craig Tesch

Customer Sample ID	2707244	Lab Sample Number	070408564
--------------------	---------	-------------------	-----------

Test	Method	Result	Units	Analysis Date	Analyst
Ammonia as N	SM 4500 NH3 H.	0.10	mg/L	4/24/2007	B.Orde
Chloride	EPA 300.0	107	mg/L	4/24/2007	II.Elder
Nitrogen, Nitrate-Nitrite	EPA 353.2	40	mg/L	4/23/2007	B.Orde
Sulfate	EPA 300.0	246	mg/L	4/27/2007	II.Elder

DePaul?



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Boise, ID 83712
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FAX 208-334-2382

Idaho Dept. of Agriculture
Attention: Craig Tesch
PO Box 790
2270 Old Penitentiary Rd
Boise, ID 83701



(Please refer to this number when contacting the lab)

Customer ID:	ISDA	Date Collected:	4/19/2007
Project ID:	850	Time Collected:	9:00 AM
Site:	8508001	Date/Time Received:	4/18/2007
Matrix:	Ground Water	Collected By:	Craig Tesch



Test	Method	Result	Units	Analysis Date	Analyst
Ammonia as N	SM 4500 NH3 H.	<0.01	mg/L	4/24/2007	B.Orde
Chloride	EPA 300.0	51.4	mg/L	4/24/2007	Il.Elder
Nitrogen, Nitrate-Nitrite	EPA 353.2	12	mg/L	4/23/2007	B.Orde
Sulfate	EPA 300.0	177	mg/L	4/24/2007	Il.Elder



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PHONE 208-334-2235
FAX 208-334-2382

Idaho Dept. of Agriculture
Attention: Craig Tesch
PO Box 790
2270 Old Penitentiary Rd
Boise, ID 83701

Laboratory ID

Lab Number

(Please refer to this number when contacting the lab)

Customer ID:	ISDA	Date Collected:	4/18/2007
Project ID:	850	Time Collected:	1:05 PM
Site:	8501401	Date/Time Received:	4/18/2007
Matrix:	Ground Water	Collected By:	Craig Tesch

Customer Sample ID

270712

Lab Sample Number

0704-0378

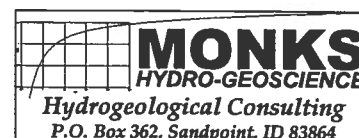
Test	Method	Result	Units	Analysis Date	Analyst
Ammonia as N	SM 4500 NH3 H.	1.4	mg/L	4/24/2007	B.Orde
Chloride	EPA 300.0	8.99	mg/L	4/24/2007	II.Elder
Nitrogen, Nitrate-Nitrite	EPA 353.2	<0.01	mg/L	4/23/2007	B.Orde
Sulfate	EPA 300.0	168	mg/L	4/24/2007	L.Bartlett



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W. B. Baker
Laboratory Supervisor

30 April, 2007
Hans Nederend
Nederend Dairy
4998 Hogg Road
Homedale, ID 83628



RE: March 2007 water quality report

Dear Hans:

This letter reports water quality data collected at Nederend Dairies #1 and #2 on March 16, 2007. Depth to water was measured in all of the monitoring wells, and wells MW-1, MW-2, MW-6, MW-8, ION and Nederend Domestic were sampled and analyzed for nitrate. Field water quality parameters were measured in all wells except ION and in the Horstman Drain.

Water Quality

Water quality data from February is summarized in Table 1 and field measured water quality parameters are summarized in Table 2.

Field measured water quality parameters at most of the wells are remaining fairly constant from month to month. Water temperatures are up at most of the wells. Water temperatures in the drain between Highway 55 and Dobbin Lane are higher than at any of the monitoring wells. Between Dobbin Lane and Hogg Road water temperature in the drain is colder than in most of the monitoring wells.

Table 1. March 2007 Water Chemistry Analytical Results

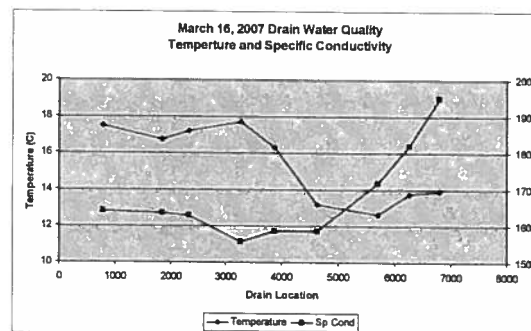
Well name:	Date:	Chloride (mg/L):	Nitrate (mg/L):	Sulfate (mg/L):	Coliform Bacteria
Nederend Domestic	3/16/07	NA	8.98	NA	NA
MW-1	3/16/07	NA	34.0	NA	NA
MW-2	3/16/07	NA	45.1	NA	NA
MW-3	3/16/07	NA	NS	NA	NA
MW-4	3/16/07	NA	NS	NA	NA
MW-5	3/16/07	NA	NS	NA	NA
MW-6	3/16/07	NA	22.1	NA	NA
MW-7	3/16/07	NA	NS	NA	NA
MW-8	3/16/07	NA	49.2	NA	NA
MW-9	3/16/07	NA	NS	NA	NA
ION	3/16/07	NA	8.89	NS	NA

Table 2. March 2007 Field Measured Water Quality Parameters

Well#	Temp C	SpCond (uS/cm)	DO Conc (mg/L)	pH	TDS (g/L)	ORP (mV)
MW-1	14.24	1509.1	1.26	7.6	980.911	92
MW-2	14.93	1937.7	0.92	7.76	1259.508	86
MW-3	14.86	1859.9	0.3	7.49	1208.949	54
MW-4	13.57	1365.3	0.53	7.76	887.426	92
MW-5	13.55	1680.5	0.03	7.67	1092.313	106
MW-6	16.31	1145.6	0.57	7.7	744.608	96
MW-7	14.86	1157.6	0.02	7.63	752.422	109
MW-8	15.85	2203.3	-0.01	7.61	1432.127	105
MW-9	15.03	1123.8	0.34	7.79	730.442	79
ION	NS	NS	NS	NS	NS	NS

Horstman Drain Water Quality - March 16, 2007										
Sample Site	Drain Loc	Date/time	Temp C	SpCond mS/cm	DO Conc mg/L	pH	TDS g/L	ORP mV	DO% %	Cond mS/cm
Hwy 55	777	3/16/2007 14:14	17.51	1640.8	3.16	8.32	1066.52	134	33.3	1406
MW-5	1833	3/16/2007 14:08	16.72	1634.4	3.11	8.29	1062.361	131	32.1	1375.9
Buntrock	2329	3/16/2007 14:03	17.19	1627.4	4.13	8.25	1057.797	129	43.1	1384.7
Thompson	3268	3/16/2007 13:57	17.69	1554.9	4.16	8.45	1010.715	99	43.9	1337.8
Dobbin	3870	3/16/2007 13:52	16.29	1586	3.8	8.35	1030.925	100	38.9	1322.3
MW-2	4624	3/16/2007 13:46	13.2	1584.8	2.45	8.26	1030.11	121	23.4	1227.6
	5703	3/16/2007 13:38	12.65	1717	3.1	8.11	1116.062	125	29.3	1312
	6255	3/16/2007 13:34	13.73	1819	2.89	8.1	1182.374	105	28	1427.3
Hogg Road	6784	3/16/2007 13:27	13.93	1948.6	3.35	8.03	1266.611	100	32.7	1536.8

Drain water quality data is summarized in the table above and plotted in the graph to the right. Water temperature decreases with distance along the drain until reaching the portion of the drain downstream of MW-2. Water temperature and specific conductivity both rise between the irrigation structure near MW-2 and Hogg Road.



