



**Minnesota Pollution  
Control Agency**

520 Lafayette Road North  
St. Paul, MN 55155-4194

# AERA-03

## Air Dispersion Modeling Analysis Form to Support Air Emissions Risk Analysis (AERA)

Doc Type: Air Emissions Risk Assessment – External Documentation

### Instructions on Page 10

**Purpose:** This form describes the modeling assumptions and methods that will be/were used in an AERA submitted prior to submitting an air permit application (pre-app) or with an air permit application (post-app). It can function as a protocol, submittal checklist and Minnesota Pollution Control Agency (MPCA) review document. There are different forms for criteria pollutant modeling. **MPCA staff will fill out areas in italics during their review, indicating deficiencies and advising the applicant on how they can be remedied.** Instructions on how to fill out this form are at the end of the form. Please consult the AERA guidance at <http://www.pca.state.mn.us/index.php/view-document.html?gid=146> and modeling guidance at <http://www.pca.state.mn.us/nwqh421> for instructions on modeling for an AERA. An AERA submitted with an air permit application is not considered “substantially complete” until **all** necessary quantitative and qualitative information has been submitted and MPCA staff have determined the appropriate methods have been used. **Submitting AERA materials for review prior to submitting an air permit application is highly recommended** so that site specific suggestions from MPCA staff can be included in AERA materials submitted with an air permit application.

### Facility Information

1. AQ Facility ID No.: \_\_\_\_\_
2. Three-letter modeling facility ID (ex., ACE): \_\_\_\_\_
3. Date(s) of pre-application submittal: \_\_\_\_\_  
(mm/dd/yyyy)
4. Date(s) of permit application submittal: \_\_\_\_\_  
(mm/dd/yyyy)
5. Facility name: \_\_\_\_\_
6. Facility location  
Street address: \_\_\_\_\_  
City: \_\_\_\_\_ State: MN Zip code: \_\_\_\_\_ County: \_\_\_\_\_
7. Proposer: \_\_\_\_\_ Phone: \_\_\_\_\_ E-mail: \_\_\_\_\_
8. AERA Preparer: \_\_\_\_\_ Phone: \_\_\_\_\_ E-mail: \_\_\_\_\_

Are there differences between the AERA air dispersion modeling materials submitted pre-app and those submitted post-app?

☐ Yes ☐ No ☐ NA

If yes, please explain the differences:

**MPCA review question:** Are there differences between the AERA air dispersion modeling materials submitted pre-app and those submitted post-app? ☐ Yes ☐ No ☐ NA

If yes, please explain the differences:

### MPCA Summary of Overall AERA Air Dispersion Modeling Review

Names of MPCA AERA reviewers: \_\_\_\_\_

Submittal date (mm/dd/yyyy)	Pre-app review date (mm/dd/yyyy)	Overall pre-app AERA air dispersion modeling determination (Select Yes for adequate, No for deficient, and enter reviewer's initials)	Post-app completeness review date (mm/dd/yyyy)	Overall post-app AERA air dispersion modeling completeness determination (Select Yes for substantially complete, No for incomplete, and enter reviewer's initials)	**Technical accuracy review date (mm/dd/yyyy)	**Technical accuracy determination and reviewer's initials
		<input type="checkbox"/> Yes <input type="checkbox"/> No Init: _____		<input type="checkbox"/> Yes <input type="checkbox"/> No Init: _____		<input type="checkbox"/> Yes <input type="checkbox"/> No Init: _____
		<input type="checkbox"/> Yes <input type="checkbox"/> No Init: _____		<input type="checkbox"/> Yes <input type="checkbox"/> No Init: _____		<input type="checkbox"/> Yes <input type="checkbox"/> No Init: _____

#### MPCA overall AERA air dispersion modeling review questions:

Are differences in methodologies between the approved protocol and modeled results acceptable? ☐ Yes ☐ No

Why:

**MPCA overall AERA air dispersion modeling pre-app review notes including comments on deficiencies and how they can be remedied:**

**MPCA overall AERA air dispersion modeling post-app review notes including comments on deficiencies and how they can be remedied:**

**\*\*MPCA overall AERA air dispersion modeling technical accuracy review notes including comments on deficiencies and how they can be remedied:**

