SAGE
ENVIRONMENTAL CONSULTING

February 22, 2012

Mr. Eric Cornwell
Manager
Stationary Source Permitting Program
Air Protection Branch
Georgia Environmental Protection Division (GA EPD)
Georgia Department of Natural Resources
4244 International Parkway, Suite 120
Atlanta, GA 30354

RE: Application No. 20161 - Chambers R&B Landfill, AIRS No: 011-00014
Application for a Landfill Gas-To-Energy Facility
BACT Application: dated January 7, 2011, with revisions dated May 19, 2011 and July 25, 2011
Air Toxics Impact Assessment Application: dated May 5, 2011
Air Impact Assessment Application: received October 3, 2011

Dear Mr. Cornwell:

The purpose of this letter is to provide responses to your January 12, 2012 letter regarding the above referenced Air Toxics Modeling (ATM) and Air Impact Assessments (AIA) submitted by Sage Environmental Consulting, L.P. (Sage) on behalf of Waste Management, Inc. Chambers R&B Landfill. Your letter contained a series of questions and requests, and our responses are provided below with attachments as appropriate to support our responses. For your convenience, a revised modeling report is enclosed with this letter which incorporates the changes described in our responses.

I. Air Toxics Impact Assessment

GA EPD Issue 1 – Evaluation of Toxic Impacts from the Existing Permitted Sources

Georgia EPD understands that the air toxic emissions from the use of the flares and the landfill were not included in the air toxic impact assessment of this project. The applicable air toxic emissions from the existing emission units need to be included in the air toxic impact assessment for this project. Please update the assessment to account for existing air toxic emissions or explain why this is not considered necessary.

Response on Issue I.1: The tables attached to the May 5, 2011 air toxic impact assessment for the project have been updated to include the impacts of the facility's three existing flares and fugitives not captured by the landfill gas collection and control system (GCCS). In the previous assessment, ISC3 was used to estimate the maximum ground level concentrations (MGLC) of

toxic air pollutants (TAP) from the generator engines and leachate concentrator. In order to update the assessment, separate SCREEN3 modeling runs were conducted for the existing sources with their impacts added to the previous ISC3 results. Each of the flares was modeled as a "flare source" using the appropriate maximum heat input rate listed in Appendix B, Table B-8 of the above referenced PSD application and release height listed in Title V renewal application TV-20315. The landfill site covers 506 acres and the fugitives were modeled as a 1,430 m by 1,430 m "area source" with a ground level release height (0 m). Each source was modeled with a unit emission rate of 1 lb/hr so that the MGLC could be determined by multiplying the unit impacts by the actual emission rate of each TAP. For the flares, the emission rate of each VOC reflects the NSPS Subpart WWW requirement to reduce emissions of NMOC by 98%.

Revised tables for the Air Toxics Modeling report, and SCREEN3 model output for the existing sources, are included in Attachment 1. Table 1 from the May 5, 2011 assessment was renumbered to Table 1A and the SCREEN3 input parameters for the flares and landfill fugitives were summarized as Tables 1B and 1C, respectively. Table 2 from the May 5, 2011 assessment was renumbered to Table 2A and the SCREEN3 modeling results for the flares and landfill fugitives were added as Table 2B. Tables 3, 4 and 5 were updated to include the emission rates, unit impacts and the 15-minute, 24-hour and annual impacts for the existing sources. For the flares, the emission rates reflect the combined rated capacity for the three flares (5,400 scfm) while the unit impacts used to determine the MGLC for each TAP are based on the impacts for the "worst-case" flare. All revisions to the tables are highlighted in red to facilitate your review. The addition of the impacts from the existing sources to the impacts of the generators and leachate concentrator did not change conclusion of the May 5, 2011 assessment – the predicted impacts for all TAP, except formaldehyde, are orders of magnitude below the acceptable ambient concentrations (AAC's).

GA EPD Issue 2 – Evaluation of the 15-minute MGLC for Specific Chemicals

Georgia EPD understands that the I5-minute maximum round level concentration (MGLC) was derived by multiplying the 1-hour ISCST3 maximum concentration by a factor of 1.32.

a. The 15-minute concentrations for hydrochloric acid (HCl) and formaldehyde presented in Table 3 do not appear to be adjusted by a factor of 1.32. Please make any necessary corrections to Table 3 and resubmit to the Division. Be sure to provide a written explanation of the changes made to the applicable concentrations in Table 3.

Response on Issue I.2: A revised Table 3 for the Air Toxics Modeling report is included in Attachment 1. Please note that incorporation of the adjustment factor in the calculations has not changed the conclusions (i.e., the predicted impacts remain well below the AAC).

II. Air Impact Assessment for Criteria Pollutants

GA EPD Issue 1 – Section 1.4.4

There is a typographical error in this section as it relates to the date of March 23, 2009. The correct date is March 23, 2010.

Response on Issue II.1: The date in Section 1.4.4 has been corrected.

GA EPD Issue 2 – Section 3 - Site Location

The applicant presented a drawing (Figure 3-2) that illustrated the relative location of R&B to the nearby Class I areas. Georgia EPD reminds the applicant that Class I areas should be examined within a radius of 300 km from the proposed site. Georgia EPD found the Linville Gorge Wilderness Area located about 230 km from the facility. Please update Section 3 to account for this additional Class I area.

Response on Issue II.2: Section 3 of the report was revised to include a new Figure 3-3, which depicts the relative location of Chambers R&B Landfill and Linville Gorge Wilderness Area, and the text of Section 3 was revised to describe the new figure.

The relative location of the R&B emission sources, federal Class I areas shown on Figures 3-2 and 3-3, and the Linville Gorge Wilderness Area is such that the receptors discussed in Section 8.1 of this report do not cover the sector used in the September 2011 Class I modeling. Additional modeling for the Linville Gorge was conducted to demonstrate that the project will not create any threat to the PSD Increment standard at the Linville Gorge Wilderness Area. Figure 8-1 of the report was revised to include five additional screening receptors for Linville Gorge.

The additional Class I Modeling files are included on a compact disk (CD) accompanying this report (see folder "\Modeling\Class I"). The Class I modeling files created in September 2011 were used as a go-by for the additional modeling, and the only difference between the February 2012 and September 2011 files are the receptors. Five receptors located in the sector between 36 and 40 azimuth degrees from the WMI sources cover the sector in which the boundaries of the Linville Gorge Wilderness Area are located relative to the sources.

A comparison of the concentrations for the additionally modeled receptors with the results presented in Section 11.5 of the September 2011 modeling report shows that the concentrations for the additionally modeled receptors are slightly higher than the concentrations previously provided to GA EPD for all pollutants and averaging periods. For this reason, the writing in Section 11.5 has been updated. As a result of the supplemental modeling, all pages in Appendix F of the September 2011 modeling report have been revised.

GA EPD Issue 3 – Significant Impact Area (SIA)

The radius of the significant impact area for the annual and 1-hour NO_2 and 24-hour and annual $PM_{2.5}$ were not reported in the application. Georgia EPD needs this information specified in the

application in order to proceed with our review on the refined analysis. Please update the application to specify the radius of the SIA for each applicable NAAQS and averaging time.

Response on Issue II.3 Tables 11-2 and 11-3 have been added at the end of Section 11 which summarize the Radius of Significant Impact (ROI) values derived from the model runs with Athens (Table 11-2) and Banks (Table 11-3) data.

