

Summary Tables of Completeness and Concentration Data

Introduction

In April of 2002 monitoring for hydrogen sulfide began at two sites. In early 2003, monitoring for ammonia started; and additional hydrogen sulfide monitoring sites near some of the largest confined animal feeding operations in the state were also established. Sixteen monitoring sites near CAFO's were in operation between 2002 and 2007. A monitoring site at Viking Lake State Park was operated from 2003 through 2007 in order to assess background ammonia concentrations at a location that was not adjacent to a large CAFO.

Iowa Administrative Code Section 567—32(455B) became effective in September 2004, establishing a health threshold for hydrogen sulfide, as well as new site selection guidelines (Appendix C). Many monitoring locations did not conform to the new siting criteria and had to be relocated. At the beginning of 2005, ten CAFO sites meeting the new siting criteria were in place, and these sites were operated through the end of 2007.

The rulemaking passed by the department in September 2004 established both a health effects value (HEV), and a health effects standard (HES), for hydrogen sulfide. The latter constitutes a threshold for regulatory action. The HEV is exceeded at a monitoring site when the one-hour average concentration exceeds 30 ppb. The HES is exceeded at a monitoring site when the daily maximum one-hour average concentration exceeds 30 ppb more than seven times per year.

The HEV was exceeded at the following sites: Atlantic (2003) Sioux Center (2003, 2004) Woodbine (2003), Jewell (2005), Newkirk (2005, 2006, 2007), Sac City (2006) and Stanhope (2006, 2007). Table 7 details the number of HEV exceedances at each site during each year.

In 2003 the HES was exceeded by two monitors, Atlantic and Sioux Center. Only the former met the siting criteria established by the 2004 rule.

The tables for hydrogen sulfide are presented first, followed by those pertaining to ammonia. For both pollutants daily statistics precede hourly statistics. The section "Additional Table Information" follows the last table, and provides explanations to help interpret the completeness and concentration statistical summary.

Summary of Hydrogen Sulfide CAFO Data

Table 1. Annual 8th highest daily maximum sample values for daily Hydrogen Sulfide for 2002-2007 CAFO sites.
Data is displayed in parts per billion (ppb).

Site Name	Atlantic	Belmond New	Belmond Old	Clarion	Goldfield	Iowa Falls	Jewell	Kanawha	Malcom	Newkirk	Sac City	Sioux Center	Stanhope	West Union	Williams	Woodbine
2002				5.2											16.2	
2003	44.1		2.5	9.6	1.0				1.1			199			14.7	21.9
2004		5.8	4.2	7.0	4.6	4.8	3.3	6.5	1.0	10.5	6.4	22.4	7.0	0.6	6.0	12.8
2005		5.0		7.1	6.5	5.4	18.8	6.1		19.3	10.6		14.4	0.8		
2006		4.1		6.0	5.1	6.9	11.4	6.3		23.4	12.5		9.4	1.9		
2007		4.2		6.4	5.1	6.9	8.5	6.7		23.1	11.6		14.3	1.4		

	Location MEETS siting criteria
	Location does NOT MEET siting criteria
	Over the standard
	Under the standard and MEETS completeness criteria
	Under the standard and does NOT MEET completeness criteria
	No Data

Table 2. Annual percent completeness for daily Hydrogen Sulfide data (2002-2007).

Site Name	Atlantic	Belmond New	Belmond Old	Clarion	Goldfield	Iowa Falls	Jewell	Kanawha	Malcom	Newkirk	Sac City	Sioux Center	Stanhope	West Union	Williams	Woodbine
2002				75%											67%	
2003	41%		21%	99%	7%				67%			66%			97%	58%
2004		51%	44%	100%	73%	67%	40%	48%	45%	47%	48%	31%	60%	50%	46%	31%
2005		90%		86%	93%	100%	99%	94%		95%	96%		100%	100%		
2006		99%		100%	96%	97%	92%	100%		96%	96%		99%	100%		
2007		99%		90%	100%	100%	96%	99%		100%	100%		99%	95%		

MEETS 90% annual completeness criteria
 Does NOT MEET 90% annual completeness criteria
 No Data

Table 3. Quarterly percent completeness for daily Hydrogen Sulfide data (2002-2007).

Site Name	Atlantic	Belmond New	Belmond Old	Clarion	Goldfield	Iowa Falls	Jewell	Kanawha	Malcom	Newkirk	Sac City	Sioux Center	Stanhope	West Union	Williams	Woodbine
2002																
1																
2				99%											67%	
3				100%											99%	
4				100%											100%	
2003																
1				98%											100%	
2	74%			100%					67%			62%			100%	68%
3	90%			100%					100%			100%			88%	75%
4			85%	100%	28%				100%			100%			100%	87%
2004																
1			93%	100%	74%				98%			100%			100%	87%
2		1%	85%	100%	56%	67%			84%			23%	41%		84%	38%

Site Name	Atlantic	Belmond New	Belmond Old	Clarion	Goldfield	Iowa Falls	Jewell	Kanawha	Malcom	Newkirk	Sac City	Sioux Center	Stanhope	West Union	Williams	Woodbine
3		100%		100%	62%	100%	67%	100%		87%	92%		99%	99%		
4		100%		100%	100%	100%	92%	90%		100%	100%		100%	100%		
2005																
1		100%		100%	100%	100%	100%	100%		100%	98%		100%	100%		
2		76%		100%	100%	100%	100%	100%		100%	100%		100%	100%		
3		100%		92%	86%	100%	99%	87%		100%	100%		100%	100%		
4		85%		53%	86%	100%	99%	88%		82%	84%		100%	100%		
2006																
1		100%		100%	100%	100%	100%	100%		89%	100%		98%	100%		
2		100%		100%	90%	100%	90%	100%		100%	100%		100%	100%		
3		98%		100%	96%	87%	78%	100%		95%	100%		99%	100%		
4		100%		100%	100%	100%	99%	100%		100%	85%		100%	100%		
2007																
1		99%		83%	99%	100%	93%	97%		100%	99%		96%	99%		
2		99%		100%	100%	100%	89%	100%		100%	100%		100%	100%		
3		100%		77%	100%	99%	100%	100%		100%	100%		100%	100%		
4		100%		100%	100%	100%	100%	100%		100%	100%		100%	83%		

	MEETS 75% annual completeness criteria
	Does NOT MEET 75% annual completeness criteria
	No Data

Table 4. Statistical summary for daily Hydrogen Sulfide for 2002-2007 CAFO sites. Data is displayed in parts per billion.

Site Name	Atlantic	Belmond New	Belmond Old	Clarion	Goldfield	Iowa Falls	Jewell	Kanawha	Malcom	Newkirk	Sac City	Sioux Center	Stanhope	West Union	Williams	Woodbine
2002																
Minimum				0.0											0.0	
Maximum				15.1											24.9	
Average				1.6											3.8	
2003																
Minimum	0.0		0.1	0.0	0.2				0.0			0.0			0.0	0.0
Maximum	101.8		4.8	20.1	2.3				3.6			330.3			29.9	36.8
Average	8.3		1.1	1.7	0.9				0.2			44.1			2.8	5.3
2004																
Minimum		0.1	0.1	0.2	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.1
Maximum		11.7	12.9	17.9	9.3	8.4	5.1	15.3	2.0	25.1	11.2	81.6	20.4	2.4	10.4	18.7
Average		1.8	1.4	2.2	1.4	1.0	0.7	2.1	0.3	2.5	1.7	6.4	1.9	0.1	2.1	3.6
2005																
Minimum		0.0		0.0	0.2	0.0	0.0	0.0		0.0	0.0		0.0	0.0		
Maximum		8.0		18.6	9.1	16.2	32.4	11.2		143.7	19.5		24.6	2.3		
Average		1.4		2.1	1.7	1.3	2.9	1.9		2.8	2.2		2.6	0.1		
2006																
Minimum		0.2		0.0	0.0	0.1	0.0	0.0		0.0	0.2		0.2	0.0		
Maximum		6.1		25.2	7.6	13.5	28.8	7.5		40.7	51.9		33.0	3.9		
Average		1.3		1.8	0.9	1.3	2.1	1.3		3.3	2.7		2.2	0.5		
2007																
Minimum		0.1		0.0	0.0	0.1	0.0	0.0		0.0	0.0		0.0	0.0		
Maximum		7.0		18.6	12.3	13.6	22.0	11.6		54.2	15.1		44.5	2.2		
Average		1.2		1.7	1.1	1.4	1.9	1.6		3.6	2.4		2.6	0.4		

Over the standard
 Under the standard and MEETS completeness criteria
 Under the standard and does NOT MEET completeness criteria
 No Data

Table 5. Top ten maximum sample values for daily Hydrogen Sulfide for 2002-2007 CAFO sites, displayed in parts per billion.

Site Name	Atlantic	Belmond New	Belmond Old	Clarion	Goldfield	Iowa Falls	Jewell	Kanawha	Malcom	Newkirk	Sac City	Sioux Center	Stanhope	West Union	Williams	Woodbine
2002																
1				15.1											24.9	
2				10.6											22.4	
3				6.5											21.7	
4				6.5											17.9	
5				6.4											17.0	
6				6.4											16.3	
7				5.4											16.2	
8				5.2											16.2	
9				5.1											16.2	
10				5.0											15.9	
2003																
1	101.8		4.8	20.1	2.3				3.6			330.3			29.9	36.8
2	81.4		3.8	12.0	2.2				1.9			296.2			28.9	34.2
3	69.6		3.2	11.9	1.7				1.7			277.9			27.3	31.4
4	64.5		2.8	11.6	1.5				1.5			255.3			23.2	27.9
5	57.8		2.8	11.1	1.4				1.5			249.2			16.5	23.7
6	46.7		2.7	10.5	1.3				1.1			238.0			16.4	23.1
7	46.0		2.6	10.4	1.2				1.1			200.0			15.3	22.2
8	44.1		2.5	9.6	1.0				1.1			199.0			14.7	21.9
9	40.6		2.5	7.9	1.0				1.0			197.0			14.0	21.9
10	38.4		2.4	7.8	0.9				1.0			195.0			12.6	21.6
2004																
1		11.7	12.9	17.9	9.3	8.4	5.1	15.3	2.0	25.1	11.2	81.6	20.4	2.4	10.4	18.7
2		9.4	11.5	12.0	8.2	7.5	4.5	7.7	1.6	25.1	9.2	34.2	16.5	1.2	9.1	16.7
3		7.4	7.9	10.6	6.9	6.4	4.4	7.7	1.3	25.0	9.0	27.8	12.7	1.1	9.0	16.2
4		6.5	7.7	9.6	5.9	5.5	4.2	7.6	1.3	18.1	8.6	23.6	8.6	0.7	8.9	15.6
5		6.4	6.0	8.7	5.7	5.5	3.9	7.4	1.3	16.3	8.5	23.5	8.1	0.7	8.7	14.8
6		6.0	5.4	7.9	5.3	5.1	3.8	7.0	1.2	13.4	8.2	23.5	7.6	0.6	8.6	14.3
7		6.0	5.1	7.2	4.7	5.0	3.4	6.9	1.2	11.8	7.2	22.4	7.6	0.6	7.9	13.3