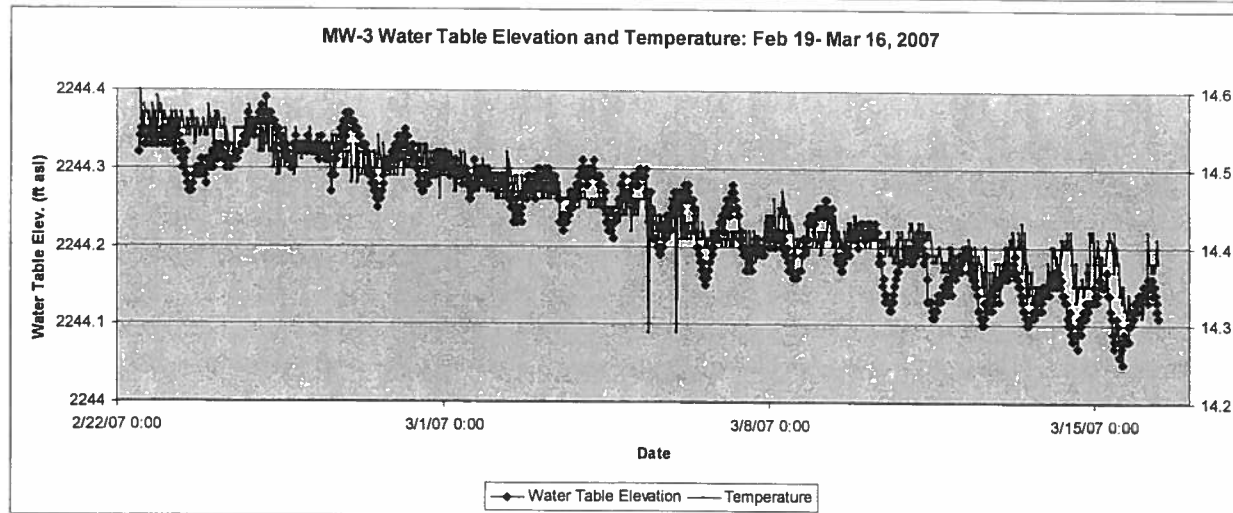
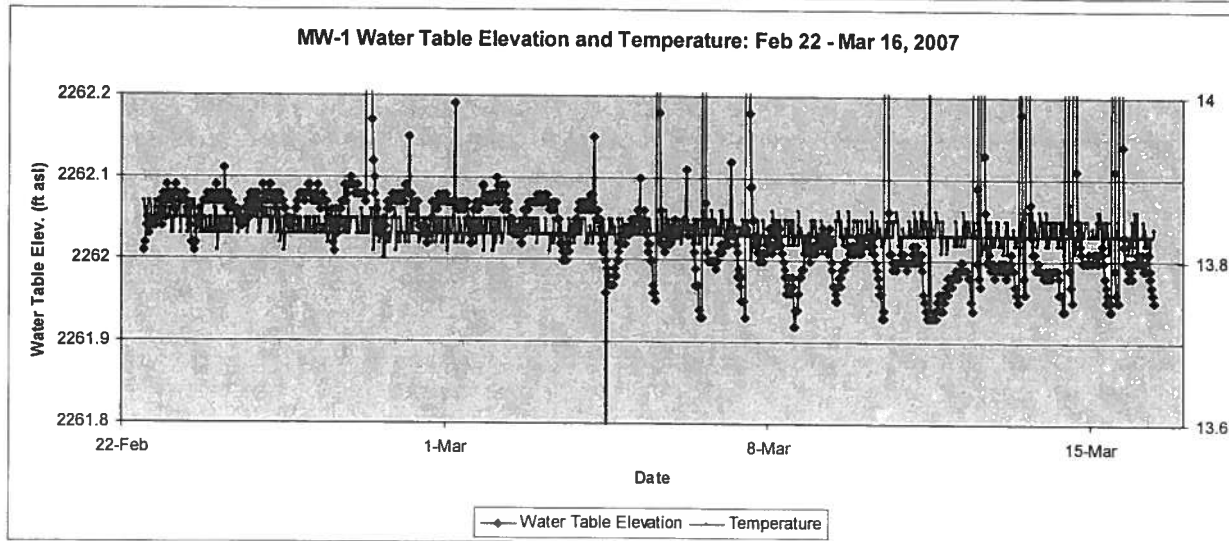
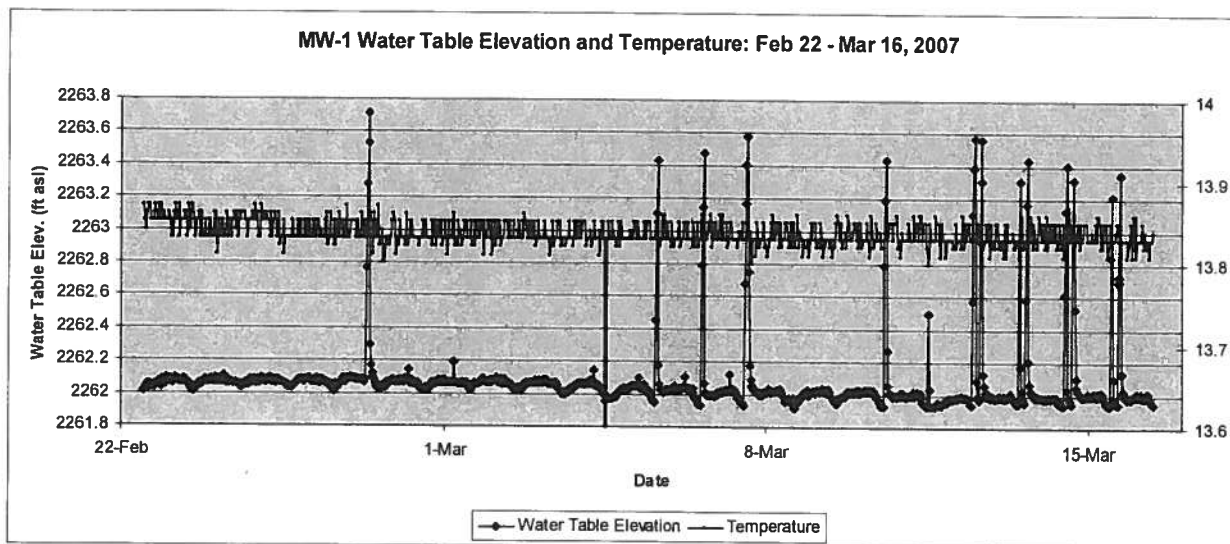
Water Level Measurements

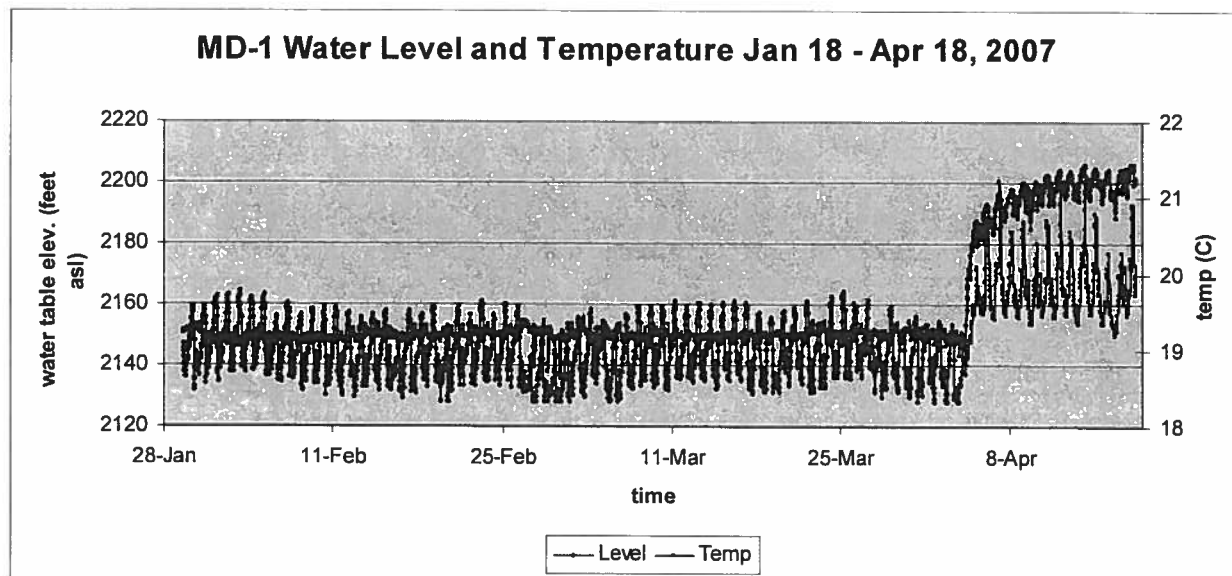
March 2007 depth to water measurements for the shallow aquifer wells are summarized in the table below. The water table rose in response to recharge from irrigation and at all wells except MW-4 and MW-5.

March 2007 Water Level Data				
Well Name:	Measuring point elevation:	Depth to Water:	Water Table Elevation:	Change from Previous month:
Nederend Domestic	2290.13	27.27	2262.86	-0.47
MW-1	2294.59	38.75	2255.84	-0.01
MW-2	2276.31	28.29	2248.02	-0.20
MW-3	2265.33	21.15	2244.18	-0.14
MW-4	2305.73	14.85	2290.88	-0.03
MW-5	2298.90	14.27	2284.63	-0.06
MW-6	2300.41	23.59	2276.82	-0.36
MW-7	2300.23	20.46	2279.77	-0.23
MW-8	~2306	38.88	2267.12	-0.43
MW-9	~2296	NM	NM	NM
ION shallow	~2303	NM		

Water table elevations and temperature at MW-1 and MW-3 are shown on the graphs on the following page. The Leveloggers were moved to MW-1 and MW-3 in January. The water table at MW-1 continues to drop in response to the end of the irrigation season and possibly decreased water levels in the drain. As shown in the upper graph of MW-1, the water level at MW-1 spikes up when well Nederend #2 is shut off. Well Nederend #2 was shut off with increasing frequency through the measurement period, apparently due to the water level in Nederend #2 dropping to the point where the pump begins to break suction. The water temperature at MW-1 is fairly constant. In the second graph of MW-1 water level data the range of the Y-axis is reduced to 0.4 feet. This graph shows that the water level in the shallow aquifer at MW-1 and Nederend #2 is continuing to go down.

The water table at MW-3 also responds to pumping in a manner similar to MW-1. Water levels at MW-3 went down during the measurement period, in response to the end of the irrigation season and decreased water levels in the drain. The water temperature at MW-3 also went down during the sample period. The daily water temperature fluctuations at MW-3 are somewhat larger than the fluctuations occurring at MW-1.





Water levels in Mirada #1 fluctuated over a ~27' range in response to varying water use at Dairy #2 from late January through early April. On April 4th, well MD-2 was apparently brought back on-line, and production at MD-1 decreased and water levels rose. The water temperature at MD-1 was fairly stable while MD-1 was the only well pumping and water levels were drawn down. When production at MD-1 decreased in early April, water temperatures began to fluctuate, apparently in response to varying mixtures of shallow and deeper aquifer water.

