AIR DISPERSION MODELING RESULTS
COMPARISON TO NATIONAL AMBIENT AIR QUALITY STANDARDS (NAAQS) and 6 NYCRR PART 257-8
USING AERMOD SOFTWARE (METEOROLOGICAL DATA 2004 - 2008)

CAS No.	Chemical Name	Model Run ID	Maximum Concentration (ug/m^3)	Background Concentration (ug/m^3)	Total Concentration (ug/m^3)	Standard (ug/m^3)	Time Period	% of Total
00630-08-0	Carbon Monoxide (CO)	CO - Run #01	169.49	1,495.00	1,664.5	40,000	1-Hour	4.161
00630-08-0	Carbon Monoxide (CO)	CO - Run #01	64.162	1,150.00	1,214.16	10,000	8-Hour	12.142
NY075-02-5	Particulate Matter ($PM_{2.5}$)*	PM Run #01	5.588	23.000	28.59	35	24-Hour	81.679
NY075-02-5	Particulate Matter ($PM_{2.5}$)	PM Run #02	2.331	8.300	10.63	12	Annual Hourly	88.596
07446-09-5	Sulfur Dioxide (SO_2)**	SO_2 Run #01	5.803	40.610	46.41	196.5	1-Hour	23.620
07446-09-5	Sulfur Dioxide (SO_2)	SO_2 Run #02	5.256	33.536	38.79	1,310	3-Hour (Secondary)	2.961
10102-44-0	Nitrogen Dioxide (NO_2)*** [1]	NO_2 Run #01	83.397	82.72	166.1	188	1-Hour	88.360
10102-44-0	Nitrogen Dioxide (NO_2) [1]	NO_2 Run #02	4.434	15.6416	20.08	99.64	Annual Hourly	20.148
N/A	Fluorides	MC Run #01	2.452	N/A	2.45	3.70	12-Hour	66.273
N/A	Fluorides	MC Run #01	1.814	N/A	1.81	2.85	24-Hour	63.649
N/A	Fluorides	MC Run #01	0.790	N/A	0.79	0.820	1-Month	96.322

* - 3 Year Average of 98th Percentile of 24 Hour Concentrations
** - 3 Year Average of 99th Percentile of Daily Max. 1 Hour Average
*** - 3 Year Average of 98th Percentile of Daily Max. 1 Hour Average

Nitrogen Oxide Background Level Based on NYSDEC 2011 data for Amherst, NY (NYSDEC Region 9)
Carbon Monoxide Background Levels Based on NYSDEC 2011 data for Loudonville, NY (NYSDEC Region 4)
Sulfur Dioxide Background Levels Based on NYSDEC 2011 data for Schenectady, NY (NYSDEC Region 4)
$PM_{2.5}$ Background Levels Based on NYSDEC 2011 Data for Albany County, NY (NYSDEC Region 4)
[1] - 1-Hour NO_X value derived by applying 80% NO_2/NO_X Ratio to NO_X modeling result

Particulate Matter ($PM_{2.5}$) - Model Run #2

File Name: PM02

Output: Annual Concentration Data
Boiler Operation Summary: 65% Load for all boilers (while burning natural gas)
Stack Heights for 8.1 Boilers = 33'; Stacks for Admin Building 2 Boilers = 33'; Stacks for TDC Boilers = 93'; Stacks for TDC Boilers = 125'

Boiler Testing Summary: 12 hours per year combusting No. 2 Fuel Oil
Generator Testing Summary: 38 hours per year per unit

Max. Annual Result: **2.331** ug/m^3
Background Conc. = 8.3 ug/m^3 (2011 NYSDEC Data for Albany County)

Annual Hour Standard = 12 ug/m^3
Total Concentration = 10.63146 **88.60% of standard**

Emission Point #	Exhaust Type	Stack Height		Stack Diameter		Temperature		Flow Rate	Velocity	Emission Rate
		ft	m	in	ft	(F)	(C)	(CFM)	(FPS)	(lb/hr)
Fab 8.1-1	Oxidizer	96	29.261	52	4.33	115	46.11	42,000	47.464	**0.021**
Fab 8.1-2	Oxidizer	96	29.261	52	4.33	115	46.11	42,000	47.464	**0.021**
Fab 8.1-3	Caustic Scrubber	96	29.261	52	4.33	72	22.22	42,500	48.029	**0**
Fab 8.1-4	Caustic Scrubber	96	29.261	52	4.33	72	22.22	42,500	48.029	**0**
Fab 8.1-5	Caustic Scrubber	96	29.261	52	4.33	72	22.22	42,500	48.029	**0**
Fab 8.1-6	Acid Scrubber	96	29.261	60	5.00	72	22.22	62,000	52.627	**0.0063**
Fab 8.1-7	Acid Scrubber	96	29.261	60	5.00	72	22.22	62,000	52.627	**0.0063**
Fab 8.1-8	Acid Scrubber	96	29.261	60	5.00	72	22.22	62,000	52.627	**0.0063**
Fab 8.1-9	Acid Scrubber	96	29.261	60	5.00	72	22.22	62,000	52.627	**0.0063**
Fab 8.1-10	Acid Scrubber	96	29.261	60	5.00	72	22.22	62,000	52.627	**0.0063**
Fab 8.1-11	Acid Scrubber	96	29.261	60	5.00	72	22.22	62,000	52.627	**0.0063**
Fab 8.1-11A	Acid Scrubber	96	29.261	60	5.00	72	22.22	62,000	52.627	**0.0063**
Fab 8.1-24	Acid Scrubber	96	29.261	60	5.00	72	22.22	62,000	52.627	**0.0063**
Fab 8.1-25	Acid Scrubber	96	29.261	60	5.00	72	22.22	62,000	52.627	**0.0063**
Fab 8.1-26	Acid Scrubber	96	29.261	60	5.00	72	22.22	62,000	52.627	**0.0063**
Fab 8.1-27	Acid Scrubber	96	29.261	60	5.00	72	22.22	62,000	52.627	**0.0063**
Fab 8.1-28	Caustic Scrubber	96	29.261	42	3.50	72	22.22	28,000	48.504	**0**
Fab 8.1-29	Caustic Scrubber	96	29.261	42	3.50	72	22.22	28,000	48.504	**0**
Fab 8.1-30	Caustic Scrubber	96	29.261	42	3.50	72	22.22	28,000	48.504	**0**
Fab 8.1-111	RCTO/Fan Stack	96	29.261	42	3.50	115	46.11	28,000	48.504	**0.021**
Fab 8.1-112	RCTO/Fan Stack	96	29.261	42	3.50	115	46.11	28,000	48.504	**0**
Fab 8.1-113	RCTO/Fan Stack	96	29.261	42	3.50	115	46.11	28,000	48.504	**0**
Fab 8.1-114	Oxidizer	96	29.261	18	1.50	554	290.00	3,000	28.294	**0**
Fab 8.1-115	Oxidizer	96	29.261	18	1.50	554	290.00	3,000	28.294	**0**
Fab 8.1-58	Dual Fuel Boiler	33	10.058	40	3.33	400	204.44	11,425	21.820	**0.289**
Fab 8.1-59	Nat. Gas Boiler	33	10.058	40	3.33	400	204.44	11,425	21.820	**0.289**
Fab 8.1-63	Dual Fuel Boiler	33	10.058	40	3.33	400	204.44	11,425	21.820	**0.289**
Fab 8.1-64	Nat. Gas Boiler	33	10.058	28	2.33	400	204.44	4,896	19.085	**0.124**
Fab 8.1-66	Nat. Gas Boiler	33	10.058	28	2.33	400	204.44	4,896	19.085	**0.122**
Fab 8.1-67	Dual Fuel Boiler	33	10.058	40	3.33	400	204.44	9,793	18.703	**0.245**

