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OglethorpePower

Oglethorpe Power Corporation
2100 East Exchange Place
Tucker, GA 30084-5336
phone 770-270-7600
fax 770-270-7872
An Electric Membership Cooperative

February 4, 2010

Mr. Eric Cornwell
Georgia Environmental Protection Division
Air Protection Branch
4244 International Parkway, Suite 120
Atlanta, GA 30354

Certified Mail/Return Receipt
70070220000127113489

RE: Oglethorpe Power Corporation – Warren County PSD Permit Application
Good Combustion Controls
National Elevation Dataset (NED) Files
Detailed Toxic Air Pollutant (TAP) Ambient Air Concentration (AAC) Derivations
Supplemental Soils and Vegetation Additional Impacts Analysis

Dear Mr. Cornwell:

Oglethorpe Power Corporation (Oglethorpe) appreciates meeting with you on December 10, 2009 regarding the proposed nominal 100 megawatt (MW) biomass-fueled electric generating facility in Warren County, Georgia.

This letter addresses four items discussed at the December 10, 2009 meeting between Oglethorpe and Georgia Environmental Protection Division (EPD).

1. A description of good combustion controls as related to the carbon monoxide (CO) best available control technology (BACT) determination.
2. A description of how the NED files were obtained and an electronic copy of these files.
3. A supplemental description of how the TAP AAC were derived, accompanied by detailed tables.
4. A supplement to the original soils and vegetation additional impacts analysis that compares predicted impacts to the 1980 EPA screening guidance.[1]

Separately, Oglethorpe has already provided a fourth hardcopy of both volumes of the application, Adobe Acrobat versions of the entire application, and a replacement page with a corrected Table 1-1 in Volume II.[2]

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1 U.S. EPA, *A Screening Procedure for the Impacts of Air Pollution Sources on Plants, Soils, and Animals* (EPA 450/2-81-078), 1980.

2 The application hardcopy was received at Georgia EPD on December 28, 2009 (FedEx tracking number 798252620580) and included the Table 1-1 Volume II correction. The remaining items were provided to Georgia EPD via email to Mr. Eric Cornwell (Georgia EPD) from Mr. Russell Bailey (Trinity Consultants) on December 18, 2009.

GOOD COMBUSTION CONTROLS

Section 5.8.2.2 of Volume II briefly describes good combustion and operating practices as related to control of CO emissions, and Section 5.8.6 determines these to be BACT. As requested by Georgia EPD, this section provides additional detail on this control method.

As products of incomplete combustion, CO emissions are very effectively controlled by ensuring complete and efficient combustion of the fuel in the boiler. Typically, measures taken to minimize the formation of oxides of nitrogen (NO_X) during combustion may inhibit complete combustion, which in turn increases the emissions of CO. High combustion temperatures, ample excess air, and an appropriate air/fuel mixing during combustion minimize CO emissions. These parameters may also increase NO_X generation, resulting in conflicting goals of optimizing combustion to limit CO, but lowering combustion temperatures to limit NO_X. Combustion controls will be used to minimize the formation of CO in the boiler. On a bubbling fluidized bed (BFB) boiler, good combustion control is accomplished through the following activities.

- Maintaining the proper boiler bed inventory through the fuel feed, ash removal, and bed makeup systems.
- Monitoring oxygen and CO concentration at the exit of the boiler to ensure that the correct amount of air is being introduced to the boiler through the primary and secondary air systems. Adjustments are made to the air feed to ensure that enough excess oxygen is available for complete combustion and to ensure minimal CO formation.
- Monitoring and adjusting the exhaust gas recirculation flow rate based on unit load and oxygen level in the flue gas. The recirculation flow is used primarily to ensure proper fluidization and temperature of the boiler bed. Proper fluidization promotes complete combustion via uniform fuel and air distribution.

NED FILES

AERMAP uses elevation data files to determine the terrain profiles around the receptors (where impacts are calculated). As noted in Section 4.4 of Volume II, Trinity used USGS 1 arc second NED as input. NED data are freely available from the USGS via its National Map Viewer.[3] The map allows a user to interactively view and download geographic data from the USGS and other government agencies.