Discussion

Nitrate levels at MW-1 were once again the highest measured at the well since monitoring began. Nitrate levels at MW-2 continue to be high. Nitrate levels at MW-8 continue a three-month downward trend. Well Nederend domestic was sampled in March for the first time since November of 2005, when the nitrate concentration was 9.02 mg/L. Nitrate at Nederend Domestic in March 2007 was 8.98 mg/L. The improvement in water quality at well Nederend Domestic and the decreasing nitrate levels at MW-8 suggests that water quality in the shallow aquifer can be improved by altering nutrient management practices. At the ION well nitrate was 8.89 mg/L. Nitrate levels at the ION well have increased slightly since it was last sampled in September 2006 when nitrate was 8.35 mg/L.

Sincerely,

John Monks, P.G.
Hydrogeologist

Cc: Ilene Dobbin (COCOA), Craig Tesch (ISDA)

NAME		Montes Hydro-Geoscience	
ATTENTION		John Montes	
ADDRESS		PO Box 362	
CITY	STATE	ZIP CODE	
San Juan	10	833864	
PHONE #	FAX #		
208-263-1991			
SAMPLER (S)		Montes	
PROJECT OR SITE		Hedden	
P.N. / P.O. NUMBER			

Chain of Custody Form

LAB NUMBER	DATE	TIME	SAMPLE IDENTIFICATION
15228	3/16/07	1115	MW-1
15229	11	1315	MW-2
15230	11	1335	NED DOM
15231	11	1405	ION
15232	11	1448	MW-6
15233	11	1505	MW-8

RELINQUISHED BY (Signature)	DATE	TIME	RECEIVED BY (Signature)
Relinquished By (Signature)	Date/Time	Received for Laboratory By (Signature)	Date/Time
<i>[Signature]</i>	3/16/07 1707	<i>[Signature]</i>	3/16/07 510



Alchem Laboratories, Inc.
104 West 31st Street
Boise, Idaho 83714
Phone (208) 336-1172

MATRIX	TESTS (CIRCLE METHOD)	NUMBER OF CONTAINERS
WATER	TPH - (418.1 / 8015M)	1
SOIL	BTEX (602 / 8020 / 8260)	1
OTHER	(+N+M)	1
	CL. SOLVENTS (601 / 8010)	1
	VOCs (601-602 / 8021)	1
	GC-MS VOCs (624 / 8260)	1
	PAHs (8270)	1
	PHENOLS (604 / 8040 / 8270)	1
	PESTICIDES (608 / 8081 / 8270)	1
	PCBs (608 / 8081)	1
	SEMI-VOLATILES (625 / 8270)	1
	TCLP-(DESIGNATE)	1
	8 RCRA METALS	1
	RBGA - NO LEAD GAS	1
	BTEX+N+M (8020 / 8260)	1
	RBGA - LEADED GAS	1
	EDB (8011) BTEX+N+M, EDC (8021 / 8260)	1
	RBGA - FUEL OILS	1
	BTEX (8020 / 8260), PAH (8270)	1
	RBGA - MOTOR OILS	1
	BTEX (8020 / 8260), PAH (8270)	1
	CL. SOLVENTS (8010)	1
	SEE ATTACHED LIST	1

NAME Monks Hydro-Geology		ZIP CODE 22201	
ATTENTION John V. Vitek		STATE ID	
ADDRESS PO Box 367		FAX #	
CITY Sub Point	PHONE # 208-265-1491		
SAMPLER (S) 1610-16			
PROJECT OR SITE Kleckerwood		P.N. / P.O. NUMBER	

Chain of Custody Form

LAB NUMBER	DATE	TIME	SAMPLE IDENTIFICATION
	7/1/05	1115	WV-1
	"	1315	WV-2
	"	1325	NED DOM
	"	1405	10N
	"	1448	WV-6
	"	1505	WV-8
RELINQUISHED BY (Signature)			DATE
Relinquished By (Signature)			Date/Time
[Signature]			7/1/05 1000
			Received for Lab



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[illegible]



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Boise, Idaho 83714

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FAX (208) 336-7124

Water, Soil and
Waste Water Analysis

LABORATORY REPORT

MONKS HYDRO-GEOSCIENCE
PO BOX 362
SANDPOINT, IDAHO 83864

ATTENTION: JOHN MONKS
SOURCE -: MW-1 / PROJ: NEDEREND

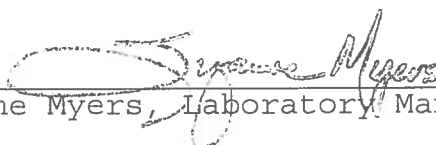
DATE COLLECTED 03/16/2007
TIME COLLECTED 11:15
DATE RECEIVED 03/16/2007
DATE REPORTED 04/04/2007
SUBMITTED : JOHN MONKS

LAB SAMPLE NUMBER - 15228

Results reported unless noted: (Chemistry Analysis as mg/l) (Bacteria as organisms/100 ml)

ANALYSIS	RESULTS	DATE ANALYZED	ANALYST
NITRATE as N	34.0	04/03/2007	TK

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Suzanne Myers, Laboratory Manager





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Boise, Idaho 83714

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FAX (208) 336-7124

Water, Soil and
Waste Water Analysis

LABORATORY REPORT

MONKS HYDRO-GEOSCIENCE
PO BOX 362
SANDPOINT, IDAHO 83864

ATTENTION: JOHN MONKS
SOURCE -: MW-2 / PROJ: NEDEREND

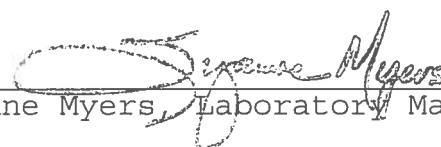
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TIME COLLECTED 13:15
DATE RECEIVED 03/16/2007
DATE REPORTED 04/04/2007
SUBMITTED : JOHN MONKS

LAB SAMPLE NUMBER - 15229

Results reported unless noted: (Chemistry Analysis as mg/l) (Bacteria as organisms/100 ml)

ANALYSIS	RESULTS	DATE ANALYZED	ANALYST
NITRATE as N	45.1	04/03/2007	TK

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Suzanne Myers, Laboratory Manager





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FAX (208) 336-7124

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Waste Water Analysis

LABORATORY REPORT

MONKS HYDRO-GEOSCIENCE
PO BOX 362
SANDPOINT, IDAHO 83864

ATTENTION: JOHN MONKS
SOURCE -: NED DOM / PROJ: NEDEREND

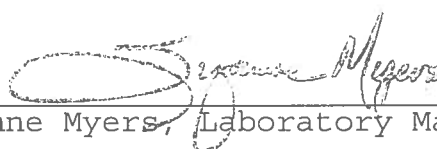
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TIME COLLECTED 13:35
DATE RECEIVED 03/16/2007
DATE REPORTED 04/04/2007
SUBMITTED : JOHN MONKS

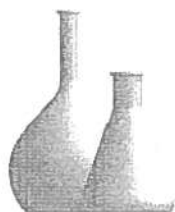
LAB SAMPLE NUMBER - 15230

Results reported unless noted: (Chemistry Analysis as mg/l) (Bacteria as organisms/100 ml)

ANALYSIS	RESULTS	DATE ANALYZED	ANALYST
NITRATE as N	8.98	04/03/2007	TK

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FAX (208) 336-7124

Water, Soil and
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LABORATORY REPORT

MONKS HYDRO-GEOSCIENCE
PO BOX 362
SANDPOINT, IDAHO 83864

ATTENTION: JOHN MONKS
SOURCE -: ION / PROJ: NEDEREND

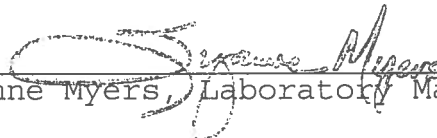
DATE COLLECTED 03/16/2007
TIME COLLECTED 14:05
DATE RECEIVED 03/16/2007
DATE REPORTED 04/04/2007
SUBMITTED : JOHN MONKS

LAB SAMPLE NUMBER - 15231

Results reported unless noted: (Chemistry Analysis as mg/l) (Bacteria as organisms/100 ml)

ANALYSIS	RESULTS	DATE ANALYZED	ANALYST
NITRATE as N	8.89	04/03/2007	TK

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Suzanne Myers, Laboratory Manager





Alchem Laboratories, Inc.

