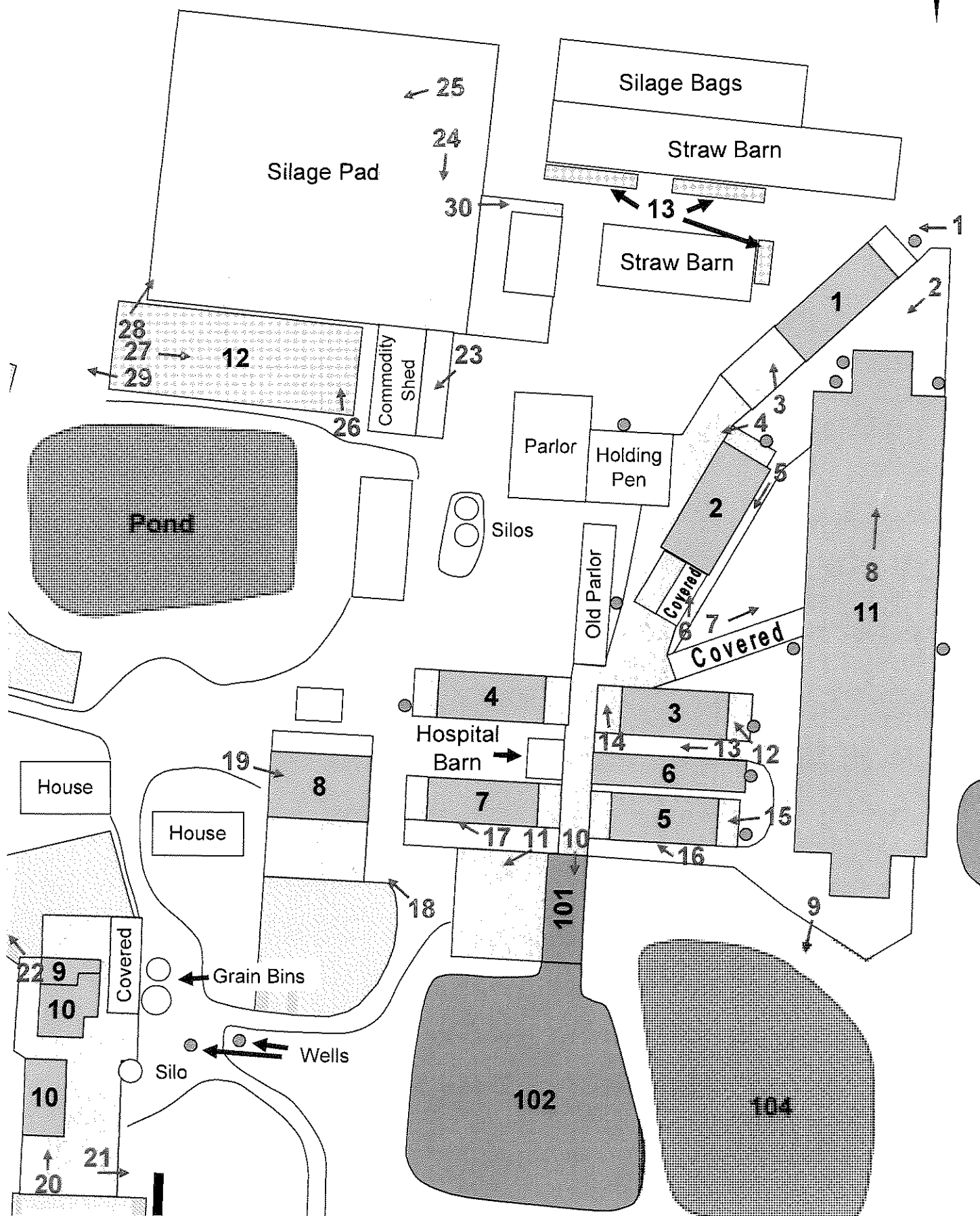
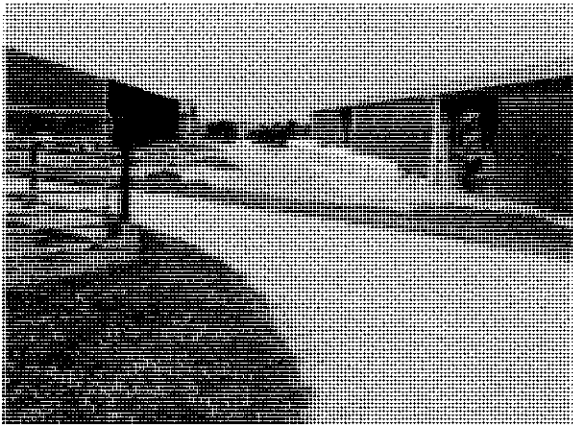