## General Information

This form is being submitted: **(mark the box that is relevant to the current submittal but keep dates of other submittals in the chart as a log)**

Submittal date(s)  
(mm/dd/yyyy)

- ☐ As part of a HHRAP-based analysis protocol (AERA-26)
- ☐ As a non-HHRAP-based analysis protocol
- ☐ To explain results in a pre-app submittal\*
- ☐ To explain results in an air permit application\*

\*If applicable, please explain any differences in methodologies between the approved protocol and the modeled results:

**Please select all of the modeling methods that will be/were used.**

- ☐ RASS "look-up" table dispersion factors
- ☐ DISPERSE (Dispersion Information Screening Procedures for Emission Risk Screening Evaluations)
- ☐ AERMOD to generate dispersion factors for the RASS (using 1 g/sec emission rates)
- ☐ AERMOD to generate individual pollutant concentrations for the RASS
- ☐ AERMOD to generate risk estimates by modeling Q/CHI sums instead of emission rates
- ☐ AERMOD to conduct deposition modeling for input into a HHRAP-based analysis (e.g., IRAP)
- ☐ AERMOD to generate unitized dispersion factors for MMREM
- ☐ AERMOD to generate mercury air concentrations for MMREM
- ☐ Other (explain): \_\_\_\_\_

**Please indicate why the specified modeling method was selected.**

- ☐ AERMOD modeling will **not** be/was **not** done because:
  - ☐ RASS lookup tables showed results below risk guidelines
  - ☐ DISPERSE modeling showed results below risk guidelines
- ☐ AERMOD modeling will be/was done after conservative screening modeling results were submitted
- ☐ AERMOD modeling will be/was done without submitting conservative screening modeling results
- ☐ Other (explain): \_\_\_\_\_

**Please indicate what support documents are being submitted.** If this form is being submitted as a protocol, please include at least one sample of each of the appropriate files listed below. A sample represents the framework of how the model will generally be set up and may not include, for example, facility specific source inputs. If this form is being submitted to describe results, please submit all of the following files which were used in the analysis:

- |  |   |
|--|---|
| AERMOD input:  | <input type="checkbox"/> sample <input type="checkbox"/> complete set (*.inp, *.adi, *.ami)         |
| (Input file should include buildings and receptor grid(s)) |   |
| AERMOD output:   | <input type="checkbox"/> sample <input type="checkbox"/> complete set (*.ado, *.plt)                |
| BPIP-PRIME Input files:                                    | <input type="checkbox"/> sample <input type="checkbox"/> complete set (*.bpi)                       |
| AERMAP files:  | <input type="checkbox"/> sample <input type="checkbox"/> complete set (*.dem(s), *.tif [NED files]) |
| Meteorological files:                                      | <input type="checkbox"/> sample <input type="checkbox"/> complete set (*.pfl, *.sfc)                |
| Q/CHI plot files if using Q/CHI method:                    | <input type="checkbox"/> sample <input type="checkbox"/> complete set                               |
| Modeled emissions file/s                                   | <input type="checkbox"/> sample <input type="checkbox"/> complete set (*.txt, *.xls)                |
| Other:   | <input type="checkbox"/> sample <input type="checkbox"/> complete set                               |

**How were the above supporting files (AERMOD, BPIP-PRIME, AERMAP files) submitted?**

- ☐ CD-ROM included with AERA submittal  
☐ SAMS spreadsheet (indicate name of file): \_\_\_\_\_  
☐ E-mailed separately  
☐ Downloaded from a FTP site  
☐ Other (explain): \_\_\_\_\_

Please note any additional information for the General Summary section (e.g., hourly and annual modeling was conducted differently).

**MPCA general information review summary**

<b>Submittal date(s)</b> (mm/dd/yyyy)	<b>Pre-app review date(s)</b> (mm/dd/yyyy)	<b>Pre-app adequacy</b>	<b>Post-app completeness review date(s)</b> (mm/dd/yyyy)	<b>Post-app completeness</b>	<b>Technical accuracy review date(s)</b> (mm/dd/yyyy)	<b>Technical accuracy</b>
		<input type="checkbox"/> Yes <input type="checkbox"/> No Init: _____		<input type="checkbox"/> Yes <input type="checkbox"/> No Init: _____		<input type="checkbox"/> Yes <input type="checkbox"/> No Init: _____
		<input type="checkbox"/> Yes <input type="checkbox"/> No Init: _____		<input type="checkbox"/> Yes <input type="checkbox"/> No Init: _____		<input type="checkbox"/> Yes <input type="checkbox"/> No Init: _____

**Detailed Modeling Descriptions****1. Criteria pollutant modeling summary:** Please identify how the Criteria Pollutants will be/were modeled.