GA EPD Issue 4 - Grid Resolution for Refined Analysis

The refined analysis for the annual NO_2, annual $PM_{2.5}$ and 24-hour $PM_{2.5}$ should be conducted on all receptors within the circular significant impact area (SIA) according to the Draft New Source Review Workshop Manual (EPA, 1990), instead of significant receptors only (Figures B-4, E1, E-2, and E-5). Please re-run the refined models for 24 hour and annual $PM_{2.5}$ and annual NO_2 using a grid resolution of 100 meters located outside the facility fence line(s) for the maximum $PM_{2.5}$ SIA and the annual NO_2 SIA analyses. Please submit an updated application describing these modeling scenarios.

Response on Issue II.4 As shown in new Tables 11-2 and 11-3, the maximum ROI derived from the model runs using two meteorological data sets for all NO_2 annual and $PM_{2.5}$ 24-hour average concentrations is approximately 1.1 km. In response to your request, cumulative modeling runs were repeated for the pollutants and averaging periods in your request above using a circular grid or 100-meter spaced Cartesian receptors extending at least 1.3 km from Source ST04. The receptor locations, elevations, and hill heights were obtained from the Preliminary Impact Modeling (PIM) runs. Then we replaced the receptors in six Cumulative Impact Modeling files used in the September 2011, and reran the models. The new modeling input and output files are included on a CD accompanying this letter (see folder "\Modeling\Class II\FIM").

The following changes to the September 2011 modeling report have been made:

- The writing in Section 8.3 on Page 8-2 has been revised to discuss the receptor grid used for the annual NO_2 and the 24-hour and annual $PM_{2.5}$ Cumulative Impact Modeling, which is depicted in new Figure 8-6.

- Figure 8-5 on Page 8-7 was replaced and Figure 8-6 was added as Page 8-8 at the end of Section 8. Figure 8-6 replaces Figure B-4 in Appendix B and Figures E-2 and E-4 in Appendix E, which have been removed from the modeling report.

- Section 11 of the report was revised to further discuss the results of the Preliminary Impact Modeling, revised Cumulative Impact Modeling as well as to evaluate preconstruction monitoring requirements.

- Appendix B of the report was revised to reflect the deletion of Figure B-4

- Figure B-5 (the last page in Appendix B) was replaced with a new Figure B-5. This plot shows all additional modeled receptors, and shows the concentrations in a new format, per your request in "GA EPD Issue 8.b".

- Appendix E of the report was revised to reflect the deletion of Figures E-2 and E-4

- Replaced two printouts of the modeling results generated by AERMOD in Appendix E, which are the two pages preceding Table E-5 in that appendix, and replaced Table E-5, Figure E-3, and Table E-6. These pages have been replaced because the modeled $PM_{2.5}$ 24-hour Design Concentration predictions changed because of the additional receptors included in the revised modeling.

- Replaced a printout of the modeling results generated by AERMOD in Appendix E, which are the two pages preceding Table E-8 in that appendix, and replaced Table E-8 and Figure E-5. These pages are replaced because the modeled $PM_{2.5}$ Annual Design Concentration predictions changed because of the additional receptors included in the revised modeling.

Please note that the highest predicted concentrations in the NO_2 annual revised model runs are the same as they were in the original September 2011 model runs. Therefore, no revisions to Section 11.1 of the modeling report or to the printouts and tables in Appendix B were necessary. The modeling predictions for several receptors that were added in the $PM_{2.5}$ 24-hour and annual model runs were slightly higher than the predictions for the receptors included in the September 2011 modeling. Although the higher concentrations did not change the overall conclusions, the writing in Section 11.4 and all applicable supplemental documentation in Appendix E were updated to document the new numbers. The revised numbers are also shown in Table 11-1 (see our response to the "GA EPD Issue 5.b" below).

GA EPD Issue 5 - Section 11 - Modeling Results and Submittals:

a. Georgia EPD was unable to locate the results, of the pre-construction monitoring comparison. Please update the application to provide this information. Georgia EPD recommends the use of the tabular format presented below with the significant monitoring concentrations listed instead of the significant impact levels (SILs).

Response on Issue II.5.a Analyses for PSD Pre-construction Monitoring applicability are now included in the revised Sections 11.1 through 11.4 of the report. Additional entries have been also added to Table 11-1.

GA EPD Issue 5 - Section 11 - Modeling Results and Submittals:

b. The applicant presented the summary tables for the significant analysis, NAAQS analysis, and PSD analysis in separate tables in the Appendices of the application. Please update the application to provide summary tables for the significant analysis, NAAQS analysis, and increment analysis in Section 11 of the application. Georgia EPD recommends the use of the following tabular format.

Response on Issue II.5.b A table in the format you requested has been prepared and included as Table 11-1 on Page 11-5 in Section 11. Please note that, in order to make the table easy to follow, only the results from the worst-case Source Group and for the worst-case meteorological data set are represented in the table. In cases when the design value is estimated as the highest or average value from five model runs for individual one-year periods, only the final design values are represented in the table.

GA EPD Issue 6 - Section 12-Additional Impacts Analyses:

The applicant used values for Q and D which were different than those discussed in the modeling protocol. Georgia EPD calculated the sum of the applicable pollutants and derived a value for Q of 159.5 tons per year, and Georgia EPD used a value of 117 km for D (Cohutta Wilderness area). This yields a Q/D of 1.36, which is well below the FLM screening threshold of 10; therefore no AQRV analysis is needed. Please include a Q/D screening analysis in all future application submitted to Georgia EPD under the PSD program for applicable Class I areas.

Response on Issue II.6 We appreciate your effort to estimate and document the Q/D screening values. WMI will include a Q/D screening analysis in all future applications submitted to Georgia EPD under the PSD program for applicable Class I areas.

GA EPD Issue 7 - Appendix A - General Supporting Information:
The applicant presented incorrect emission data (tons per year) in table A-1. Please correct this table and resubmit to Georgia EPD.

Response on Issue II.7 We apologize for the erroneous entries in Table A-2 (not Table A-1). The table has been revised to reflect the correct emission data, which were the emission rates used for the impact assessment.

GA EPD Issue 8 - Appendix B - Class II Modeling Information and Results for NO_2:

a. The applicant presented a numerical value of 38.53 ($\mu g/m^3$) (Modeled Design Concentration for NO_2) in Table B-2 and Figure B- 1; this concentration is not consistent with the concentration shown in Figure B-1.
b. The applicant presented a numerical value of 113.1 ($\mu g/m^3$) (Total Concentration for NO_2) in Table B-3 and Figure B-3 and this concentration is not consistent with the concentration shown in Figure B-3. Georgia EPD requests the applicant to provide SURFER figures showing the modeling receptors using the classed POST type of maps of modeled concentration. Please update the application accordingly.

Response on Issue II.8 We carefully reviewed the referenced tables and concentration plots and found no inconsistencies. We believe that the confusion may have stemmed from the facts that the concentration numbers on the plot were indeed hard to read (as the numbers overlaid on each other) and that the values on the plot were rounded to whole numbers.

In order to address your concerns, Figures B-1 and B-3 were re-designed in the manner you suggested above in Item 8.b.

GA EPD Issue 9 – Appendix F – Modeling Results for Class I Area Impacts:

a. Table F-3 is identified as pertaining to PM_{10} yet the tabular entries refer to $PM_{2.5}$ as the pollutant. Which pollutant is correct? Please update this table accordingly.

b. Table F-4 is identified as pertaining to $PM_{2.5}$ yet the tabular entries refer to PM_{10} as the pollutant. Which pollutant is correct? Please update this table accordingly.

Response on Issue II.8 As denoted by the Class I SIL, Table F-3 pertains to PM_{10} and Table F-4 pertains to $PM_{2.5}$. A corrected version of each table is included in the revised report.