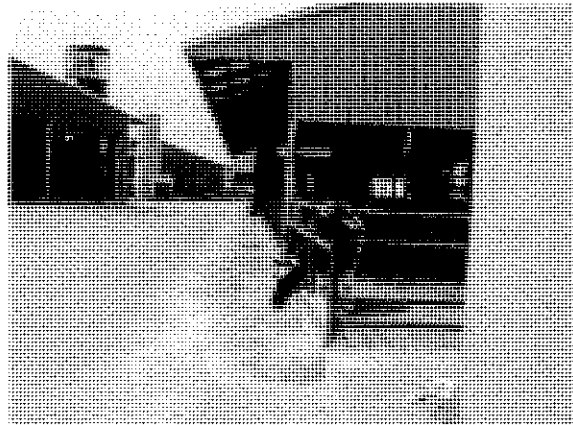
Varel Dairy, Inc. - Picture Index



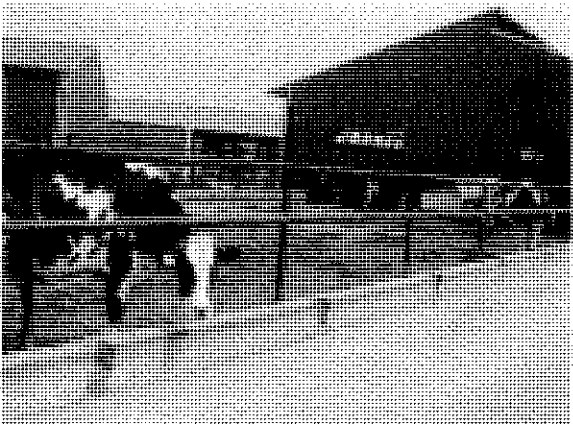
Varel Dairy, Inc. - Facility Pictures



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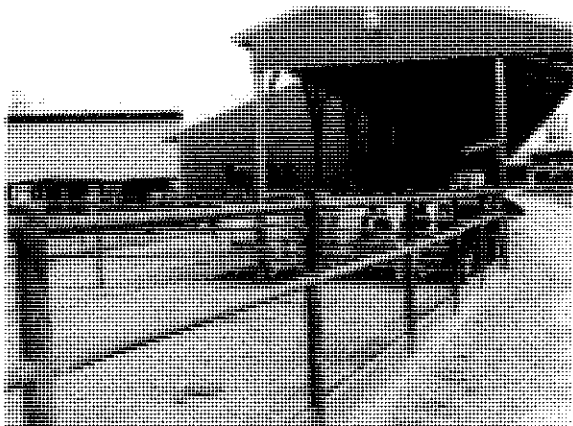
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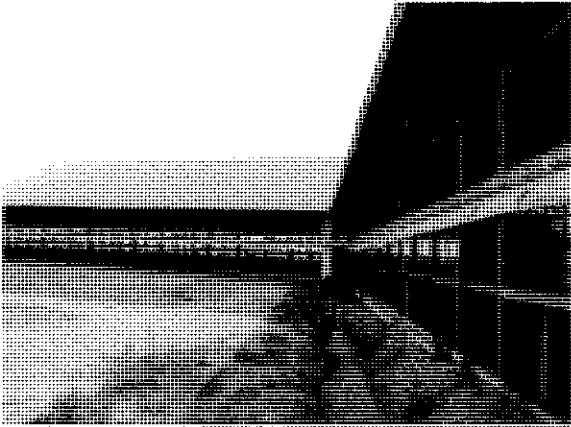


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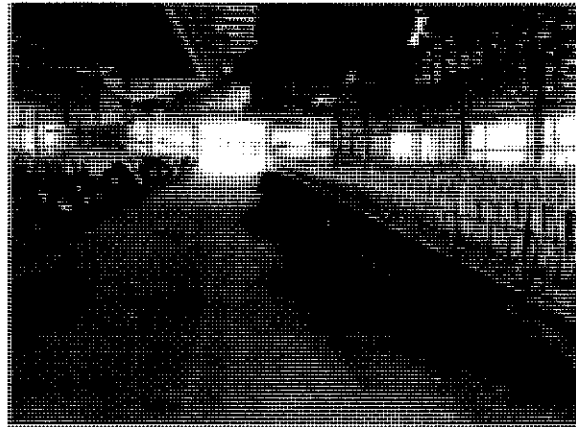


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Varel Dairy, Inc. - Facility Pictures



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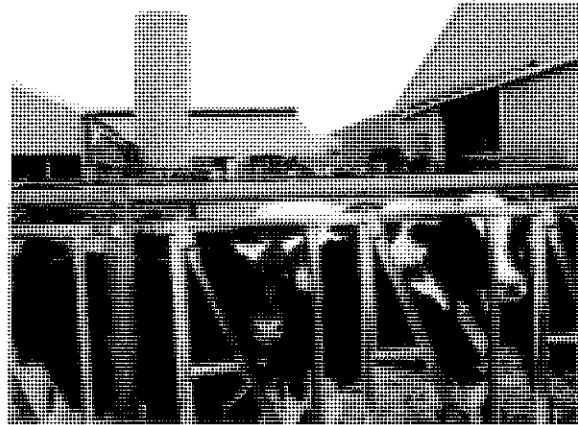