- ☐ NAAQS/MAAQS air dispersion modeling will be/was conducted for the following pollutants, and the analysis/protocol is:  
contained in the general file named: \_\_\_\_\_
- ☐ NO<sub>2</sub> ☐ PM<sub>10</sub> ☐ PM<sub>2.5</sub> ☐ SO<sub>2</sub> ☐ CO ☐ Pb ☐ H<sub>2</sub>S  
☐ Other (explain): \_\_\_\_\_
- ☐ The remaining Criteria Pollutants were compared to NAAQS/MAAQS in the RASS (Risk Assessment Screening Spreadsheet) using high-first-high (H1H) modeled concentrations as a screening step.
- ☐ All Criteria air pollutants were compared to NAAQS/MAAQS in the RASS (Risk Assessment Screening Spreadsheet) using high-first-high (H1H) modeled concentrations as a screening step.
- ☐ Criteria pollutants with health benchmarks were also included in the summation of hazard indices and cancer risks (e.g., NO<sub>2</sub> and lead).
- ☐ Except for using H1H values, inclusion/exclusion of different sources and different emission estimates, the AERA dispersion modeling will be /was the same as the criteria pollutant modeling.

Give any additional information about the Criteria Pollutant Modeling (list any deviations from EPA or MPCA guidance)?

**MPCA criteria modeling review summary**

<b>Submittal date(s)</b> (mm/dd/yyyy)	<b>Pre-app review date(s)</b> (mm/dd/yyyy)	<b>Pre-app adequacy</b>	<b>Post-app completeness review date(s)</b> (mm/dd/yyyy)	<b>Post-app completeness</b>	<b>Technical accuracy review date(s)</b> (mm/dd/yyyy)	<b>Technical accuracy</b>
		<input type="checkbox"/> Yes <input type="checkbox"/> No Init: _____		<input type="checkbox"/> Yes <input type="checkbox"/> No Init: _____		<input type="checkbox"/> Yes <input type="checkbox"/> No Init: _____
		<input type="checkbox"/> Yes <input type="checkbox"/> No Init: _____		<input type="checkbox"/> Yes <input type="checkbox"/> No Init: _____		<input type="checkbox"/> Yes <input type="checkbox"/> No Init: _____

**MPCA criteria modeling summary review questions:**

Is there/will there be sufficient information about the criteria pollutants for the AERA? ☐ Yes ☐ No

**MPCA criteria modeling summary review notes:**

2. **Air dispersion model specifics** (mark all that apply):

☐ Only High-first-high (H1H) values will be/were specified in the model output setup ☐ Yes ☐ No

If no, explain:

- ☐ AERMOD Version \_\_\_\_\_ (e.g., 09292) will be/was used
- ☐ AERMOD Regulatory Default Option will be/was used
- ☐ AERMOD Concentration option will be/was used
- ☐ AERMOD Rural item will be/was used
- ☐ AERMOD URBANOPT item will be/was used
- ☐ AERMOD Non-Regulatory Default Option will be/was used
- ☐ Some non-default AERMOD items will be/was used (requires MPCA written approval)\*

\*FASTALL, FASTAREA, FLAT, POINTCAP, POINTHOR, etc., explain:

**Please give any additional information for the Air Dispersion Model Summary (list any deviations from EPA or MPCA guidance)?**

**MPCA air dispersion model specifics summary**

<b>Submittal date(s)</b> (mm/dd/yyyy)	<b>Pre-app review date(s)</b> (mm/dd/yyyy)	<b>Pre-app adequacy</b>	<b>Post-app completeness review date(s)</b> (mm/dd/yyyy)	<b>Post-app completeness</b>	<b>Technical accuracy review date(s)</b> (mm/dd/yyyy)	<b>Technical accuracy</b>
		<input type="checkbox"/> Yes <input type="checkbox"/> No Init: _____		<input type="checkbox"/> Yes <input type="checkbox"/> No Init: _____		<input type="checkbox"/> Yes <input type="checkbox"/> No Init: _____
		<input type="checkbox"/> Yes <input type="checkbox"/> No Init: _____		<input type="checkbox"/> Yes <input type="checkbox"/> No Init: _____		<input type="checkbox"/> Yes <input type="checkbox"/> No Init: _____

