PROJECT DATA SUPPLEMENT

CASE STUDY 3.1

SAND CHANNELS

CONTIGUOUS TO

PERMEABLE LAGOON COVER

(KEWAUNEE COUNTY)

FINAL REPORT

ON

WISCONSIN'S DAIRY AND LIVESTOCK ODOR AND AIR EMISSION PROJECT

DECEMBER 2008

WISCONSIN DEPARTMENT OF AGRICULTURE, TRADE AND CONSUMER PROTECTION
WISCONSIN DEPARTMENT OF NATURAL RESOURCES
WISCONSIN AGRICULTURAL STEWARDSHIP INITIATIVE

MADISON, WISCONSIN

Ambient Air Concentrations

Daytime Levels - Sand Separation Channel

Kewaunee County

August 27, 2007

Field Sampling Measurements

(Micrograms per Cubic Meter)

Location	NH3	H2S
1	769	208
2	317	ND
3	465	ND
4	432	ND
5	468	ND
7	ND	ND
8	151	56

Note: ND = Non-Detect (detection limits vary with conditions)

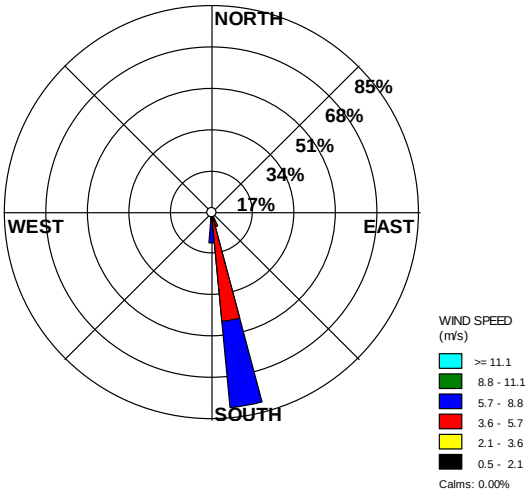
Ammonia

Hydrogen Sulfide

10 Location Number

0 25 50

Meters



Ambient Air Concentrations

Nighttime Levels - Sand Separation Channel

Kewaunee County

August 27-28, 2007

Field Sampling Measurements

(Micrograms per Cubic Meter)

Location	NH3	H2S
1	644	607
2	292	342
3	239	20
4	350	82
5	383	496
7	29	55
8	112	71

Note: ND = Non-Detect (detection limits vary with conditions)

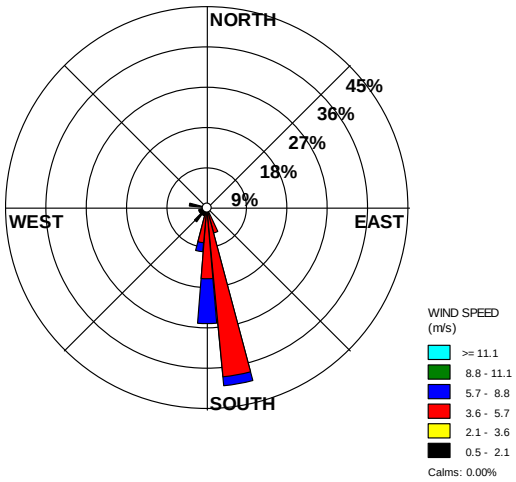
Ammonia

Hydrogen Sulfide

10 Location Number

0 25 50

Meters



Ambient Air Concentrations

Daytime Levels - Sand Separation Channel

Kewaunee County

September 17, 2007

Field Sampling Measurements

(Micrograms per Cubic Meter)

Location	NH3	H2S
1	728	151
2	251	89
4	159	41
5	160	144
7	50	ND
8	83	ND
9	178	34

Note: ND = Non-Detect (detection limits vary with conditions)

