

5.2 Model Processing Options

AERMOD model setup options must be specified at the start of the analysis to properly adjust dispersion calculations so that they are representative of actual aerodynamic conditions over the study area. Additionally, AERMOD has several options, some of which are designated “non-default,” that may be appropriate on a case-by-case basis. For this analysis, the “regulatory default” selection of model options was used. The regulatory default options direct AERMOD to use:

- Elevated terrain algorithms requiring input of terrain height data for receptors and emission sources;
- Stack tip downwash (building downwash automatically overrides);
- Calms processing routines;
- Buoyancy-induced dispersion; and
- Missing meteorological data processing routines.

5.3 Project-Specific Parameters

Regional and site-specific model inputs such as meteorological data, surrounding terrain conditions, building influences, and emission source characteristics each must be evaluated and appropriately selected in preparation of running AERMOD. The AERMOD Modeling System includes preprocessor programs AERSURFACE, AERMET, and AERMAP to develop the required input parameters representing meteorological conditions and the terrain elevations across the study area. Procedures for developing the project-specific data for the purposes of this analysis are described below.

5.3.1 Dispersion Coefficients

The AERMOD dispersion model can account for differences in air dispersion influences that are attributed to the land use in the study area as being characteristically urban or rural. The appropriate dispersion coefficients for taking land use into account are determined using the USEPA-preferred land use classification technique in 40 CFR 51, Appendix W, known as the “Auer” method. This classification method involves assessing land use for Auer’s categories within a three (3) kilometer radius of the site. USEPA recommends using urban dispersion coefficients and mixing heights if greater than 50 percent of the area is considered urban; otherwise, rural coefficients and mixing heights apply. Based on a review of land use in the vicinity of the site using USGS surface data and by inspecting aerial imagery, the “rural” dispersion option was used for this analysis.

5.3.2 Meteorological Data

GAEPD provides representative meteorological data to simulate atmospheric conditions in the vicinity of the emission sources on its website. Arglass is located in Lowndes County; therefore, the meteorological data set with surface data from Valdosta Regional Airport (Call ID KVLD) located approximately 3.5 miles to the east of the site was used with upper air observations from Tallahassee Regional Airport, Florida (Call ID KTLH). The most recent meteorological data period available is 2017-2021.

5.3.3 Surface Characteristics

Meteorological data available from GA EPD is provided with surface terrain characteristic already processed. Values for the albedo and Bowen ratio were determined by GA EPD for a given area and incorporated in the meteorological data files. Therefore, for this analysis, executing AERMET and AERSURFACE was not necessary.