**MPCA air dispersion model specifics review questions:**

Do you approve of the methods described above? ☐ Yes ☐ No

**MPCA air dispersion model specifics review notes:**

3. **Meteorological data summary:**

Does the modeling use five years of meteorological data? ☐ Yes ☐ No

☐ Was the latest version of MPCA pre-processed meteorological data used (06341 or 11059)?

If checked, enter the MPCA ZIP file name: \_\_\_\_\_

Please indicate the three letter call sign, station name and the state the meteorological surface station is located in. (Ex.: MSP: Minneapolis/St. Paul, MN)

Pre-processed AERMET version 06341 or earlier files: \_\_\_\_\_

Pre-processed AERMET version 11059, with or without \_\_\_\_\_

AERMINUTE version 11059 processing, files: \_\_\_\_\_

What meteorological upper air station was used? Station/Site: \_\_\_\_\_

SITEDATA Facility/Site: \_\_\_\_\_

PROFBASE elevation (meters): \_\_\_\_\_

What consecutive 5-year period will be used (e.g. 1986 - 1990 w/o AERSURFACE; 2001 - 2005 w/AERSURFACE): \_\_\_\_\_

Note: If site-specific meteorological data will be collected and used, please follow the federal guidance (EPA's), as specified in section 8.3 and section 8.3.3.2 (QA/QC) of 40 CFR Part 51 dated 11/09/2005 (Appendix W).

☐ If site-specific meteorological data will be collected and used, where will the **location** of the meteorological tower be set (city and state, coordinates, etc.)? \_\_\_\_\_

☐ If site-specific meteorological data will be collected and used, what **year** of data is proposed to be used? \_\_\_\_\_

What justification(s) applies for the proposed surface and upper air stations identified above? (Check all that apply)

- |   |   |
|---|---|
| <input type="checkbox"/> Similar surface characteristics as meteorological tower  | <input type="checkbox"/> Proximity to surface and/or upper air station(s) |
| <input type="checkbox"/> Similar land use characteristics   | <input type="checkbox"/> Similar wind patterns/characteristics            |
| <input type="checkbox"/> Other – Please describe: _____   |   |
| <input type="checkbox"/> AERSURFACE version: _____  |   |
| <input type="checkbox"/> (Land Cover) LULC data source: _____   |   |
| <input type="checkbox"/> Explain how LULC was parameterized: _____  |   |
| <input type="checkbox"/> A 10km by 10km domain for albedo and Bowen ratio will be/was used  |   |
| <input type="checkbox"/> A 1km radius domain for roughness height will be/was used  |   |
| <input type="checkbox"/> Yearly-averaged moisture conditions (wet, dry, or average) based on historical ranks will be/were accounted for in AERSURFACE (for the Bowen Ratio)? _____ |   |
| <input type="checkbox"/> Cultivated land (a.k.a. row crops or cropland; $z_o \sim 0.01\text{m}$ to $0.2\text{m}$ )  |   |
| <input type="checkbox"/> 50/50 mix of cultivated land and deciduous forest ( $z_o \sim 0.3\text{m}$ to $0.8\text{m}$ )  |   |
| <input type="checkbox"/> Deciduous forest (and major urban downtown areas) ( $z_o \sim 0.5\text{m}$ to $1.3\text{m}$ )  |   |
| <input type="checkbox"/> Unknown land use   |   |
| <input type="checkbox"/> Other criteria will be/were considered (explain): _____  |   |
| <input type="checkbox"/> EPA post-processors (such as LEADPOST) are proposed to be used.<br>Please list: _____  |   |
| <input type="checkbox"/> Topography at the project site and potential NWS sites was considered.   |   |
| <input type="checkbox"/> Prevailing wind conditions at several potential NWS sites were considered.   |   |
| <input type="checkbox"/> Frequency of calm hours at several potential NWS sites were considered.  |   |
| <input type="checkbox"/> Frequency of missing data at several potential NWS sites were considered.  |   |