Emission Point #	Exhaust Type	Stack Height		Stack Diameter		Temperature		Flow Rate	Velocity	Emission Rate
		ft	m	in	ft	(F)	(C)	(CFM)	(FPS)	(lb/hr)
Fab 8.1-88	Oxidizer	96	29.261	52	4.33	115	46.11	42,000	47.464	**0**
Admin 2-B1	Nat. Gas Boiler	33	10.058	20	1.67	400	204.44	1,991	15.208	**0.050**
Admin 2-B2	Nat. Gas Boiler	33	10.058	20	1.67	400	204.44	1,991	15.208	**0.050**
Admin 2-B3	Nat. Gas Boiler	33	10.058	20	1.67	400	204.44	1,991	15.208	**0.050**
ESB-12 Gens	Emergency Generators	33	10.058	18	1.50	815	435.00	15,100	142.41	**0.0014**
101	Nat. Gas Boiler	93	28.346	8	0.67	190	87.78	457	21.820	**0.011**
102	Nat. Gas Boiler	93	28.346	8	0.67	190	87.78	457	21.820	**0.011**
103	Nat. Gas Boiler	93	28.346	8	0.67	190	87.78	457	21.820	**0.011**
104	Dual Fuel Boiler	93	28.346	42	3.50	268	131.11	9,793	16.964	**0.244**
105	Dual Fuel Boiler	93	28.346	42	3.50	268	131.11	9,793	16.964	**0.244**
106	Nat. Gas Boiler	93	28.346	42	3.50	268	131.11	11,751	20.357	**0.291**
107	Nat. Gas Boiler	93	28.346	42	3.50	268	131.11	11,751	20.357	**0.292**
108	Nat. Gas Boiler	93	28.346	42	3.50	268	131.11	11,751	20.357	**0.292**
109	Nat. Gas Boiler	93	28.346	42	3.50	268	131.11	11,751	20.357	**0.292**
TDC-121	Caustic Scrubber	110	33.528	20	1.67	72	22.22	6,000	45.837	**0**
TDC-122	Caustic Scrubber	110	33.528	20	1.67	72	22.22	6,000	45.837	**0**
TDC-123	Caustic Scrubber	110	33.528	20	1.67	72	22.22	6,000	45.837	**0**
ESB2-12 Gens	Emergency Generators	38	11.582	18	1.50	815	435.00	15,100	142.414	**0.0014**
TDC-124	POU - Acid Scrubber	110	33.528	50	4.17	72	22.22	39,000	47.670	**0.0057**
TDC-125	POU - Acid Scrubber	110	33.528	50	4.17	72	22.22	39,000	47.670	**0.0057**
TDC-126	POU - Acid Scrubber	110	33.528	50	4.17	72	22.22	39,000	47.670	**0**
TDC-127	POU - Acid Scrubber	110	33.528	50	4.17	72	22.22	39,000	47.670	**0**
TDC-118	Oxidizer	110	33.528	36	3.00	115	46.11	24,000	56.588	**0.0046**
TDC-119	Oxidizer	110	33.528	36	3.00	115	46.11	24,000	56.588	**0.0046**
TDC-120	Oxidizer	110	33.528	36	3.00	115	46.11	24,000	56.588	**0**
Fab 8.2-1	Acid Scrubber	125	38.100	60	5.00	72	22.22	61,111	51.873	**0.0131**
Fab 8.2-2	Acid Scrubber	125	38.100	60	5.00	72	22.22	61,111	51.873	**0.0131**
Fab 8.2-3	Acid Scrubber	125	38.100	60	5.00	72	22.22	61,111	51.873	**0.0131**
Fab 8.2-4	Acid Scrubber	125	38.100	60	5.00	72	22.22	61,111	51.873	**0.0131**
Fab 8.2-5	Acid Scrubber	125	38.100	60	5.00	72	22.22	61,111	51.873	**0.0131**
Fab 8.2-6	Acid Scrubber	125	38.100	60	5.00	72	22.22	61,111	51.873	**0.0131**
Fab 8.2-7	Acid Scrubber	125	38.100	60	5.00	72	22.22	61,111	51.873	**0.0131**
Fab 8.2-8	Acid Scrubber	125	38.100	60	5.00	72	22.22	61,111	51.873	**0.0131**
Fab 8.2-9	Acid Scrubber	125	38.100	60	5.00	72	22.22	61,111	51.873	**0.0131**
Fab 8.2-10	Acid Scrubber (n+1)	125	38.100	60	5.00	72	22.22	62,000	52.627	**0**
Fab 8.2-11	Caustic Scrubber	125	38.100	42	3.50	72	22.22	27,600	47.811	**0**
Fab 8.2-12	Caustic Scrubber	125	38.100	42	3.50	72	22.22	27,600	47.811	**0**
Fab 8.2-13	Caustic Scrubber	125	38.100	42	3.50	72	22.22	27,600	47.811	**0**
Fab 8.2-14	Caustic Scrubber	125	38.100	42	3.50	72	22.22	27,600	47.811	**0**

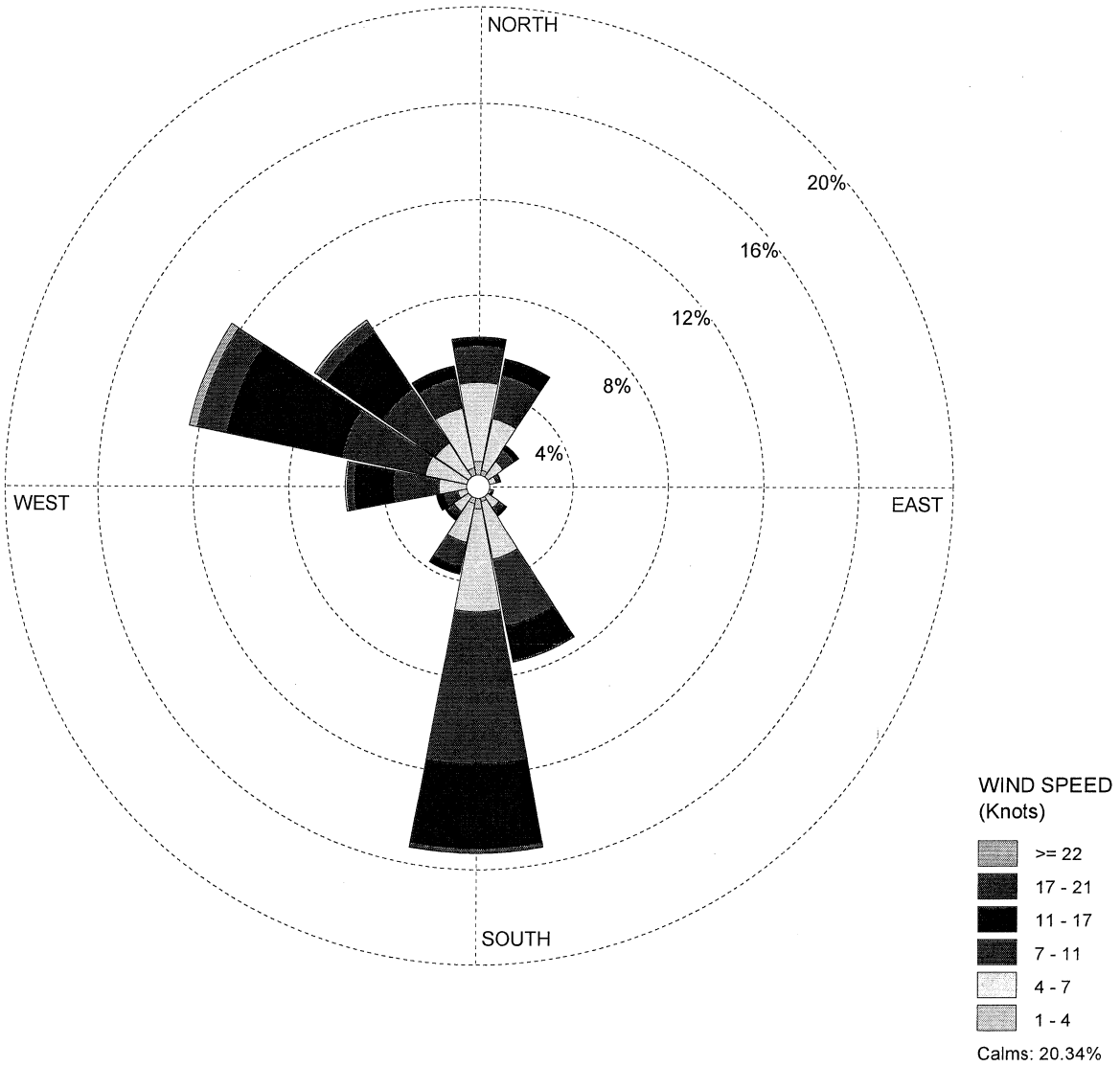
Emission Point #	Exhaust Type	Stack Height		Stack Diameter		Temperature		Flow Rate	Velocity	Emission Rate
		ft	m	in	ft	(F)	(C)	(CFM)	(FPS)	(lb/hr)
Fab 8.2-15	Caustic Scrubber	125	38.100	42	3.50	72	22.22	27,600	47.811	**0**
Fab 8.2-16	Caustic Scrubber	125	38.100	42	3.50	72	22.22	28,000	48.504	**0**
Fab 8.2-17	Oxidizer	125	38.100	52	4.33	115	46.11	37,800	42.718	**0.01945**
Fab 8.2-18	Oxidizer	125	38.100	52	4.33	115	46.11	37,800	42.718	**0.01945**
Fab 8.2-19	Oxidizer	125	38.100	52	4.33	115	46.11	37,800	42.718	**0.01945**
Fab 8.2-20	Oxidizer	125	38.100	52	4.33	115	46.11	37,800	42.718	**0.01945**
Fab 8.2-21	Oxidizer	125	38.100	52	4.33	115	46.11	37,800	42.718	**0.01945**
Fab 8.2-22	Oxidizer	125	38.100	52	4.33	115	46.11	42,000	47.464	**0**
Fab 8.2-23	Dual Fuel Boiler (1500 hp)	125	38.100	42	3.50	268	131.1	9,793	16.964	**0.244**
Fab 8.2-24	Dual Fuel Boiler (1500 hp)	125	38.100	42	3.50	268	131.1	9,793	16.964	**0.244**
Fab 8.2-25	Dual Fuel Boiler (1500 hp)	125	38.100	42	3.50	268	131.1	9,793	16.964	**0.244**
Fab 8.2-26	Nat. Gas Boiler (1800 hp)	125	38.100	42	3.50	268	131.1	11,751	20.356	**0.292**
Fab 8.2-27	Nat. Gas Boiler (1800 hp)	125	38.100	42	3.50	268	131.1	11,751	20.356	**0.292**
Fab 8.2-28	Nat. Gas Boiler (750 hp)	125	38.100	28	2.33	268	131.1	4,896	19.083	**0.122**
Fab 8.2-29	Nat. Gas Boiler (100 hp)	125	38.100	8	0.67	190	87.78	457	21.820	**0.0162**
Fab 8.2 15 Gens	Emergency Generators	125	38.100	18	1.50	815	435.0	15,100	142.414	**0.0014**