Site Name	Atlantic	Belmond New	Belmond Old	Clarion	Goldfield	Iowa Falls	Jewell	Kanawha	Malcom	Newkirk	Sac City	Sioux Center	Stanhope	West Union	Williams	Woodbine
8		5.8	4.2	7.0	4.6	4.8	3.3	6.5	1.0	10.5	6.4	22.4	7.0	0.6	6.0	12.8
9		5.7	4.2	6.9	4.5	4.6	3.3	6.4	0.9	10.4	6.2	20.2	6.8	0.5	5.0	11.9
10		4.9	4.2	6.6	4.1	4.6	2.6	6.0	0.9	9.9	5.1	19.8	6.0	0.5	4.8	11.7
2005																
1		8.0		18.6	9.1	16.2	32.4	11.2		143.7	19.5		24.6	2.3		
2		7.7		14.7	8.9	12.9	31.2	7.2		47.8	15.9		23.8	2.2		
3		7.5		13.4	8.9	12.6	31.0	7.0		36.6	14.0		23.4	1.7		
4		6.5		10.2	7.8	10.2	24.8	6.6		27.5	13.2		19.1	1.4		
5		6.3		7.9	7.4	8.1	21.8	6.5		25.1	13.1		19.0	1.1		
6		6.0		7.3	7.1	7.0	20.0	6.4		23.7	11.5		15.5	0.9		
7		5.5		7.1	6.7	5.7	19.9	6.3		23.2	11.1		14.7	0.9		
8		5.0		7.1	6.5	5.4	18.8	6.1		19.3	10.6		14.4	0.8		
9		4.9		6.5	6.4	5.3	18.7	6.0		17.8	10.2		12.7	0.8		
10		4.7		6.5	6.1	5.3	18.1	5.9		17.5	10.2		12.7	0.7		
2006																
1		6.1		25.2	7.6	13.5	28.8	7.5		40.7	51.9		33.0	3.9		
2		5.2		16.2	6.4	12.9	24.5	7.1		29.4	23.9		25.0	2.8		
3		5.2		6.9	6.3	12.2	20.0	7.0		28.7	17.7		13.9	2.6		
4		5.0		6.8	5.5	11.4	19.4	6.8		28.5	16.7		12.3	2.5		
5		4.8		6.8	5.4	8.3	12.7	6.6		28.0	16.1		11.6	2.5		
6		4.5		6.3	5.4	8.1	12.4	6.5		26.1	16.0		10.2	2.1		
7		4.3		6.2	5.2	8.0	11.9	6.3		25.7	13.5		9.4	1.9		
8		4.1		6.0	5.1	6.9	11.4	6.3		23.4	12.5		9.4	1.9		
9		4.1		5.9	5.1	6.8	10.5	6.0		22.3	12.5		9.2	1.8		
10		4.0		5.3	4.9	5.8	9.0	6.0		21.7	12.5		8.6	1.7		
2007																
1		7.0		18.6	12.3	13.6	22.0	11.6		54.2	15.1		44.5	2.2		
2		5.6		15.2	8.3	10.1	15.4	8.3		35.7	12.8		27.3	1.8		
3		5.4		13.7	7.3	9.0	11.6	8.2		32.8	12.4		23.4	1.8		
4		4.8		9.4	7.1	8.7	11.4	8.2		29.5	12.3		22.9	1.7		
5		4.8		7.3	6.9	7.4	11.0	8.0		26.3	12.2		20.0	1.7		

Site Name	Atlantic	Belmond New	Belmond Old	Clarion	Goldfield	Iowa Falls	Jewell	Kanawha	Malcom	Newkirk	Sac City	Sioux Center	Stanhope	West Union	Williams	Woodbine
6		4.6		7.1	5.9	7.3	9.9	7.1		24.5	12.0		17.6	1.6		
7		4.3		6.5	5.4	7.3	8.6	6.7		23.2	11.9		15.8	1.5		
8		4.2		6.4	5.1	6.9	8.5	6.7		23.1	11.6		14.3	1.4		
9		4.1		6.4	4.9	6.3	8.4	6.4		21.4	11.4		14.0	1.4		
10		4.1		6.3	4.7	5.4	7.7	6.3		20.6	9.5		13.1	1.3		

Table 6. Percentiles for daily Hydrogen Sulfide for 2002-2007 CAFO sites, displayed in parts per billion.

Site Name	Atlantic	Belmond New	Belmond Old	Clarion	Goldfield	Iowa Falls	Jewell	Kanawha	Malcom	Newkirk	Sac City	Sioux Center	Stanhope	West Union	Williams	Woodbine
2002																
100%				15.1											24.9	
90%				3.5											11.5	
80%				2.4											6.5	
70%				1.8											4.1	
60%				1.5											2.6	
50%				1.1											1.6	
40%				0.9											1.1	
30%				0.6											0.7	
20%				0.4											0.5	
10%				0.2											0.0	
2003																
100%	101.8		4.8	20.1	2.3				3.6			330.3			29.9	36.8
90%	22.3		2.5	3.8	1.6				0.7			116.1			6.0	12.8
80%	9.6		1.9	2.2	1.3				0.4			74.2			4.2	8.2
70%	5.8		1.4	1.6	1.0				0.2			49.0			2.9	6.4
60%	3.2		1.0	1.2	0.8				0.0			32.7			2.1	4.1
50%	2.1		0.7	1.0	0.6				0.0			18.3			1.5	2.7

Site Name	Atlantic	Belmond New	Belmond Old	Clarion	Goldfield	Iowa Falls	Jewell	Kanawha	Malcom	Newkirk	Sac City	Sioux Center	Stanhope	West Union	Williams	Woodbine
40%	1.4		0.6	0.8	0.6				0.0			10.8			1.1	2.1
30%	0.8		0.4	0.7	0.5				0.0			6.5			0.7	1.5
20%	0.4		0.3	0.6	0.5				0.0			3.4			0.5	0.8
10%	0.1		0.2	0.3	0.4				0.0			0.6			0.4	0.5
2004																
100%		11.7	12.9	17.9	9.3	8.4	5.1	15.3	2.0	25.1	11.2	81.6	20.4	2.4	10.4	18.7
90%		3.8	3.3	4.5	3.0	2.3	1.9	4.9	0.8	5.6	3.8	19.3	3.7	0.4	4.1	10.1
80%		2.7	2.0	3.0	2.0	1.5	1.2	3.7	0.6	3.0	2.7	9.4	2.6	0.2	2.7	6.8
70%		2.0	1.2	2.5	1.5	1.1	0.7	2.7	0.4	2.2	2.0	7.9	1.9	0.1	2.0	4.5
60%		1.6	0.9	2.0	1.1	0.7	0.5	1.8	0.3	1.5	1.5	4.7	1.5	0.0	1.8	2.6
50%		1.1	0.7	1.6	0.9	0.6	0.2	1.4	0.1	1.0	0.9	2.4	1.1	0.0	1.5	1.2
40%		0.9	0.5	1.3	0.8	0.4	0.1	1.0	0.0	0.8	0.6	1.7	1.0	0.0	1.3	0.7
30%		0.7	0.5	1.0	0.7	0.3	0.0	0.7	0.0	0.7	0.4	0.9	0.7	0.0	1.2	0.5
20%		0.6	0.4	0.9	0.6	0.2	0.0	0.5	0.0	0.5	0.3	0.5	0.6	0.0	1.0	0.4
10%		0.5	0.3	0.7	0.4	0.1	0.0	0.3	0.0	0.3	0.1	0.2	0.4	0.0	0.7	0.3
2005																
100%		8.0		18.6	9.1	16.2	32.4	11.2		143.7	19.5		24.6	2.3		
90%		3.2		4.0	4.0	3.6	5.7	4.2		5.2	5.8		6.0	0.4		
80%		1.9		2.8	2.5	1.6	3.9	2.8		2.7	3.6		3.9	0.2		
70%		1.5		2.2	1.8	1.2	2.9	2.1		1.7	2.3		2.7	0.1		
60%		1.2		2.0	1.4	0.8	1.9	1.7		1.2	1.6		1.8	0.0		
50%		0.9		1.6	1.2	0.7	1.5	1.5		1.0	1.1		1.4	0.0		
40%		0.7		1.4	0.9	0.5	1.2	1.1		0.8	0.8		1.0	0.0		
30%		0.6		1.1	0.8	0.4	0.8	0.9		0.6	0.5		0.8	0.0		
20%		0.5		0.9	0.7	0.3	0.5	0.7		0.4	0.4		0.6	0.0		
10%		0.4		0.6	0.6	0.1	0.2	0.5		0.3	0.2		0.4	0.0		
2006																
100%		6.1		25.2	7.6	13.5	28.8	7.5		40.7	51.9		33.0	3.9		
90%		2.7		3.6	2.3	2.8	4.7	3.1		7.6	6.1		4.3	1.0		
80%		1.9		2.6	1.3	1.7	2.8	2.0		3.5	3.9		2.8	0.7		
70%		1.3		2.1	0.9	1.3	1.9	1.4		2.2	2.9		2.2	0.6		

Site Name	Atlantic	Belmond New	Belmond Old	Clarion	Goldfield	Iowa Falls	Jewell	Kanawha	Malcom	Newkirk	Sac City	Sioux Center	Stanhope	West Union	Williams	Woodbine
60%		1.1		1.7	0.7	0.9	1.4	1.2		1.8	2.0		1.7	0.5		
50%		0.9		1.4	0.5	0.7	1.1	1.0		1.6	1.4		1.4	0.4		
40%		0.8		1.1	0.4	0.6	0.9	0.8		1.3	1.1		1.1	0.3		
30%		0.7		0.8	0.3	0.5	0.8	0.6		1.1	0.7		0.9	0.3		
20%		0.6		0.6	0.2	0.4	0.6	0.3		0.9	0.6		0.7	0.2		
10%		0.4		0.4	0.2	0.3	0.4	0.0		0.6	0.4		0.5	0.0		
2007																
100%		7.0		18.6	12.3	13.6	22.0	11.6		54.2	15.1		44.5	2.2		
90%		2.4		3.3	2.9	3.0	4.6	3.8		8.2	5.9		5.6	1.0		
80%		1.7		2.2	2.1	2.0	2.7	2.1		4.5	3.8		3.0	0.7		
70%		1.3		1.8	1.1	1.4	1.9	1.6		2.8	2.7		2.2	0.5		
60%		1.0		1.5	0.8	1.1	1.4	1.4		2.2	2.0		1.7	0.4		
50%		0.8		1.2	0.6	0.8	1.1	1.1		1.8	1.5		1.3	0.3		
40%		0.6		0.9	0.3	0.6	0.8	0.9		1.5	1.2		1.0	0.3		
30%		0.6		0.8	0.2	0.5	0.6	0.7		1.3	0.8		0.8	0.2		
20%		0.4		0.6	0.1	0.4	0.5	0.4		1.1	0.5		0.6	0.1		
10%		0.3		0.3	0.0	0.3	0.3	0.3		0.8	0.2		0.4	0.0		

Table 7. Number of hours with levels over the Health Effects Value (HEV) for 2002-2007 CAFO sites.