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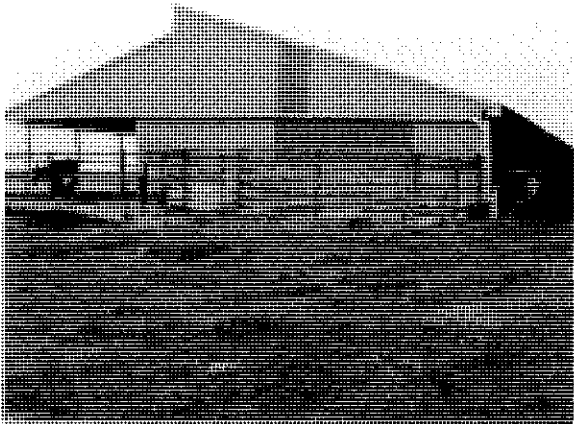
Varel Dairy, Inc. - Facility Pictures



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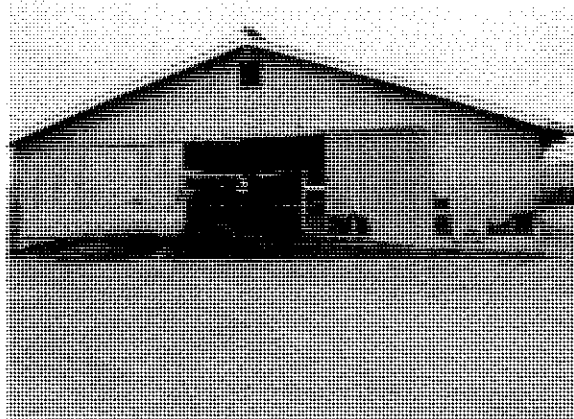


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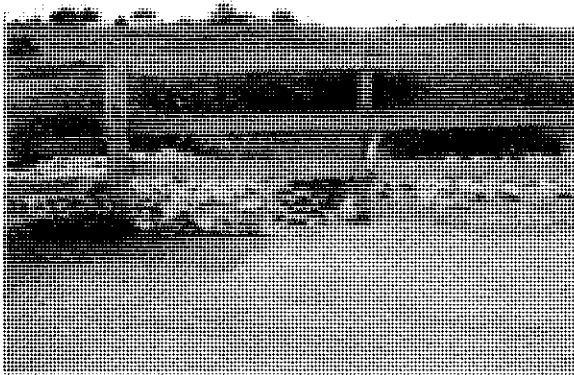
Varel Dairy, Inc. - Facility Pictures



19



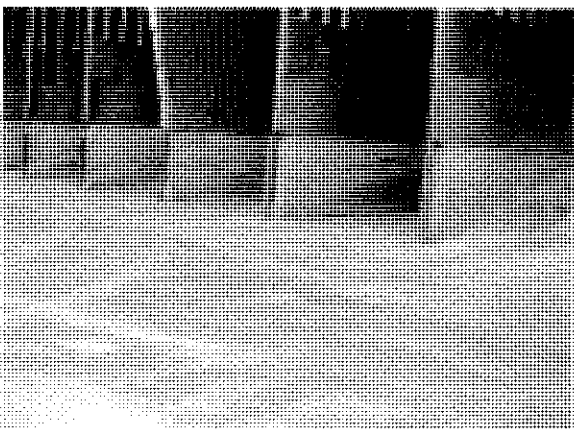
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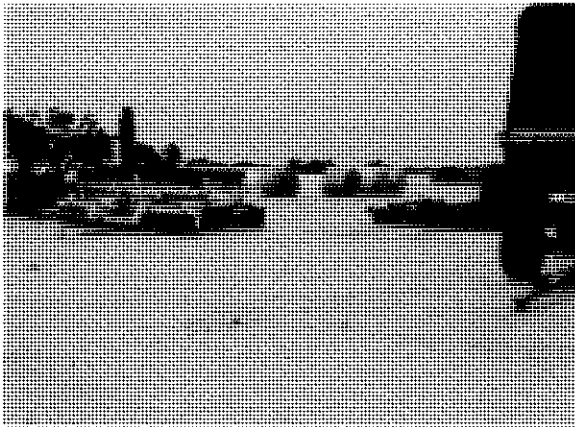


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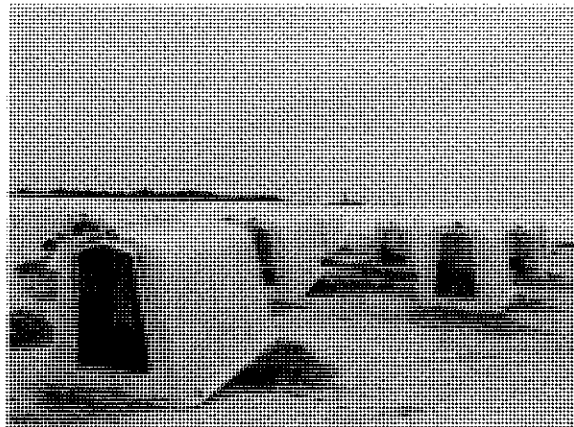