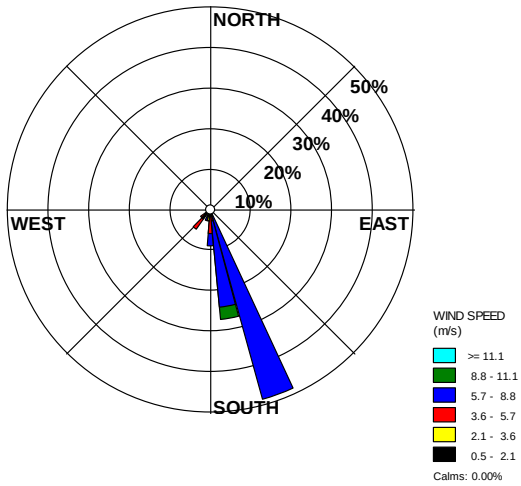
Ammonia

Hydrogen Sulfide

10 Location Number

0 25 50

Meters



Ambient Air Concentrations

Nighttime Levels - Sand Separation Channel

Kewaunee County

September 17-18, 2007

Field Sampling Measurements

(Micrograms per Cubic Meter)

Location	NH3	H2S
1	141	184
2	314	157
4	233	49
5	580	122
7	103	ND
8	133	27
9	108	20

Note: ND = Non-Detect (detection limits vary with conditions)

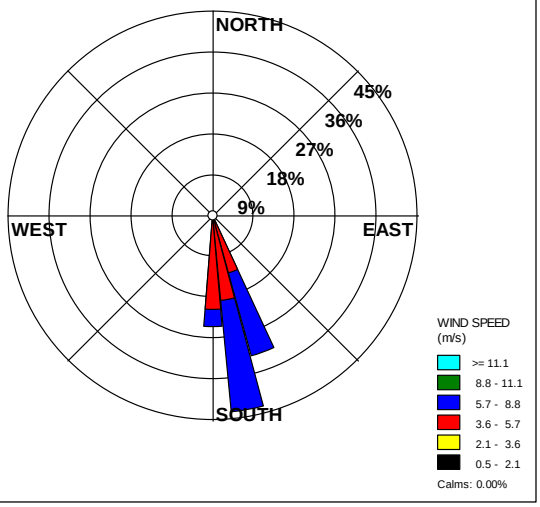
Ammonia

Hydrogen Sulfide

10 Location Number

0 25 50

Meters



Ambient Air Concentrations

Daytime Levels - Sand Separation Channel

Kewaunee County

May 12, 2008

Field Sampling Measurements

(Micrograms per Cubic Meter)

Location	NH3	H2S
1	324	ND
2	52	ND
5	ND	ND
6	ND	ND
7	944	ND
8	ND	ND
9	ND	ND

Note: ND = Non-Detect (detection limits vary with conditions)

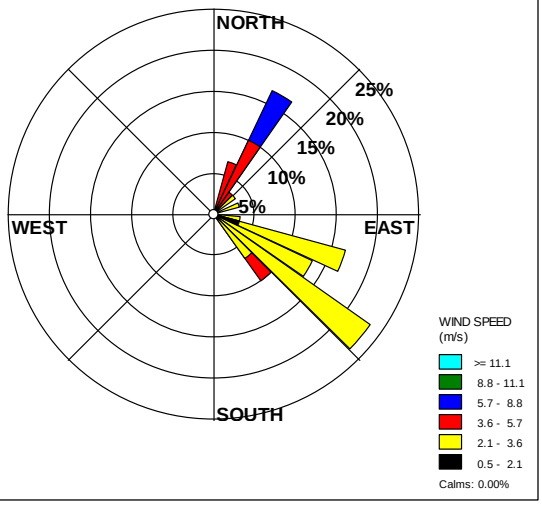
Ammonia

Hydrogen Sulfide

10 Location Number

0 25 50

Meters



Ambient Air Concentrations

Nighttime Levels - Sand Separation Channel

Kewaunee County

May 12-13, 2008

Field Sampling Measurements

(Micrograms per Cubic Meter)

Location	NH3	H2S
1	687	ND
2	189	ND
4	520	ND
5	43	ND
6	ND	ND
7	67	ND
8	55	ND
9	ND	ND