If you have any questions, please contact me. Thank you for your time and consideration regarding this matter. WMI and Sage sincerely hope that this submission addresses and successfully resolved all of your concerns and look forward to the permit being issued in the near future.

Sincerely,
Sage Environmental Consulting, L.P.

William Apple
Project Manager

attachments

cc: Dave Thorley – Waste Management, Inc.
Tim Bassett – Waste Management, Inc.

Attachment 1

Replacement Tables and SCREEN3 Modeling Results to Update the May 5, 2011 Air Toxics Modeling Report

Waste Management - Chambers R&B Landfill
Air Toxics Modeling Results for Worst-case Scenario
Table 1A. CAT 3520C Generator Engine and Leachate Concentrator Stack Locations, Parameters, and Emission Rates for ISC3

EPN	Description	UTM-E NAD27	UTM-N NAD27	Base Elevation		Stack Height		Exit Temp.		Exit Velocity		Stack Diameter		Unit Impact Emission Rates		HCl Emission Rates		Formaldehyde Emission Rates	
		(meters)	(meters)	(feet)	(meters)	(feet)	(meters)	(^{o}F)	(^{o}K)	(ft/sec)	(m/sec)	(feet)	(meters)	(lb/hr)	(g/s)	(lb/hr)	(g/s)	(lb/hr)	(g/s)
ST01	Generator Engine No. 1 SN01	276,789	3,803,809	896.7	273.3	80.0	24.4	898.0	754.26	152.730	46.552	1.330	0.405						
ST02	Generator Engine No. 2 SN02	276,789	3,803,804	897.5	273.6	80.0	24.4	898.0	754.26	152.730	46.552	1.330	0.405						
ST03	Generator Engine No. 3 SN03	276,789	3,803,800	897.9	273.7	80.0	24.4	898.0	754.26	152.730	46.552	1.330	0.405	8.33E-02	1.05E-02	7.83E-02	1.09E-02	9.50E-01	1.20E-01
ST04	Generator Engine No. 4 SN04	276,789	3,803,795	898.1	273.7	80.0	24.4	898.0	754.26	152.730	46.552	1.330	0.405	1.67E-01	2.10E-02	1.57E-01	2.19E-02	1.90E+00	2.39E-01
ST05	Generator Engine No. 5 SN05	276,788	3,803,790	898.2	273.8	80.0	24.4	898.0	754.26	152.730	46.552	1.330	0.405	1.67E-01	2.10E-02	1.57E-01	2.19E-02	1.90E+00	2.39E-01
ST06	Generator Engine No. 6 SN06	276,788	3,803,786	898.3	273.8	80.0	24.4	898.0	754.26	152.730	46.552	1.330	0.405	1.67E-01	2.10E-02	1.57E-01	2.19E-02	1.90E+00	2.39E-01
ST07	Leachate Concentrator LC01	276,779	3,803,782	898.3	273.8	80.0	24.4	155.0	341.48	96.383	29.377	2.500	0.762	4.17E-01	5.25E-02	#######	7.29E-01	4.75E+00	5.98E-01
													Total	1.0000	0.1260	6.2899	0.8055	11.4000	1.4364

Note: The emission points, stack parameters, and emission rates represent the worst-case operating scenario, which consist of the leachate concentrator and four engines operating simultaneously.

Table 1B. Existing Flare Parameters and Emission Rates for SCREEN3

EPN	Unit Rated Capacity (scfm)	Unit Rated Capacity (mmBtu/hr)	Release Height (feet)	Unit Impact Emission Rate (lb/hr)
Flare #1	800	24.3	21	1
Flare #2	2,150	65.3	33	1
Flare #3	2,500	75.9	42	1

Table 1C. Landfill Fugitives Area Source Parameters and Emission Rates for SCREEN3

Site	Area (acres)	Equivalent Total Area (m x m)	Release Height (feet)	Unit Impact Emission Rate (lb/hr)
1	20	--	--	--
2	486	--	--	--
1 and 2	540	1,430 x 1,430	0	1

Note: Approximately 2,995 scfm of LFG is not captured by the GCCS based on annual potential LFG rate of 4,722 mmscf (PSD Application #20161, App. B, Table B-8) and 75% capture efficiency

Waste Management - Chambers R&B Landfill
Air Toxics Modeling Results for Worst-case Scenario
Table 2A. Summary of the ISCST3 Modeling Results for CAT3520C Generators

	Unit Impacts			Hydrogen Chloride		Formaldehyde		
	1-Hour ($\mu g/m^3$)	24-Hour ($\mu g/m^3$)	Annual ($\mu g/m^3$)	1-Hour ($\mu g/m^3$)	Annual ($\mu g/m^3$)	1-Hour ($\mu g/m^3$)	24-Hour ($\mu g/m^3$)	Annual ($\mu g/m^3$)
1989	3.249	**0.895**	**0.129**	**30.810**	**0.942**	37.043	**10.198**	
1990	**3.326**	0.597	0.098	30.481	0.709	**37.916**	6.804	
1991	3.314	0.685	0.084	29.866	0.621	37.780	7.814	
1992	3.299	0.760	0.093	29.361	0.679	37.616	8.667	
1993	3.295	0.727	0.089	27.219	0.658	37.567	8.283	
MAX	**3.326**	**0.895**	**0.129**	**30.810**	**0.942**	**37.916**	**10.198**	
					Average:	**37.584**	**8.353**	**1.115**

Notes:
1. Unit impacts were modeled with a generic rate of 1 lb/hr total emissions split between the stacks.
2. Hydrogen Chloride and Formaldehyde were modeled with the proposed allowable emission rate for each stack, obtained from the permit application.

Table 2B. Summary of the SCREEN3 Modeling Results for LFG Flares and Fugitives

	Unit Impacts		
	1-Hour ($\mu g/m^3$)	24-Hour ($\mu g/m^3$)	Annual ($\mu g/m^3$)
Flare #1	1.481	0.592	0.118
Flare #2	0.435	0.174	0.035
Flare #3	0.334	0.133	0.027
Fugitives	15.63	6.252	1.250

Notes: 1. Unit impacts were modeled with a generic rate of 1 lb/hr

Waste Management - Chambers R&B Landfill
Air Toxics Modeling Results for Worst-case Scenario
Table 3. Comparison of MGLC with AAC for 15-minute Average Concentrations