WIND ROSE PLOT:

Station #14735 - ALBANY/COUNTY ARPT, NY

DISPLAY:

Wind Speed
Direction (blowing from)

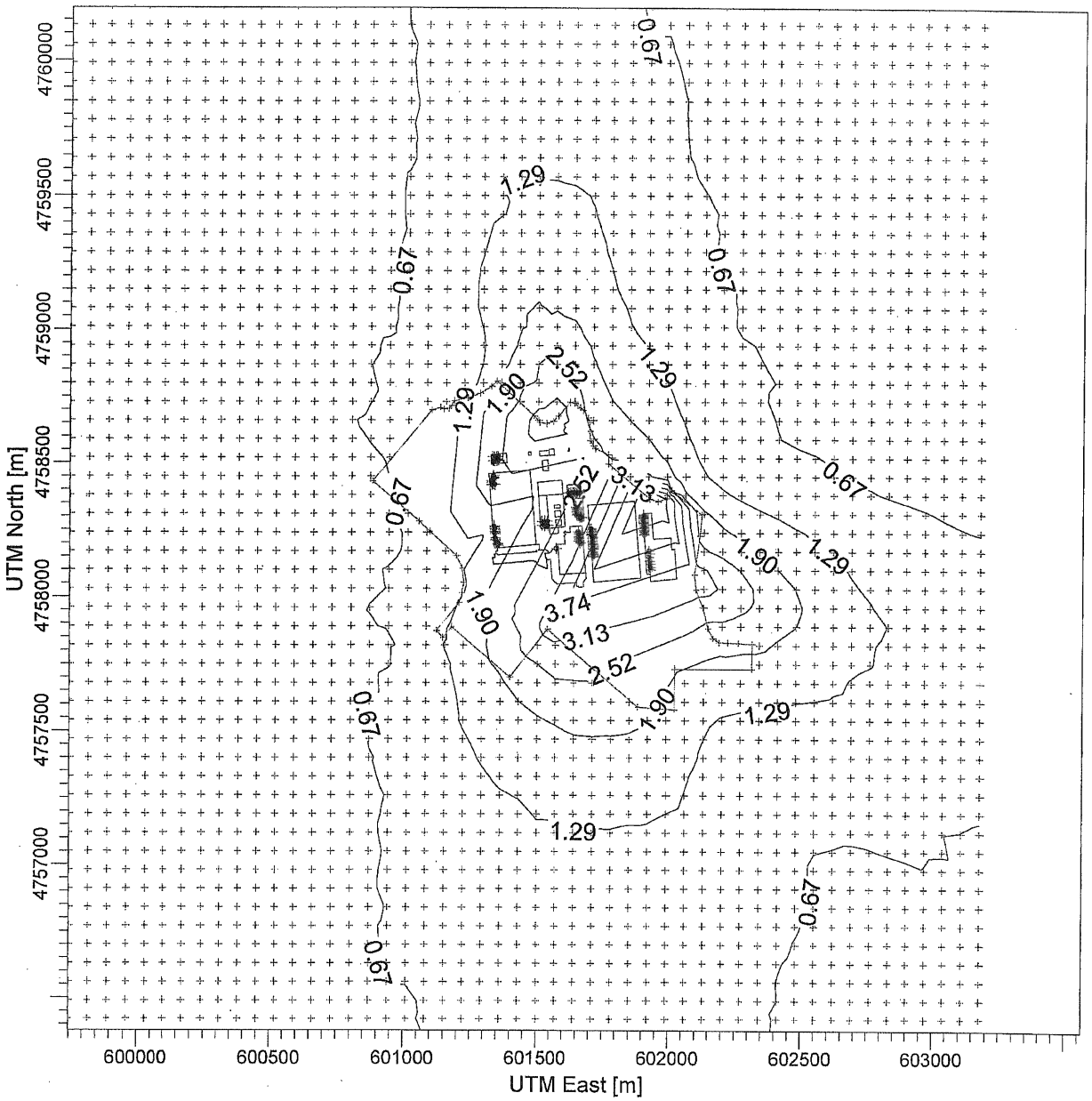


COMMENTS:	DATA PERIOD:	COMPANY NAME:	
	Start Date: 1/1/2004 - 00:00 **End Date: 12/31/2008 - 19:00**	**C.T. Male Associates**	
		MODELER:	
	CALM WINDS:	TOTAL COUNT:	
	20.34%	**42350 hrs.**	
	AVG. WIND SPEED:	DATE:	PROJECT NO.:
	6.44 Knots	**4/22/2013**	**11.1086**

WRPLOT View - Lakes Environmental Software

PROJECT TITLE:

Air Dispersion Modeling - GLOBALFOUNDRIES U.S. INC. Fab 8.2
Maximum 24-Hour Concentration Data (98th Percentile) - PM2.5



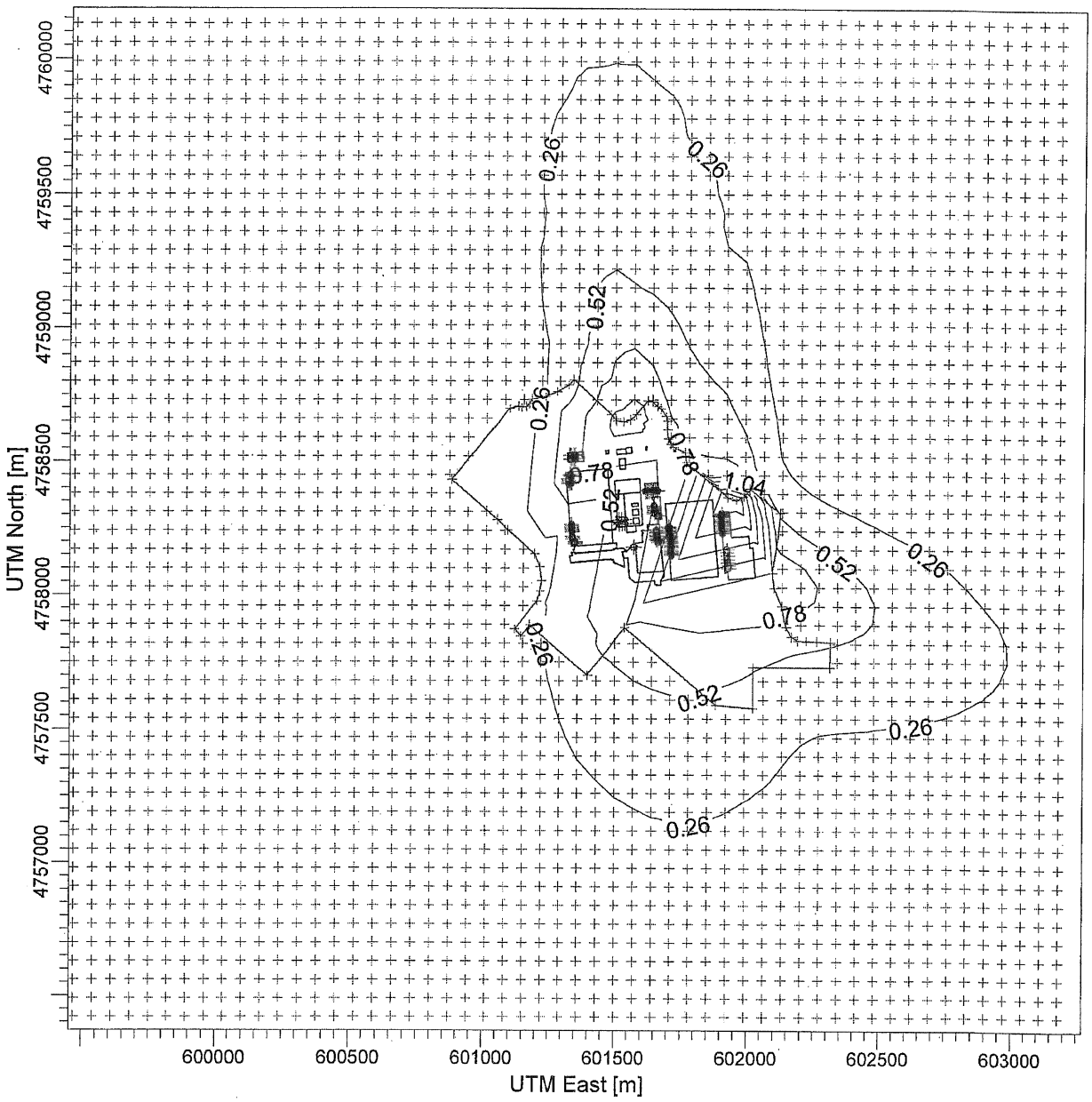
COMMENTS:	SOURCES:	COMPANY NAME:	
CAS No.: NY075-02-5 Particulate Matter (PM-2.5) 24 Hour Standard = 35 ug/m3 (Background = 23.00)	**121**	**C.T. Male Associates**	
	RECEPTORS: **5499**	MODELER:	
	OUTPUT TYPE: **Concentration**	SCALE: 1:24,000 0 0.5 km	
	MAX: **5.58781 ug/m^3**	DATE: **5/31/2013**	PROJECT NO.: **11.1086**