104 West 31st Street
Boise, Idaho 83714

Phone (208) 336-1172
FAX (208) 336-7124

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MONKS HYDRO-GEOSCIENCE
PO BOX 362
SANDPOINT, IDAHO 83864

ATTENTION: JOHN MONKS
SOURCE -: MW-6 / PROJ: NEDEREND

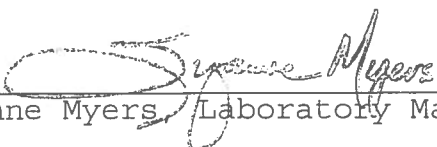
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TIME COLLECTED 14:48
DATE RECEIVED 03/16/2007
DATE REPORTED 04/04/2007
SUBMITTED : JOHN MONKS

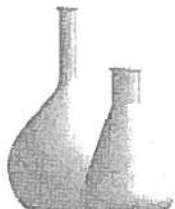
LAB SAMPLE NUMBER - 15232

Results reported unless noted: (Chemistry Analysis as mg/l) (Bacteria as organisms/100 ml)

ANALYSIS	RESULTS	DATE ANALYZED	ANALYST
NITRATE as N	22.1	04/03/2007	TK

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Suzanne Myers Laboratory Manager





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Boise, Idaho 83714

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FAX (208) 336-7124

Water, Soil and
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MONKS HYDRO-GEOSCIENCE
PO BOX 362
SANDPOINT, IDAHO 83864

ATTENTION: JOHN MONKS
SOURCE -: MW-8 / PROJ: NEDEREND

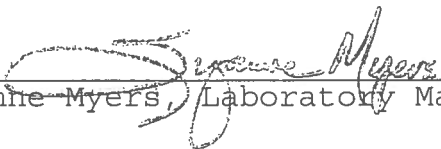
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TIME COLLECTED 15:05
DATE RECEIVED 03/16/2007
DATE REPORTED 04/04/2007
SUBMITTED : JOHN MONKS

LAB SAMPLE NUMBER - 15233

Results reported unless noted: (Chemistry Analysis as mg/l) (Bacteria as organisms/100 ml)

ANALYSIS	RESULTS	DATE ANALYZED	ANALYST
NITRATE as N	49.2	04/03/2007	TK

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Suzanne Myers, Laboratory Manager



4 April, 2007
Hans Nederend
Nederend Dairy
4998 Hogg Road
Homedale, ID 83628



RE: February 2007 water quality report

Dear Hans:

This letter reports water quality data collected at Nederend Dairies #1 and #2 on February 22, 2007. Depth to water was measured in all of the monitoring wells, and all wells except Nederend Domestic were sampled and analyzed for nitrate. Field water quality parameters were measured in all sampled wells and in the Horstman Drain.

Water Quality

Water quality data from February is summarized in Table 1 and field measured water quality parameters are summarized in Table 2.

Field measured water quality parameters at most of the wells are remaining fairly constant from month to month. Water temperatures are going up at most of the wells. Exceptions are MW-4 and MW-7. Water temperatures in the drain are higher than at any of the monitoring wells. The temperature increases in the wells may be due to recharge from the drain.

Table 1. February 2007 Water Chemistry Analytical Results

Well name:	Date:	Chloride (mg/L):	Nitrate (mg/L):	Sulfate (mg/L):	Coliform Bacteria
Nederend Domestic	2/22/07	NS	NS	NS	NS
MW-1	2/22/07	NA	33.8	NA	NA
MW-2	2/22/07	NA	43.4	NA	NA
MW-3	2/22/07	NA	24.9	NA	NA
MW-4	2/22/07	NA	10.4	NA	NA
MW-5	2/22/07	NA	14.0	NA	NA
MW-6	2/22/07	NA	23.1	NA	NA
MW-7	2/22/07	NA	17.3	NA	NA
MW-8	2/22/07	NA	54.7	NA	NA
MW-9	2/22/07	NA	12.1	NA	NA
ION	2/22/07	NS	NS	NS	NS

Table 2. February 2007 Field Measured Water Quality Parameters

Well#	Temp C	SpCond (uS/cm)	DO Conc (mg/L)	pH	TDS (g/L)	ORP (mV)
MW-1	14.17	1506.0	1.23	7.64	978.881	106
MW-2	14.69	1023.9	0.93	7.68	665.511	108
MW-3	14.86	1839.6	0.23	7.62	1195.766	112
MW-4	13.53	1386.5	0.63	7.74	901.201	106
MW-5	13.36	1685.6	0.09	7.61	1095.638	114
MW-6	16.20	1201.6	0.54	7.64	781.052	107
MW-7	14.85	1402.3	0.07	7.50	911.515	117
MW-8	15.70	2213.2	0.09	7.54	1438.557	113
MW-9	13.96	1678.5	0.57	7.58	1091.038	116
ION	NS	NS	NS	NS	NS	NS

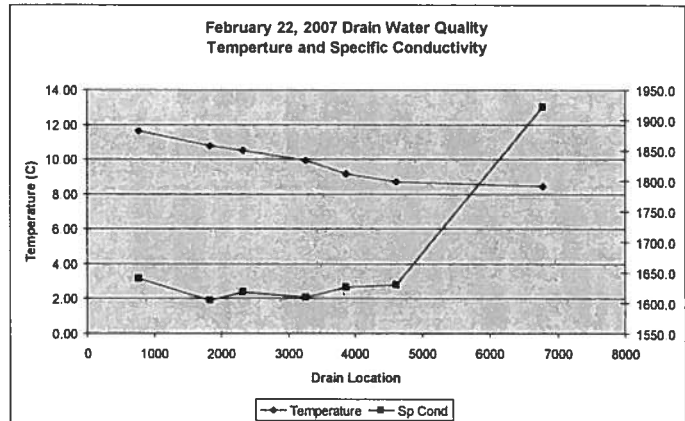
Horstman Drain Water Quality - February 22, 2007

Sample Site	Drain Loc	Date/time	Temp C	SpCond mS/cm	DO Conc mg/L	pH	TDS g/L	ORP mV	DO% %	Cond mS/cm
Hwy 55	777	2/22/2007	11.63	1639.9	3.19	8.52	1065.943	112	29.5	1221.1
MW-5	1833	2/22/2007	10.79	1603.7	3.21	8.51	1042.409	99	29.1	1168.3
Buntrock	2329	2/22/2007	10.52	1617.4	3.27	8.46	1051.292	97	29.5	1170.2
Thompson	3268	2/22/2007	9.92	1608.4	2.89	8.42	1045.471	121	25.7	1145.1
Dobbin	3870	2/22/2007	9.15	1625.3	2.67	8.32	1056.434	127	23.3	1133.3
MW-2	4624	2/22/2007	8.71	1629.9	2.32	8.29	1059.437	144	20.0	1122.7
Hogg Road	6784	2/22/2007	8.44	1921.9	2.29	8.03	1249.262	123	19.7	1314.2

Drain water quality data is plotted in the graph to the right. Water temperature decreases with distance along the drain. Specific conductivity both rises between the irrigation structure near MW-2 and Hogg Road.

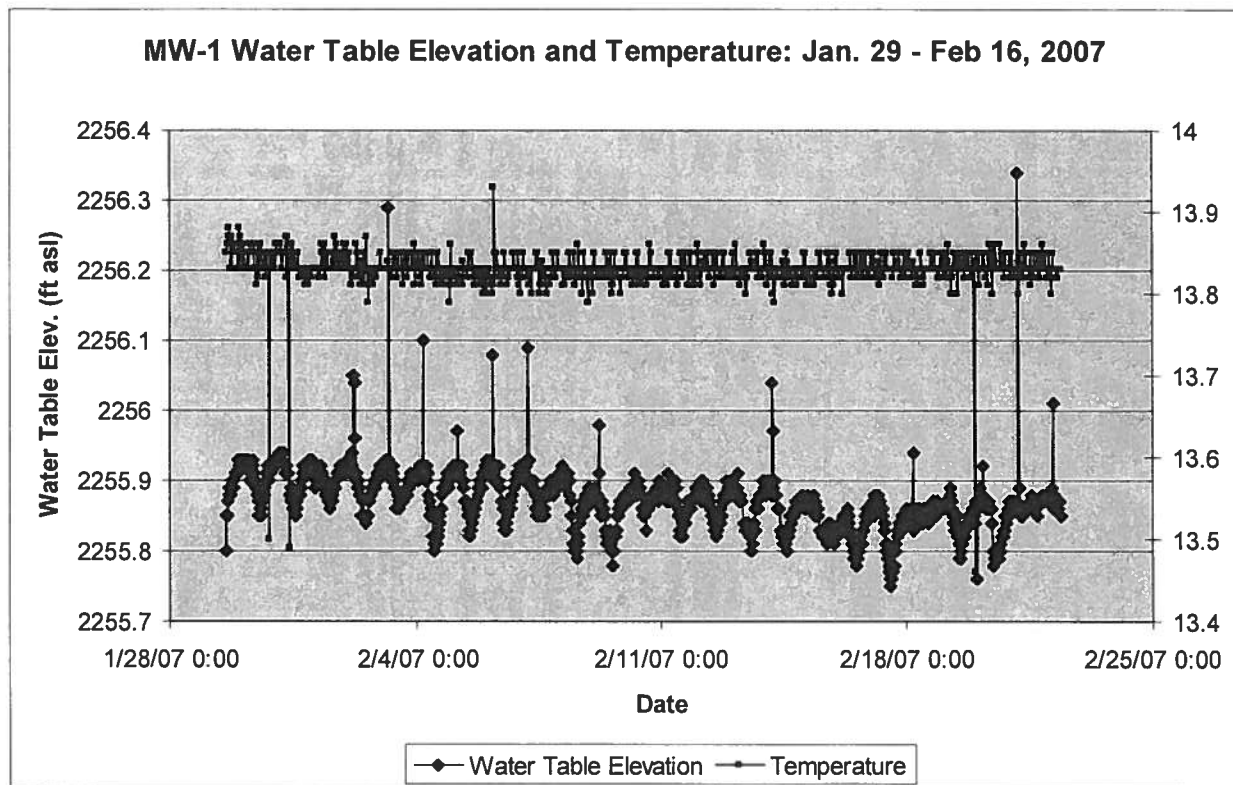
Water Level Measurements

February 2007 depth to water measurements for the shallow aquifer wells are summarized in the table below. The water table continues the seasonal decline that begins when recharge from irrigation ends.