	Molecular Weight	HAP Average Reference Concentration	Generators and Leachate Concentrator (ISC3)		Flares (SCREEN3)		Fugitives (SCREEN3)		Predicted MGLC for Chemical-specific Actual Emission Rate	AAC15 (ug/m3)	Is GLCmax < AAC?	MGLC/ AAC Ratio
			Total Emission Rate	Predicted MGLC for 1 lb/hr Emissions [1]	Total Emission Rate	Predicted MGLC for 1 lb/hr Emissions [1]	Total Emission Rate	Predicted MGLC for 1 lb/hr Emissions [1]				
	(lb/lb-mol)	(ppmv)	(lb/hr)	(µg/m^3)	(lb/hr)	(µg/m^3)	(lb/hr)	(µg/m^3)	(µg/m^3)	(µg/m^3)	(Yes/No)	
1,1,1-Trichloroethane	133.41	0.17	0.0011	3.326	0.0004	1.481	0.0105	15.630	0.221	190,000	Yes	1.17E-06
1,1,2,2-Tetrachloroethane	167.85	0.04	0.0003	3.326	0.0001	1.481	0.0029	15.630	0.062			
1,1-Dichloroethane	98.97	0.74	0.0036	3.326	0.0012	1.481	0.0342	15.630	0.725			
1,1-Dichloroethene	96.94	0.09	0.0004	3.326	0.0002	1.481	0.0042	15.630	0.088			
1,2-Dichloroethane	98.96	0.12	0.0006	3.326	0.0002	1.481	0.0055	15.630	0.117			
1,2-Dichloropropane	112.99	0.02	0.0001	3.326	0.0000	1.481	0.0012	15.630	0.026			
Benzene	78.11	0.97	0.0038	3.326	0.0013	1.481	0.0354	15.630	0.750	1,600	Yes	4.69E-04
Carbon Disulfide	76.13	0.27	0.0010	3.326	0.0003	1.481	0.0096	15.630	0.203	9,033	Yes	2.25E-05
Carbon Tetrachloride	153.84	0.01	0.0001	3.326	0.0000	1.481	0.0005	15.630	0.011	15,730	Yes	6.76E-07
Carbonyl Sulfide	60.07	0.18	0.0005	3.326	0.0002	1.481	0.0051	15.630	0.109			
Chlorobenzene	112.56	0.23	0.0013	3.326	0.0004	1.481	0.0119	15.630	0.252			
Chlorodifluromethane	86.47	0.36	0.0015	3.326	0.0005	1.481	0.0143	15.630	0.303	437,500	Yes	6.93E-07
Chlorethane	64.52	0.34	0.0011	3.326	0.0004	1.481	0.0103	15.630	0.219			
Chloroform	119.39	0.02	0.0001	3.326	0.0000	1.481	0.0009	15.630	0.018	24,000	Yes	7.62E-07
Chloromethane	50.49	0.19	0.0005	3.326	0.0002	1.481	0.0045	15.630	0.096	41,400	Yes	2.32E-06
Dichloromethane	84.94	3.40	0.0143	3.326	0.0049	1.481	0.1346	15.630	2.849	43,380	Yes	6.57E-05
Ethylbenzene	106.16	6.79	0.0357	3.326	0.0122	1.481	0.3364	15.630	7.121	54,500	Yes	1.31E-04
Hexane	86.18	2.19	0.0094	3.326	0.0032	1.481	0.0882	15.630	1.868			
Methyl Isobutyl Ketone	100.16	0.75	0.0037	3.326	0.0013	1.481	0.0351	15.630	0.742	30,000	Yes	2.47E-05
Toluene	92.13	25.41	0.1161	3.326	0.0398	1.481	1.0925	15.630	23.127	113,100	Yes	2.04E-04
Trichloroethene	131.4	0.68	0.0044	3.326	0.0015	1.481	0.0418	15.630	0.884	107,400	Yes	8.23E-06
Vinyl Chloride	62.5	1.08	0.0033	3.326	0.0011	1.481	0.0314	15.630	0.665	1,280	Yes	5.20E-04
Xylene	106.16	16.58	0.0873	3.326	0.0299	1.481	0.8216	15.630	17.394	65,500	Yes	2.66E-04
Hydrogen Chloride	36.45	53.5 as Cl	6.2899		1.6066	1.481			43.810	700	Yes	6.26E-02
Formaldehyde	30.03		11.4000						50.049	246	Yes	2.03E-01

Abbreviations: MGLC = Maximum Ground-Level Concentration
AAC = Acceptable Ambient Concentration

Notes:
1. For all chemicals except HCl and formaldehyde, unit impacts were modeled with a generic rate of 1 lb/hr total emissions split between the stacks for the generators. Unit impacts were modeled with a generic rate of 1 lb/hr total emissions for each of the flares and landfill fugitives not captured by the GCCS.
2. HCl and Formaldehyde were modeled with the actual emission rate for each stack obtained from the permit application.
3. See Tables 2A and 2B for the MGLC values.
4. For the comparison with 15-minute AAC values, the 1-hour model predicitons were adjusted using a 1.32 factor.
5. The total predicted MGLC for chemical-specific emission rates is the sum of the impacts for the generators, leachate concentrator, flares and fugitives. The total emission rates for the flares reflect the 97% conversion of chlorinated compounds and the NSPS Subpart WWW requirement to reduce NMOC by 98%.

Waste Management - Chambers R&B Landfill
Air Toxics Modeling Results for Worst-case Scenario
Table 4. Comparison of MGLC with AAC for 24-hour Average Concentrations

	Molecular Weight	HAP Average Reference Concentration	Generators and Leachate Concentrator (ISC3)		Flares (SCREEN3)		Fugitives (SCREEN3)		Predicted MGLC for Chemical-specific Actual Emission Rate	AAC24	Is GLCmax < AAC?	MGLC/ AAC Ratio
			Total Emission Rate	Predicted MGLC for 1 lb/hr Emissions [1]	Total Emission Rate	Predicted MGLC for 1 lb/hr Emissions [1]	Total Emission Rate	Predicted MGLC for 1 lb/hr Emissions [1]				
	(lb/lb-mol)	(ppmv)	(lb/hr)	(µg/m^3)	(lb/hr)	(µg/m^3)	(lb/hr)	(µg/m^3)	(µg/m^3)	(µg/m^3)	(Yes/No)	
1,1,1-Trichloroethane	133.41	0.168	0.0011	0.895	0.0004	0.592	0.0105	6.252	0.067	4523.9	Yes	1.47E-05
1,1,2,2-Tetrachloroethane	167.85	0.0375	0.0003	0.895	0.0001	0.592	0.0029	6.252	0.019	83.3	Yes	2.25E-04
1,1-Dichloroethane	98.97	0.741	0.0036	0.895	0.0012	0.592	0.0342	6.252	0.218	952.4	Yes	2.29E-04
1,1-Dichloroethene	96.94	0.092	0.0004	0.895	0.0002	0.592	0.0042	6.252	0.027			
1,2-Dichloroethane	98.96	0.12	0.0006	0.895	0.0002	0.592	0.0055	6.252	0.035	476.2	Yes	7.41E-05
1,2-Dichloropropane	112.99	0.023	0.0001	0.895	0.0000	0.592	0.0012	6.252	0.008	833.4	Yes	9.27E-06
Benzene	78.11	0.972	0.0038	0.895	0.0013	0.592	0.0354	6.252	0.226	2.5	Yes	8.91E-02
Carbon Disulfide	76.13	0.2705	0.0010	0.895	0.0003	0.592	0.0096	6.252	0.061	143.4	Yes	4.27E-04
Carbon Tetrachloride	153.84	0.007	0.0001	0.895	0.0000	0.592	0.0005	6.252	0.003	49.9	Yes	6.41E-05
Carbonyl Sulfide	60.07	0.183	0.0005	0.895	0.0002	0.592	0.0051	6.252	0.033			
Chlorobenzene	112.56	0.227	0.0013	0.895	0.0004	0.592	0.0119	6.252	0.076	833.4	Yes	9.11E-05
Chlorodifluromethane	86.47	0.355	0.0015	0.895	0.0005	0.592	0.0143	6.252	0.091	8333.5	Yes	1.09E-05
Chlorethane	64.52	0.3435	0.0011	0.895	0.0004	0.592	0.0103	6.252	0.066	6283.0	Yes	1.05E-05
Chloroform	119.39	0.0155	0.0001	0.895	0.0000	0.592	0.0009	6.252	0.006	39.0	Yes	1.41E-04
Chloromethane	50.49	0.1925	0.0005	0.895	0.0002	0.592	0.0045	6.252	0.029	492.9	Yes	5.86E-05
Dichloromethane	84.94	3.395	0.0143	0.895	0.0049	0.592	0.1346	6.252	0.857	230.5	Yes	3.72E-03
Ethylbenzene	106.16	6.789	0.0357	0.895	0.0122	0.592	0.3364	6.252	2.142	1035.7	Yes	2.07E-03
Hexane	86.18	2.1935	0.0094	0.895	0.0032	0.592	0.0882	6.252	0.562	4285.8	Yes	1.31E-04
Methyl Isobutyl Ketone	100.16	0.75	0.0037	0.895	0.0013	0.592	0.0351	6.252	0.223	976.2	Yes	2.29E-04
Toluene	92.13	25.405	0.1161	0.895	0.0398	0.592	1.0925	6.252	6.957	1795.3	Yes	3.88E-03
Trichloroethene	131.4	0.681	0.0044	0.895	0.0015	0.592	0.0418	6.252	0.266	1278.6	Yes	2.08E-04
Vinyl Chloride	62.5	1.077	0.0033	0.895	0.0011	0.592	0.0314	6.252	0.200	2.0	Yes	9.85E-02
Xylene	106.16	16.582	0.0873	0.895	0.0299	0.592	0.8216	6.252	5.233	1035.7	Yes	5.05E-03
Hydrogen Chloride	36.45	53.5 as Cl	6.2899		1.6066	0.592			N/A			
Formaldehyde												