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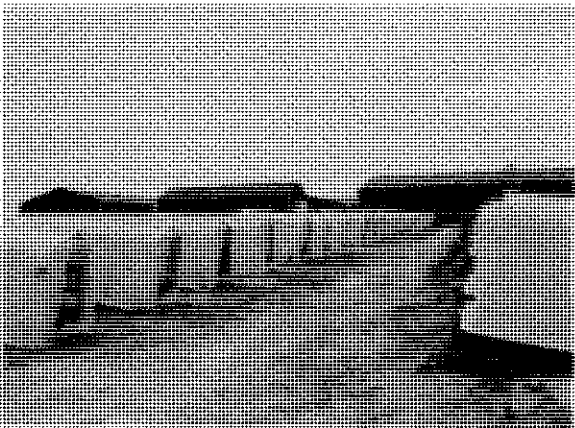
Varel Dairy, Inc. - Facility Pictures



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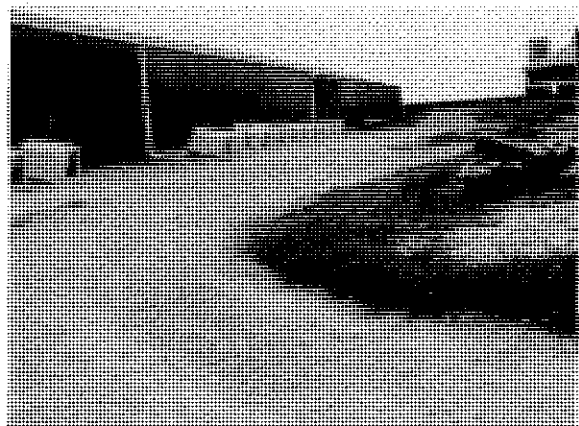
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Waste Storage - Operation Responsibility

Varel Dairy, Inc.

Barn #	Barn Name	Storage Type	Definition of Storage Type
1	1	Waste Holding Pond	Holding area that accepts liquid waste. Waste is held until it is removed for field application.
2	2	Waste Holding Pond	Holding area that accepts liquid waste. Waste is held until it is removed for field application.
3	3	Waste Holding Pond	Holding area that accepts liquid waste. Waste is held until it is removed for field application.
4	4	Waste Holding Pond	Holding area that accepts liquid waste. Waste is held until it is removed for field application.
5	5	Manure Pack	Waste that is temporarily contained within the animal confinement areas. The waste is either hauled directly for land application or moved to a longer term storage structure.
6	6	Waste Holding Pond	Holding area that accepts liquid waste. Waste is held until it is removed for field application.
7	7	Manure Pack	Waste that is temporarily contained within the animal confinement areas. The waste is either hauled directly for land application or moved to a longer term storage structure.

Waste Storage - Operation Responsibility

8	8	Manure Pack	Waste that is temporarily contained within the animal confinement areas. The waste is either hauled directly for land application or moved to a longer term storage structure.
9	9 - Bulls	Manure Pack	Waste that is temporarily contained within the animal confinement areas. The waste is either hauled directly for land application or moved to a longer term storage structure.
10	10	Manure Pack	Waste that is temporarily contained within the animal confinement areas. The waste is either hauled directly for land application or moved to a longer term storage structure.
11	11	Waste Holding Pond	Holding area that accepts liquid waste. Waste is held until it is removed for field application.
12	Heifer Calves - Huts	Manure Pack	Waste that is temporarily contained within the animal confinement areas. The waste is either hauled directly for land application or moved to a longer term storage structure.
13	Bull Calves - Huts	Manure Pack	Waste that is temporarily contained within the animal confinement areas. The waste is either hauled directly for land application or moved to a longer term storage structure.
101	1st Stage	Waste Holding Pond	Holding area that accepts liquid waste. Waste is held until it is removed for field application.
102	2nd Stage	Waste Holding Pond	Holding area that accepts liquid waste. Waste is held until it is removed for field application.

Waste Storage - Operation Responsibility

103	3rd Stage	Waste Holding Pond	Holding area that accepts liquid waste. Waste is held until it is removed for field application.
104	4th Stage	Waste Holding Pond	Holding area that accepts liquid waste. Waste is held until it is removed for field application.
105	Solids Stacking Area	Above Ground	Stacking area that accepts the waste from the animal confinement areas or solid/liquid separator. Waste is held until it is removed for field application.