Site Name	Atlantic	Belmond New	Belmond Old	Clarion	Goldfield	Iowa Falls	Jewell	Kanawha	Malcom	Newkirk	Sac City	Sioux Center	Stanhope	West Union	Williams	Woodbine
2002				0											0	
2003	23		0	0	0		0		0			470			0	3
2004		0	0	0	0	0	0	0	0	0	0	9	0	0	0	0
2005		0		0	0	0	3	0		4	0		0	0		
2006		0		0	0	0	0	0		2	1		1	0		
2007		0		0	0	0	0	0		4	0		1	0		

MEETS completeness
 Does NOT MEET completeness
 No Data

Table 8. Annual percent completeness for hourly Hydrogen Sulfide data for 2002-2007 CAFO sites.

Site Name	Atlantic	Belmond New	Belmond Old	Clarion	Goldfield	Iowa Falls	Jewell	Kanawha	Malcom	Newkirk	Sac City	Sioux Center	Stanhope	West Union	Williams	Woodbine
2002				74%											66%	
2003	41%		21%	99%	7%				66%			65%			96%	62%
2004		50%	44%	99%	73%	66%	40%	48%	45%	47%	48%	30%	60%	50%	45%	32%
2005		90%		86%	93%	99%	99%	94%		95%	95%		99%	99%		
2006		99%		99%	96%	96%	92%	99%		96%	96%		99%	99%		
2007		99%		93%	99%	99%	97%	99%		99%	99%		98%	95%		

MEETS 90% annual completeness
 Does NOT MEET 90% annual completeness
 No Data

Table 9. Quarterly percent completeness for hourly Hydrogen Sulfide data for 2002-2007 CAFO sites.

Site Name	Atlantic	Belmond New	Belmond Old	Clarion	Goldfield	Iowa Falls	Jewell	Kanawha	Malcom	Newkirk	Sac City	Sioux Center	Stanhope	West Union	Williams	Woodbine
2002																
1																
2				98%											66%	
3				99%											99%	
4				99%											99%	
2003																
1				99%											99%	
2	73%			99%					66%			61%			99%	68%
3	91%			99%					99%			99%			88%	86%
4			85%	99%	28%				99%			99%			99%	92%
2004																
1			94%	99%	73%				98%			99%			99%	91%
2		2%	84%	99%	57%	67%		1%	83%			23%	43%		83%	38%
3		99%		99%	62%	99%	67%	99%		86%	92%		99%	99%		
4		99%		99%	99%	99%	92%	90%		99%	99%		99%	99%		
2005																
1		99%		99%	99%	99%	99%	99%		99%	98%		99%	99%		
2		76%		99%	99%	99%	99%	99%		99%	99%		99%	99%		
3		99%		92%	86%	99%	99%	88%		99%	99%		99%	99%		
4		85%		55%	89%	99%	99%	89%		82%	84%		99%	99%		
2006																
1		99%		99%	99%	99%	99%	99%		88%	99%		98%	99%		
2		99%		99%	91%	99%	90%	99%		99%	99%		99%	99%		
3		98%		99%	97%	87%	82%	99%		96%	99%		99%	99%		
4		99%		99%	99%	99%	99%	99%		99%	85%		99%	99%		
2007																
1		98%		84%	99%	99%	95%	97%		99%	99%		96%	99%		
2		98%		99%	99%	99%	94%	99%		99%	99%		99%	99%		
3		99%		88%	99%	98%	99%	99%		99%	99%		99%	99%		
4		99%		99%	99%	99%	99%	99%		99%	99%		99%	83%		



MEETS 75% quarterly completeness

Does NOT MEET 75% quarterly completeness

No Data

Table 10. Statistical summary for 2002-2007 hourly Hydrogen Sulfide data, displayed in parts per billion.

Site Name	Atlantic	Belmond New	Belmond Old	Clarion	Goldfield	Iowa Falls	Jewell	Kanawha	Malcom	Newkirk	Sac City	Sioux Center	Stanhope	West Union	Williams	Woodbine
2002																
Minimum				0.0												0.0
Maximum				15.1												24.9
Average				0.4												1.0
2003																
Minimum	0.0		0.0	0.0	0.0				0.0			0.0			0.0	0.0
Maximum	101.8		4.8	20.1	2.3				3.6			330.3			29.9	36.8
Average	1.0		0.3	0.4	0.3				0.1			8.9			0.6	1.1
2004																
Minimum		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Maximum		11.7	12.9	17.9	9.3	8.4	5.1	15.3	2.0	25.1	11.2	81.6	20.4	2.4	10.4	18.7
Average		0.5	0.4	0.8	0.6	0.2	0.1	0.6	0.1	0.5	0.3	1.6	0.5	0.0	0.9	0.7
2005																
Minimum		0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0		
Maximum		8.0		18.6	9.1	16.2	32.4	11.2		143.7	19.5		24.6	2.3		
Average		0.4		0.7	0.7	0.3	0.7	0.7		0.6	0.4		0.6	0.0		
2006																
Minimum		0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0		
Maximum		6.1		25.2	7.6	13.5	28.8	7.5		40.7	51.9		33.0	3.9		
Average		0.5		0.6	0.3	0.4	0.6	0.4		0.9	0.5		0.6	0.2		
2007																
Minimum		0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0		
Maximum		7.0		18.6	12.3	13.6	22.0	11.6		54.2	15.1		44.5	2.2		
Average		0.4		0.5	0.2	0.4	0.5	0.5		1.1	0.6		0.6	0.1		

MEETS completeness
 Does NOT MEET completeness
 No Data

Table 11. Top ten maximum sample values for hourly Hydrogen Sulfide data for 2002-2007 CAFO sites.

Data is displayed in parts per billion.

Site Name	Atlantic	Belmond New	Belmond Old	Clarion	Goldfield	Iowa Falls	Jewell	Kanawha	Malcom	Newkirk	Sac City	Sioux Center	Stanhope	West Union	Williams	Woodbine
2002																
1				15.1											24.9	
2				10.6											22.4	
3				9.8											21.7	
4				6.5											20.5	
5				6.5											17.9	
6				6.4											17.0	
7				6.4											16.3	
8				6.1											16.2	
9				5.4											16.2	
10				5.2											16.2	
2003																
1	101.8		4.8	20.1	2.3				3.6			330.3			29.9	36.8
2	81.4		4.7	18.5	2.2				1.9			296.2			28.9	34.2
3	71.3		3.8	16.6	1.7				1.7			277.9			27.3	31.4
4	69.6		3.2	14.8	1.6				1.5			255.3			23.2	28.4
5	64.5		3.0	12.0	1.6				1.5			249.2			18.2	27.9
6	57.8		3.0	11.9	1.5				1.4			238.0			16.5	27.4
7	46.7		2.9	11.6	1.4				1.4			227.0			16.4	23.7
8	46.0		2.8	11.1	1.3				1.3			200.0			16.4	23.6
9	45.8		2.8	10.8	1.3				1.1			199.0			15.3	23.1
10	44.1		2.8	10.5	1.2				1.1			197.0			15.0	22.2
2004																
1		11.7	12.9	17.9	9.3	8.4	5.1	15.3	2.0	25.1	11.2	81.6	20.4	2.4	10.4	18.7
2		9.4	12.6	14.6	9.2	7.5	4.5	7.7	1.8	25.1	9.2	79.9	16.5	1.2	9.1	16.7
3		9.3	11.5	14.2	8.5	6.4	4.4	7.7	1.7	25.0	9.0	70.2	13.5	1.1	9.0	16.2
4		7.4	11.5	13.5	8.2	5.7	4.2	7.6	1.6	18.1	8.6	51.3	12.7	0.7	8.9	15.6
5		6.5	10.8	12.5	7.1	5.6	3.9	7.4	1.5	16.3	8.6	49.5	11.1	0.7	8.7	15.3
6		6.4	10.6	12.0	6.9	5.6	3.9	7.0	1.5	15.7	8.5	41.2	10.4	0.6	8.6	15.3

Site Name	Atlantic	Belmond New	Belmond Old	Clarion	Goldfield	Iowa Falls	Jewell	Kanawha	Malcom	Newkirk	Sac City	Sioux Center	Stanhope	West Union	Williams	Woodbine
7		6.0	7.9	10.6	5.9	5.5	3.8	6.9	1.4	13.6	8.2	38.4	8.6	0.6	7.9	14.8
8		6.0	7.7	10.4	5.7	5.5	3.4	6.5	1.4	13.4	7.5	35.7	8.1	0.6	7.4	14.3
9		5.8	7.5	9.6	5.5	5.2	3.3	6.4	1.4	12.5	7.2	34.2	7.7	0.6	6.8	13.9
10		5.8	7.1	9.2	5.3	5.1	3.3	6.4	1.3	12.3	7.2	28.7	7.6	0.6	6.8	13.3
2005																
1		8.0		18.6	9.1	16.2	32.4	11.2		143.7	19.5		24.6	2.3		
2		7.7		15.2	8.9	12.9	31.2	7.2		47.8	15.9		23.8	2.2		
3		7.5		14.8	8.9	12.6	31.0	7.0		45.2	14.0		23.4	1.8		
4		7.3		14.7	7.8	11.3	24.8	6.6		36.6	13.2		21.9	1.7		
5		7.0		13.8	7.5	10.2	22.0	6.5		27.7	13.1		20.1	1.4		
6		6.8		13.4	7.4	9.0	21.8	6.4		27.5	11.7		19.8	1.3		
7		6.7		12.3	7.1	8.1	20.0	6.3		25.1	11.5		19.8	1.3		
8		6.5		11.6	7.0	7.2	19.9	6.2		23.7	11.1		19.1	1.2		
9		6.4		11.2	6.7	7.0	18.8	6.1		23.2	10.6		19.0	1.2		
10		6.4		10.8	6.6	6.8	18.8	6.0		22.0	10.4		18.9	1.2		
2006																
1		6.1		25.2	7.6	13.5	28.8	7.5		40.7	51.9		33.0	3.9		
2		5.2		16.2	6.4	12.9	24.5	7.1		38.2	23.9		25.0	3.4		
3		5.2		11.9	6.3	12.2	20.0	7.0		29.4	18.0		21.2	3.1		
4		5.0		7.0	5.5	11.4	19.4	6.8		28.7	17.7		13.9	2.8		
5		4.8		6.9	5.5	8.3	19.4	6.7		28.5	16.7		12.5	2.6		
6		4.6		6.8	5.4	8.1	19.1	6.6		28.0	16.1		12.3	2.6		
7		4.6		6.8	5.4	8.1	17.9	6.5		26.1	16.0		11.6	2.5		
8		4.5		6.3	5.2	8.0	12.7	6.4		25.7	14.4		10.2	2.5		
9		4.5		6.2	5.1	7.7	12.7	6.3		25.4	13.5		9.4	2.1		
10		4.3		6.0	5.1	7.5	12.4	6.3		23.4	12.5		9.4	2.1		
2007																
1		7.0		18.6	12.3	13.6	22.0	11.6		54.2	15.1		44.5	2.2		
2		5.6		16.6	8.3	10.1	17.6	8.3		35.7	12.8		29.0	1.8		
3		5.4		16.1	7.3	9.0	15.8	8.2		32.8	12.4		27.3	1.8		
4		4.8		15.2	7.1	8.7	15.4	8.2		31.6	12.3		23.4	1.8		