Abbreviations: MGLC = Maximum Ground-Level Concentration
AAC = Acceptable Ambient Concentration

Notes:
1. For all chemicals except HCl and formaldehyde, unit impacts were modeled with a generic rate of 1 lb/hr total emissions split between the stacks for the generators. Unit impacts were modeled with a generic rate of 1 lb/hr total emissions for each of the flares and landfill fugitives not captured by the GCCS.
2. HCl and Formaldehyde were modeled with the actual emission rate for each stack obtained from the permit application.
3. See Tables 2A and 2B for the MGLC values.
4. The total predicted MGLC for chemical-specific emission rates is the sum of the impacts for the generators, leachate concentrator, flares and fugitives. The total emission rates for the flares reflect the 97% conversion of chlorinated compounds and the NSPS Subpart WWW requirement to reduce NMOC by 98%.

Waste Management - Chambers R&B Landfill
Air Toxics Modeling Results for Worst-case Scenario
Table 5. Comparison of MGLC with AAC for Annual Average Concentrations

	Molecular Weight	HAP Average Reference Concentration	Generators and Leachate Concentrator (ISC3)		Flares (SCREEN3)		Fugitives (SCREEN3)		Predicted MGLC for Chemical-specific Actual Emission Rate	AAC-A	Is GLCmax < AAC?	MGLC/ AAC Ratio
			Total Emission Rate	Predicted MGLC for 1 lb/hr Emissions [1]	Total Emission Rate	Predicted MGLC for 1 lb/hr Emissions [1]	Total Emission Rate	Predicted MGLC for 1 lb/hr Emissions [1]				
	(lb/lb-mol)	(ppmv)	(lb/hr)	(µg/m^3)	(lb/hr)	(µg/m^3)	(lb/hr)	(µg/m^3)	(µg/m^3)	(µg/m^3)	(Yes/No)	
1,1,1-Trichloroethane	133.41	0.168	0.0011	0.129	0.0004	0.118	0.0105	1.250	0.013			
1,1,2,2-Tetrachloroethane	167.85	0.038	0.0003	0.129	0.0001	0.118	0.0029	1.250	0.004	2.0	Yes	1.86E-03
1,1-Dichloroethane	98.97	0.741	0.0036	0.129	0.0012	0.118	0.0342	1.250	0.043			
1,1-Dichloroethene	96.94	0.092	0.0004	0.129	0.0002	0.118	0.0042	1.250	0.005	200.0	Yes	2.64E-05
1,2-Dichloroethane	98.96	0.120	0.0006	0.129	0.0002	0.118	0.0055	1.250	0.007	0.39	Yes	1.83E-02
1,2-Dichloropropane	112.99	0.023	0.0001	0.129	0.0000	0.118	0.0012	1.250	0.002	4.00	Yes	3.85E-04
Benzene	78.11	0.972	0.0038	0.129	0.0013	0.118	0.0354	1.250	0.045	0.13	Yes	3.46E-01
Carbon Disulfide	76.13	0.271	0.0010	0.129	0.0003	0.118	0.0096	1.250	0.012	700.0	Yes	1.74E-05
Carbon Tetrachloride	153.84	0.007	0.0001	0.129	0.0000	0.118	0.0005	1.250	0.001	0.67	Yes	9.56E-04
Carbonyl Sulfide	60.07	0.183	0.0005	0.129	0.0002	0.118	0.0051	1.250	0.007			
Chlorobenzene	112.56	0.227	0.0013	0.129	0.0004	0.118	0.0119	1.250	0.015			
Chlorodifluromethane	86.47	0.355	0.0015	0.129	0.0005	0.118	0.0143	1.250	0.018	50,000	Yes	3.63E-07
Chlorethane	64.52	0.344	0.0011	0.129	0.0004	0.118	0.0103	1.250	0.013	10,000	Yes	1.31E-06
Chloroform	119.39	0.016	0.0001	0.129	0.0000	0.118	0.0009	1.250	0.001	0.44	Yes	2.52E-03
Chloromethane	50.49	0.193	0.0005	0.129	0.0002	0.118	0.0045	1.250	0.006	90.00	Yes	6.39E-05
Dichloromethane	84.94	3.395	0.0143	0.129	0.0049	0.118	0.1346	1.250	0.171	20.00	Yes	8.54E-03
Ethylbenzene	106.16	6.789	0.0357	0.129	0.0122	0.118	0.3364	1.250	0.427	1,000.0	Yes	4.27E-04
Hexane	86.18	2.194	0.0094	0.129	0.0032	0.118	0.0882	1.250	0.112	200.0	Yes	5.60E-04
Methyl Isobutyl Ketone	100.16	0.750	0.0037	0.129	0.0013	0.118	0.0351	1.250	0.044			
Toluene	92.13	25.405	0.1161	0.129	0.0398	0.118	1.0925	1.250	1.386	400.0	Yes	3.46E-03
Trichloroethene	131.40	0.681	0.0044	0.129	0.0015	0.118	0.0418	1.250	0.053			
Vinyl Chloride	62.50	1.077	0.0033	0.129	0.0011	0.118	0.0314	1.250	0.040	0.23	Yes	1.76E-01
Xylene	106.16	16.582	0.0873	0.129	0.0299	0.118	0.8216	1.250	1.042	100.0	Yes	1.04E-02
Hydrogen Chloride	36.45	53.5 as Cl	6.2899		1.6066	0.118			1.133	20.0	Yes	5.66E-02
Formaldehyde			11.4000						1.115	0.77-1.1		1.45-1.01

Abbreviations: MGLC = Maximum Ground-Level Concentration
AAC = Acceptable Ambient Concentration