Note: ND = Non-Detect (detection limits vary with conditions)

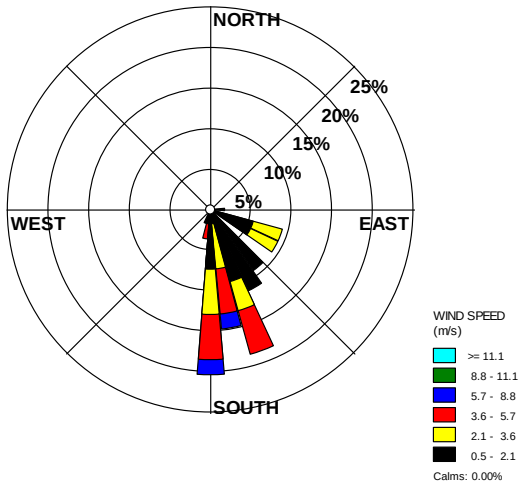
Ammonia

Hydrogen Sulfide

10 Location Number

0 25 50

Meters



Ambient Air Concentrations

Daytime Levels - Sand Separation Channel

Kewaunee County

June 23, 2008

Field Sampling Measurements

(Micrograms per Cubic Meter)

Location	NH3	H2S
1	589	2411
2	291	209
4	129	346
5	86	189
6	34	ND
7	241	ND
8	ND	63
9	ND	ND

Note: ND = Non-Detect (detection limits vary with conditions)