Site Name	Atlantic	Belmond New	Belmond Old	Clarion	Goldfield	Iowa Falls	Jewell	Kanawha	Malcom	Newkirk	Sac City	Sioux Center	Stanhope	West Union	Williams	Woodbine
5		4.8		14.2	6.9	8.7	12.7	8.1		29.5	12.2		22.9	1.8		
6		4.6		13.9	5.9	8.0	12.3	8.0		26.3	12.0		22.3	1.7		
7		4.3		13.7	5.8	7.4	11.6	8.0		24.5	11.9		21.3	1.7		
8		4.2		13.6	5.4	7.3	11.4	7.2		24.4	11.6		20.8	1.7		
9		4.2		11.4	5.3	7.3	11.0	7.1		23.4	11.4		20.4	1.6		
10		4.1		11.2	5.1	7.3	10.2	7.1		23.2	11.4		20.0	1.6		

Table 12. Percentiles for hourly Hydrogen Sulfide data for 2002-2007 CAFO sites. Data is displayed in parts per billion.

Site Name	Atlantic	Belmond New	Belmond Old	Clarion	Goldfield	Iowa Falls	Jewell	Kanawha	Malcom	Newkirk	Sac City	Sioux Center	Stanhope	West Union	Williams	Woodbine
2002																
100%				15.1											24.9	
90%				1.2											2.6	
80%				0.7											1.1	
70%				0.4											0.6	
60%				0.2											0.4	
50%				0.0											0.2	
40%				0.0											0.1	
30%				0.0											0.0	
20%				0.0											0.0	
10%				0.0											0.0	
2003																
100%	101.8		4.8	20.1	2.3				3.6			330.3			29.9	36.8
90%	1.3		0.8	1.0	0.7				0.2			23.9			1.5	2.8
80%	0.5		0.4	0.6	0.5				0.0			7.4			0.9	1.3
70%	0.3		0.3	0.4	0.4				0.0			2.9			0.6	0.8
60%	0.2		0.2	0.3	0.3				0.0			1.2			0.3	0.5

Site Name	Atlantic	Belmond New	Belmond Old	Clarion	Goldfield	Iowa Falls	Jewell	Kanawha	Malcom	Newkirk	Sac City	Sioux Center	Stanhope	West Union	Williams	Woodbine
50%	0.1		0.1	0.3	0.3				0.0			0.5			0.2	0.3
40%	0.1		0.1	0.2	0.2				0.0			0.2			0.1	0.2
30%	0.0		0.1	0.1	0.1				0.0			0.0			0.0	0.1
20%	0.0		0.0	0.0	0.1				0.0			0.0			0.0	0.0
10%	0.0		0.0	0.0	0.0				0.0			0.0			0.0	0.0
2004																
100%		11.7	12.9	17.9	9.3	8.4	5.1	15.3	2.0	25.1	11.2	81.6	20.4	2.4	10.4	18.7
90%		1.0	0.8	1.5	1.4	0.4	0.2	1.4	0.5	1.0	0.8	4.3	1.0	0.0	1.5	1.9
80%		0.6	0.5	1.1	0.8	0.2	0.0	0.9	0.3	0.5	0.3	1.5	0.6	0.0	1.1	0.6
70%		0.5	0.4	0.9	0.6	0.1	0.0	0.6	0.0	0.4	0.1	0.8	0.4	0.0	1.0	0.4
60%		0.4	0.3	0.8	0.6	0.0	0.0	0.4	0.0	0.3	0.0	0.5	0.3	0.0	0.9	0.3
50%		0.4	0.2	0.6	0.5	0.0	0.0	0.3	0.0	0.2	0.0	0.4	0.3	0.0	0.8	0.2
40%		0.3	0.2	0.5	0.4	0.0	0.0	0.2	0.0	0.2	0.0	0.1	0.2	0.0	0.7	0.1
30%		0.2	0.1	0.4	0.3	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.2	0.0	0.5	0.1
20%		0.2	0.1	0.3	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.4	0.0
10%		0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.2	0.0
2005																
100%		8.0		18.6	9.1	16.2	32.4	11.2		143.7	19.5		24.6	2.3		
90%		0.9		1.4	1.1	0.7	1.5	1.4		1.1	1.0		1.3	0.0		
80%		0.6		1.0	0.8	0.4	0.9	1.1		0.6	0.5		0.7	0.0		
70%		0.4		0.8	0.7	0.3	0.6	0.8		0.5	0.3		0.5	0.0		
60%		0.3		0.7	0.6	0.2	0.4	0.6		0.4	0.2		0.3	0.0		
50%		0.3		0.6	0.5	0.1	0.3	0.5		0.3	0.1		0.3	0.0		
40%		0.2		0.5	0.4	0.1	0.2	0.4		0.2	0.1		0.2	0.0		
30%		0.1		0.3	0.4	0.0	0.1	0.2		0.1	0.0		0.1	0.0		
20%		0.1		0.1	0.3	0.0	0.0	0.1		0.1	0.0		0.1	0.0		
10%		0.0		0.0	0.2	0.0	0.0	0.0		0.0	0.0		0.0	0.0		
2006																
100%		6.1		25.2	7.6	13.5	28.8	7.5		40.7	51.9		33.0	3.9		
90%		0.9		1.2	0.6	0.8	1.3	1.0		1.6	1.3		1.1	0.4		
80%		0.6		0.8	0.4	0.5	0.9	0.7		1.2	0.6		0.7	0.3		

Site Name	Atlantic	Belmond New	Belmond Old	Clarion	Goldfield	Iowa Falls	Jewell	Kanawha	Malcom	Newkirk	Sac City	Sioux Center	Stanhope	West Union	Williams	Woodbine
70%		0.5		0.6	0.3	0.4	0.7	0.5		1.0	0.4		0.5	0.2		
60%		0.4		0.5	0.2	0.3	0.5	0.3		0.8	0.3		0.4	0.1		
50%		0.4		0.4	0.1	0.3	0.4	0.2		0.7	0.2		0.3	0.1		
40%		0.3		0.3	0.1	0.2	0.3	0.0		0.6	0.2		0.3	0.1		
30%		0.3		0.2	0.0	0.2	0.2	0.0		0.4	0.1		0.2	0.0		
20%		0.2		0.2	0.0	0.1	0.1	0.0		0.3	0.1		0.2	0.0		
10%		0.2		0.1	0.0	0.1	0.0	0.0		0.0	0.0		0.1	0.0		
2007																
100%		7.0		18.6	12.3	13.6	22.0	11.6		54.2	15.1		44.5	2.2		
90%		0.8		1.1	0.7	0.8	1.0	1.2		1.8	1.4		1.1	0.4		
80%		0.5		0.7	0.3	0.5	0.6	0.9		1.3	0.9		0.6	0.3		
70%		0.4		0.5	0.1	0.4	0.4	0.7		1.1	0.6		0.4	0.2		
60%		0.3		0.3	0.0	0.3	0.3	0.5		0.9	0.4		0.3	0.1		
50%		0.3		0.2	0.0	0.2	0.2	0.3		0.8	0.2		0.2	0.0		
40%		0.2		0.2	0.0	0.2	0.2	0.1		0.7	0.1		0.2	0.0		
30%		0.2		0.1	0.0	0.2	0.1	0.0		0.6	0.0		0.1	0.0		
20%		0.1		0.1	0.0	0.1	0.0	0.0		0.5	0.0		0.0	0.0		
10%		0.1		0.0	0.0	0.1	0.0	0.0		0.2	0.0		0.0	0.0		

Summary of Ammonia CAFO Data

Table 13. Annual highest daily maximum for daily Ammonia data for 2003-2007 CAFO sites. Numbers expressed in parts per billion (ppb).

Site Name	Atlantic	Belmond New	Belmond Old	Clarion	Goldfield	Iowa Falls	Jewell	Kanawha	Malcom	Newkirk	Sac City	Sioux Center	Stanhope	Viking Lake	West Union	Williams	Woodbine
2003	650.6		150.7	1182.0	642.3				398.9			357.9		142.6		1104.0	696.8
2004		481.2	379.1	973.5	904.6	607.0	690.2	251.7	745.9	316.1	390.8	100.6	1751.0	198.1	588.6	199.5	135.3
2005		476.4		508.0	783.3	427.3	875.5	548.0		729.6	317.4		1045.0	109.8	453.5		
2006		181.1		550.7	538.5	285.8	995.7	314.9		278.8	395.9		1820.0	43.7	930.9		
2007		330.8		586.3	1996.0	174.9	459.6	877.4		161.0	251.2		596.3	114.6	732.8		

	MEETS 90% annual AND 75% quarterly completeness
	Does NOT MEET 90% annual or Does NOT MEET 75% quarterly completeness
	No Data

Table 14. Annual percent completeness for daily Ammonia data (2003-2007).

Site Name	Atlantic	Belmond New	Belmond Old	Clarion	Goldfield	Iowa Falls	Jewell	Kanawha	Malcom	Newkirk	Sac City	Sioux Center	Stanhope	Viking Lake	West Union	Williams	Woodbine
2003	39%		21%	72%	6%				35%			48%		62%		60%	50%
2004		50%	46%	93%	85%	58%	42%	50%	40%	38%	52%	26%	49%	92%	48%	45%	31%
2005		99%		90%	95%	98%	99%	96%		100%	99%		100%	97%	99%		
2006		100%		100%	99%	100%	98%	99%		99%	99%		100%	88%	94%		
2007		99%		95%	97%	100%	98%	99%		94%	96%		95%	93%	92%		

	MEETS 90% annual completeness
	Does NOT MEET 90% completeness
	No Data

Table 15. Quarterly percent completeness for daily Ammonia data (2003-2007).