AERMOD View - Lakes Environmental Software

C:\Data\Lakes\Fab8-2\PM01\PM01.isc

PROJECT TITLE:

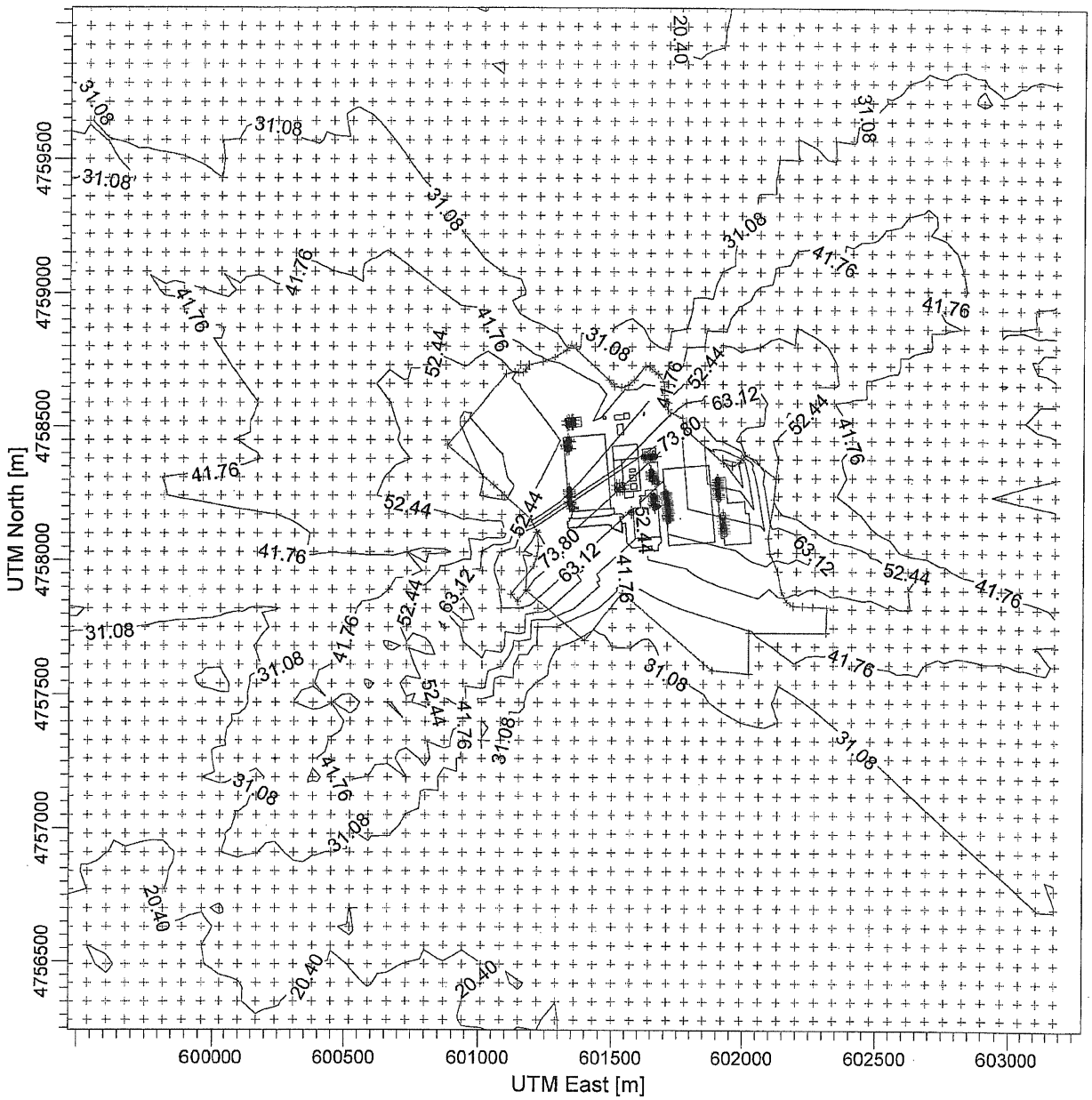
Air Dispersion Modeling - GLOBALFOUNDRIES U.S. INC. Fab 8.2
Annual Hourly Concentration Data - PM2.5



COMMENTS:	SOURCES:	COMPANY NAME:	
CAS No.: NY075-02-5 Particulate Matter (PM-2.5) Annual Hourly Standard = 12 ug/m3 (Background = 8.3)	121	C.T. Male Associates	
	RECEPTORS:	MODELER:	
	5499		
	OUTPUT TYPE:	SCALE: 1:24,000	
	Concentration	0 0.5 km	
	MAX:	DATE:	PROJECT NO.:
	2.33146 ug/m^3	5/31/2013	11.1086

PROJECT TITLE:

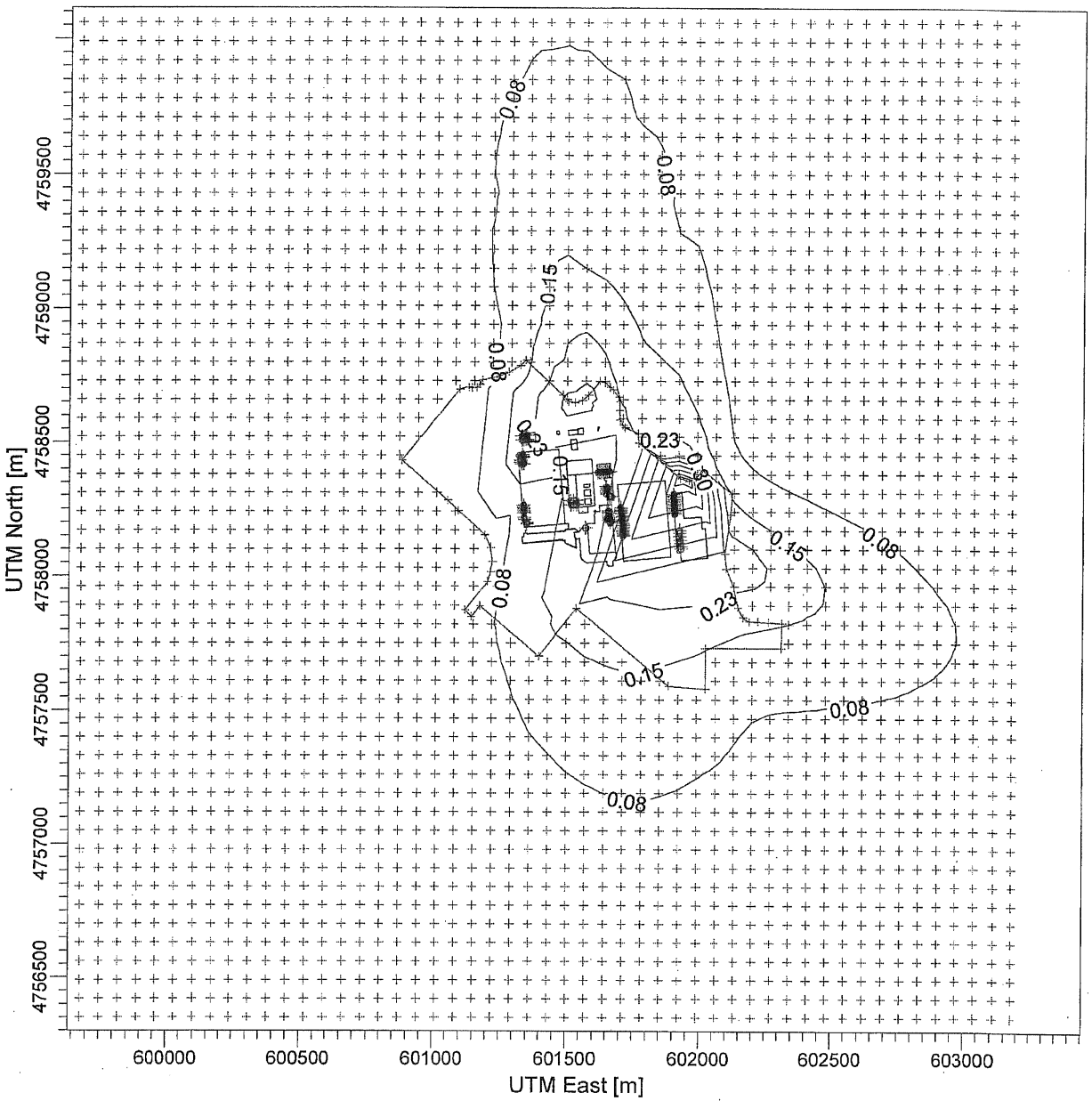
Air Dispersion Modeling - GLOBALFOUNDRIES U.S. INC. Fab 8.2
Maximum Hourly Concentration Data (98th Percentile) - Nitrogen Dioxide (NO2)