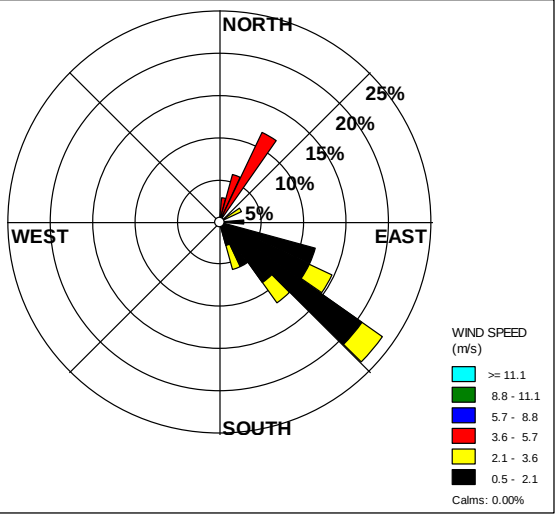
Ammonia

Hydrogen Sulfide

10 Location Number

0 25 50

Meters

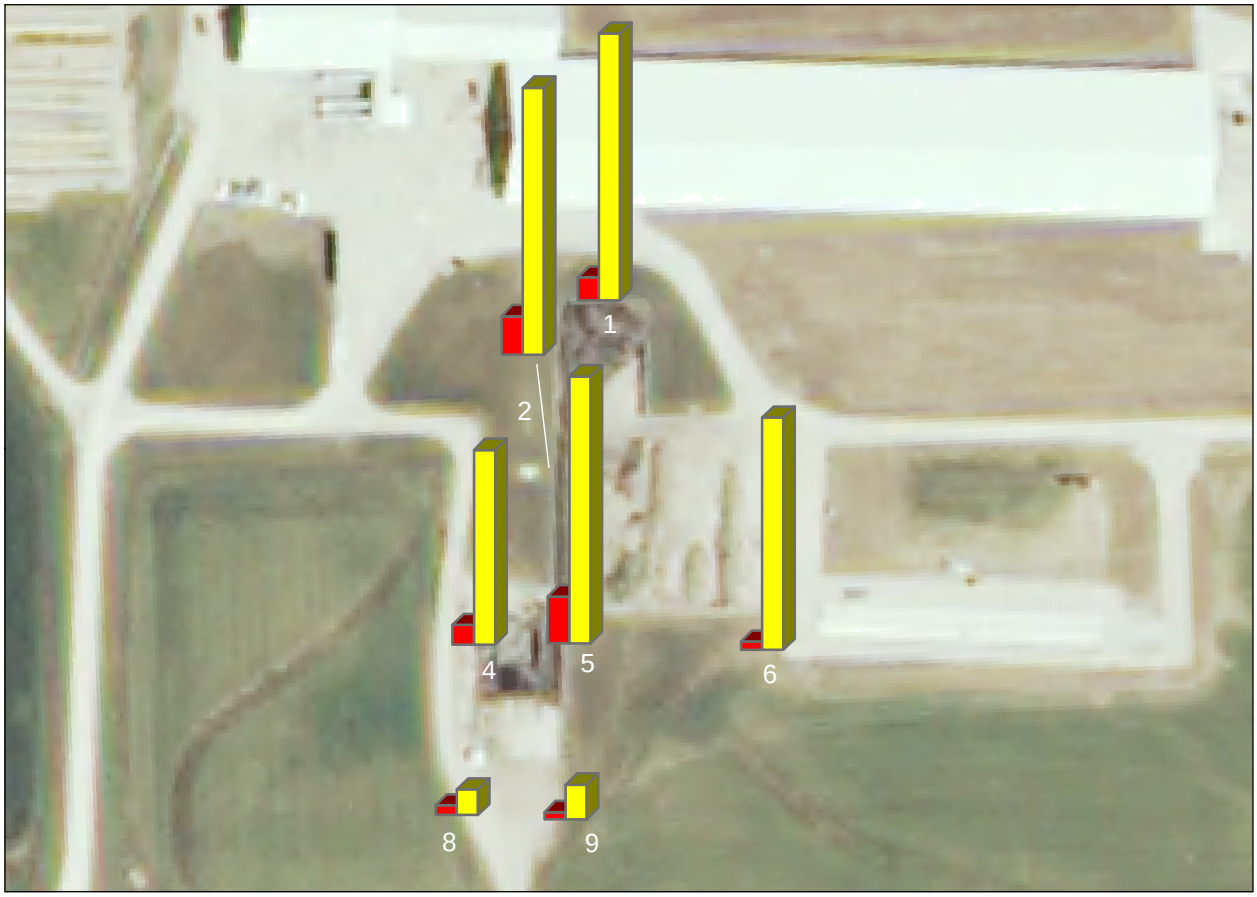


Ambient Air Concentrations

Nighttime Levels - Sand Separation Channel

Kewaunee County

June 23-24, 2008



Field Sampling Measurements

(Micrograms per Cubic Meter)

Location	NH3	H2S
1	210	11625
2	354	2558
4	178	1792
5	427	16750
6	76	2138
8	89	236
9	67	320

Note: H2S bar graphs for locations 1, 2 and 5 are not to scale

Note: ND = Non-Detect (detection limits vary with conditions)

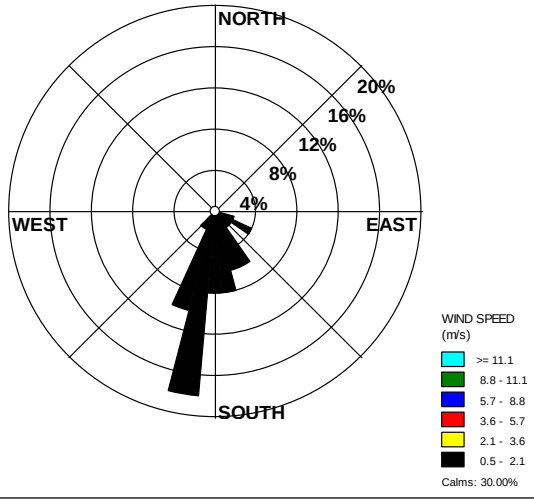
Ammonia

Hydrogen Sulfide

10 Location Number

0 25 50

Meters



Ambient Air Concentrations

Daytime Levels - Sand Separation Channel

Kewaunee County

July 21, 2008

Field Sampling Measurements

(Micrograms per Cubic Meter)