Site Name	Atlantic	Belmond New	Belmond Old	Clarion	Goldfield	Iowa Falls	Jewell	Kanawha	Malcom	Newkirk	Sac City	Sioux Center	Stanhope	Viking Lake	West Union	Williams	Woodbine
2003																	
1				7%												18%	
2	65%			89%								47%		81%		77%	68%
3	90%			96%					41%			49%		71%		43%	53%
4			85%	95%	25%				96%			93%		97%		100%	76%
2004																	
1			99%	99%	82%				79%			95%		100%		99%	87%
2		1%	85%	100%	59%	36%			82%		32%	9%	26%	80%		82%	38%
3		99%		76%	99%	99%	71%	100%		83%	76%		73%	91%	90%		
4		99%		98%	99%	98%	98%	99%		67%	99%		97%	96%	99%		
2005																	
1		100%		99%	98%	91%	99%	99%		100%	98%		100%	89%	97%		
2		100%		100%	100%	100%	99%	100%		100%	100%		100%	100%	99%		
3		98%		91%	99%	100%	100%	84%		100%	100%		99%	99%	99%		
4		100%		71%	85%	100%	99%	100%		100%	100%		100%	100%	100%		
2006																	
1		99%		100%	100%	99%	100%	100%		99%	99%		100%	88%	100%		
2		100%		100%	100%	100%	100%	100%		100%	99%		100%	87%	100%		
3		100%		100%	98%	100%	93%	100%		99%	100%		99%	79%	99%		
4		100%		100%	100%	100%	99%	98%		100%	100%		100%	100%	78%		
2007																	
1		99%		89%	93%	100%	94%	97%		77%	86%		96%	100%	72%		
2		97%		100%	100%	99%	98%	100%		100%	100%		86%	76%	97%		
3		100%		90%	96%	100%	100%	100%		100%	100%		100%	97%	99%		
4		100%		100%	100%	100%	100%	100%		100%	100%		100%	100%	100%		

MEETS 75% quarterly completeness
 Does NOT MEET 75% quarterly completeness
 No Data

Table 16. Statistical summary, displayed in parts per billion, for daily Ammonia data (2003-2007).

Site Name	Atlantic	Belmond New	Belmond Old	Clarion	Goldfield	Iowa Falls	Jewell	Kanawha	Malcom	Newkirk	Sac City	Sioux Center	Stanhope	Viking Lake	West Union	Williams	Woodbine
2003																	
Minimum	8.6		1.8	0.0	22.8				6.1		0.2		0.0			0.0	3.3
Maximum	650.6		150.7	1182.0	642.3				398.9		357.9		142.6			1104.0	696.8
Average	154.0		41.2	138.9	136.6				55.8		68.4		9.7			90.2	143.2
2004																	
Minimum		0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.8
Maximum		481.2	379.1	973.5	904.6	607.0	690.2	251.7	745.9	316.1	390.8	100.6	1751.0	198.1	588.6	199.5	135.3
Average		41.8	41.4	96.2	54.8	88.7	103.8	38.4	78.2	23.9	54.0	28.7	100.7	8.7	29.4	36.2	39.5
2005																	
Minimum		0.3		0.0	0.0	0.0	2.9	0.0		0.0	0.0		2.0	0.0	0.0		
Maximum		476.4		508.0	783.3	427.3	875.5	548.0		729.6	317.4		1045.0	109.8	453.5		
Average		31.0		71.3	38.1	51.7	52.8	40.0		31.3	29.8		64.5	7.2	45.3		
2006																	
Minimum		0.3		0.0	0.0	0.1	3.8	0.0		0.0	0.0		0.0	0.0	0.0		
Maximum		181.1		550.7	538.5	285.8	995.7	314.9		278.8	395.9		1820.0	43.7	930.9		
Average		25.2		67.1	31.2	31.5	44.6	30.2		26.1	27.0		46.7	6.6	64.7		
2007																	
Minimum		2.3		0.0	0.0	2.1	0.5	0.0		0.0	0.0		1.7	0.0	0.0		
Maximum		330.8		586.3	1996.0	174.9	459.6	877.4		161.0	251.2		596.3	114.6	732.8		
Average		25.5		59.4	27.0	26.2	41.6	33.6		21.3	26.4		37.1	8.4	54.8		

MEETS completeness
 Does NOT MEET completeness
 No Data

Table 17. Top ten maximum sample values for daily Ammonia data for 2003-2007. Data displayed in parts per billion.

Site Name	Atlantic	Belmond New	Belmond Old	Clarion	Goldfield	Iowa Falls	Jewell	Kanawha	Malcom	Newkirk	Sac City	Sioux Center	Stanhope	Viking Lake	West Union	Williams	Woodbine
2003																	
1	650.6		150.7	1182.0	642.3				398.9			357.9		142.6		1104.0	696.8
2	423.6		123.8	949.5	290.6				364.2			345.2		75.6		819.4	547.9
3	419.1		112.4	859.1	229.5				264.9			319.9		67.5		743.5	480.5
4	379.3		110.0	757.2	185.9				254.5			315.0		54.4		672.4	453.0
5	368.3		97.5	729.8	176.6				233.7			309.0		46.7		661.8	443.3
6	364.6		97.0	696.3	171.9				193.6			289.4		41.2		535.3	419.4
7	319.1		87.9	691.4	154.0				152.4			277.3		40.2		522.1	403.1
8	316.7		81.7	596.6	126.6				152.0			260.8		39.1		444.1	395.0
9	312.5		75.6	521.4	111.5				135.8			236.8		37.6		443.8	377.0
10	305.1		69.6	494.5	109.9				130.0			234.7		34.7		393.2	375.8
2004																	
1		481.2	379.1	973.5	904.6	607.0	690.2	251.7	745.9	316.1	390.8	100.6	1751.0	198.1	588.6	199.5	135.3
2		329.4	311.8	609.5	404.9	431.5	587.1	250.3	641.0	244.8	343.6	100.2	797.2	65.5	232.8	185.5	129.4
3		269.7	271.4	603.7	334.1	414.9	401.9	199.7	511.2	225.9	240.9	83.8	745.7	62.8	187.9	178.2	123.1
4		251.0	180.6	568.7	308.9	407.9	366.0	190.4	485.2	138.9	204.2	82.5	622.2	61.1	123.3	160.7	117.5
5		227.2	160.0	564.8	216.7	312.7	363.1	185.3	472.7	103.9	196.3	82.0	507.5	44.8	106.4	155.3	108.0
6		201.8	145.4	538.7	200.9	302.4	332.1	177.3	460.2	80.9	191.9	72.6	330.9	42.5	98.9	150.9	97.9
7		165.2	117.6	516.4	195.1	282.0	323.3	145.8	407.3	74.0	170.2	69.7	256.6	32.7	93.5	140.9	91.8
8		164.9	116.5	466.3	179.9	266.4	280.1	136.9	402.5	71.0	150.1	68.9	253.9	31.1	91.6	135.0	90.9
9		161.0	100.2	440.5	176.7	243.8	247.7	134.5	394.1	64.2	146.6	63.9	224.5	28.9	85.9	130.6	85.7
10		154.2	98.4	415.4	173.6	217.0	237.8	124.3	384.7	57.3	134.9	63.8	219.4	28.5	81.6	122.9	84.2
2005																	
1		476.4		508.0	783.3	427.3	875.5	548.0		729.6	317.4		1045.0	109.8	453.5		
2		352.8		478.3	702.2	385.1	721.4	383.3		721.4	202.8		859.7	48.9	366.5		
3		269.6		466.3	374.7	318.5	705.3	363.1		296.6	180.6		787.4	38.9	329.2		
4		268.1		465.9	367.7	289.0	479.7	340.1		244.0	168.6		741.9	35.2	272.5		
5		255.2		437.9	246.7	280.1	387.2	278.1		207.2	167.6		558.8	34.0	261.8		
6		206.4		388.5	209.7	279.2	346.3	260.7		202.8	145.7		522.7	31.2	240.9		
7		194.4		369.7	207.6	271.6	297.9	242.1		190.4	144.5		519.6	25.8	234.6		

Site Name	Atlantic	Belmond New	Belmond Old	Clarion	Goldfield	Iowa Falls	Jewell	Kanawha	Malcom	Newkirk	Sac City	Sioux Center	Stanhope	Viking Lake	West Union	Williams	Woodbine
8		163.0		358.0	204.6	268.2	295.6	241.2		185.9	141.1		486.6	25.0	216.6		
9		153.7		321.5	200.4	243.3	265.7	222.3		183.8	110.4		458.8	22.3	208.7		
10		151.6		303.1	164.3	241.9	243.5	221.9		169.0	102.6		452.6	21.7	206.4		
2006																	
1		181.1		550.7	538.5	285.8	995.7	314.9		278.8	395.9		1820.0	43.7	930.9		
2		144.7		444.7	355.7	283.6	397.8	257.6		263.1	262.3		649.4	39.2	805.4		
3		127.4		429.3	317.0	258.9	332.9	236.4		159.3	246.7		424.4	38.5	800.1		
4		119.8		424.1	297.9	193.6	319.2	202.9		132.3	234.8		412.0	34.4	573.1		
5		117.5		406.5	243.9	193.4	251.5	196.5		132.0	181.8		374.9	33.4	382.6		
6		101.6		374.2	222.9	168.2	243.8	188.2		127.9	142.4		331.2	29.4	357.9		
7		95.7		336.4	217.2	135.3	226.6	144.5		111.2	134.0		310.0	28.1	354.9		
8		92.3		331.8	210.1	134.7	220.5	143.3		111.0	122.0		293.9	24.4	338.1		
9		90.9		301.2	175.7	120.9	198.2	141.4		108.6	119.0		270.9	23.0	319.7		
10		79.0		300.9	167.0	118.7	183.4	138.7		103.6	118.2		250.0	21.5	309.1		
2007																	
1		330.8		586.3	1996.0	174.9	459.6	877.4		161.0	251.2		596.3	114.6	732.8		
2		244.0		432.8	1137.0	153.4	398.1	681.7		130.1	158.1		520.0	47.6	622.5		
3		175.0		338.6	207.5	99.2	340.4	410.3		120.9	119.5		420.8	43.5	495.6		
4		128.6		336.2	177.3	90.5	326.9	366.3		119.6	90.0		399.3	43.4	492.4		
5		123.4		322.5	169.0	84.9	326.4	320.3		83.0	90.0		305.8	42.2	415.6		
6		101.8		321.1	158.6	79.7	261.1	269.3		82.2	89.1		298.6	32.9	358.0		
7		100.5		314.2	157.5	77.8	250.4	244.4		78.8	83.8		258.3	32.0	319.8		
8		100.0		305.9	120.4	76.9	220.7	223.2		76.5	81.8		228.4	31.2	275.8		
9		94.2		289.6	118.8	74.4	219.7	169.4		74.1	79.8		204.2	30.6	270.7		
10		94.2		280.7	97.4	74.4	202.0	162.7		66.6	79.7		149.3	27.5	268.3		

Table 18. Percentiles for daily Ammonia data for 2003-2007 CAFO sites. Data displayed in parts per billion.