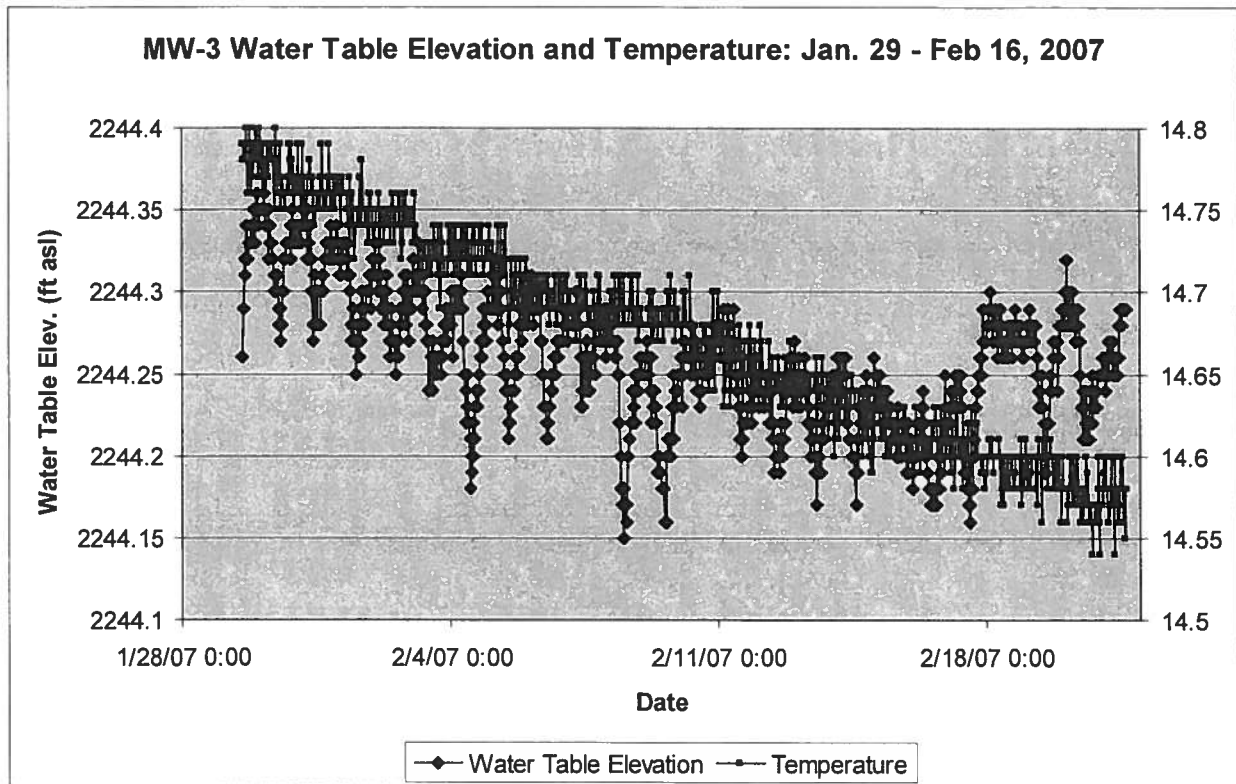


February 2007 Water Level Data

Well Name:	Measuring point elevation:	Depth to Water:	Water Table Elevation:	Change from Previous month:
Nederend Domestic	2290.13	26.8	2263.33	-0.39
MW-1	2294.59	38.74	2255.85	-0.03
MW-2	2276.31	28.09	2248.22	-0.21
MW-3	2265.33	21.01	2244.32	0.00
MW-4	2305.73	14.82	2290.91	-0.03
MW-5	2298.90	14.21	2284.69	-0.06
MW-6	2300.41	23.23	2277.18	-0.39
MW-7	2300.23	20.23	2280	-0.24
MW-8	~2306	38.45	2267.55	-0.49
MW-9	~2296	13.48	2282.52	-0.1
ION shallow	~2303	NM		



Water table elevations and temperature at MW-1 and MW-3 are shown on the graphs above and on the following page. The Leveloggers were moved to MW-1 and MW-3 in January. The water table at MW-1 fluctuates ~0.1 feet on a daily basis in response to varying pumping rates at Naderend #2. The water table at MW-1 appears to be going down. Water temperature at MW-1 is fairly stable at ~13.83° C. The water table at MW-1 spikes upward occasionally. These spikes are probably caused by well Naderend #2 being shut off for short periods of time after water levels in Naderend #2 go down far enough that the pump begins to suck air.



The water table at MW-3 also fluctuates ~0.1 feet on a daily basis. The water level at MW-3 is going down, possibly in response to the end of the irrigation season. The water temperature at MW-3 is also going down.

The Levellogger in Mirada #1 was not retrieved to download data during the February sampling event.

Discussion

Nitrate levels were down in all of the wells except MW-1 in February 2007. Nitrate levels at MW-1 for the second month in a row were the highest measured at the well. Nitrate levels at MW-2 and MW-8 continue to be very high.

Sincerely,

John Monks, P.G.
Hydrogeologist

Cc: Ilene Dobbin (COCOA), Craig Tesch (ISDA)

NAME <u>Monks Hydro-GeoScience</u>	
ATTENTION <u>John Monks</u>	
ADDRESS <u>PO Box 362</u>	
CITY <u>Sandpoint</u>	STATE <u>ID</u> ZIP CODE <u>83860</u>
PHONE # <u>208-263-1929</u>	FAX #
SAMPLER (S) <u>John Monks</u>	
PROJECT OR SITE <u>Kleever</u>	
P.N. / P.O. NUMBER	

Chain of Custody Form

LAB NUMBER	DATE	TIME	SAMPLE IDENTIFICATION
14657	2/26/07	1105	MW-3
14658	11	1145	MW-1
14659	11	1228	MW-2
14660	11	1303	MW-4
14661	11	1324	MW-5
14662	11	1339	MW-9
14663	11	1408	MW-7
14664	11	1415	MW-6
14665	11	1435	MW-8

MATRIX	TESTS (CIRCLE METHOD)	NUMBER OF CONTAINERS
WATER	TPH - (418.1 / 8015M)	1
	BTEX (602 / 8020 / 8260) (+N+M)	
	CL. SOLVENTS (601 / 8010)	
	VOCs (601-602 / 8021)	
	GC-MS VOCs (624 / 8260)	
	PAHs (8270)	
	PHENOLS (604 / 8040 / 8270)	
	PESTICIDES (608 / 8081 / 8270)	
	PCBs (608 / 8081)	
	SEMI-VOLATILES (625 / 8270)	
	TCLP-(DESIGNATE)	
	8 RCRA METALS	
	RBGA - NO LEAD GAS	
	BTEX+N+M (8020 / 8260)	
	RBGA - LEADED GAS	
	EDB (8011) BTEX+N+M,	
	EDC (8021 / 8260)	
	RBGA - FUEL OILS	
	BTEX (8020 / 8260), PAH (8270)	
	RBGA - MOTOR OILS	
	BTEX (8020 / 8260), PAH (8270)	
	CL. SOLVENTS (8010)	
	SEE ATTACHED LIST	

RELINQUISHED BY (Signature)		DATE	TIME	RECEIVED BY (Signature)
Relinquished By (Signature)	Date/Time	Received for Laboratory By (Signature)	Date/Time	Received With Seal Intact? ☐ Yes ☐ No Label Tag, COC Agree? ☐ Yes ☐ No
<u>[Signature]</u>	<u>2/26/07 1650</u>	<u>[Signature]</u>	<u>2-22-07 450</u>	



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Phone (208) 336-1172



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Boise, Idaho 83714

Phone (208) 336-1172
FAX (208) 336-7124

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Waste Water Analysis

LABORATORY REPORT

MONKS HYDRO-GEOSCIENCE
PO BOX 362
SANDPOINT, IDAHO 83864

ATTENTION: JOHN MONKS
SOURCE -: MW-1 / PROJ: NEDEREND

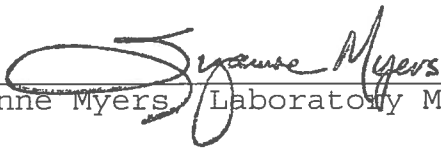
DATE COLLECTED 02/22/2007
TIME COLLECTED 11:45
DATE RECEIVED 02/22/2007
DATE REPORTED 03/21/2007
SUBMITTED :

LAB SAMPLE NUMBER - 14658

Results reported unless noted: (Chemistry Analysis as mg/l) (Bacteria as organisms/100 ml)

ANALYSIS	RESULTS	DATE ANALYZED	ANALYST
NITRATE as N	33.8	03/16/2007	TK

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Suzanne Myers Laboratory Manager





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ATTENTION: JOHN MONKS
SOURCE -: MW-2 / PROJ: NEDEREND

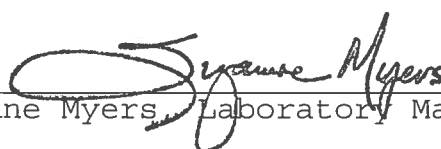
DATE COLLECTED 02/22/2007
TIME COLLECTED 12:28
DATE RECEIVED 02/22/2007
DATE REPORTED 03/21/2007
SUBMITTED :

LAB SAMPLE NUMBER - 14659

Results reported unless noted: (Chemistry Analysis as mg/l) (Bacteria as organisms/100 ml)

ANALYSIS	RESULTS	DATE ANALYZED	ANALYST
NITRATE as N	43.4	03/16/2007	TK

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Suzanne Myers, Laboratory Manager





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SANDPOINT, IDAHO 83864

ATTENTION: JOHN MONKS
SOURCE -: MW-3 / PROJ: NEDEREND

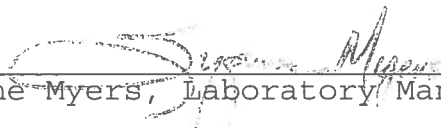
DATE COLLECTED 02/22/2007
TIME COLLECTED 11:05
DATE RECEIVED 02/22/2007
DATE REPORTED 03/05/2007
SUBMITTED :