SEND TO: VAREL DAIRY
7300 TWIN LEVEE RD.
BARTELSON, IL 62218

GROWER: James Varel

MANURE ANALYSIS

SAMPLE ID:	PIT MANURE 8/26	LAGOON 8/22
LAB #:	18214	18215
NUTRIENT	lbs / Ton	lbs / 1000 gal
TKN	4.2	9.7
NH4-N	2.2	5.3
P2O5	2.4	5.80
K2O	1.9	6.7
%TS	15.63	2.20
%H2O	84.37	97.80

TKN is the total nitrogen in the sample. NH4-N is ammonia nitrogen, at application it is 100% available.
TKN minus NH4-N is organic nitrogen, it is 20% available the first year. The plant available nitrogen
equals $(0.2 \times \text{organic nitrogen}) + \text{NH4-N}$. Example TKN = 50, NH4-N = 18, then Org-N = $50 - 18 = 32$
Therefore, plant available nitrogen = $(.2 \times 32) + 18 = 24.4$

P2O5 (Phosphate) and K2O (Potash) are usually 90% available the first year.

SIGNED: Marcia Breda

DATE: 09-03-2008

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SGS Avey Laboratory, Inc. | Agricultural Services
1511 E. Main Street, P.O. Box 175, Belleville, IL 62221 1(818) 233-0445 1(518) 231-7282 www.sgs.com

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Carlyle, IL 62831
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SEND TO: VAREL DAIRY
7300 TWIN LEVEE RD.
BARTELSON, IL 62218

GROWER: Same

MANURE ANALYSIS

SAMPLE ID: Liquid manure

LAB #: 15753

NUTRIENT lbs / 1000 gal

TKN 9.4

NH4-N 6.1

P2O5 3.8

K2O 9.0

%TS 1.91

%H2O 98.09

TKN is the total nitrogen in the sample. NH4-N is ammonia nitrogen, at application it is 100% available.

TKN minus NH4-N is organic nitrogen, it is 20% available the first year. The plant available nitrogen

equals $(0.2 \times \text{organic nitrogen}) + \text{NH4-N}$. Example TKN = 50, NH4-N = 18, then Org-N = $50 - 18 = 32$

Therefore, plant available nitrogen = $(.2 \times 32) + 18 = 24.4$

P2O5 (Phosphate) and K2O (Potash) are usually 90% available the first year.

SIGNED: Maria Reed

DATE: 06-12-2008

Animal Inventory

Varel Dairy, Inc.

Barn # 1 1

Animal Type **Dairy - 1400#**
Animal Capacity **120**
Average Size **1400**
IDOA Animal Units **168**
NRCS Animal Units **168**

Barn # 2 2

Animal Type **Dairy - 1400#**
Animal Capacity **120**
Average Size **1400**
IDOA Animal Units **168**
NRCS Animal Units **168**

Barn # 3 3

Animal Type **Dairy - 750#**
Animal Capacity **90**
Average Size **750**
IDOA Animal Units **54**
NRCS Animal Units **68**

Barn # 4 4

Animal Type **Dairy - 750#**
Animal Capacity **90**
Average Size **750**
IDOA Animal Units **54**
NRCS Animal Units **68**

Barn # 5 5

Animal Type **Dairy - 1400#**
Animal Capacity **40**
Average Size **1400**
IDOA Animal Units **56**
NRCS Animal Units **56**

Animal Inventory

Barn # 6 6

Animal Type **Dairy - 1400#**
Animal Capacity **40**
Average Size **1400**
IDOA Animal Units **56**
NRCS Animal Units **56**

Barn # 7 7

Animal Type **Dairy - 1400#**
Animal Capacity **40**
Average Size **1400**
IDOA Animal Units **56**
NRCS Animal Units **56**

Barn # 8 8

Animal Type **Dairy - 250#**
Animal Capacity **175**
Average Size **250**
IDOA Animal Units **105**
NRCS Animal Units **44**

Barn # 9 9 - Bulls

Animal Type **Bulls**
Animal Capacity **20**
Average Size **1200**
IDOA Animal Units **20**
NRCS Animal Units **24**

Barn # 10 10

Animal Type **Dairy - 1000#**
Animal Capacity **70**
Average Size **1000**
IDOA Animal Units **42**
NRCS Animal Units **70**

Animal Inventory

Barn # 11 11

Animal Type **Dairy - 1400#**
Animal Capacity **600**
Average Size **1400**
IDOA Animal Units **840**
NRCS Animal Units **840**

Barn # 12 Heifer Calves - Huts

Animal Type **Dairy - 150#**
Animal Capacity **120**
Average Size **150**
IDOA Animal Units **72**
NRCS Animal Units **18**

Barn # 13 Bull Calves - Huts

Animal Type **Beef - 100#**
Animal Capacity **20**
Average Size **100**
IDOA Animal Units **20**
NRCS Animal Units **2**

Total IDOA Animal Units 1,711

Total NRCS Animal Units 1,637

Annual Waste Volume and Nutrient Content - Total Operation

Varel Dairy, Inc.