Notes:
1. For all chemicals except HCl and formaldehyde, unit impacts were modeled with a generic rate of 1 lb/hr total emissions split between the stacks for the generators. Unit impacts were modeled with a generic rate of 1 lb/hr total emissions for each of the flares and landfill fugitives not captured by the GCCS.
2. HCl and Formaldehyde were modeled with the actual emission rate for each stack obtained from the permit application.
3. See Tables 2A and 2B for the MGLC values.
4. The total predicted MGLC for chemical-specific emission rates is the sum of the impacts for the generators, leachate concentrator, flares and fugitives. The total emission rates for the flares reflect the 97% conversion of chlorinated compounds and the NSPS Subpart WWW requirement to reduce NMOC by 98%.

```
 ***  SCREEN3 MODEL RUN  ***
 *** VERSION DATED 96043 ***

Waste Managment Chambers R&B Landfill Flare #1 (800 scfm)

SIMPLE TERRAIN INPUTS:
   SOURCE TYPE            =        FLARE
   EMISSION RATE (G/S)    =     0.126000
   FLARE STACK HEIGHT (M) =       6.4008
   TOT HEAT RLS (CAL/S)   =     0.170097E+07
   RECEPTOR HEIGHT (M)    =       0.0000
   URBAN/RURAL OPTION     =        RURAL
   EFF RELEASE HEIGHT (M) =      10.7383
   BUILDING HEIGHT (M)    =       0.0000
   MIN HORIZ BLDG DIM (M) =       0.0000
   MAX HORIZ BLDG DIM (M) =       0.0000

THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.


BUOY. FLUX =   28.203 M**4/S**3;  MOM. FLUX =   17.197 M**4/S**2.

*** FULL METEOROLOGY ***

**********************************
*** SCREEN AUTOMATED DISTANCES ***
**********************************

*** TERRAIN HEIGHT OF    0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***
```

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
1.	0.000	1	1.0	1.0	320.0	271.64	2.05	2.02	NO
100.	0.3061E-01	5	1.0	1.0	10000.0	100.46	26.36	25.88	NO
200.	0.5105	3	10.0	10.1	3200.0	36.77	24.09	14.80	NO
300.	1.308	4	20.0	20.2	6400.0	22.83	22.82	12.48	NO
400.	1.481	4	20.0	20.2	6400.0	22.83	29.69	15.71	NO
500.	1.385	4	20.0	20.2	6400.0	22.83	36.34	18.67	NO
600.	1.257	4	15.0	15.2	4800.0	27.72	43.00	21.78	NO
700.	1.152	4	15.0	15.2	4800.0	27.72	49.44	24.54	NO
800.	1.066	4	10.0	10.1	3200.0	36.68	56.07	27.79	NO
900.	1.011	4	10.0	10.1	3200.0	36.68	62.33	30.38	NO
1000.	0.9456	4	10.0	10.1	3200.0	36.68	68.53	32.94	NO
1100.	0.8892	4	8.0	8.1	2560.0	43.17	74.89	35.36	NO
1200.	0.8404	4	8.0	8.1	2560.0	43.17	80.97	37.26	NO
1300.	0.7927	4	8.0	8.1	2560.0	43.17	87.01	39.11	NO
1400.	0.7471	4	8.0	8.1	2560.0	43.17	93.01	40.92	NO
1500.	0.7041	4	8.0	8.1	2560.0	43.17	98.98	42.69	NO
1600.	0.6639	4	8.0	8.1	2560.0	43.17	104.90	44.42	NO
1700.	0.6293	4	5.0	5.1	1600.0	62.62	111.40	47.54	NO
1800.	0.6117	4	5.0	5.1	1600.0	62.62	117.23	49.15	NO
1900.	0.5936	4	5.0	5.1	1600.0	62.62	123.03	50.74	NO
2000.	0.5753	4	5.0	5.1	1600.0	62.62	128.80	52.30	NO
2100.	0.5886	5	1.5	1.5	10000.0	89.12	102.50	41.08	NO
2200.	0.6053	5	1.5	1.5	10000.0	89.12	106.71	41.86	NO
2300.	0.6203	5	1.5	1.5	10000.0	89.12	110.91	42.63	NO
2400.	0.6337	5	1.5	1.5	10000.0	89.12	115.09	43.39	NO
2500.	0.6465	5	1.0	1.0	10000.0	100.46	119.91	45.87	NO
2600.	0.6621	5	1.0	1.0	10000.0	100.46	124.05	46.59	NO

2700.	0.6765	5	1.0	1.0	10000.0	100.46	128.18	47.30	NO
2800.	0.6896	5	1.0	1.0	10000.0	100.46	132.29	48.01	NO
2900.	0.7016	5	1.0	1.0	10000.0	100.46	136.40	48.70	NO
3000.	0.7125	5	1.0	1.0	10000.0	100.46	140.49	49.39	NO
3500.	0.7523	5	1.0	1.0	10000.0	100.46	160.81	52.76	NO
4000.	0.7720	5	1.0	1.0	10000.0	100.46	180.88	55.98	NO
4500.	0.7679	5	1.0	1.0	10000.0	100.46	200.73	58.71	NO
5000.	0.7566	5	1.0	1.0	10000.0	100.46	220.36	61.32	NO
5500.	0.7407	5	1.0	1.0	10000.0	100.46	239.79	63.83	NO
6000.	0.7323	6	1.0	1.0	10000.0	84.84	172.88	42.83	NO
6500.	0.7390	6	1.0	1.0	10000.0	84.84	185.55	44.06	NO
7000.	0.7422	6	1.0	1.0	10000.0	84.84	198.13	45.26	NO
7500.	0.7376	6	1.0	1.0	10000.0	84.84	210.60	46.29	NO
8000.	0.7314	6	1.0	1.0	10000.0	84.84	222.99	47.29	NO
8500.	0.7240	6	1.0	1.0	10000.0	84.84	235.29	48.25	NO
9000.	0.7157	6	1.0	1.0	10000.0	84.84	247.51	49.19	NO
9500.	0.7067	6	1.0	1.0	10000.0	84.84	259.66	50.10	NO
10000.	0.6973	6	1.0	1.0	10000.0	84.84	271.73	50.99	NO

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 1. M:

395.	1.481	4	20.0	20.2	6400.0	22.83	29.42	15.59	NO

DWASH= MEANS NO CALC MADE (CONC = 0.0)
DWASH=NO MEANS NO BUILDING DOWNWASH USED
DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

****
*** SUMMARY OF SCREEN MODEL RESULTS ***
****

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	1.481	395.	0.

```
 ***  SCREEN3 MODEL RUN  ***
 *** VERSION DATED 96043 ***

Waste Managment Chambers R&B Landfill Flare #2 (2,150 scfm)

SIMPLE TERRAIN INPUTS:
   SOURCE TYPE            =        FLARE
   EMISSION RATE (G/S)    =     0.126000
   FLARE STACK HEIGHT (M) =      10.0584
   TOT HEAT RLS (CAL/S)   =     0.457092E+07
   RECEPTOR HEIGHT (M)    =       0.0000
   URBAN/RURAL OPTION     =        RURAL
   EFF RELEASE HEIGHT (M) =      17.0158
   BUILDING HEIGHT (M)    =       0.0000
   MIN HORIZ BLDG DIM (M) =       0.0000
   MAX HORIZ BLDG DIM (M) =       0.0000

THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.


BUOY. FLUX =   75.787 M**4/S**3;  MOM. FLUX =   46.214 M**4/S**2.

*** FULL METEOROLOGY ***

**********************************
*** SCREEN AUTOMATED DISTANCES ***
**********************************

*** TERRAIN HEIGHT OF    0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***
```