Location	NH3	H2S
1	414	1014
2	379	127
4	126	303
5	245	182
6	ND	ND
7	115	ND
8	ND	48
9	ND	ND

Note: ND = Non-Detect (detection limits vary with conditions)

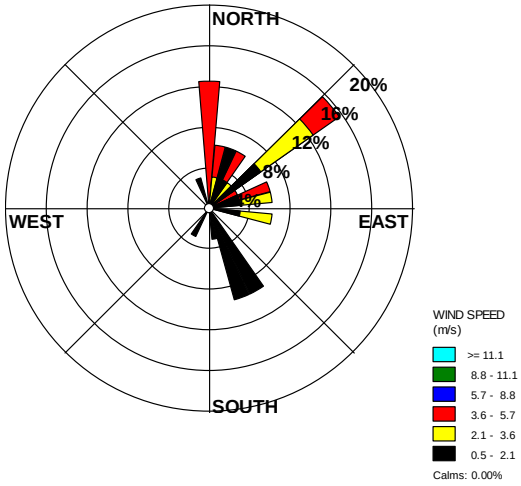
Ammonia

Hydrogen Sulfide

10 Location Number

0 25 50

Meters



Ambient Air Concentrations

Nighttime Levels - Sand Separation Channel

Kewaunee County

July 21-22, 2008

Field Sampling Measurements

(Micrograms per Cubic Meter)

Location	NH3	H2S
1	188	809
2	153	279
4	106	137
5	270	550
6	87	ND
7	208	23
8	71	91
9	94	296

Note: ND = Non-Detect (detection limits vary with conditions)

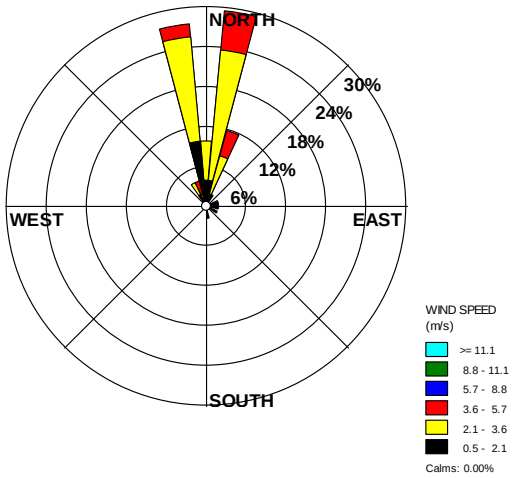
Ammonia

Hydrogen Sulfide

10 Location Number

0 25 50

Meters



Ambient Air Concentrations

Daytime Levels

Kewaunee County

May 5, 2009

Field Sampling Measurements

(Micrograms per Cubic Meter)

Location	NH3	H2S
1	489	158
2	182	28
4	142	41
5	97	ND
9	49	

Note: ND = Non-Detect (detection limits vary with conditions)

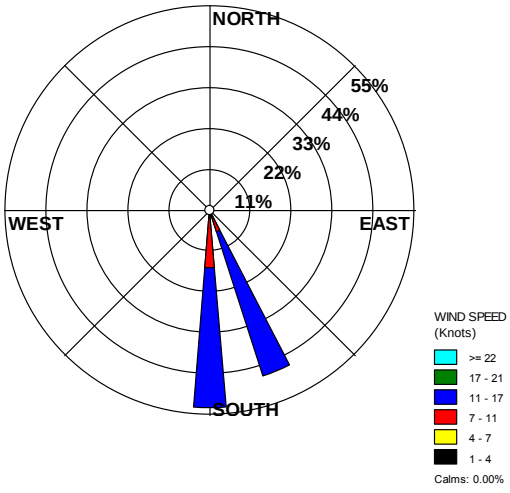
Ammonia

Hydrogen Sulfide

10 Location Number

0 25 50

Meters



Ambient Air Concentrations

Nighttime Levels

Kewaunee County

May 5-6, 2009

Field Sampling Measurements

(Micrograms per Cubic Meter)