LAB SAMPLE NUMBER - 14657

Results reported unless noted: (Chemistry Analysis as mg/l) (Bacteria as organisms/100 ml)

ANALYSIS	RESULTS	DATE ANALYZED	ANALYST
NITRATE as N	24.9	03/01/2007	TK

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FAX (208) 336-7124

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SANDPOINT, IDAHO 83864

ATTENTION: JOHN MONKS
SOURCE -: MW-4 / PROJ: NEDEREND

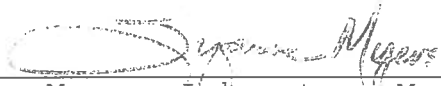
DATE COLLECTED 02/22/2007
TIME COLLECTED 13:03
DATE RECEIVED 02/22/2007
DATE REPORTED 03/05/2007
SUBMITTED :

LAB SAMPLE NUMBER - 14660

Results reported unless noted: (Chemistry Analysis as mg/l) (Bacteria as organisms/100 ml)

ANALYSIS	RESULTS	DATE ANALYZED	ANALYST
NITRATE as N	10.4	03/01/2007	TK

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FAX (208) 336-7124

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PO BOX 362
SANDPOINT, IDAHO 83864

ATTENTION: JOHN MONKS
SOURCE -: MW-5 / PROJ: NEDEREND

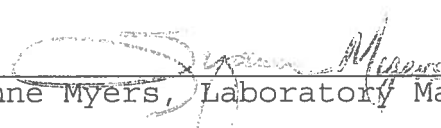
DATE COLLECTED 02/22/2007
TIME COLLECTED 13:24
DATE RECEIVED 02/22/2007
DATE REPORTED 03/05/2007
SUBMITTED :

LAB SAMPLE NUMBER - 14661

Results reported unless noted: (Chemistry Analysis as mg/l) (Bacteria as organisms/100 ml)

ANALYSIS	RESULTS	DATE ANALYZED	ANALYST
NITRATE as N	14.0	03/01/2007	TK

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Boise, Idaho 83714

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FAX (208) 336-7124

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PO BOX 362
SANDPOINT, IDAHO 83864

ATTENTION: JOHN MONKS
SOURCE -: MW-6 / PROJ: NEDEREND

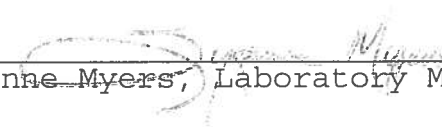
DATE COLLECTED 02/22/2007
TIME COLLECTED 14:15
DATE RECEIVED 02/22/2007
DATE REPORTED 03/05/2007
SUBMITTED :

LAB SAMPLE NUMBER - 14664

Results reported unless noted: (Chemistry Analysis as mg/l) (Bacteria as organisms/100 ml)

ANALYSIS	RESULTS	DATE ANALYZED	ANALYST
NITRATE as N	23.1	03/01/2007	TK

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Suzanne Myers, Laboratory Manager





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FAX (208) 336-7124

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PO BOX 362
SANDPOINT, IDAHO 83864

ATTENTION: JOHN MONKS
SOURCE -: MW-7 / PROJ: NEDEREND

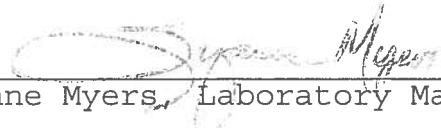
DATE COLLECTED 02/22/2007
TIME COLLECTED 14:00
DATE RECEIVED 02/22/2007
DATE REPORTED 03/05/2007
SUBMITTED :

LAB SAMPLE NUMBER - 14663

Results reported unless noted: (Chemistry Analysis as mg/l) (Bacteria as organisms/100 ml)

ANALYSIS	RESULTS	DATE ANALYZED	ANALYST
NITRATE as N	17.3	03/01/2007	TK

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FAX (208) 336-7124

Water, Soil and
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LABORATORY REPORT

MONKS HYDRO-GEOSCIENCE
PO BOX 362
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ATTENTION: JOHN MONKS
SOURCE -: MW-8 / PROJ: NEDEREND

DATE COLLECTED 02/22/2007
TIME COLLECTED 14:35
DATE RECEIVED 02/22/2007
DATE REPORTED 03/21/2007
SUBMITTED :

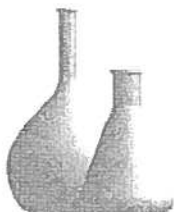
LAB SAMPLE NUMBER - 14665

Results reported unless noted: (Chemistry Analysis as mg/l) (Bacteria as organisms/100 ml)

ANALYSIS	RESULTS	DATE ANALYZED	ANALYST
NITRATE as N	54.7	03/16/2007	TK

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Suzanne Myers, Laboratory Manager





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FAX (208) 336-7124

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LABORATORY REPORT

MONKS HYDRO-GEOSCIENCE
PO BOX 362
SANDPOINT, IDAHO 83864

ATTENTION: JOHN MONKS
SOURCE -: MW-9 / PROJ: NEDEREND

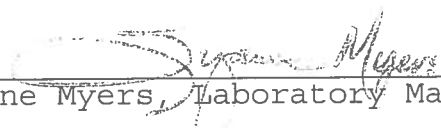
DATE COLLECTED 02/22/2007
TIME COLLECTED 13:39
DATE RECEIVED 02/22/2007
DATE REPORTED 03/05/2007
SUBMITTED :

LAB SAMPLE NUMBER - 14662

Results reported unless noted: (Chemistry Analysis as mg/l) (Bacteria as organisms/100 ml)

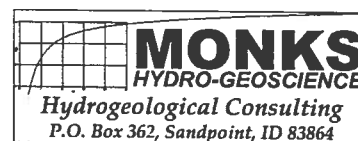
ANALYSIS	RESULTS	DATE ANALYZED	ANALYST
NITRATE as N	12.1	03/01/2007	TK

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Suzanne Myers, Laboratory Manager



20 March, 2007
Hans Nederend
Nederend Dairy
4998 Hogg Road
Homedale, ID 83628



RE: January 2007 water quality report

Dear Hans:

This letter reports water quality data collected at Nederend Dairies #1 and #2 on January 29, 2007. Depth to water was measured in all of the monitoring wells, and all wells except Nederend Domestic were sampled and analyzed for nitrate. Field water quality parameters were measured in all wells sampled and in the Horstman Drain.

Water Quality

Water quality data from January is summarized in Table 1 and field measured water quality parameters are summarized in Table 2.

Field measured water quality parameters at most of the wells are remaining fairly constant from month to month. Water temperatures are going up at most of the wells. Exceptions are MW-4 and MW-7. Water temperatures in the drain are higher than at any of the monitoring wells. The temperature increases in the wells may be due to recharge from the drain.

Table 1. January 2007 Water Chemistry Analytical Results

Well name:	Date:	Chloride (mg/L):	Nitrate (mg/L):	Sulfate (mg/L):	Coliform Bacteria
Nederend Domestic	1/29/07	NS	NS	NS	NS
MW-1	1/29/07	NA	33.3	NA	NA
MW-2	1/29/07	NA	43.7	NA	NA
MW-3	1/29/07	NA	26	NA	NA
MW-4	1/29/07	NA	11.2	NA	NA
MW-5	1/29/07	NA	15.6	NA	NA
MW-6	1/29/07	NA	24.5	NA	NA
MW-7	1/29/07	NA	19.4	NA	NA
MW-8	1/29/07	NA	63.6	NA	NA
MW-9	1/29/07	NA	14.5	NA	NA
ION	1/29/07	NS	NS	NS	NS

Table 2. January 2007 Field Measured Water Quality Parameters

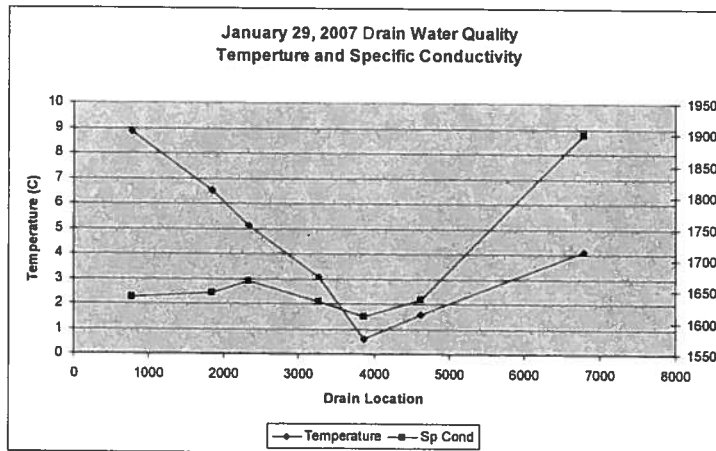
Well#	Temp C	SpCond (uS/cm)	DO Conc (mg/L)	pH	TDS (g/L)	ORP (mV)
MW-1	14.06	1493.1	1.31	7.60	970.504	67
MW-2	14.58	1885.9	0.95	7.64	1225.819	86
MW-3	15.45	19.7	1.35	7.69	12.837	83
MW-4	13.55	1394.2	0.61	7.65	906.214	98
MW-5	13.53	1689.2	0.10	7.54	1097.998	107
MW-6	16.09	1242.9	0.57	7.60	807.896	104
MW-7	15.02	1558.0	0.03	7.42	1012.729	114
MW-8	15.74	2241.2	0.04	7.44	1456.795	109
MW-9	14.44	1691.8	0.36	7.50	1099.701	108
ION	NS	NS	NS	NS	NS	NS