**If urban (URBANOPT), please indicate:**

Population: \_\_\_\_\_ Roughness height (meters): \_\_\_\_\_

**Population rationale:**

- |   |  |
|---|--|
| <input type="checkbox"/> Full Metropolitan Statistical Area (MSA) | <input type="checkbox"/> Full Micropolitan Statistical Area (MSA)    |
| <input type="checkbox"/> Partial Metropolitan Statistical Area    | <input type="checkbox"/> Partial Micropolitan Statistical Area (MSA) |
| <input type="checkbox"/> Other (specify): _____                   |  |

Roughness height rationale (e.g., project site estimated via National Land Cover Data (NLCD) with MPCA Land Use.

- ☐ The wind speed categories in the ME WINDCATS pathway will be set to default wind speeds in conjunction with no wind speed emission factors? ☐ Yes ☐ No
- a. If no, please list the user-specified wind speed categories as proposed: \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_
- b. Will these be used in conjunction with the SO EMISFACT WSPEED pathway? ☐ Yes ☐ No
- c. If yes, please list the user-specified wind speed emission factors as proposed: \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_

Please add additional information for the Meteorological Data Summary (list any deviations from EPA or MPCA guidance)?

**MPCA meteorological data summary**

Submittal date(s) (mm/dd/yyyy)	Pre-app review date(s) (mm/dd/yyyy)	Pre-app adequacy	Post-app completeness review date(s) (mm/dd/yyyy)	Post-app completeness	Technical accuracy review date(s) (mm/dd/yyyy)	Technical accuracy
		<input type="checkbox"/> Yes <input type="checkbox"/> No Init: _____		<input type="checkbox"/> Yes <input type="checkbox"/> No Init: _____		<input type="checkbox"/> Yes <input type="checkbox"/> No Init: _____
		<input type="checkbox"/> Yes <input type="checkbox"/> No Init: _____		<input type="checkbox"/> Yes <input type="checkbox"/> No Init: _____		<input type="checkbox"/> Yes <input type="checkbox"/> No Init: _____

**MPCA meteorological data review questions:**

Do you approve of the methods described above? ☐ Yes ☐ No

**MPCA meteorological data review notes:**

4. **Terrain and geospatial summary** (AERMAP 09040: generally use NED data)

- ☐ AERMAP will be/was used. If not please explain: \_\_\_\_\_  
Please write the AERMAP Version (e.g. 09040): \_\_\_\_\_  
USGS DEM Data will be/was used: Check the appropriate specification: ☐ None ☐ 1-degree ☐ 7.5 minute ☐ mix  
☐ Other (specify): \_\_\_\_\_  
☐ National Elevation Dataset NED: \_\_\_\_\_  
☐ UTM coordinates (NAD83, zone15 extended) will be/were used.  
Note: All UTM coordinates must be in NAD83, **not** NAD27.  
☐ If other please explain: \_\_\_\_\_

**Check the maximum terrain variation** (meters [m] – as applicable):

- ☐ Within 10m of shortest stack ☐ Within 10m of lowest fugitive source  
☐ Within 100m of shortest stack ☐ Within 100m of lowest fugitive source  
☐ Within 1000m of shortest stack ☐ Within 1000m of lowest fugitive source

Additional information for the Terrain and Geospatial Summary (list any deviations from EPA or MPCA guidance)?

**MPCA terrain and geospatial summary**

<b>Submittal date(s)</b> (mm/dd/yyyy)	<b>Pre-app review date(s)</b> (mm/dd/yyyy)	<b>Pre-app adequacy</b>	<b>Post-app completeness review date(s)</b> (mm/dd/yyyy)	<b>Post-app completeness</b>	<b>Technical accuracy review date(s)</b> (mm/dd/yyyy)	<b>Technical accuracy</b>
		<input type="checkbox"/> Yes <input type="checkbox"/> No Init: _____		<input type="checkbox"/> Yes <input type="checkbox"/> No Init: _____		<input type="checkbox"/> Yes <input type="checkbox"/> No Init: _____
		<input type="checkbox"/> Yes <input type="checkbox"/> No Init: _____		<input type="checkbox"/> Yes <input type="checkbox"/> No Init: _____		<input type="checkbox"/> Yes <input type="checkbox"/> No Init: _____