Animal Type	Inventory	Daily Volume/day/space	Total Daily Volume	Total Annual Volume	Nutrient Content lbs/day/space			Annual Nutrients Produced		
					N	P ₂ O ₅	K ₂ O	N	P ₂ O ₅	K ₂ O
Beef - 100#	20	6	120	43,800	0.0340	0.025	0.030	248	183	219
Bulls	20	60	1,200	438,000	0.3400	0.250	0.300	2,482	1,825	2,190
Dairy - 150#	120	13	1,560	569,400	0.0640	0.030	0.050	2,803	1,314	2,190
Dairy - 250#	175	22	3,850	1,405,250	0.1060	0.040	0.090	6,771	2,555	5,749
Dairy - 750#	180	66	11,880	4,336,200	0.3180	0.120	0.270	20,893	7,884	17,739
Dairy - 1000#	70	86	6,020	2,197,300	0.4250	0.170	0.340	10,859	4,344	8,687
Dairy - 1400#	960	120	115,200	42,048,000	0.5950	0.240	0.480	208,488	84,096	168,192
Total Inventory	1545	Source: MWPS 18 Table 2-1	139,830	51,037,950				252,544	102,200	204,966

Source: MWPS
18 Table 2-1

Annual Waste Volume and Nutrient Content - Operation Responsibility

Varel Dairy, Inc.

Animal Type	Inventory	Daily Volume/ day/space	Total Daily Volume	Total Annual Volume	Nutrient Content lbs/day/space			Annual Nutrients Produced		
					N	P ₂ O ₅	K ₂ O	N	P ₂ O ₅	K ₂ O
Beef - 100#	20	6	120	43,800	0.0340	0.025	0.030	248	183	219
Bulls	20	60	1,200	438,000	0.3400	0.250	0.300	2,482	1,825	2,190
Dairy - 150#	120	13	1,560	569,400	0.0640	0.030	0.050	2,803	1,314	2,190
Dairy - 250#	175	22	3,850	1,405,250	0.1060	0.040	0.090	6,771	2,555	5,749
Dairy - 750#	180	66	11,880	4,336,200	0.3180	0.120	0.270	20,893	7,884	17,739
Dairy - 1000#	70	86	6,020	2,197,300	0.4250	0.170	0.340	10,859	4,344	8,687
Dairy - 1400#	960	120	115,200	42,048,000	0.5950	0.240	0.480	208,488	84,096	168,192
Total Inventory	1545	Source: MWPS 18 Table 2-1		51,037,950	Source: MWPS 18 Table 2-1			252,544	102,200	204,966

Total Facility Nitrogen - Operation Responsibility

Varel Dairy, Inc.

Barn # 1	1	Barn # 2	2
Waste Source	Dairy - 1400#	Waste Source	Dairy - 1400#
Animal Spaces	120.00	Animal Spaces	120.00
Annual Manure Volume Gallons or Lbs	5,256,000	Annual Manure Volume Gallons or Lbs	5,256,000
Total N per Animal Space	0.5950	Total N per Animal Space	0.5950
Total N Annually from Source - Pounds	26,061	Total N Annually from Source - Pounds	26,061
Ammonium % of Total N	44.44	Ammonium % of Total N	44.44
	Source: MWPS - 18 Table 2-1		Source: MWPS - 18 Table 2-1
	Source: MWPS - 18 Table 10-6 and 7		Source: MWPS - 18 Table 10-6 and 7
Organic	Inorganic	Organic	Inorganic
N Pounds Annually	14,479	N Pounds Annually	14,479
N loss during Storage and Handling	11,582 Pounds	N loss during Storage and Handling	11,582 Pounds
N loss pounds annually (storage)	77.5 %	N loss pounds annually (storage)	77.5 %
N loss during Land Application	-8,976 Pounds	N loss during Land Application	-8,976 Pounds
N loss pounds annually (application)	17.5 %	N loss pounds annually (application)	17.5 %
	Source: MWPS - 18 Table 10-1		Source: MWPS - 18 Table 10-1
	Source: MWPS - 18 Table 10-2		Source: MWPS - 18 Table 10-2
	Source: MWPS - 18 Table 10-5		Source: MWPS - 18 Table 10-5
Organic N mineralization factor Year 1	25%	Organic N mineralization factor Year 1	25%
Organic N Mineralized Year 1	3,620	Organic N Mineralized Year 1	3,620
Plant Available N Year 1	3,620	Plant Available N Year 1	3,620
Total Plant available N Year 1	5,770	Total Plant available N Year 1	5,770
Organic N Mineralized Year 2	1,810	Organic N Mineralized Year 2	1,810
Organic N Mineralized Year 3	905	Organic N Mineralized Year 3	905
Organic N Mineralized Year 4	452	Organic N Mineralized Year 4	452

Total Facility Nitrogen - Operation Responsibility

Varel Dairy, Inc.