Sample Site	Drain Loc	Date/time	Temp C	SpCond mS/cm	DO Conc mg/L	pH	TDS g/L
Hwy 55	777	1/29/2007	8.85	1640.0	3.07	8.35	1066.025
MW-5	1833	1/29/2007	6.53	1647.0	2.60	8.35	1070.566
Buntrock	2329	1/29/2007	5.09	1665.3	2.30	8.04	1082.477
Thompson	3268	1/29/2007	3.06	1633.9	2.45	8.30	1062.032
Dobbin	3870	1/29/2007	0.60	1609.2	2.27	8.30	1046.004
MW-2	4624	1/29/2007	1.58	1637.4	2.38	8.32	1064.319
Hogg Road	6784	1/29/2007	4.10	1901.1	2.23	8.15	1235.708

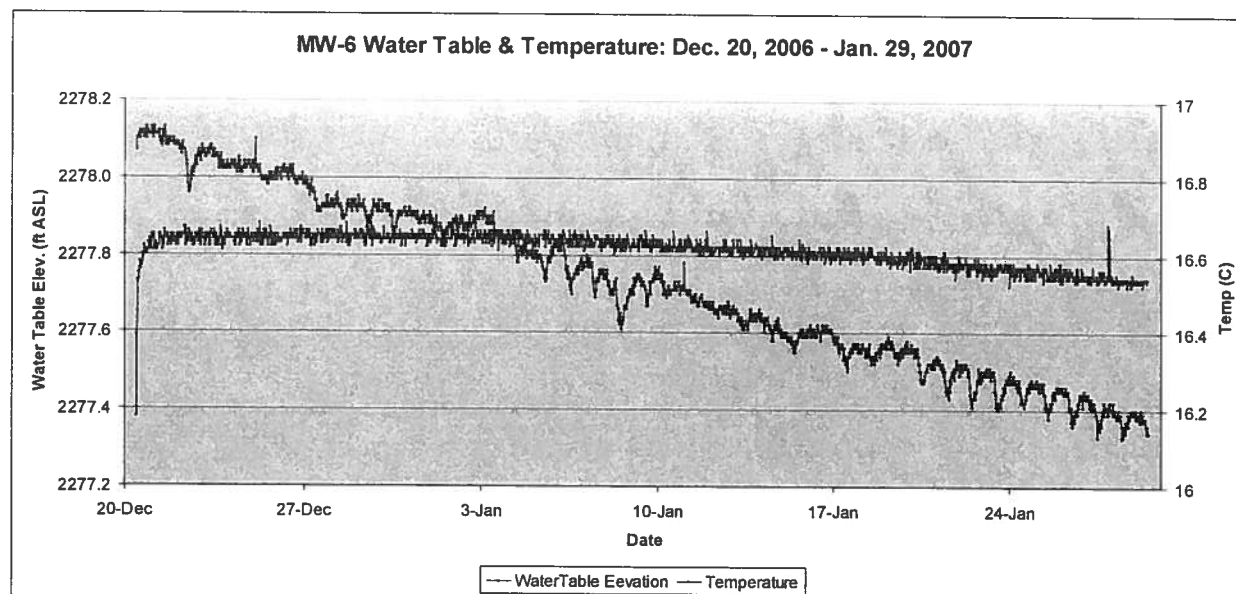
Drain water quality data is plotted in the graph to the right. Water temperature decreases with distance along the drain until reaching the portion of the drain downstream of MW-2. Water temperature and specific conductivity both rise between the irrigation structure near MW-2 and Hogg Road.

Water Level Measurements

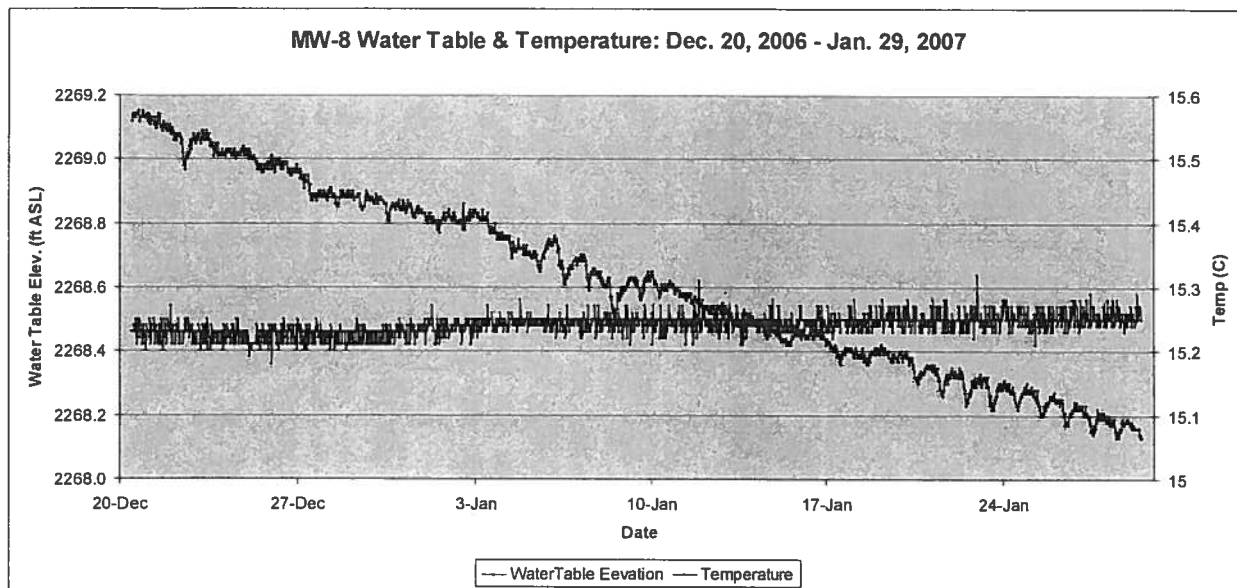
January 2007 depth to water measurements for the shallow aquifer wells are summarized in the table below. The water table rose in response to recharge from irrigation and at all wells except MW-4 and MW-5.



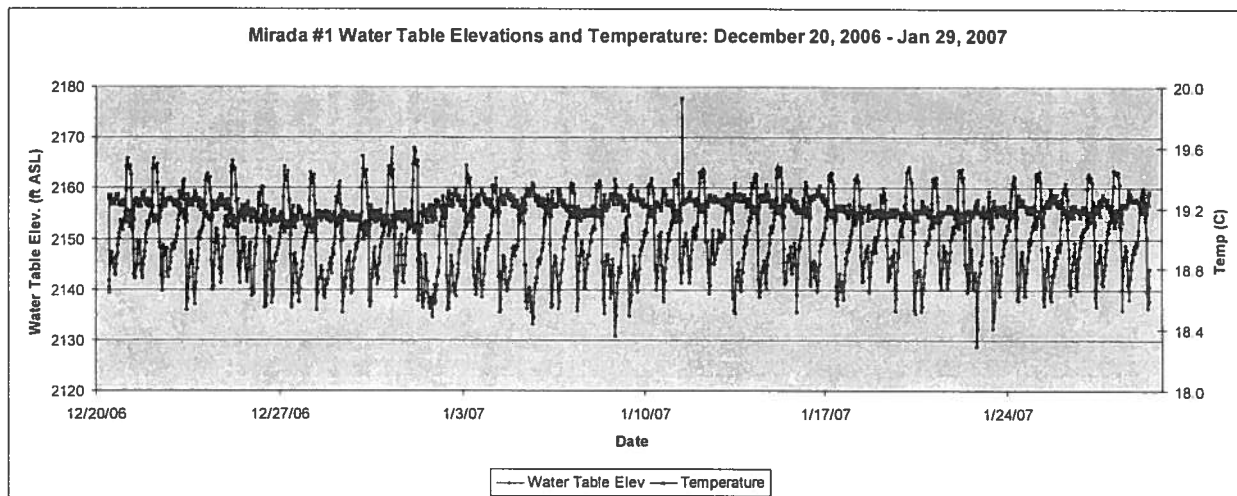
Well Name:	Measuring point elevation:	Depth to Water:	Water Table Elevation:	Change from Previous month:
Nederend Domestic	2290.13	26.41	2263.72	-0.91
MW-1	2294.59	38.71	2255.88	-0.11
MW-2	2276.31	27.88	2248.43	-0.31
MW-3	2265.33	21.01	2244.32	-0.15
MW-4	2305.73	14.79	2290.94	-0.13
MW-5	2298.90	14.15	2284.75	-0.14
MW-6	2300.41	22.84	2277.57	-0.63
MW-7	2300.23	19.99	2280.24	-0.43
MW-8	~2306	37.96	2268.04	-0.91
MW-9	~2296	13.38	2282.62	-0.42
ION shallow	~2303	NM		



Water table elevations and temperature at MW-6 and MW-8 are shown on the graphs above and on the following page. The water table at MW-6 continues to drop in response to the end of the irrigation season and decreased water levels in the drain. The water temperature at MW-6 peaked around January 1st and then began to decline.



The water table at MW-8 responded in a manner similar to at MW-6, with water levels continuing to decline in response to the end of the irrigation season and decreased water levels in the drain. The water temperature at MW-8 continued to rise very slowly.



Water levels in Mirada #1 fluctuated over a ~35' range in response to varying water use at Dairy #2.