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
1.	0.000	1	1.0	1.0	518.5	517.54	2.76	2.73	NO
100.	0.1029E-01	5	1.0	1.2	10000.0	135.23	34.33	33.96	NO
200.	0.1168E-01	5	1.0	1.2	10000.0	135.23	35.72	34.35	NO
300.	0.5341E-01	4	20.0	21.7	6400.0	39.37	22.96	12.74	NO
400.	0.1892	4	20.0	21.7	6400.0	39.37	29.85	16.02	NO
500.	0.3191	4	20.0	21.7	6400.0	39.37	36.58	19.14	NO
600.	0.3987	4	20.0	21.7	6400.0	39.37	43.19	22.14	NO
700.	0.4315	4	20.0	21.7	6400.0	39.37	49.66	24.99	NO
800.	0.4340	4	20.0	21.7	6400.0	39.37	55.99	27.65	NO
900.	0.4216	4	20.0	21.7	6400.0	39.37	62.26	30.25	NO
1000.	0.4013	4	20.0	21.7	6400.0	39.37	68.47	32.82	NO
1100.	0.3761	4	20.0	21.7	6400.0	39.37	74.63	34.81	NO
1200.	0.3539	4	15.0	16.2	4800.0	48.23	80.96	37.23	NO
1300.	0.3391	4	15.0	16.2	4800.0	48.23	87.00	39.08	NO
1400.	0.3238	4	15.0	16.2	4800.0	48.23	93.00	40.89	NO
1500.	0.3086	4	15.0	16.2	4800.0	48.23	98.97	42.66	NO
1600.	0.2938	4	15.0	16.2	4800.0	48.23	104.89	44.39	NO
1700.	0.2796	4	15.0	16.2	4800.0	48.23	110.78	46.08	NO
1800.	0.2672	4	10.0	10.8	3200.0	64.98	117.09	48.82	NO
1900.	0.2605	4	10.0	10.8	3200.0	64.98	122.90	50.42	NO
2000.	0.2535	4	10.0	10.8	3200.0	64.98	128.68	51.99	NO
2100.	0.2463	4	10.0	10.8	3200.0	64.98	134.43	53.54	NO
2200.	0.2391	4	10.0	10.8	3200.0	64.98	140.15	55.06	NO
2300.	0.2320	4	10.0	10.8	3200.0	64.98	145.86	56.56	NO
2400.	0.2250	4	10.0	10.8	3200.0	64.98	151.53	58.04	NO
2500.	0.2181	4	10.0	10.8	3200.0	64.98	157.19	59.50	NO
2600.	0.2114	4	8.0	8.7	2560.0	76.98	163.15	61.81	NO

2700.	0.2068	4	8.0	8.7	2560.0	76.98	168.75	63.21	NO
2800.	0.2021	4	8.0	8.7	2560.0	76.98	174.33	64.60	NO
2900.	0.1984	5	2.5	3.0	10000.0	104.12	136.26	48.31	NO
3000.	0.2029	5	2.0	2.4	10000.0	110.85	140.71	50.01	NO
3500.	0.2246	5	1.5	1.8	10000.0	120.29	161.47	54.74	NO
4000.	0.2435	5	1.5	1.8	10000.0	120.29	181.47	57.86	NO
4500.	0.2569	5	1.0	1.2	10000.0	135.23	201.93	62.70	NO
5000.	0.2677	5	1.0	1.2	10000.0	135.23	221.45	65.15	NO
5500.	0.2755	5	1.0	1.2	10000.0	135.23	240.80	67.51	NO
6000.	0.2809	5	1.0	1.2	10000.0	135.23	259.97	69.80	NO
6500.	0.2843	5	1.0	1.2	10000.0	135.23	278.99	72.02	NO
7000.	0.2859	5	1.0	1.2	10000.0	135.23	297.86	74.17	NO
7500.	0.2863	5	1.0	1.2	10000.0	135.23	316.58	76.26	NO
8000.	0.2855	5	1.0	1.2	10000.0	135.23	335.17	78.30	NO
8500.	0.2839	5	1.0	1.2	10000.0	135.23	353.64	80.29	NO
9000.	0.2816	5	1.0	1.2	10000.0	135.23	371.98	82.23	NO
9500.	0.2787	5	1.0	1.2	10000.0	135.23	390.21	84.13	NO
10000.	0.2753	5	1.0	1.2	10000.0	135.23	408.32	85.98	NO

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 1. M:

761.	0.4353	4	20.0	21.7	6400.0	39.37	53.60	26.64	NO

DWASH= MEANS NO CALC MADE (CONC = 0.0)
DWASH=NO MEANS NO BUILDING DOWNWASH USED
DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

*** INVERSION BREAK-UP FUMIGATION CALC. ***
CONC (UG/M**3) = 0.5901
DIST TO MAX (M) = 6136.07

****
*** SUMMARY OF SCREEN MODEL RESULTS ***
****

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	0.4353	761.	0.
INV BREAKUP FUMI	0.5901	6136.	--

```
 ***  SCREEN3 MODEL RUN  ***
 *** VERSION DATED 96043 ***

Waste Managment Chambers R&B Landfill Flare #3 (2,500 scfm)

SIMPLE TERRAIN INPUTS:
   SOURCE TYPE            =        FLARE
   EMISSION RATE (G/S)    =     0.126000
   FLARE STACK HEIGHT (M) =      12.8016
   TOT HEAT RLS (CAL/S)   =     0.531291E+07
   RECEPTOR HEIGHT (M)    =       0.0000
   URBAN/RURAL OPTION     =        RURAL
   EFF RELEASE HEIGHT (M) =      20.2777
   BUILDING HEIGHT (M)    =       0.0000
   MIN HORIZ BLDG DIM (M) =       0.0000
   MAX HORIZ BLDG DIM (M) =       0.0000

THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.


BUOY. FLUX =   88.090 M**4/S**3;  MOM. FLUX =   53.715 M**4/S**2.

*** FULL METEOROLOGY ***

**********************************
*** SCREEN AUTOMATED DISTANCES ***
**********************************

*** TERRAIN HEIGHT OF    0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***
```

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
1.	0.000	1	1.0	1.1	562.4	561.39	2.87	2.84	NO
100.	0.5185E-02	5	1.0	1.3	10000.0	142.06	34.76	34.40	NO
200.	0.7516E-02	5	1.0	1.3	10000.0	142.06	36.69	35.35	NO
300.	0.1908E-01	3	10.0	10.7	3200.0	73.25	35.33	22.03	NO
400.	0.1027	3	10.0	10.7	3200.0	73.25	45.82	28.38	NO
500.	0.2041	3	10.0	10.7	3200.0	73.25	56.06	34.56	NO
600.	0.2738	3	10.0	10.7	3200.0	73.25	66.10	40.62	NO
700.	0.3106	4	20.0	22.2	6400.0	44.01	49.71	25.09	NO
800.	0.3299	4	20.0	22.2	6400.0	44.01	56.05	27.76	NO
900.	0.3334	4	20.0	22.2	6400.0	44.01	62.31	30.36	NO
1000.	0.3271	4	20.0	22.2	6400.0	44.01	68.52	32.91	NO
1100.	0.3125	4	20.0	22.2	6400.0	44.01	74.67	34.90	NO
1200.	0.2969	4	20.0	22.2	6400.0	44.01	80.77	36.82	NO
1300.	0.2811	4	20.0	22.2	6400.0	44.01	86.83	38.70	NO
1400.	0.2696	4	15.0	16.7	4800.0	53.45	93.06	41.03	NO
1500.	0.2601	4	15.0	16.7	4800.0	53.45	99.02	42.79	NO
1600.	0.2504	4	15.0	16.7	4800.0	53.45	104.95	44.52	NO
1700.	0.2405	4	15.0	16.7	4800.0	53.45	110.84	46.21	NO
1800.	0.2308	4	15.0	16.7	4800.0	53.45	116.69	47.86	NO
1900.	0.2214	4	15.0	16.7	4800.0	53.45	122.52	49.49	NO
2000.	0.2122	4	15.0	16.7	4800.0	53.45	128.31	51.09	NO
2100.	0.2065	4	10.0	11.1	3200.0	71.41	134.52	53.78	NO
2200.	0.2020	4	10.0	11.1	3200.0	71.41	140.25	55.29	NO
2300.	0.1974	4	10.0	11.1	3200.0	71.41	145.94	56.79	NO
2400.	0.1927	4	10.0	11.1	3200.0	71.41	151.62	58.26	NO
2500.	0.1879	4	10.0	11.1	3200.0	71.41	157.27	59.72	NO
2600.	0.1831	4	10.0	11.1	3200.0	71.41	162.90	61.15	NO