Barn # 3	3	Barn # 4	4
Waste Source	Dairy - 750#	Waste Source	Dairy - 750#
Animal Spaces	90.00	Animal Spaces	90.00
Annual Manure Volume Gallons or Lbs	2,168,100	Annual Manure Volume Gallons or Lbs	2,168,100
Total N per Animal Space	0.3180	Total N per Animal Space	0.3180
Total N Annually from Source - Pounds	10,446	Total N Annually from Source - Pounds	10,446
Ammonium % of Total N	44.44	Ammonium % of Total N	44.44
	Source: MWPS - 18 Table 2-1		Source: MWPS - 18 Table 2-1
	Source: MWPS - 18 Table 10-6 and 7		Source: MWPS - 18 Table 10-6 and 7
N Pounds Annually	5,804	N Pounds Annually	5,804
N loss during Storage and Handling	4,642 Pounds	N loss during Storage and Handling	4,642 Pounds
N loss pounds annually (storage)	77.5 %	N loss pounds annually (storage)	77.5 %
N loss during Land Application	-3,598 Pounds	N loss during Land Application	-3,598 Pounds
N loss pounds annually (application)	17.5 %	N loss pounds annually (application)	17.5 %
	Source: MWPS - 18 Table 10-2		Source: MWPS - 18 Table 10-2
	Source: MWPS - 18 Table 10-5		Source: MWPS - 18 Table 10-5
Organic N mineralization factor Year 1	25%	Organic N mineralization factor Year 1	25%
Organic N Mineralized Year 1	1,451 Pounds	Organic N Mineralized Year 1	1,451 Pounds
Plant Available N Year 1	1,451 Pounds	Plant Available N Year 1	1,451 Pounds
Total Plant available N Year 1	2,313 Pounds	Total Plant available N Year 1	2,313 Pounds
Organic N Mineralized Year 2	725 Pounds	Organic N Mineralized Year 2	725 Pounds
Organic N Mineralized Year 3	363 Pounds	Organic N Mineralized Year 3	363 Pounds
Organic N Mineralized Year 4	181 Pounds	Organic N Mineralized Year 4	181 Pounds

Total Facility Nitrogen - Operation Responsibility

Varel Dairy, Inc.

Barn # 5	5	Barn # 6	6
Waste Source	Dairy - 1400#	Waste Source	Dairy - 1400#
Animal Spaces	40.00	Animal Spaces	40.00
Annual Manure Volume Gallons or Lbs	1,752,000	Annual Manure Volume Gallons or Lbs	1,752,000
Total N per Animal Space	0.5950	Total N per Animal Space	0.5950
Total N Annually from Source - Pounds	8,687	Total N Annually from Source - Pounds	8,687
Ammonium % of Total N	44.44	Ammonium % of Total N	44.44
	Source: MWPS - 18 Table 2-1		Source: MWPS - 18 Table 2-1
	Source: MWPS - 18 Table 10-6 and 7		Source: MWPS - 18 Table 10-6 and 7
N Pounds Annually	4,826	N Pounds Annually	4,826
N loss during Storage and Handling	30 %	N loss during Storage and Handling	77.5 %
N loss pounds annually (storage)	-1,158 Pounds	N loss pounds annually (storage)	-2,992 Pounds
N loss during Land Application	3 %	N loss during Land Application	17.5 %
N loss pounds annually (application)	-81 Pounds	N loss pounds annually (application)	-152 Pounds
	Source: MWPS - 18 Table 10-1		Source: MWPS - 18 Table 10-1
	Source: MWPS - 18 Table 10-2		Source: MWPS - 18 Table 10-2
Organic N mineralization factor Year 1	25%	Organic N mineralization factor Year 1	25%
Organic N Mineralized Year 1	1,207	Organic N Mineralized Year 1	1,207
Plant Available N Year 1	1,207	Plant Available N Year 1	1,207
Total Plant available N Year 1	3,828	Total Plant available N Year 1	1,923
Organic N Mineralized Year 2	603	Organic N Mineralized Year 2	603
Organic N Mineralized Year 3	302	Organic N Mineralized Year 3	302
Organic N Mineralized Year 4	151	Organic N Mineralized Year 4	151
	Source: MWPS - 18 Table 10-5		Source: MWPS - 18 Table 10-5

Total Facility Nitrogen - Operation Responsibility

Varel Dairy, Inc.

