

Biswell, David, NMENV

Subject: FW: Review of Class 2 PMR Air Modeling New Filter Building
Attachments: Class 2 PMR Air Modeling Review Final Report.docx

From: David Stuenkel [<mailto:dstuenkel@trininc.com>]
Sent: Tuesday, February 20, 2018 9:17 AM
To: Maestas, Ricardo, NMENV <Ricardo.Maestas@state.nm.us>
Cc: Kimberly Wood <krw@trininc.com>
Subject: RE: Review of Class 2 PMR Air Modeling New Filter Building

Ricardo:

Attached is the final report for Trinity's independent review of the air modeling included in Appendix D of the Class 2 PMR related to the new filter building at WIPP. Let me know if you have any questions.

Thanks,

David

*David Stuenkel, PhD, CHP
Trinity Engineering Associates, Inc.
Radiological Engineer/Health Physicist
e-mail: dstuenkel@trininc.com
voice/text: (859) 426-0173*

From: Maestas, Ricardo, NMENV [<mailto:Ricardo.Maestas@state.nm.us>]
Sent: Wednesday, February 14, 2018 12:30
To: David Stuenkel <dstuenkel@trininc.com>
Cc: Kimberly Wood <krw@trininc.com>; Maestas, Ricardo, NMENV <Ricardo.Maestas@state.nm.us>
Subject: RE: Review of Class 2 PMR Air Modeling New Filter Building

Hello David,

We have reviewed the draft report and have no questions. Thank you for your work on independently verifying the modeling.

Please finalize the report and submit to NMED.

Let me know if you have any questions.

Ricardo Maestas
NMED WIPP Staff Manager
Hazardous Waste Bureau
2905 Rodeo Park Dr., Bldg 1
Santa Fe, New Mexico 87505



Ricardo.Maestas@state.nm.us
505-476-6050

From: Maestas, Ricardo, NMENV
Sent: Tuesday, February 13, 2018 8:45 AM
To: 'David Stuenkel' <dstuenkel@trininc.com>
Cc: Kimberly Wood <krw@trininc.com>; Maestas, Ricardo, NMENV (Ricardo.Maestas@state.nm.us) <Ricardo.Maestas@state.nm.us>
Subject: RE: Review of Class 2 PMR Air Modeling New Filter Building

Good morning David,

Thank you for the summary and the draft report. I will review today and let you know if I have any questions.

Ricardo

Ricardo Maestas
NMED WIPP Staff Manager
Hazardous Waste Bureau
2905 Rodeo Park Dr., Bldg 1
Santa Fe, New Mexico 87505
Ricardo.Maestas@state.nm.us
505-476-6050

From: David Stuenkel [<mailto:dstuenkel@trininc.com>]
Sent: Monday, February 12, 2018 10:45 AM
To: Maestas, Ricardo, NMENV <Ricardo.Maestas@state.nm.us>
Cc: Kimberly Wood <krw@trininc.com>
Subject: Review of Class 2 PMR Air Modeling New Filter Building

Ricardo:

Attached is the draft report for Trinity's independent review of the air modeling included in Appendix D of the Class 2 PMR related to the new filter building at WIPP. Below is a summary of the review (also included in the report):

- Modeling inputs used in the AERMOD, AERMAP, and AERMET matched those described in Appendix D of the Class 2 PMR. Numerical conversions of input parameters were checked, and no errors or discrepancies were found.
- Contour plots showing the average concentration for the three scenarios generated using AERPLOT showed good agreement with contour plots included in Figures 3-1, 3-2, and 3-3 of Appendix D of the Class 2 PMR.
- The location of the MEIs for the three modeled scenarios and the average concentrations at those locations reported in Appendix D of the Class 2 PMR, agree with those independently modeled.
- The average concentrations at the two offsite receptor locations (Smith Ranch and Mills Ranch) reported in Appendix D of the Class 2 PMR, agree with those independently modeled.
- The average and maximum concentration for each hour of the day included in Appendix D of the Class 2 PMR, agree with those independently modeled and calculated.

If you'd like, I could share the KMZ files with you via DropBox; the files are too large to provide by e-mail. This would allow you to view the modeling results in Google Earth. Let me know if you have any questions about the report or Appendix D of the PMR.

Thanks,

David

David Stuenkel, PhD, CHP

Trinity Engineering Associates, Inc.

Radiological Engineer/Health Physicist

e-mail: dstuenkel@trininc.com

voice/text: (859) 426-0173

Final Report

**Review of “Volatile Organic Compound (VOC) Modeling Assessment”
(Appendix D of Class 2 Permit Modification Request:
Changes Due to Construction and Operation of a New Filter Building)**

Prepared for
The New Mexico Environment Department
Hazardous Waste Bureau
WIPP Group

Prepared by
Trinity Engineering Associates
25 W. Fountain Ave.
Cincinnati, Ohio 45246

February 2018
Revision 0

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1 Introduction

The purpose of this report is to document the independent calculations included in Appendix D: Volatile Organic Compound (VOC) Modeling Assessment of the draft *Class 2 Permit Modification Request: Changes Due to Construction and Operation of a New Filter Building*. Modeling results were independently calculated and compared to results included the permit modification request (PMR). Section 2 of this report describes the modeling approach. The modeling results are provided in Section 3. Section 4 includes a summary of the results and conclusions.

2 Modeling Approach

Average concentrations from the stack of the proposed filter building were modeled using AERMOD (Version 16216r). AERMOD is a steady-state plume model, incorporating air dispersion based on planetary boundary layer turbulence structure and scaling concepts. Version 16216r was the most current version of the model at the time the analysis was performed. In addition to AERMOD itself, the AERMET (Version 16216) and AERMAP (Version 11103) data preprocessors were used generate the meteorological input files and receptor locations, respectively.

2.1 Sources

The source modeled was a stack with a height of 38.1 meters (125 feet) and a diameter of 4.26 meters (14 feet). The source was located at a location of 613887 meters Easting and 3582209 meters Northing in UTM Zone 13. The location of modeled stack is shown in Figure 1.

Three scenarios were modeled with only differences being the flow rate and exit velocity; the exit velocity was calculated based on the flow rate and the diameter of the stack. Modeled flow rates and exit velocities are provided in Table 1. The emission rate was 0.125997881 g/s (1.0 pounds per hour [lb/hr]).

Table 1: Scenario Dependent Source Parameters

| Scenario | Flow rate (scfm) | Exit Velocity (m/s) |
|----------|------------------|---------------------|
| 1 | 125,000 | 4.13 |
| 2 | 280,000 | 9.24 |
| 3 | 560,000 | 18.48 |



Figure 1: Modeled Stack Location

2.2 Meteorological Data

The following meteorological data were used to generate the surface and profile files required by AERMOD:

- Site-specific data for the years 2009-2013 provided by NWP
- Surface data for the years 2009-2013 from the National Weather Service (NWS) station in Carlsbad, NM (Station 93033)
- Upper air data for the years 2009-2013 from the NWS station located in El Paso, TX (Station 3020).

All data were processed using AERMET (Version 16216). No differences were observed between the surface and profile files provided by the Permittees and those independently generated.

2.3 Receptors

A rectangular receptor grid was placed across the WIPP property with the following spacing between receptor locations:

- Every 10 meters inside the Property Protection Area
- Every 25 meters inside the Exclusive Use Area but outside the Property Protection Area
- Every 50 meters inside the Off-Limits Area but outside the Exclusive Use Area
- Every 100 meters inside the WIPP Site Boundary but Outside the off-Limits Area

Waste Isolation Pilot Plant
DRAFT Hazardous Waste Facility Permit
February 22, 2018