2700.	0.1784	4	10.0	11.1	3200.0	71.41	168.51	62.57	NO
2800.	0.1737	4	10.0	11.1	3200.0	71.41	174.10	63.98	NO
2900.	0.1691	4	10.0	11.1	3200.0	71.41	179.67	65.36	NO
3000.	0.1656	4	8.0	8.9	2560.0	84.20	185.54	67.63	NO
3500.	0.1696	5	2.0	2.6	10000.0	116.93	161.14	53.75	NO
4000.	0.1863	5	1.5	1.9	10000.0	126.66	181.62	58.31	NO
4500.	0.1967	5	1.0	1.3	10000.0	142.06	202.10	63.25	NO
5000.	0.2075	5	1.0	1.3	10000.0	142.06	221.61	65.68	NO
5500.	0.2159	5	1.0	1.3	10000.0	142.06	240.94	68.03	NO
6000.	0.2223	5	1.0	1.3	10000.0	142.06	260.11	70.30	NO
6500.	0.2270	5	1.0	1.3	10000.0	142.06	279.12	72.50	NO
7000.	0.2301	5	1.0	1.3	10000.0	142.06	297.98	74.64	NO
7500.	0.2321	5	1.0	1.3	10000.0	142.06	316.69	76.72	NO
8000.	0.2330	5	1.0	1.3	10000.0	142.06	335.28	78.74	NO
8500.	0.2331	5	1.0	1.3	10000.0	142.06	353.74	80.72	NO
9000.	0.2325	5	1.0	1.3	10000.0	142.06	372.07	82.65	NO
9500.	0.2313	5	1.0	1.3	10000.0	142.06	390.30	84.54	NO
10000.	0.2296	5	1.0	1.3	10000.0	142.06	408.41	86.39	NO

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 1. M:

878.	0.3336	4	20.0	22.2	6400.0	44.01	61.00	29.82	NO

DWASH= MEANS NO CALC MADE (CONC = 0.0)
DWASH=NO MEANS NO BUILDING DOWNWASH USED
DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

*** INVERSION BREAK-UP FUMIGATION CALC. ***
CONC (UG/M**3) = 0.4931
DIST TO MAX (M) = 6990.61

****
*** SUMMARY OF SCREEN MODEL RESULTS ***
****

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	0.3336	878.	0.
INV BREAKUP FUMI	0.4931	6991.	--

*** SCREEN3 MODEL RUN ***
*** VERSION DATED 96043 ***

Waste Managment Chambers R&B Landfill Fugitives (506 acres)

SIMPLE TERRAIN INPUTS:
SOURCE TYPE = AREA
EMISSION RATE (G/(S-M**2)) = 0.616170E-07
SOURCE HEIGHT (M) = 0.0000
LENGTH OF LARGER SIDE (M) = 1430.0000
LENGTH OF SMALLER SIDE (M) = 1430.0000
RECEPTOR HEIGHT (M) = 0.0000
URBAN/RURAL OPTION = RURAL
THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

MODEL ESTIMATES DIRECTION TO MAX CONCENTRATION

BUOY. FLUX = 0.000 M**4/S**3; MOM. FLUX = 0.000 M**4/S**2.

*** FULL METEOROLOGY ***

****
*** SCREEN AUTOMATED DISTANCES ***
****

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	MAX DIR (DEG)
1.	12.73	6	1.0	1.0	10000.0	0.00	45.
100.	13.08	6	1.0	1.0	10000.0	0.00	45.
200.	13.40	6	1.0	1.0	10000.0	0.00	45.
300.	13.71	6	1.0	1.0	10000.0	0.00	45.
400.	14.01	6	1.0	1.0	10000.0	0.00	45.
500.	14.30	6	1.0	1.0	10000.0	0.00	45.
600.	14.58	6	1.0	1.0	10000.0	0.00	45.
700.	14.84	6	1.0	1.0	10000.0	0.00	45.
800.	15.10	6	1.0	1.0	10000.0	0.00	45.
900.	15.35	6	1.0	1.0	10000.0	0.00	45.
1000.	15.60	6	1.0	1.0	10000.0	0.00	45.
1100.	9.312	6	1.0	1.0	10000.0	0.00	45.
1200.	7.839	6	1.0	1.0	10000.0	0.00	45.
1300.	6.991	6	1.0	1.0	10000.0	0.00	45.
1400.	6.390	6	1.0	1.0	10000.0	0.00	45.
1500.	5.941	6	1.0	1.0	10000.0	0.00	45.
1600.	5.583	6	1.0	1.0	10000.0	0.00	45.
1700.	5.287	6	1.0	1.0	10000.0	0.00	45.
1800.	5.041	6	1.0	1.0	10000.0	0.00	45.
1900.	4.825	6	1.0	1.0	10000.0	0.00	45.
2000.	4.638	6	1.0	1.0	10000.0	0.00	45.
2100.	4.470	6	1.0	1.0	10000.0	0.00	45.
2200.	4.319	6	1.0	1.0	10000.0	0.00	45.
2300.	4.182	6	1.0	1.0	10000.0	0.00	45.
2400.	4.058	6	1.0	1.0	10000.0	0.00	45.
2500.	3.945	6	1.0	1.0	10000.0	0.00	45.
2600.	3.840	6	1.0	1.0	10000.0	0.00	45.
2700.	3.746	6	1.0	1.0	10000.0	0.00	45.
2800.	3.658	6	1.0	1.0	10000.0	0.00	45.

2900.	3.576	6	1.0	1.0	10000.0	0.00	45.
3000.	3.501	6	1.0	1.0	10000.0	0.00	45.
3500.	3.187	6	1.0	1.0	10000.0	0.00	45.
4000.	2.948	6	1.0	1.0	10000.0	0.00	45.
4500.	2.753	6	1.0	1.0	10000.0	0.00	45.
5000.	2.588	6	1.0	1.0	10000.0	0.00	45.
5500.	2.445	6	1.0	1.0	10000.0	0.00	45.
6000.	2.319	6	1.0	1.0	10000.0	0.00	45.
6500.	2.207	6	1.0	1.0	10000.0	0.00	45.
7000.	2.109	6	1.0	1.0	10000.0	0.00	45.
7500.	2.022	6	1.0	1.0	10000.0	0.00	45.
8000.	1.944	6	1.0	1.0	10000.0	0.00	45.
8500.	1.873	6	1.0	1.0	10000.0	0.00	45.
9000.	1.807	6	1.0	1.0	10000.0	0.00	45.
9500.	1.745	6	1.0	1.0	10000.0	0.00	45.
10000.	1.688	6	1.0	1.0	10000.0	0.00	45.

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 1. M:

1011.	15.63	6	1.0	1.0	10000.0	0.00	45.

****
*** SUMMARY OF SCREEN MODEL RESULTS ***
****

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	15.63	1011.	0.