**MPCA terrain and geospatial review questions:**

Do you approve of the methods described above? ☐ Yes ☐ No

**MPCA terrain and geospatial review notes:**

5. **Building summary** (BPIP-PRIME 04274: please use UTM coordinates and CSS approach):

- ☐ BPIP-Prime will be/was used.  
If not please explain: \_\_\_\_\_  
☐ BPIP option 1: MPCA defined “square” structure  
☐ BPIP option 2: User defined “rectangular” structure  
☐ BPIP option 3: pre-existing BPIP file; Filename  
☐ All buildings will be/were included.  
If not please explain: \_\_\_\_\_  
☐ Composite single structures with multiple tiers will be/were used.  
**Note:** Tiering of buildings must follow guidance from section 6 of the Oct. 2004 “MPCA Air Dispersion Modeling Guidance For Minnesota Title V Modeling Requirements And Federal Prevention of Significant Deterioration (PSD) Requirements (Version 2.2).”

Is the tallest modeled building height greater than or equal to the tallest height on Form MI-01? ☐ Yes ☐ No

Are all DISPERSE stack locations at the “building” center? ☐ Yes ☐ No ☐ Not Applicable

Additional information for the building summary (list any deviations from EPA or MPCA guidance)?

**MPCA building summary**

<b>Submittal date(s)</b> (mm/dd/yyyy)	<b>Pre-app review date(s)</b> (mm/dd/yyyy)	<b>Pre-app adequacy</b>	<b>Post-app completeness review date(s)</b> (mm/dd/yyyy)	<b>Post-app completeness</b>	<b>Technical accuracy review date(s)</b> (mm/dd/yyyy)	<b>Technical accuracy</b>
		<input type="checkbox"/> Yes <input type="checkbox"/> No Init: _____		<input type="checkbox"/> Yes <input type="checkbox"/> No Init: _____		<input type="checkbox"/> Yes <input type="checkbox"/> No Init: _____
		<input type="checkbox"/> Yes <input type="checkbox"/> No Init: _____		<input type="checkbox"/> Yes <input type="checkbox"/> No Init: _____		<input type="checkbox"/> Yes <input type="checkbox"/> No Init: _____

**MPCA building review questions:**

Do you approve of the methods described above? ☐ Yes ☐ No

**MPCA building geospatial review notes:****6. Receptor summary:**

- ☐ Receptors will be/were placed along the owned and controlled property boundary.  
☐ The modeling followed MPCA Guidance for Ambient Receptors (<http://www.pca.state.mn.us/nwqh421>).  
☐ If not, will/was a polar grid used?

	<b>Spacing</b>	<b>Dimension</b>	<b>Number</b>
a. Inside the property boundary(s):	meters		
b. On the fenceline(s):	meters		
c. On the property line(s):	meters		
d. Beyond the property line(s):	meters		
<b>Total area</b>			

- ☐ Additional air dispersion modeling receptors will be/were placed at locations of additional risk receptors.  
Please describe these receptors:

- ☐ Flag pole receptors will be/were included. Please describe the flag pole receptors and how/why they were chosen:

Additional information for the receptor summary? (list any deviations from EPA or MPCA guidance)

**MPCA receptor summary**

<b>Submittal date(s)</b> (mm/dd/yyyy)	<b>Pre-app review date(s)</b> (mm/dd/yyyy)	<b>Pre-app adequacy</b>	<b>Post-app completeness review date(s)</b> (mm/dd/yyyy)	<b>Post-app completeness</b>	<b>Technical accuracy review date(s)</b> (mm/dd/yyyy)	<b>Technical accuracy</b>
		<input type="checkbox"/> Yes <input type="checkbox"/> No Init: _____		<input type="checkbox"/> Yes <input type="checkbox"/> No Init: _____		<input type="checkbox"/> Yes <input type="checkbox"/> No Init: _____
		<input type="checkbox"/> Yes <input type="checkbox"/> No Init: _____		<input type="checkbox"/> Yes <input type="checkbox"/> No Init: _____		<input type="checkbox"/> Yes <input type="checkbox"/> No Init: _____

**MPCA receptor review questions:**

Do you approve of the methods described above? ☐ Yes ☐ No

Is there a reason to consider that the presence of "flagpole" receptors which may experience higher concentrations than the maximum ground level concentrations? ☐ Yes ☐ No Why?