Site Name	Atlantic	Belmond New	Belmond Old	Clarion	Goldfield	Iowa Falls	Jewell	Kanawha	Malcom	Newkirk	Sac City	Sioux Center	Stanhope	Viking Lake	West Union	Williams	Woodbine
2003																	
100%	650.6		150.7	1182.0	642.3				398.9			357.9		142.6		1104.0	696.8
90%	257.4		77.4	322.4	220.8				98.8			169.1		20.4		227.6	307.0
80%	224.3		58.9	221.4	174.7				68.9			106.6		13.3		131.3	243.8
70%	191.9		46.8	159.7	137.6				57.3			75.3		10.1		88.0	197.0
60%	159.5		38.3	111.3	110.2				46.5			52.1		8.1		48.8	157.2
50%	141.5		34.1	86.1	97.0				38.7			39.2		6.3		33.9	119.0
40%	119.0		29.5	52.2	92.1				32.0			28.4		5.6		25.3	69.4
30%	100.7		23.3	31.6	76.0				25.9			21.9		3.3		18.2	40.5
20%	77.6		18.1	21.6	72.3				20.4			15.5		1.8		14.0	27.2
10%	42.4		13.9	13.4	51.2				14.2			11.8		0.0		9.1	19.8
2004																	
100%		481.2	379.1	973.5	904.6	607.0	690.2	251.7	745.9	316.1	390.8	100.6	1751.0	198.1	588.6	199.5	135.3
90%		88.9	74.3	252.2	98.5	155.6	214.2	98.7	188.4	44.6	99.8	62.6	170.0	18.0	49.5	91.0	81.8
80%		55.9	57.0	161.3	73.4	117.6	152.7	72.6	108.5	28.4	76.0	46.2	132.5	13.5	34.3	58.1	57.3
70%		40.4	43.7	108.8	59.0	96.4	117.0	44.3	48.5	20.8	64.3	37.8	94.2	10.2	25.2	33.9	46.1
60%		29.9	36.3	68.9	49.6	80.5	92.4	32.3	38.3	16.5	56.1	25.6	75.1	8.1	20.8	27.8	38.1
50%		22.6	31.1	45.9	40.9	73.0	79.4	18.6	25.0	13.9	43.9	22.5	63.2	6.1	18.6	21.7	32.9
40%		16.1	25.8	29.0	33.7	66.5	61.8	11.2	22.5	10.2	30.7	19.6	52.6	4.2	15.8	16.4	26.9
30%		11.8	18.5	20.5	27.9	55.3	51.6	6.8	18.5	7.5	24.2	14.9	43.0	2.1	14.2	13.4	22.7
20%		7.8	11.7	13.8	19.2	37.7	40.0	2.9	14.3	5.3	18.9	11.5	33.9	0.2	12.3	10.5	15.3
10%		5.1	5.9	6.5	10.4	25.6	13.3	0.9	10.1	1.5	11.9	4.0	24.7	0.0	9.1	5.6	9.1
2005																	
100%		476.4		508.0	783.3	427.3	875.5	548.0		729.6	317.4		1045.0	109.8	453.5		
90%		59.2		180.3	91.6	94.9	88.1	95.5		50.2	64.1		115.6	14.9	121.3		
80%		43.2		112.3	47.1	62.5	58.2	53.1		35.4	41.8		67.4	10.1	67.9		
70%		30.8		73.5	34.0	46.6	43.4	35.9		26.7	31.5		49.0	8.1	40.7		
60%		22.6		55.2	23.9	40.5	36.2	27.3		20.8	26.4		40.5	6.5	29.9		
50%		18.0		40.0	17.2	36.1	32.1	18.0		17.3	20.7		34.6	5.6	22.8		
40%		14.5		28.3	12.1	31.7	27.7	13.7		14.3	16.6		28.4	4.4	18.0		

Site Name	Atlantic	Belmond New	Belmond Old	Clarion	Goldfield	Iowa Falls	Jewell	Kanawha	Malcom	Newkirk	Sac City	Sioux Center	Stanhope	Viking Lake	West Union	Williams	Woodbine
30%		10.7		19.7	8.7	28.5	23.9	10.1		11.7	12.8		22.0	3.8	14.1		
20%		7.6		11.6	6.6	24.4	19.8	7.1		9.0	8.9		17.1	2.4	10.0		
10%		5.4		6.0	4.0	16.4	16.1	3.4		6.2	5.1		12.2	0.4	5.8		
2006																	
100%		181.1		550.7	538.5	285.8	995.7	314.9		278.8	395.9		1820.0	43.7	930.9		
90%		52.6		160.7	61.8	53.2	78.3	65.9		52.4	59.5		77.0	13.8	192.5		
80%		35.3		106.7	34.4	36.6	52.3	41.7		38.0	38.8		45.0	9.4	109.3		
70%		25.1		74.5	26.2	30.6	39.7	29.8		27.7	28.3		36.2	7.2	48.5		
60%		20.7		53.3	21.7	26.7	33.2	22.4		21.1	23.5		29.2	5.8	30.1		
50%		17.1		36.8	17.1	23.1	29.1	17.7		17.0	18.4		24.7	4.6	18.2		
40%		14.8		26.5	13.9	20.7	25.8	14.0		13.5	13.2		21.7	4.2	11.7		
30%		13.4		18.4	11.3	18.2	21.6	10.8		11.5	8.9		18.8	2.7	8.5		
20%		11.4		11.0	9.0	15.4	18.3	7.4		8.3	5.9		15.3	2.5	6.3		
10%		9.3		6.2	7.1	12.5	15.3	4.2		6.3	2.2		11.7	1.1	3.1		
2007																	
100%		330.8		586.3	1996.0	174.9	459.6	877.4		161.0	251.2		596.3	114.6	732.8		
90%		42.8		159.8	44.1	44.0	80.9	63.9		43.4	53.0		67.3	18.1	137.8		
80%		31.4		96.7	28.0	33.8	49.2	36.8		31.2	37.4		40.2	12.4	86.5		
70%		25.1		58.5	19.5	28.0	38.1	26.2		23.2	30.7		31.1	9.0	47.5		
60%		21.1		39.9	13.3	25.2	31.7	19.6		19.7	24.4		25.2	7.2	27.1		
50%		18.6		30.6	10.1	22.0	26.1	15.3		16.2	20.3		22.3	5.9	19.7		
40%		16.2		22.5	6.0	19.5	22.8	12.3		12.8	16.3		19.6	4.6	15.4		
30%		13.8		14.2	2.9	17.0	18.7	9.7		10.3	13.4		16.2	4.0	11.8		
20%		12.1		9.7	0.1	14.0	15.2	7.2		7.9	10.0		12.7	2.6	7.6		
10%		9.5		4.1	0.0	10.1	11.5	3.6		4.9	6.4		8.9	0.9	3.5		

Table 19. Annual percent completeness for hourly Ammonia data for 2003-2007 CAFO sites.

Site Name	Atlantic	Belmond New	Belmond Old	Clarion	Goldfield	Iowa Falls	Jewell	Kanawha	Malcom	Newkirk	Sac City	Sioux Center	Stanhope	Viking Lake	West Union	Williams	Woodbine
2003	39%		21%	72%	7%				35%			48%		63%		61%	52%
2004		50%	45%	93%	86%	58%	42%	50%	40%	38%	51%	26%	50%	92%	47%	45%	32%
2005		98%		90%	95%	96%	98%	95%		98%	98%		98%	96%	98%		
2006		99%		99%	98%	98%	97%	98%		98%	98%		98%	88%	93%		
2007		98%		95%	96%	98%	97%	98%		93%	96%		94%	93%	91%		

MEETS 90% annual completeness
 Does NOT MEET 90% annual completeness
 No Data

Table 20. Quarterly percent completeness for hourly Ammonia data for 2003-2007 CAFO sites.

Site Name	Atlantic	Belmond New	Belmond Old	Clarion	Goldfield	Iowa Falls	Jewell	Kanawha	Malcom	Newkirk	Sac City	Sioux Center	Stanhope	Viking Lake	West Union	Williams	Woodbine
2003																	
1				8%												19%	
2	67%			90%								47%		81%		79%	68%
3	91%			94%					42%			51%		71%		45%	60%
4			84%	94%	26%				98%			93%		97%		99%	79%
2004																	
1			98%	99%	83%				80%			95%		99%		99%	91%
2		1%	84%	99%	62%	36%			82%		31%	9%	29%	80%		83%	38%
3		99%		77%	98%	98%	69%	99%		84%	76%		73%	91%	90%		
4		98%		98%	98%	98%	97%	98%		69%	98%		98%	96%	98%		
2005																	
1		98%		98%	98%	90%	98%	98%		99%	97%		98%	91%	98%		
2		98%		98%	98%	98%	98%	98%		98%	99%		98%	98%	97%		
3		98%		92%	99%	98%	98%	86%		98%	98%		98%	98%	98%		

Site Name	Atlantic	Belmond New	Belmond Old	Clarion	Goldfield	Iowa Falls	Jewell	Kanawha	Malcom	Newkirk	Sac City	Sioux Center	Stanhope	Viking Lake	West Union	Williams	Woodbine
4		98%		71%	84%	98%	98%	99%		98%	98%		99%	99%	98%		
2006																	
1		98%		98%	99%	98%	98%	99%		98%	98%		98%	87%	98%		
2		98%		99%	99%	98%	98%	99%		98%	98%		98%	86%	98%		
3		99%		99%	98%	98%	95%	99%		97%	98%		98%	79%	98%		
4		98%		99%	99%	98%	98%	97%		98%	98%		98%	99%	78%		
2007																	
1		98%		90%	93%	98%	95%	97%		76%	85%		95%	99%	73%		
2		97%		99%	99%	98%	97%	99%		99%	99%		85%	78%	96%		
3		99%		94%	95%	99%	99%	99%		98%	99%		98%	97%	98%		
4		99%		99%	99%	98%	98%	99%		99%	99%		99%	99%	98%		

	MEETS 75% quarterly completeness
	Does NOT MEET 75% quarterly completeness
	No Data

Table 21. Statistical summary, in parts per billion, for hourly Ammonia data (2003-2007).