Location	NH3	H2S
1	246	103
2		109
4	79	38
5	75	17
9	23	

Note: ND = Non-Detect (detection limits vary with conditions)

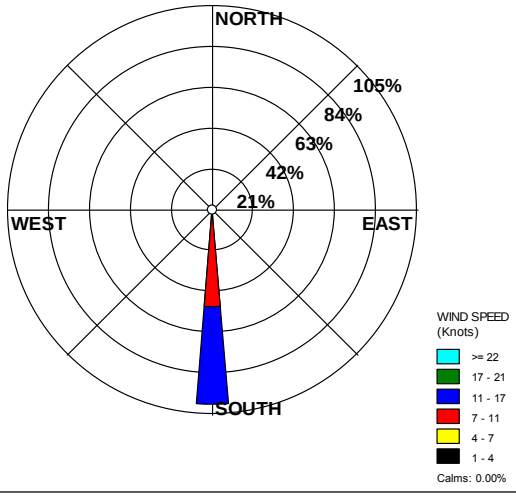
Ammonia

Hydrogen Sulfide

10 Location Number

0 25 50

Meters



Ambient Air Concentrations

Daytime Levels

Kewaunee County

June 2, 2009

Field Sampling Measurements

(Micrograms per Cubic Meter)

Location	NH3	H2S
1	349	292
2	166	82
3	188	ND
4	241	501
5	166	213
6	ND	ND
9	ND	ND

Note: ND = Non-Detect (detection limits vary with conditions)

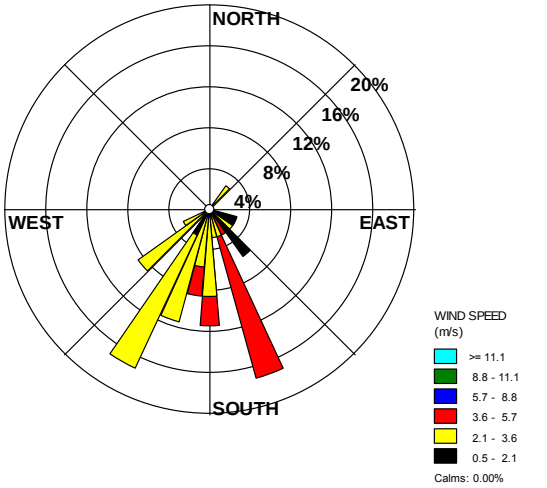
Ammonia

Hydrogen Sulfide

10 Location Number

0 25 50

Meters



Ambient Air Concentrations

Nighttime Levels

Kewaunee County

June 2-3, 2009

Field Sampling Measurements

(Micrograms per Cubic Meter)

Location	NH3	H2S
1	285	350
2	143	62
3	ND	ND
4	100	177
5	316	84
6	ND	ND
9	22	30

Note: ND = Non-Detect (detection limits vary with conditions)

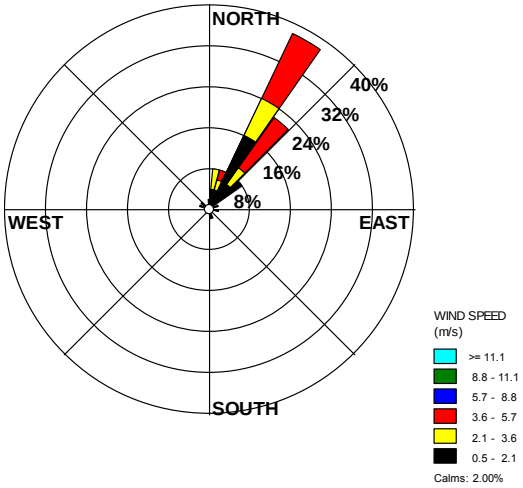
Ammonia

Hydrogen Sulfide

10 Location Number

0 25 50

Meters



Nasal Ranger Readings

Kewaunee County
Sand Channel

April 17, 2009
& June 3, 2009

60 Nasal Ranger Reading

Early AM Run

AM Run

PM Run

Late PM Run

0 60 120
Meters

No Wind Data Available