**MPCA receptor review notes:**

## AERA Emission Source Summary

What will be/is the minimum stack height modeled (in meters)? \_\_\_\_\_

What will be/is the maximum stack height modeled (in meters)? \_\_\_\_\_

Will/is the shortest modeled stack height equal to the shortest height on Form GI-04? ☐ Yes ☐ No

Will/were any stacks (be) merged? ☐ Yes ☐ No

If yes, which stacks will be/were merged? \_\_\_\_\_

If stacks will be/were merged will they be/were stacks merged per MPCA DISPERSE guidance? ☐ Yes ☐ No

If no explain how the stacks will be/were merged:

### MPCA example of merged stacks

Model ID & Form GI-04 SV_ID_No.	RASS Stack ID number	Stack Height (meters)	Stack Temperature (Kelvin)	Stack Velocity (m/sec)	Stack Diameter (meters)
1 (3 merged stacks from Form GI-04):		10.0 (lowest of 3 values below)	293 (lowest of 3 values below)	2.5 (lowest of 3 values below)	1.0 (lowest of 3 values below)
SV001		10.0	300	3.3	1.1
SV002		11.0	310	2.5	1.1
SV003		12.0	293	2.7	1.0
2 (SV004 only)		20	400	3.3	1.0
3 (SV005 only)		15	350	11.1	3.2
4 (Coal Pile)		1	293	0.001	20

### MPCA review questions:

Did the insignificant source characterization follow the AERA guidance? ☐ Yes ☐ No

Were stacks merged appropriately? ☐ Yes ☐ No

Do the stack parameters in the modeling correctly characterize the emission sources? ☐ Yes ☐ No

See the AERA-03 form for a summary of the source parameters used in the modeling.

Is the characterization technically correct? ☐ Yes ☐ No

### MPCA emission sources review notes:

☐ An operating scenario of less than 8760 hrs/day will be/was used and it is reflected in a permit limit or physical limit.

Are any of the point sources capped and/or have horizontal stacks (see guidance in section 6.1, AERMOD Implementation Guide (03/19/2009)) and accounted for in the following? ☐ No ☐ Yes → exit velocity(s) = 0.001 m/s

☐ Non-Default POINTCAP/POINTHOR\*

\*Please provide justification for use of non-default option in question b, below.

b. Additional information for this subsection:

### Volume sources:

☐ Yes ☐ N/A ☐ No – Please explain:

Please refer to the modeling guidance on calculating the lateral and vertical dimensions.

a. Will there be any volume source(s) overlapping or within 1.0 meters of any receptors? ☐ No ☐ Yes\*

\*Volume source should be converted to an area source of commensurate size (per section 6.2 of the latest AERMOD Implementation Guide (03/19/2009)) or be further refined.

b. Additional information for this subsection:



**Open pit sources:**

☐ Yes ☐ N/A ☐ No – Please explain:

**Stack parameters details** Information about insignificant sources can be found in the AERA-05 form.

Please fill out the table below or indicate a file where this information can be found (modeled values should match Form GI-04 values unless merged):

**\* These column headings are for point sources and will change with different source types**

\*For area sources the column headings are: height (m), XINIT, YINIT, ANGLE, SZINIT

\*For volume sources the column headings are: height (m), SYINIT, SZINIT

\*For area circle the column headings are: height (m), Radius, Nvert, SZinit

\*For area poly the column headings are: height (m), Nvert, SZinit

RASS ID#	Source ID	Source type (point, volume, area, etc.)	*Stack height (meters)	*Stack temperature (Kelvin)	*Stack exit velocity (m/sec)	*Stack diameter (meters)	*	Facility descriptions
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
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Additional information for the Emission Source Summary (list any deviations from EPA or MPCA guidance):

Explain any site specific uncertainty that might be associated with the modeling:

**MPCA Stack Parameters Review Summary**

Submittal date(s) (mm/dd/yyyy)	Pre-app review date(s) (mm/dd/yyyy)	Pre-app adequacy	Post-app completeness review date(s) (mm/dd/yyyy)	Post-app completeness	Technical accuracy review date(s) (mm/dd/yyyy)	Technical accuracy
		<input type="checkbox"/> Yes <input type="checkbox"/> No Init: _____		<input type="checkbox"/> Yes <input type="checkbox"/> No Init: _____		<input type="checkbox"/> Yes <input type="checkbox"/> No Init: _____
		<input type="checkbox"/> Yes <input type="checkbox"/> No Init: _____		<input type="checkbox"/> Yes <input type="checkbox"/> No Init: _____		<input type="checkbox"/> Yes <input type="checkbox"/> No Init: _____

**MPCA stack parameters review questions:**

Do the stack parameters correctly characterize the emission sources? ☐ Yes ☐ No

Is the characterization technically correct? ☐ Yes ☐ No

## **MPCA stack parameters review notes:**

## **MPCA additional air dispersion modeling review questions:**

1. How accurate is the dispersion model to the actual site dispersion? What are the factors impacting the accuracy:
2. Please explain any site specific uncertainty related to the modeling:
3. If possible, describe the location of the maximum concentration for annual and hourly modeling (Note: In general air dispersion modeling analyses are designed not to underestimate concentrations. The exact locations of maximum risk may vary due to the exact time of emission releases, or actual dispersion which depends on weather conditions):
4. Describe any additional modeling or modeling validation conducted by MPCA staff:

## **Proposer/Preparer Instructions**

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Boxes can be checked by clicking on them. Response areas will expand as necessary to include the complete response. Multiple dates can be added by using the "Enter key" (return key) after you type the first date. All Air Emission Risk Analysis (AERA) documents must be submitted electronically whether submitted with an air permit application or alone. AERA documents submitted with an air permit application must also be submitted in a hard copy. Hard copies of spreadsheets, like the Risk Assessment Screening Spreadsheet (RASS) and lengthy modeling files should include the first summary page of the document but do not need to include subsequent pages since the electronic version will be available for review.

If **all** of the requested forms and support documents **are not included** with an air permit application needing an AERA the air permit application **will be deemed incomplete**. This includes risk estimates for pre-existing facilities. MPCA staff will return this AERA form plus any other incomplete AERA forms to the applicant with deficiencies and remedies indicated in the *italicized* MPCA review areas. If forms were submitted pre-app they should be updated and re-submitted post-app with any *italicized* MPCA comments left in and changes summarized in the appropriate areas.

**Facility Information:** Fill in the Air Quality (AQ) Facility identification (ID) No. (Number), which is the first eight digits of the permit number for all new permits issued under the new operating permit program, Standard Industrial Classification (SIC) code, facility name and location, and submittal dates. The project proposer and AERA preparer should be people that MPCA staff can contact with general and technical questions about the AERA submittal.

## **MPCA Review Instructions**

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### **Specific section/document review**

MPCA staff will summarize their review of specific sections/support documents by marking either "Yes" for adequate or "No" for deficient in the pre-app sections, or "Yes" for substantially complete or "No" for incomplete in the post-app sections, along with their initials. They will add comments on deficiencies and how they can be remedied in the summary section. When there are multiple submittals, include each new submittal date in the table with the corresponding review dates and comments, thus keeping a log of submittals.

### **Overall adequacy/completeness summary**

If **all** of the necessary sections/documents are present and follow the appropriate methods (i.e., follows the AERA, emissions and modeling guidance) MPCA staff will mark the appropriate overall summary section with either "Yes" for adequate in the pre-app section, or "Yes" for substantially complete in the post-app section. Otherwise they will mark "No" for deficient in the pre-app AERA submittal determination section or "No" for incomplete in the post-app AERA determination section. They will add comments on deficiencies and how they can be remedied in the overall summary section. If this form is being submitted as a protocol indicate in the MPCA overall review notes whether the protocol is approved or has deficiencies. Remember an AERA submitted with an air permit application is not considered "substantially complete" until **all** necessary quantitative and qualitative information has been submitted, and MPCA staff have determined that appropriate methods have been used. **Please summarize these results in the AERA-01 form.** The AERA-01 form will be shared with the permit engineer conducting the permit application completeness review. If deficiencies are noted in this form during the completeness review then this form should also be shared with the permit engineer who will share it with the applicant.