Site Name	Atlantic	Belmond New	Belmond Old	Clarion	Goldfield	Iowa Falls	Jewell	Kanawha	Malcom	Newkirk	Sac City	Sioux Center	Stanhope	Viking Lake	West Union	Williams	Woodbine
2003																	
Minimum	0.0		0.0	0.0	0.2				0.0			0.0		0.0		0.0	0.0
Maximum	650.6		150.7	1182.0	642.3				398.9			357.9		142.6		1104.0	696.8
Average	67.4		19.6	30.1	63.1				22.9			23.1		2.8		26.5	62.9
2004																	
Minimum		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Maximum		481.2	379.1	973.5	904.6	607.0	690.2	251.7	745.9	316.1	390.8	100.6	1751.0	283.6	588.6	230.3	154.7
Average		11.1	17.0	26.0	22.0	44.9	49.8	11.8	20.5	6.7	22.3	11.2	38.7	3.0	11.5	15.2	17.1

Site Name	Atlantic	Belmond New	Belmond Old	Clarion	Goldfield	Iowa Falls	Jewell	Kanawha	Malcom	Newkirk	Sac City	Sioux Center	Stanhope	Viking Lake	West Union	Williams	Woodbine
2005																	
Minimum		0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0		
Maximum		476.4		508.0	783.3	427.3	875.5	548.0		729.6	317.4		1045.0	109.8	453.5		
Average		11.9		21.1	11.4	26.3	20.0	15.2		11.9	11.3		21.3	3.2	15.2		
2006																	
Minimum		0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0		
Maximum		181.1		550.7	538.5	285.8	995.7	314.9		278.8	395.9		1820.0	43.7	930.9		
Average		10.8		20.4	12.0	15.7	19.4	12.4		11.4	9.6		15.7	2.9	15.0		
2007																	
Minimum		0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0		
Maximum		330.8		586.3	1996.0	174.9	459.6	877.4		161.0	251.2		596.3	114.6	732.8		
Average		12.3		20.4	12.3	14.4	16.4	14.2		10.3	12.6		13.8	3.9	13.4		

	MEETS completeness
	Does NOT MEET completeness
	No Data

Table 22. Top ten maximum sample values for hourly Ammonia data for 2003-2007 CAFO sites. Data displayed in parts per billion.

Site Name	Atlantic	Belmond New	Belmond Old	Clarion	Goldfield	Iowa Falls	Jewell	Kanawha	Malcom	Newkirk	Sac City	Sioux Center	Stanhope	Viking Lake	West Union	Williams	Woodbine
2003																	
1	650.6		150.7	1182.0	642.3				398.9			357.9		142.6		1104.0	696.8
2	423.6		123.8	949.5	591.5				364.2			345.2		75.6		819.4	547.9
3	419.1		119.7	897.7	477.3				334.6			321.0		67.5		743.5	542.4
4	379.3		115.1	892.8	402.9				323.0			319.9		60.5		672.4	480.5
5	368.3		112.4	859.1	310.0				266.5			315.0		54.4		661.8	453.0
6	364.6		110.1	757.2	290.6				264.9			314.0		47.8		617.9	443.3

Site Name	Atlantic	Belmond New	Belmond Old	Clarion	Goldfield	Iowa Falls	Jewell	Kanawha	Malcom	Newkirk	Sac City	Sioux Center	Stanhope	Viking Lake	West Union	Williams	Woodbine
7	319.1		110.0	732.1	254.2				254.5			309.0		46.7		611.3	419.4
8	316.7		103.4	729.8	238.9				241.2			289.4		41.2		578.8	412.7
9	312.5		99.0	696.3	238.2				233.7			284.4		40.2		576.4	403.1
10	305.6		97.5	691.4	235.8				193.6			277.3		39.3		558.5	396.6
2004																	
1		481.2	379.1	973.5	904.6	607.0	690.2	251.7	745.9	316.1	390.8	100.6	1751.0	283.6	588.6	230.3	154.7
2		427.1	311.8	609.5	635.8	481.3	587.1	250.3	641.0	264.1	343.6	100.2	949.6	221.5	451.4	199.5	144.8
3		329.4	271.4	603.7	507.5	474.5	401.9	248.2	601.3	244.8	240.9	83.8	797.2	214.5	232.8	196.3	135.3
4		269.7	263.7	568.7	420.7	431.5	366.0	236.7	511.2	227.9	240.5	82.5	760.4	198.1	229.1	185.5	129.4
5		251.0	214.5	564.8	404.9	414.9	363.1	222.2	485.2	225.9	204.2	82.0	745.7	188.2	187.9	178.2	128.3
6		239.8	180.6	561.2	396.3	407.9	332.1	216.2	472.7	212.8	196.3	77.9	622.2	160.4	160.0	160.7	123.1
7		227.2	160.0	538.7	392.0	382.2	323.3	202.1	460.2	204.8	191.9	77.8	613.5	65.5	123.3	155.3	121.5
8		203.9	157.6	516.4	343.5	367.2	315.7	199.7	451.9	197.7	181.8	72.6	507.5	62.8	106.4	150.9	119.5
9		201.8	153.9	500.0	334.1	326.1	304.8	190.4	441.2	174.9	170.2	69.7	448.3	61.7	98.9	140.9	117.8
10		177.5	145.6	466.3	308.9	317.1	296.2	185.3	417.0	156.8	165.9	68.9	364.6	61.1	93.5	140.1	117.5
2005																	
1		476.4		508.0	783.3	427.3	875.5	548.0		729.6	317.4		1045.0	109.8	453.5		
2		352.8		478.3	760.6	385.1	721.4	392.9		721.4	249.5		859.7	99.7	366.5		
3		274.0		466.3	702.2	318.5	705.3	383.3		707.2	202.8		787.4	59.6	329.2		
4		269.6		465.9	374.7	289.0	479.7	363.1		681.8	201.2		763.3	48.9	321.5		
5		268.1		437.9	367.7	280.1	387.2	340.1		636.0	180.6		753.5	38.9	303.3		
6		255.2		433.6	287.9	279.2	346.3	302.2		634.2	177.6		741.9	38.0	272.5		
7		253.3		430.3	254.7	271.6	297.9	289.9		623.6	170.1		604.2	35.2	261.8		
8		252.2		408.7	246.7	268.2	295.6	278.1		511.2	168.6		560.8	34.0	241.4		
9		229.3		402.7	209.7	259.7	275.9	260.7		495.1	167.6		558.8	31.5	240.9		
10		225.3		401.5	207.6	243.3	275.5	242.1		455.5	166.2		522.7	31.2	234.6		
2006																	
1		181.1		550.7	538.5	285.8	995.7	314.9		278.8	395.9		1820.0	43.7	930.9		
2		144.7		444.7	388.5	283.6	761.8	257.6		263.1	285.0		1178.0	39.6	805.4		
3		138.2		429.3	355.7	258.9	716.1	236.4		259.4	262.3		708.2	39.2	800.1		
4		127.4		424.1	317.0	212.6	712.9	202.9		159.3	246.7		649.4	38.5	765.0		

Site Name	Atlantic	Belmond New	Belmond Old	Clarion	Goldfield	Iowa Falls	Jewell	Kanawha	Malcom	Newkirk	Sac City	Sioux Center	Stanhope	Viking Lake	West Union	Williams	Woodbine
5		119.8		406.5	297.9	196.5	694.1	196.5		156.5	246.0		424.4	37.1	761.6		
6		117.5		374.2	296.4	193.6	673.1	188.2		139.5	239.4		412.0	36.8	588.7		
7		101.6		351.5	266.6	193.4	665.5	187.5		138.2	234.8		374.9	35.2	573.1		
8		95.7		344.5	263.5	169.5	397.8	186.5		132.3	212.1		366.5	34.4	459.4		
9		93.0		337.6	251.4	168.2	344.4	176.4		132.3	202.2		331.2	33.4	455.8		
10		92.5		336.4	243.9	158.8	332.9	171.0		132.0	183.0		310.0	32.0	409.5		
2007																	
1		330.8		586.3	1996.0	174.9	459.6	877.4		161.0	251.2		596.3	114.6	732.8		
2		244.9		432.8	1993.0	153.4	398.1	695.2		150.0	158.1		520.0	52.7	622.5		
3		244.0		357.7	1993.0	123.0	340.4	681.7		130.1	132.8		461.3	47.6	495.6		
4		236.2		338.6	1993.0	99.2	326.9	610.8		125.5	121.8		420.8	46.6	492.4		
5		231.2		336.2	1982.0	91.8	326.4	610.1		120.9	119.5		399.3	46.5	415.6		
6		218.9		331.4	1953.0	90.5	312.9	428.1		119.6	111.3		345.1	43.5	358.0		
7		215.3		326.9	1873.0	90.5	287.6	426.7		116.9	108.1		305.8	43.4	333.7		
8		214.3		322.5	1758.0	84.9	286.3	410.3		116.1	97.2		298.6	42.4	325.1		
9		194.3		322.0	1742.0	79.7	261.1	409.4		115.9	95.7		270.9	42.2	319.8		
10		186.6		321.1	1684.0	77.8	256.8	396.9		113.5	94.6		258.3	42.0	314.7		

Table 23. Percentiles for hourly Ammonia data for 2003-2007 CAFO sites. Data is displayed in parts per billion.

Site Name	Atlantic	Belmond New	Belmond Old	Clarion	Goldfield	Iowa Falls	Jewell	Kanawha	Malcom	Newkirk	Sac City	Sioux Center	Stanhope	Viking Lake	West Union	Williams	Woodbine
2003																	
100%	650.6		150.7	1182.0	642.3				398.9			357.9		142.6		1104.0	696.8
90%	137.4		40.9	67.2	127.5				46.3			51.5		8.0		58.4	142.1
80%	108.3		29.7	35.5	86.7				33.6			30.6		4.9		29.9	111.1
70%	89.4		23.7	23.2	70.5				25.7			21.1		3.5		20.7	91.9
60%	73.9		19.0	17.4	59.8				20.5			16.1		2.1		15.6	71.8