Discussion

The January 2007 water quality data shows that water quality at some wells is deteriorating. January 2007 nitrate levels at MW-1, MW-3 and MW-7 are the highest measured at these wells. Nitrate levels at MW-2 are continuing to increase to levels higher than measured in 2006. Nitrate levels at MW-8 continue to be very high. Nitrate levels at MW-4, upgradient of Dairy #2, also continue to increase.

Sincerely,

John Monks, P.G.
Hydrogeologist

Cc: Ilene Dobbin (COCOA), Craig Tesch (ISDA)

NAME Monks Hydro-Geoscience		ATTENTION John Monks		ADDRESS PO Box 362		CITY Summit		STATE ID		ZIP CODE 83864	
PHONE # 208-263-1861		FAX #		SAMPLER (S) Monks							
PROJECT OR SITE Hedderwood Dairy								P.N. / P.O. NUMBER			

Chain of Custody Form

[illegible]

RELINQUISHED BY (Signature)	Date/Time	Received for Laboratory By (Signature)	Date/Time	RECEIVED BY (Signature)	Received With Seal Intact? Label Tag, COC Agree?	Yes ☐ No ☐	Yes ☐ No ☐
	1/29/07 1610		1/29/07 16:10			☐ Yes ☐ No	☒ Yes ☐ No



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Boise, Idaho 83714

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LABORATORY REPORT

MONKS HYDRO-GEOSCIENCE
PO BOX 362
SANDPOINT, IDAHO 83864

ATTENTION: JOHN MONKS
SOURCE -: MW-1 / PROJ: NEDEREND DAIRY

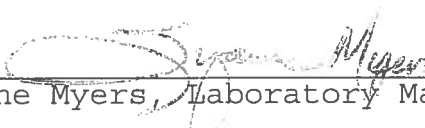
DATE COLLECTED 01/29/2007
TIME COLLECTED 11:07
DATE RECEIVED 01/30/2007
DATE REPORTED 02/16/2007
SUBMITTED : JOHN

LAB SAMPLE NUMBER - 14010

Results reported unless noted: (Chemistry Analysis as mg/l) (Bacteria as organisms/100 ml)

ANALYSIS	RESULTS	DATE ANALYZED	ANALYST
NITRATE as N	33.3	02/15/2007	TK

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Suzanne Myers, Laboratory Manager





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MONKS HYDRO-GEOSCIENCE
PO BOX 362
SANDPOINT, IDAHO 83864

ATTENTION: JOHN MONKS
SOURCE -: MW-2 / PROJ: NEDEREND DAIRY

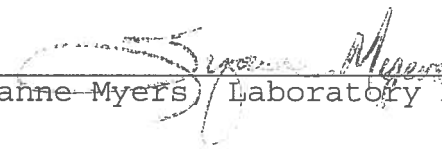
DATE COLLECTED 01/29/2007
TIME COLLECTED 11:25
DATE RECEIVED 01/30/2007
DATE REPORTED 02/16/2007
SUBMITTED : JOHN

LAB SAMPLE NUMBER - 14011

Results reported unless noted: (Chemistry Analysis as mg/l) (Bacteria as organisms/100 ml)

ANALYSIS	RESULTS	DATE ANALYZED	ANALYST
NITRATE as N	43.7	02/15/2007	TK

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Suzanne Myers / Laboratory Manager





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FAX (208) 336-7124

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LABORATORY REPORT

MONKS HYDRO-GEOSCIENCE
PO BOX 362
SANDPOINT, IDAHO 83864

ATTENTION: JOHN MONKS
SOURCE -: MW-3 / PROJ: NEDEREND DAIRY

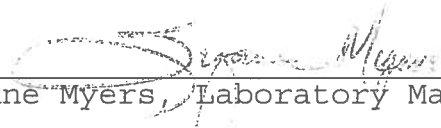
DATE COLLECTED 01/29/2007
TIME COLLECTED 11:45
DATE RECEIVED 01/30/2007
DATE REPORTED 02/12/2007
SUBMITTED : JOHN

LAB SAMPLE NUMBER - 14012

Results reported unless noted: (Chemistry Analysis as mg/l) (Bacteria as organisms/100 ml)

ANALYSIS	RESULTS	DATE ANALYZED	ANALYST
NITRATE as N	26.0	02/07/2007	TK

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Suzanne Myers, Laboratory Manager





Alchem Laboratories, Inc.

104 West 31st Street
Boise, Idaho 83714

Phone (208) 336-1172
FAX (208) 336-7124

Water, Waste Water
and Soil Analysis

LABORATORY REPORT

MONKS HYDRO-GEOSCIENCE
PO BOX 362
SANDPOINT, IDAHO 83864

ATTENTION: JOHN MONKS
SOURCE -: MW-4 / PROJ: NEDEREND DAIRY

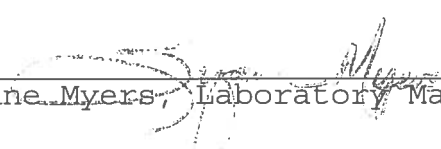
DATE COLLECTED 01/29/2007
TIME COLLECTED 12:05
DATE RECEIVED 01/30/2007
DATE REPORTED 02/12/2007
SUBMITTED : JOHN

LAB SAMPLE NUMBER - 14013

Results reported unless noted: (Chemistry Analysis as mg/l) (Bacteria as organisms/100 ml)

ANALYSIS	RESULTS	DATE ANALYZED	ANALYST
NITRATE as N	11.2	02/07/2007	TK

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MONKS HYDRO-GEOSCIENCE
PO BOX 362
SANDPOINT, IDAHO 83864

DATE COLLECTED 01/29/2007
TIME COLLECTED 12:33
DATE RECEIVED 01/30/2007
DATE REPORTED 02/12/2007
SUBMITTED : JOHN

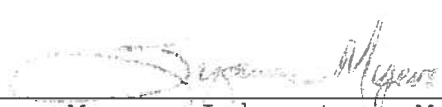
ATTENTION: JOHN MONKS
SOURCE -: MW-5 / PROJ: NEDEREND DAIRY

LAB SAMPLE NUMBER - 14014

Results reported unless noted: (Chemistry Analysis as mg/l) (Bacteria as organisms/100 ml)

ANALYSIS	RESULTS	DATE ANALYZED	ANALYST
NITRATE as N	15.6	02/07/2007	TK

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MONKS HYDRO-GEOSCIENCE
PO BOX 362
SANDPOINT, IDAHO 83864

ATTENTION: JOHN MONKS
SOURCE -: MW-6 / PROJ: NEDEREND DAIRY

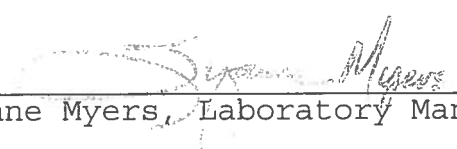
DATE COLLECTED 01/29/2007
TIME COLLECTED 13:10
DATE RECEIVED 01/30/2007
DATE REPORTED 02/12/2007
SUBMITTED : JOHN

LAB SAMPLE NUMBER - 14015

Results reported unless noted: (Chemistry Analysis as mg/l) (Bacteria as organisms/100 ml)

ANALYSIS	RESULTS	DATE ANALYZED	ANALYST
NITRATE as N	24.5	02/07/2007	TK

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Alchem Laboratories, Inc.

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Boise, Idaho 83714

Phone (208) 336-1172
FAX (208) 336-7124

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MONKS HYDRO-GEOSCIENCE
PO BOX 362
SANDPOINT, IDAHO 83864

ATTENTION: JOHN MONKS
SOURCE -: MW-7 / PROJ: NEDEREND DAIRY

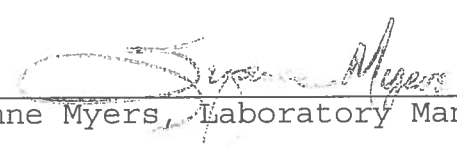
DATE COLLECTED 01/29/2007
TIME COLLECTED 12:55
DATE RECEIVED 01/30/2007
DATE REPORTED 02/12/2007
SUBMITTED : JOHN

LAB SAMPLE NUMBER - 14016

Results reported unless noted: (Chemistry Analysis as mg/l) (Bacteria as organisms/100 ml)

ANALYSIS	RESULTS	DATE ANALYZED	ANALYST
NITRATE as N	19.4	02/07/2007	TK

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Alchem Laboratories, Inc.

104 West 31st Street
Boise, Idaho 83714

Phone (208) 336-1172
FAX (208) 336-7124

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and Soil Analysis*

LABORATORY REPORT

MONKS HYDRO-GEOSCIENCE
PO BOX 362
SANDPOINT, IDAHO 83864

ATTENTION: JOHN MONKS
SOURCE -: MW-8 / PROJ: NEDEREND DAIRY

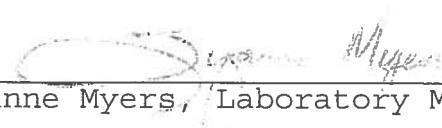
DATE COLLECTED 01/29/2007
TIME COLLECTED 13:32
DATE RECEIVED 01/30/2007
DATE REPORTED 02/21/2007
SUBMITTED : JOHN

LAB SAMPLE NUMBER - 14017

Results reported unless noted: (Chemistry Analysis as mg/l) (Bacteria as organisms/100 ml)

ANALYSIS	RESULTS	DATE ANALYZED	ANALYST
NITRATE as N	63.6	02/16/2007	TK

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Suzanne Myers, Laboratory Manager