Barn # 7	7	Barn # 8	8		
Waste Source	Dairy - 1400#	Waste Source	Dairy - 250#		
Animal Spaces	40.00	Animal Spaces	175.00		
Annual Manure Volume Gallons or Lbs	1,752,000	Annual Manure Volume Gallons or Lbs	1,405,250		
Total N per Animal Space	0.5950	Total N per Animal Space	0.1060		
Total N Annually from Source - Pounds	8,687	Total N Annually from Source - Pounds	6,771		
Ammonium % of Total N	44.44	Ammonium % of Total N	44.44		
	Source: MWPS - 18 Table 2-1		Source: MWPS - 18 Table 2-1		
	Source: MWPS - 18 Table 10-6 and 7		Source: MWPS - 18 Table 10-6 and 7		
	Organic	Inorganic	Organic		
N Pounds Annually	4,826	3,861 Pounds	N Pounds Annually	3,762	3,009 Pounds
N loss during Storage and Handling		30 %	N loss during Storage and Handling		30 %
N loss pounds annually (storage)		-1,158 Pounds	N loss pounds annually (storage)		-903 Pounds
N loss during Land Application		3%	N loss during Land Application		3%
N loss pounds annually (application)		-81 Pounds	N loss pounds annually (application)		-63 Pounds
	Source: MWPS - 18 Table 10-1		Source: MWPS - 18 Table 10-1		Source: MWPS - 18 Table 10-1
	Source: MWPS - 18 Table 10-2		Source: MWPS - 18 Table 10-2		Source: MWPS - 18 Table 10-2
	Source: MWPS - 18 Table 10-5		Source: MWPS - 18 Table 10-5		Source: MWPS - 18 Table 10-5
Organic N mineralization factor Year 1	25%		Organic N mineralization factor Year 1	25%	
Organic N Mineralized Year 1	1,207	Pounds	Organic N Mineralized Year 1	940	Pounds
Plant Available N Year 1	1,207	Pounds	Plant Available N Year 1	940	Pounds
Total Plant available N Year 1	3,828	Pounds	Total Plant available N Year 1	2,984	Pounds
Organic N Mineralized Year 2	603	Pounds	Organic N Mineralized Year 2	470	Pounds
Organic N Mineralized Year 3	302	Pounds	Organic N Mineralized Year 3	235	Pounds
Organic N Mineralized Year 4	151	Pounds	Organic N Mineralized Year 4	118	Pounds

Total Facility Nitrogen - Operation Responsibility

Varel Dairy, Inc.

Barn # 9	9 - Bulls	Barn # 10	10	Waste Source	Dairy - 1000#
Waste Source					
Animal Spaces	20.00			Animal Spaces	70.00
Annual Manure Volume Gallons or Lbs	438,000			Annual Manure Volume Gallons or Lbs	2,197,300
Total N per Animal Space	0.3400	Source: MWPS - 18 Table 2-1		Total N per Animal Space	0.4250
Total N Annually from Source - Pounds	2,482			Total N Annually from Source - Pounds	10,859
Ammonium % of Total N	38.10	Source: MWPS - 18 Table 10-6 and 7		Ammonium % of Total N	44.44
					Source: MWPS - 18 Table 2-1
					Source: MWPS - 18 Table 10-6 and 7
N Pounds Annually	1,536	Organic	Inorganic	N Pounds Annually	6,033
N loss during Storage and Handling				N loss during Storage and Handling	4,826 Pounds
N loss pounds annually (storage)				N loss pounds annually (storage)	30 %
N loss during Land Application				N loss during Land Application	-1,448 Pounds
N loss pounds annually (application)				N loss pounds annually (application)	3 %
					Source: MW 18 Table 10-
					-101 Pounds
Organic N mineralization factor Year 1	25%			Organic N mineralization factor Year 1	25%
Organic N Mineralized Year 1	384			Organic N Mineralized Year 1	1,508
Plant Available N Year 1	384			Plant Available N Year 1	1,508
Total Plant available N Year 1	1,026			Total Plant available N Year 1	3,277
					Pounds
Organic N Mineralized Year 2	192			Organic N Mineralized Year 2	4,785
Organic N Mineralized Year 3	96			Organic N Mineralized Year 3	Pounds
Organic N Mineralized Year 4	48			Organic N Mineralized Year 4	754
					Pounds
					377
					189
					Pounds

Varel Dairy, Inc.

LMFA 900.803 m) (1), (2), (3), (4), (5), (9)

Total Facility Nitrogen - Operation Responsibility

Varel Dairy, Inc.

Barn # 13	Bull Calves - Huts	Beef - 100#	
Waste Source			
Animal Spaces		20.00	
Annual Manure Volume Gallons or Lbs		43,800	
Total N per Animal Space		0.0340	Source: MWFS - 18 Table 2-1
Total N Annually from Source - Pounds		248	
Ammonium % of Total N		38.10	Source: MWFS - 18 Table 10-6 and 7
	Organic	Inorganic	
N Pounds Annually	154	95 Pounds	
N loss during Storage and Handling		30 %	Source: MWFS - 18 Table 10-4
N loss pounds annually (storage)		-28 Pounds	
N loss during Land Application		3 %	Source: MWFS - 18 Table 10-2
N loss pounds annually (application)		-2 Pounds	
Organic N mineralization factor Year 1	25%		Source: MWFS - 18 Table 10-5
Organic N Mineralized Year 1	38	Pounds	
Plant Available N Year 1	38	64 Pounds	
Total Plant available N Year 1		103 Pounds	
Organic N Mineralized Year 2	19	Pounds	
Organic N Mineralized Year 3	10	Pounds	
Organic N Mineralized Year 4	5	Pounds	

Total Facility Nitrogen - Operation Responsibility

Varel Dairy, Inc.

Land Required to Dispose of Waste for Corn Grain Yield AVG

Avg Corn Grain Yield	139
Acres required for Application	387.00