COMMENTS:	SOURCES:	COMPANY NAME:	
CAS No.: 10102-44-0 Nitrogen Dioxide Annual Hourly Standard = 188 ug/m3 (Background = 82.72) Site Contribution = 80% of result (NO2/NOX ratio)	**121**	**C.T. Male Associates**	
	RECEPTORS: **5499**	MODELER:	
	OUTPUT TYPE: **Concentration**	SCALE: 1:24,000 0 0.5 km	
	MAX: **104.24645 ug/m^3**	DATE: **5/31/2013**	PROJECT NO.: **11.1086**

PROJECT TITLE:

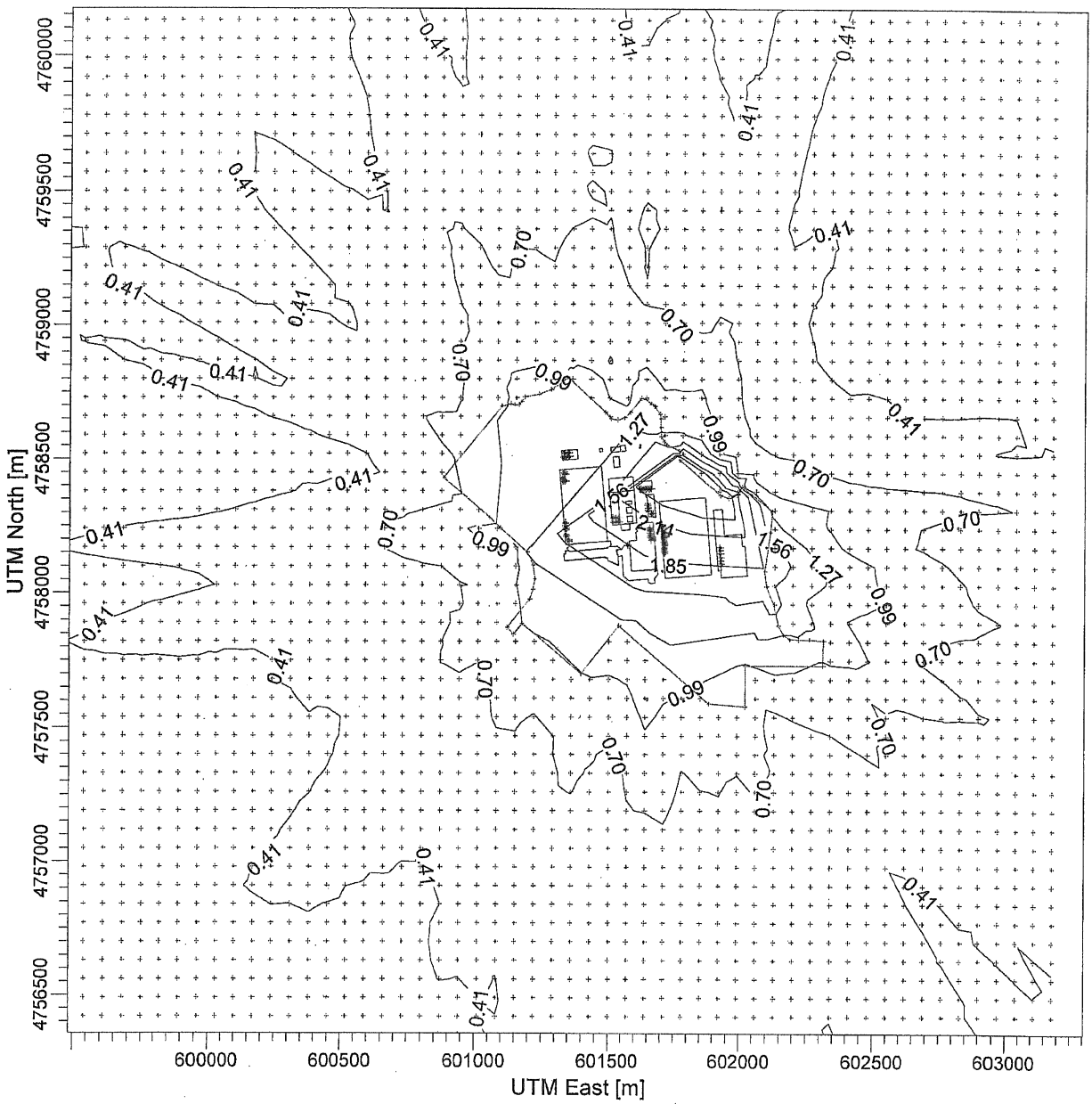
Air Dispersion Modeling - GLOBALFOUNDRIES U.S. INC. Fab 8.2
Annual Hourly Concentration Data - Sulfur Dioxide (SO2)



COMMENTS:	SOURCES:	COMPANY NAME:	
CAS No.: 07446-09-5 Sulfur Dioxide AGC = 80 ug/m3 (Background = 40.61)	**121**	**C.T. Male Associates**	
	RECEPTORS:	MODELER:	
	5499		
	OUTPUT TYPE:	SCALE: 1:24,000	
	Concentration	0 0.5 km	
	MAX:	DATE:	PROJECT NO.:
	0.67606 ug/m^3	**5/31/2013**	**11.1086**

PROJECT TITLE:

Air Dispersion Modeling - GLOBALFOUNDRIES U.S. INC. Fab 8.2
12 Hour Concentration Data - Fluorides