Site Name	Atlantic	Belmond New	Belmond Old	Clarion	Goldfield	Iowa Falls	Jewell	Kanawha	Malcom	Newkirk	Sac City	Sioux Center	Stanhope	Viking Lake	West Union	Williams	Woodbine
50%	59.3		15.8	13.3	49.6				16.7			12.4		0.7		11.9	41.0
40%	43.7		12.2	10.2	38.7				13.7			9.4		0.0		9.2	22.7
30%	25.8		9.2	7.6	27.6				10.5			7.0		0.0		6.4	15.2
20%	15.3		6.2	4.2	21.3				8.0			4.4		0.0		4.0	9.8
10%	8.4		2.6	1.0	11.6				4.2			1.7		0.0		0.4	4.1
2004																	
100%		481.2	379.1	973.5	904.6	607.0	690.2	251.7	745.9	316.1	390.8	100.6	1751.0	283.6	588.6	230.3	154.7
90%		26.2	36.7	58.7	46.9	81.1	97.1	30.2	34.4	15.3	51.2	27.9	76.3	8.2	20.4	32.0	38.2
80%		15.1	26.7	33.8	34.0	66.2	70.8	17.2	21.7	9.2	37.3	19.2	56.5	5.4	16.4	21.0	27.9
70%		10.3	20.7	23.7	26.1	57.5	56.6	11.6	17.1	6.1	27.8	14.3	44.7	3.8	13.4	16.0	20.9
60%		7.1	16.3	17.2	20.6	49.4	48.2	8.0	14.3	4.0	21.4	10.6	36.3	2.1	11.5	12.5	16.4
50%		4.7	12.8	12.6	16.1	40.5	40.4	4.8	12.1	2.3	16.4	7.5	29.7	0.3	9.8	9.8	12.5
40%		3.1	9.1	9.1	12.0	31.1	34.0	2.5	10.0	1.5	12.1	4.2	23.0	0.0	8.1	7.5	8.5
30%		2.0	6.4	6.2	8.4	23.1	28.3	1.3	7.7	0.0	7.9	2.0	16.4	0.0	6.0	5.6	6.1
20%		0.3	3.5	3.7	5.0	15.9	21.8	0.1	4.8	0.0	3.4	0.1	10.8	0.0	4.0	2.9	4.0
10%		0.0	0.3	1.2	1.3	7.4	6.8	0.0	2.1	0.0	0.0	0.0	6.2	0.0	0.2	0.4	1.0
2005																	
100%		476.4		508.0	783.3	427.3	875.5	548.0		729.6	317.4		1045.0	109.8	453.5		
90%		23.3		44.0	24.0	46.2	34.7	33.5		22.1	25.9		37.3	7.3	28.8		
80%		15.8		28.0	15.3	34.5	25.3	21.5		15.3	17.3		27.9	5.1	19.7		
70%		12.9		21.0	10.9	29.3	21.3	15.0		11.7	13.0		22.4	4.4	15.5		
60%		10.4		16.0	8.2	25.8	18.3	11.1		9.2	10.1		18.6	3.0	12.5		
50%		8.3		11.9	6.3	22.7	15.8	8.2		7.6	7.4		15.4	2.4	10.1		
40%		6.3		8.8	4.7	20.0	13.5	6.2		6.0	5.3		12.4	2.1	8.0		
30%		4.6		6.1	3.6	16.7	11.2	4.2		4.4	3.1		9.8	0.5	6.1		
20%		3.4		3.9	2.2	12.4	8.7	2.2		3.3	1.0		7.3	0.2	4.0		
10%		1.9		1.5	0.2	8.0	6.0	0.2		1.5	0.0		4.1	0.0	1.8		
2006																	
100%		181.1		550.7	538.5	285.8	995.7	314.9		278.8	395.9		1820.0	43.7	930.9		
90%		19.2		45.3	23.2	25.6	33.9	26.9		22.9	22.8		26.6	6.5	29.2		
80%		14.6		27.3	15.5	20.6	24.1	18.5		15.6	15.6		20.0	4.5	15.3		

Site Name	Atlantic	Belmond New	Belmond Old	Clarion	Goldfield	Iowa Falls	Jewell	Kanawha	Malcom	Newkirk	Sac City	Sioux Center	Stanhope	Viking Lake	West Union	Williams	Woodbine
70%		12.3		19.6	11.9	17.9	19.8	13.9		12.1	11.1		16.7	3.5	10.3		
60%		10.6		14.6	9.6	15.8	17.0	10.8		9.9	7.7		14.2	2.5	8.1		
50%		9.1		11.1	7.9	13.9	14.7	8.0		8.1	5.3		12.2	2.4	6.2		
40%		7.7		8.3	6.5	12.3	12.8	6.0		6.5	3.3		10.4	1.3	4.6		
30%		6.3		6.1	5.2	10.7	10.9	4.2		4.8	2.0		8.5	0.5	3.4		
20%		4.7		4.1	3.8	8.8	8.7	2.3		4.0	0.1		6.4	0.4	2.0		
10%		2.4		1.8	2.0	5.7	5.9	0.2		2.4	0.0		4.1	0.0	0.0		
2007																	
100%		330.8		586.3	1996.0	174.9	459.6	877.4		161.0	251.2		596.3	114.6	732.8		
90%		21.0		43.7	23.2	24.8	30.1	27.9		21.1	26.5		25.0	8.6	25.1		
80%		16.1		28.0	13.0	20.1	22.1	17.2		15.3	18.8		18.9	6.1	15.4		
70%		13.7		20.5	7.8	17.2	17.7	12.8		11.9	14.9		15.5	4.6	12.0		
60%		11.9		15.9	4.2	15.0	14.7	9.8		9.4	11.8		12.8	3.9	9.8		
50%		10.3		12.3	1.4	13.0	12.3	7.9		7.5	9.3		10.7	2.6	7.6		
40%		8.8		9.1	0.0	11.2	10.3	6.0		6.4	7.5		8.8	2.5	5.9		
30%		7.1		5.9	0.0	9.3	8.3	4.2		4.5	5.8		7.2	1.3	4.3		
20%		5.3		3.0	0.0	7.0	6.3	2.3		3.0	4.0		5.0	0.6	2.4		
10%		2.8		0.3	0.0	4.1	4.0	0.2		1.5	2.0		2.2	0.0	0.4		

Additional Table Information

Listed below is additional information that may be useful in interpreting the tables found in this review

Annual 8th Highest Daily Maximum for Hydrogen Sulfide

This table shows the 8th highest daily maximums for each hydrogen sulfide CAFO site for each year. The data is displayed in parts per billion. The values were determined from a list of the valid daily maximums. Days with at least 18 hours of continuous data or a max value over the standard (≥ 31 ppb) were considered valid and included in the study. Meeting completeness criteria requires both 90% annual and 75% quarterly completeness. Those monitoring sites within 100 meters of a separated location satisfy siting criteria.

Annual Percent Completeness for Daily Hydrogen Sulfide

This table shows the annual percent completeness for the daily hydrogen sulfide. The values were calculated by dividing the number of valid days by the total number of days in each year. At least 90% of the total days must be valid to meet annual completeness criteria.

Quarterly Percent Completeness for Daily Hydrogen Sulfide

This table shows the daily quarterly percent completeness for hydrogen sulfide. Each year is divided into four calendar quarters. Percent completeness was found by dividing the total number of valid days by the total number of days in each calendar quarter. To meet quarterly completeness criteria, at least 75% of the days in each quarter must be valid.

Statistical Summary for Daily Hydrogen Sulfide

This table shows the annual minimum, annual maximum, and annual average daily sample values of the hydrogen sulfide data for each CAFO site. Completeness criteria require at least 90% annual daily completeness and 75% quarterly daily completeness. The standard is exceeded at a site where the 8th highest daily maximum is greater than 30 ppb. Sites with days that exceed the standard are valid and are not required to meet the completeness criteria for those specific days.

Top Ten Maximum Sample Values for Daily Hydrogen Sulfide

This table shows the top ten maximum daily sample values for hydrogen sulfide. Daily values were determined from daily maximums of the 24 hour continuous data. Days with at least 18 hours of data or values greater than the standard (30 ppb) are considered valid.

Percentiles for Daily Hydrogen Sulfide

This table shows ten percentile ranks for the daily hydrogen sulfide data for each CAFO site. Daily values were calculated from the daily maximums of the 24 hour continuous data.

Number of hours with levels over the Health Effects Value

This table shows the total number of hours, for each year, in which levels over the Health Effects Value were recorded for each CAFO site. These totals were calculated by counting the number of sample values from each site which were greater than or equal to 31 parts per billion. Hourly data utilized every hour of continuous data collected.

Annual Completeness for Hourly Hydrogen Sulfide

This table shows the annual completeness for the hourly hydrogen sulfide data for each CAFO site. The annual completeness was calculated by dividing the number of hours sampled by the total number of hours in each year. Annual completeness is met when 90% of the total hours are sampled. Hourly data utilized every hour of continuous data collected.

Quarterly Completeness for Hourly Hydrogen Sulfide

This table shows the quarterly completeness for hourly hydrogen sulfide data. These percentages were calculated by dividing the number of hours sampled in each calendar quarter by the total number of hours in each quarter. Quarterly completeness is met when at least 75% of the hours in each quarter are sampled. Hourly data utilized every hour of continuous data collected.

Statistical Summary for Hourly Hydrogen Sulfide

This table shows a statistical summary for the hourly hydrogen sulfide data, including the annual minimum, annual maximum and annual average for hourly values. Meeting completeness requires both 90% annual and 75% quarterly completeness. Hourly data utilized every hour of continuous data collected. Sites do not meet the standard when the 8th highest Daily maximum is greater than or equal to 31 ppb.

Top Ten Maximum Sample Values for Hourly Hydrogen Sulfide

This table shows the top ten annual maximum values for hourly hydrogen sulfide for each CAFO site. Hourly data refers to every hour of continuous 24 hour data collected.

Percentiles for Hourly Hydrogen Sulfide

This table shows ten percentile ranks for the hourly hydrogen sulfide data for each CAFO site. Hourly values include every sample value of the 24 hour continuous data.

Annual Highest Daily Maximum for Ammonia

This table shows the highest annual daily maximums for hydrogen sulfide for each CAFO. The data is displayed in parts per billion. The values were determined from a list of the daily maximums of the 24 hour continuous data. Days with at least 18 hours of continuous were considered valid and included in the study. Meeting completeness requires both 90% annual and 75% quarterly completeness.

Annual Percent Completeness for Daily Ammonia

This table shows the annual percent completeness for daily ammonia. The values were calculated by dividing the number of valid days by the total number of days in each year. At least 90% of the total days must be valid to meet completeness.

Quarterly Percent Completeness for Daily Ammonia

This table shows the daily quarterly percent completeness for ammonia. Each year is divided into four calendar quarters. Percent completeness was found by dividing the total number of valid days by the total number of days in each calendar quarter. To meet completeness, at least 75% of the days in each quarter must be valid.

Statistical Summary for Daily Ammonia

This table shows the annual minimum, annual maximum and annual average daily sample values for each CAFO site for ammonia. To meet completeness both 90% annual daily completeness and 75% quarterly daily completeness are required.

Top Ten Maximum Sample Values for Daily Ammonia

This table shows the top ten maximum daily sample values for ammonia. Days with at least 18 hours of data are considered valid. Daily values were determined from daily maximums of the 24 hour continuous data.

Percentiles for Daily Ammonia Data

This table shows ten percentile ranks for the daily ammonia data for each CAFO site. Daily values were calculated from the daily maximums of the 24 hour continuous data.

Annual Completeness for Hourly Ammonia

This table shows the annual completeness for the hourly ammonia data for each CAFO site. The annual completeness was calculated by dividing the number of hours sampled by the total number of hours in each year. Annual completeness is met when 90% of the total hours are sampled. Hourly data utilized every hour of continuous data collected.

Quarterly Completeness for Hourly Ammonia

This table shows the quarterly completeness for hourly ammonia data. These percentages were calculated by dividing the number of hours sampled in each calendar quarter by the total number of hours in each quarter. Quarterly completeness is met when at least 75% of the hours in each quarter are sampled. Hourly data utilized every hour of

continuous data collected.

Statistical Summary for Hourly Ammonia

This table shows a statistical summary for the hourly ammonia data, including the annual minimum, annual maximum and annual average for hourly values. Meeting completeness requires both 90% annual and 75% quarterly completeness. Hourly data utilized every hour of continuous data collected.

Top Ten Maximum Sample Values for Hourly Ammonia

This table shows the top ten annual maximum sample values for hourly ammonia for each CAFO site. Hourly data refers to every hour of continuous 24 hour data collected.

Percentiles for Hourly Ammonia

This table shows ten percentile ranks for the hourly ammonia data for each CAFO site. Hourly values include every sample value of the 24 hour continuous data.