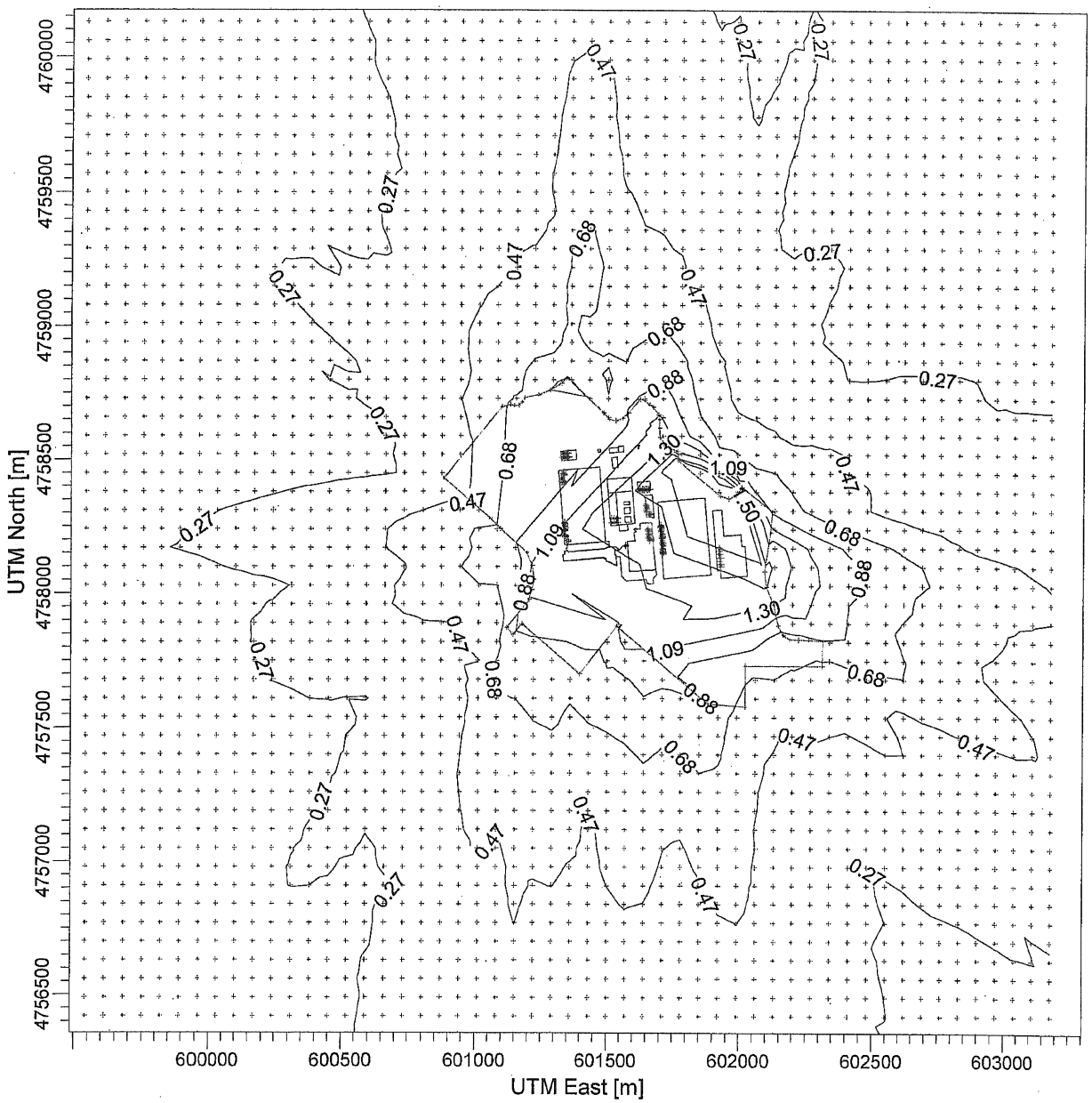
COMMENTS:	SOURCES:	COMPANY NAME:	
CAS No.: N/A Fluorines 12 Hour Limit = 3.7 ug/m3	106	C.T. Male Associates	
	RECEPTORS:	MODELER:	
	5499		
	OUTPUT TYPE:	SCALE: 1:24,000	
	Concentration	0 0.5 km	
	MAX:	DATE:	PROJECT NO.:
	2.452 ug/m^3	5/31/2013	11.1086

AERMOD View - Lakes Environmental Software

C:\Data\Lakes\Fab8-2\MC02a\MC02.isc

PROJECT TITLE:

Air Dispersion Modeling - GLOBALFOUNDRIES U.S. INC. Fab 8.2
24 Hour Concentration Data - Fluorides



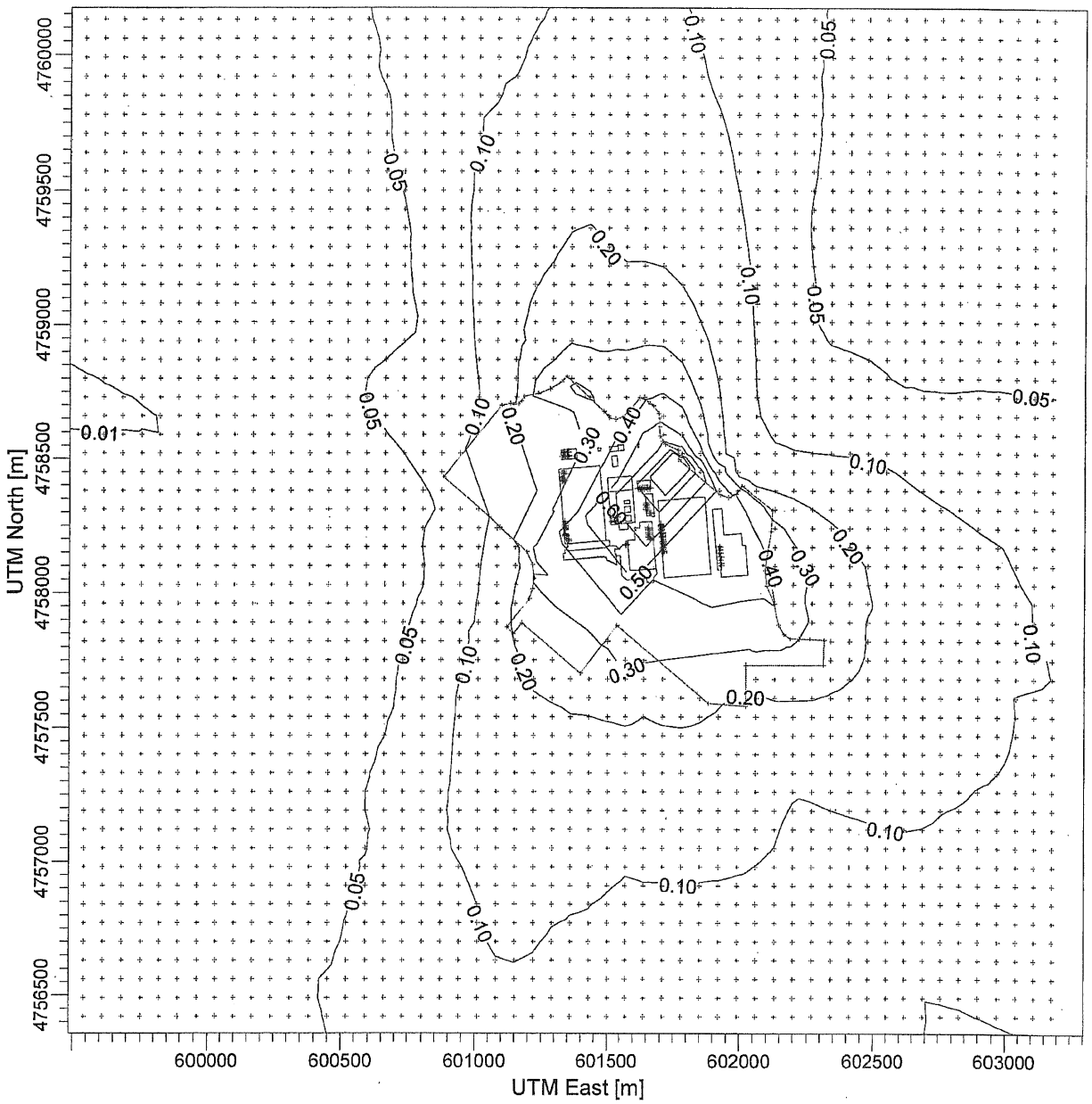
COMMENTS:	SOURCES:	COMPANY NAME:	
CAS No.: N/A Fluorines 24 Hour Limit = 2.85 ug/m3	**106**	**C.T. Male Associates**	
	RECEPTORS: **5499**	MODELER:	
	OUTPUT TYPE: **Concentration**	SCALE: 1:24,000 0 0.5 km	
	MAX: **1.814 ug/m^3**	DATE: **5/31/2013**	PROJECT NO.: **11.1086**

AERMOD View - Lakes Environmental Software

C:\Data\Lakes\Fab8-2\MC02a\MC02.isc

PROJECT TITLE:

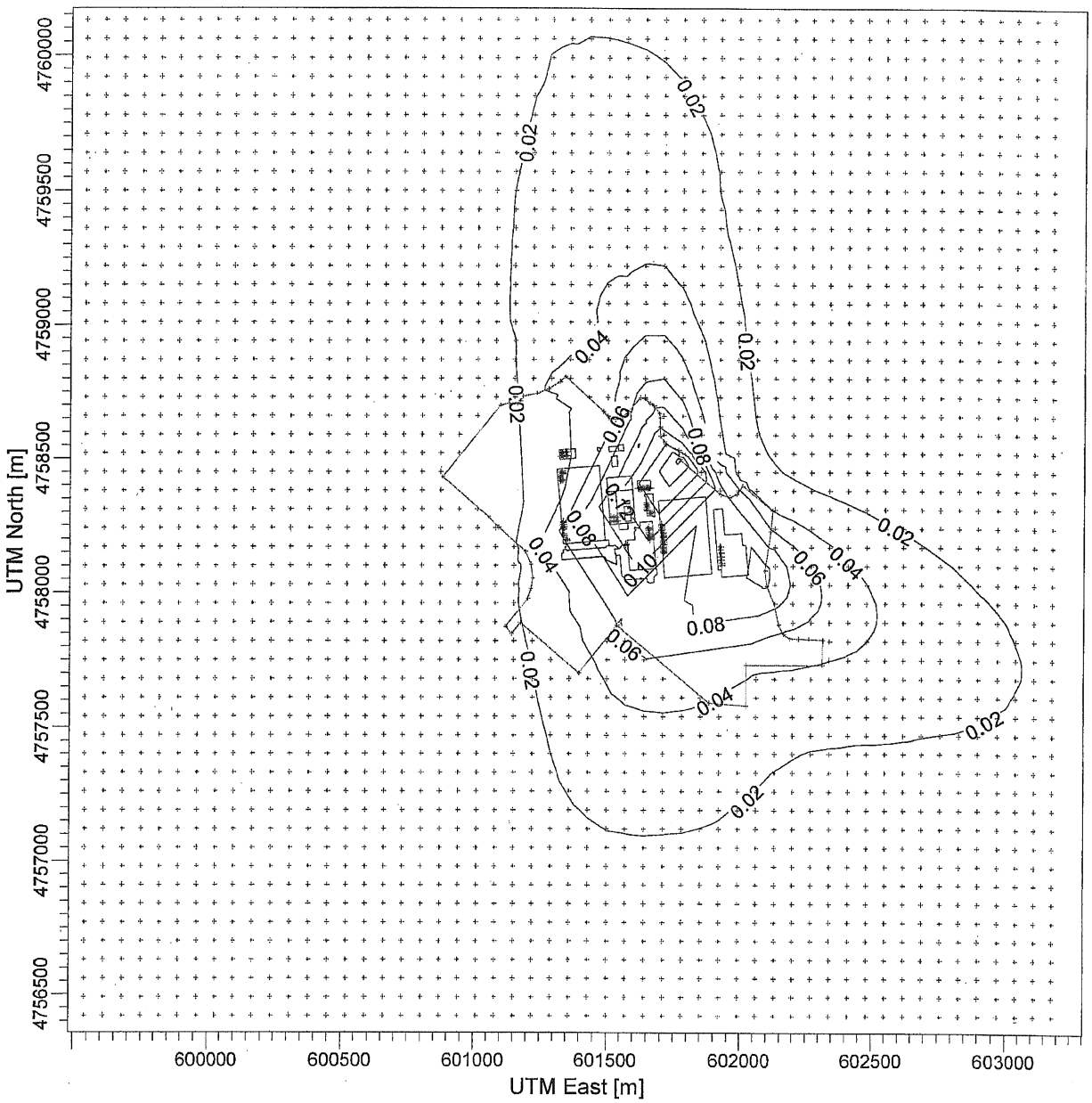
Air Dispersion Modeling - GLOBALFOUNDRIES U.S. INC. Fab 8.2
Monthly Concentration Data - Fluorides



COMMENTS:	SOURCES:	COMPANY NAME:	
CAS No.: N/A Fluorines Monthly Limit = 0.82 ug/m3	**106**	**C.T. Male Associates**	
	RECEPTORS: **5499**	MODELER:	
	OUTPUT TYPE: **Concentration**	SCALE: 1:24,000 0 0.5 km	
	MAX: **0.790 ug/m^3**	DATE: **5/31/2013**	PROJECT NO.: **11.1086**

PROJECT TITLE:

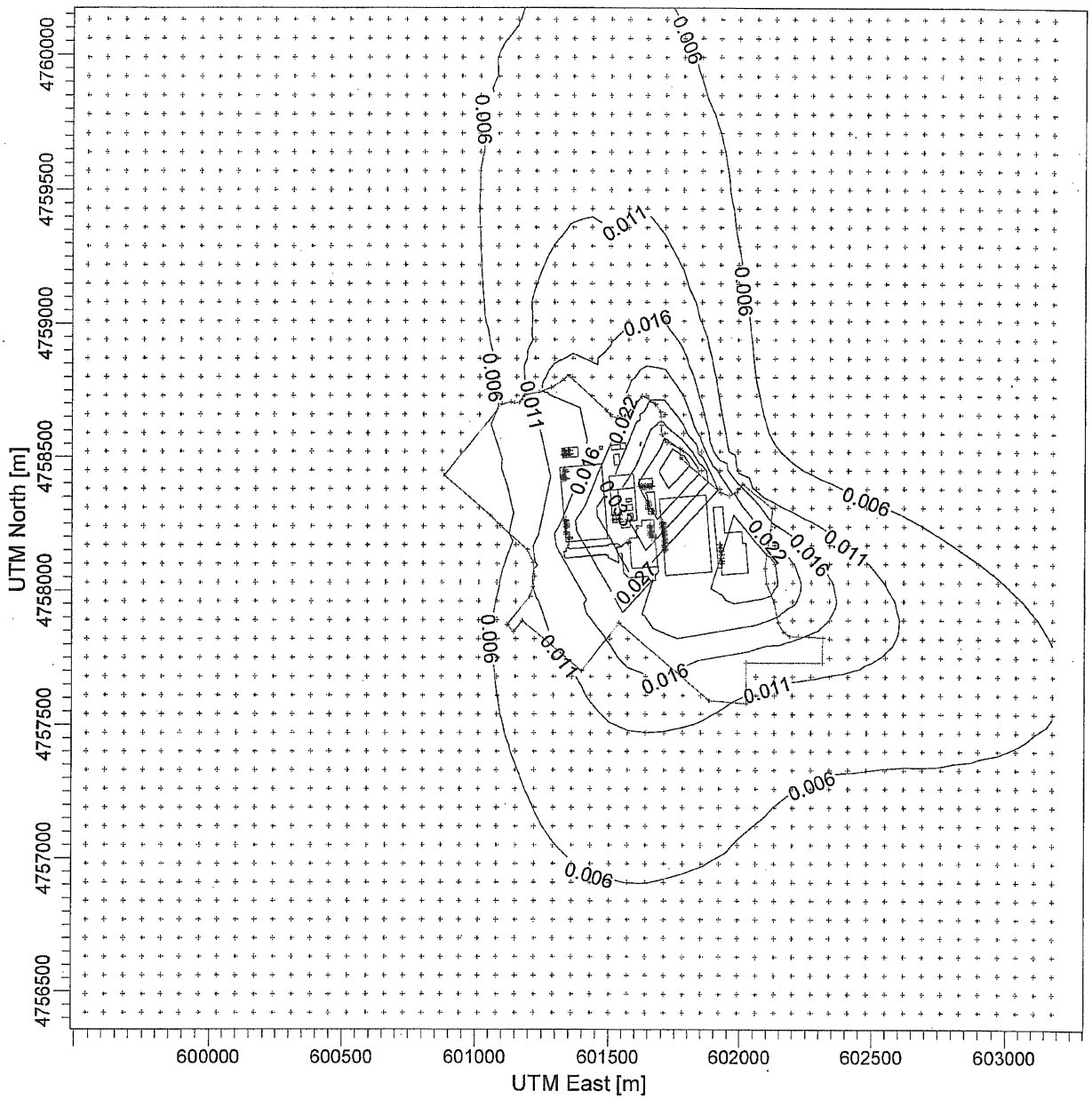
Air Dispersion Modeling - GLOBALFOUNDRIES U.S. INC. Fab 8.2
Annual Hourly Concentration Data - Chlorine (Cl2)



COMMENTS:	SOURCES:	COMPANY NAME:	
CAS No.: 07782-50-5 Chlorine AGC = 0.2 ug/m3	**106**	**C.T. Male Associates**	
	RECEPTORS: **5499**	MODELER:	
	OUTPUT TYPE: **Concentration**	SCALE: 1:24,000 0 0.5 km	
	MAX: **0.189 ug/m^3**	DATE: **5/31/2013**	PROJECT NO.: **11.1086**

PROJECT TITLE:

Air Dispersion Modeling - GLOBALFOUNDRIES U.S. INC. Fab 8.2
Annual Hourly Concentration Data - Sulfur Hexafluoride (SF6)



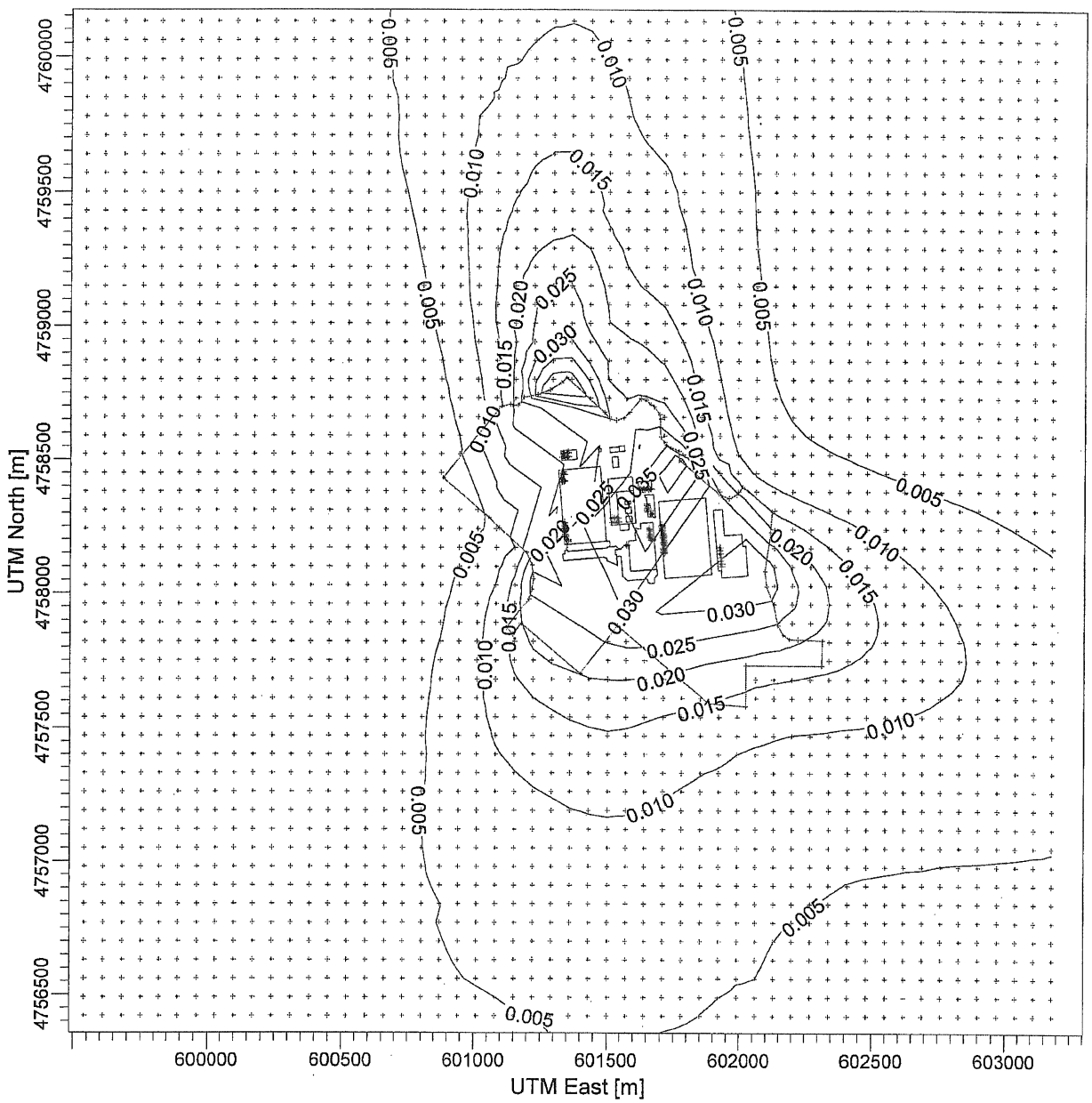
COMMENTS:	SOURCES:	COMPANY NAME:	
CAS No.: 02551-62-4 Sulfur Hexafluoride AGC = 0.086 ug/m3	106	C.T. Male Associates	
	RECEPTORS:	MODELER:	
	5499		
	OUTPUT TYPE:	SCALE: 1:24,000	
	Concentration	0 0.5 km	
	MAX:	DATE:	PROJECT NO.:
	0.04953 ug/m^3	5/31/2013	11.1086

AERMOD View - Lakes Environmental Software

C:\Data\Lakes\Fab8-2\MC02a\MC02.isc

PROJECT TITLE:

Air Dispersion Modeling - GLOBALFOUNDRIES U.S. INC. Fab 8.2
Annual Hourly Concentration Data - Silicon Tetafluoride (SiF4)



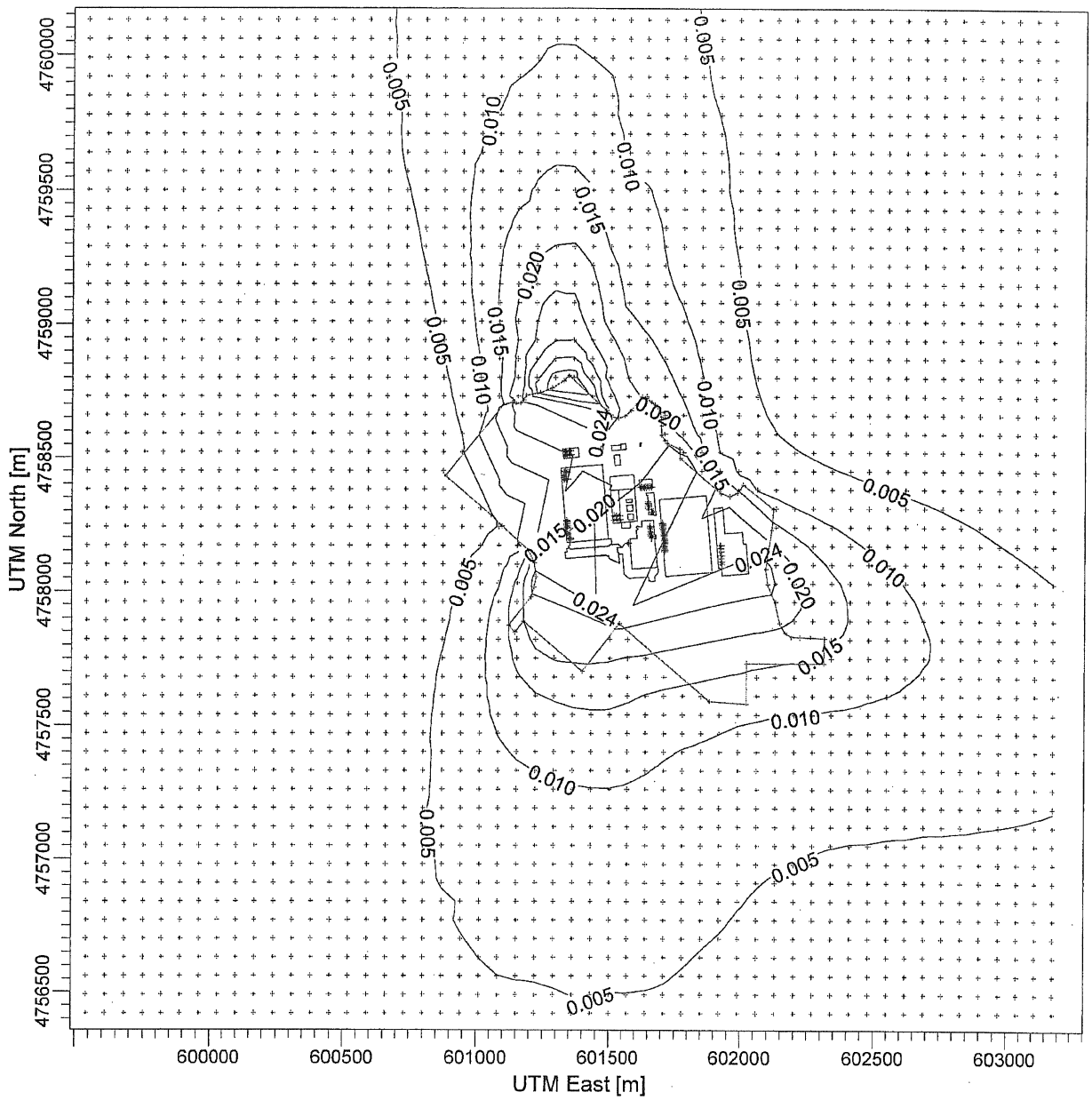
COMMENTS:	SOURCES:	COMPANY NAME:	
CAS No.: 07783-61-1 Silicon Tetafluoride AGC = 0.071 ug/m3	**106**	**C.T. Male Associates**	
	RECEPTORS: **5499**	MODELER:	
	OUTPUT TYPE: **Concentration**	SCALE: 1:24,000 0 0.5 km	
	MAX: **0.04567 ug/m^3**	DATE: **5/31/2013**	PROJECT NO.: **11.1086**

AERMOD View - Lakes Environmental Software

C:\Data\Lakes\Fab8-2\MC02a\MC02.isc

PROJECT TITLE:

Air Dispersion Modeling - GLOBALFOUNDRIES U.S. INC. Fab 8.2
Annual Hourly Concentration Data - Tungsten Hexafluoride (WF6)



COMMENTS:	SOURCES:	COMPANY NAME:	
CAS No.: 07783-82-6 Tungsten Hexafluoride AGC = 0.071 ug/m3	**106**	**C.T. Male Associates**	
	RECEPTORS: **5499**	MODELER:	
	OUTPUT TYPE: **Concentration**	SCALE: 1:24,000 0 0.5 km	
	MAX: **0.0446 ug/m^3**	DATE: **5/31/2013**	PROJECT NO.: **11.1086**

AERMOD View - Lakes Environmental Software

C:\Data\Lakes\Fab8-2\MC02a\MC02.isc