The NED data utilized in the modeling analyses were downloaded in two parts. First, the region covering the 20-km Class II receptor grid was selected based on approximate geographic coordinates. Then the 1/3 ArcSecond NED CONUS (Continental US) data format was selected. Note that due to the size of the domain, the NED data were split into two output files. Both output files were then downloaded.

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[3] http://nmviewogc.cr.usgs.gov/viewer.htm

The second step was to obtain NED data for the Class I receptors. These receptors were located 50 km from the facility in the direction of each Class I area. To minimize the size of the NED files, only data surrounding the Class I receptors were selected for download, not the entire 50-km area surrounding the facility (though some areas were grouped into a single NED file). The 1/3 ArcSecond NED CONUS (Continental US) data format files were then downloaded (three files total).

The downloaded files were in ZIP file format and included the GeoTIFF NED data file (.TIF extension), the TIF world file enabling the file to be mapped in GIS (.TFW extension), and additional metadata for the file. The TIF is the only file used in AERMAP to obtain the receptors elevations.

Copies of the NED files are included on the CD in Attachment 1. A plot of the NED file domains and the receptor locations is provided in Figure 1-1 in Attachment 1.

TAP AAC DERIVATION

During the December 10, 2009 meeting, Georgia EPD inquired as to whether a short-term safety factor of 10 was used in deriving the 15-minute AAC. The factor was used as indicated in Section 6.1 of Volume II of the original submittal.

Georgia EPD requested that any detailed information used in the derivation of the AACs be provided. Copies of the detailed derivation tables for the annual, 24-hour, and 15-minute AACs are included in Attachment 2.

SUPPLEMENTAL SOILS AND VEGETATION ADDITIONAL IMPACTS ANALYSIS

Section 5.4 of the original submittal contained an additional impacts analysis for soils and vegetation based on comparison of the modeled impacts to the secondary NAAQS.

Georgia EPD requested that a comparison of modeled impacts to the 1980 EPA screening guidance also be performed to ensure no adverse impacts on soils or vegetation would be expected as a result of the proposed project.[4]

For all pollutants but PM_{10} in this supplemental analysis, a unit emission rate was modeled in AERMOD from the proposed boiler. The impacts were then scaled using the emission rates included in the Significance Analysis and/or TAP analysis.[5] For PM_{10}, the demonstration that the proposed project will not cause or contribute to any NAAQS exceedances is presented is the

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4 U.S. EPA, *A Screening Procedure for the Impacts of Air Pollution Sources on Plants, Soils, and Animals* (EPA 450/2-81-078), 1980.

5 For averaging periods not included in the Significance Analysis, Oglethorpe utilized the proposed BACT limits and applied a reasonable factor to account for variability in short-term emission rates.

Supplemental PM_{10} NAAQS analysis requested by Georgia EPD and submitted in a separate letter.

The table included in Attachment 3 presents a summary of the supplemental soils and vegetation additional impacts analysis. This table indicates that all predicted impacts are less than the 1980 EPA screening thresholds and the secondary NAAQS.

Copies of the unit emission rate AERMOD files utilized in this analysis are also included on the same CD as the NED files in Attachment 1.

If you have any questions about the material presented in this letter or require additional information, please do not hesitate to call me at 770-270-7166.

Sincerely,

OGLETHORPE POWER CORPORATION

Doug J. Fulle
Vice President, Environmental Affairs

DJF:dmc

c: Mr. Pete Courtney (Georgia EPD)
Ms. Wende Martin (OPC)
Mr. Mike Bilello (OPC)
Mr. Russell Bailey (Trinity)

Attachments

Attachment 1

NED Plot and Files
Boiler Unit-Rate AERMOD Files

CD File Index

The CD contains copies of the electronic NED files and the AERMOD files utilized in the supplemental Soils and Vegetation Additional Impacts Analysis. A summary of the CD folders is as follows.

NED Files

The various NED files utilized for the Class II 20-km receptor grid are contained in the Class II folder while the files used for the Class I receptors are contained in the Class I folder.

Supplemental Soils and Vegetation Additional Impacts Analysis Files

Contains the AERMOD input (.ami), output (.lst) and plot (.plt) files from the unit-rate boiler modeling for the supplemental soils and vegetation additional impacts analysis. For all of the files, the nomenclature is as follows:

VIV2*YY*.xxx where:

YY = modeled year (1989-1993)
xxx = input or output file (*.ami* = input, *.lst* = output)

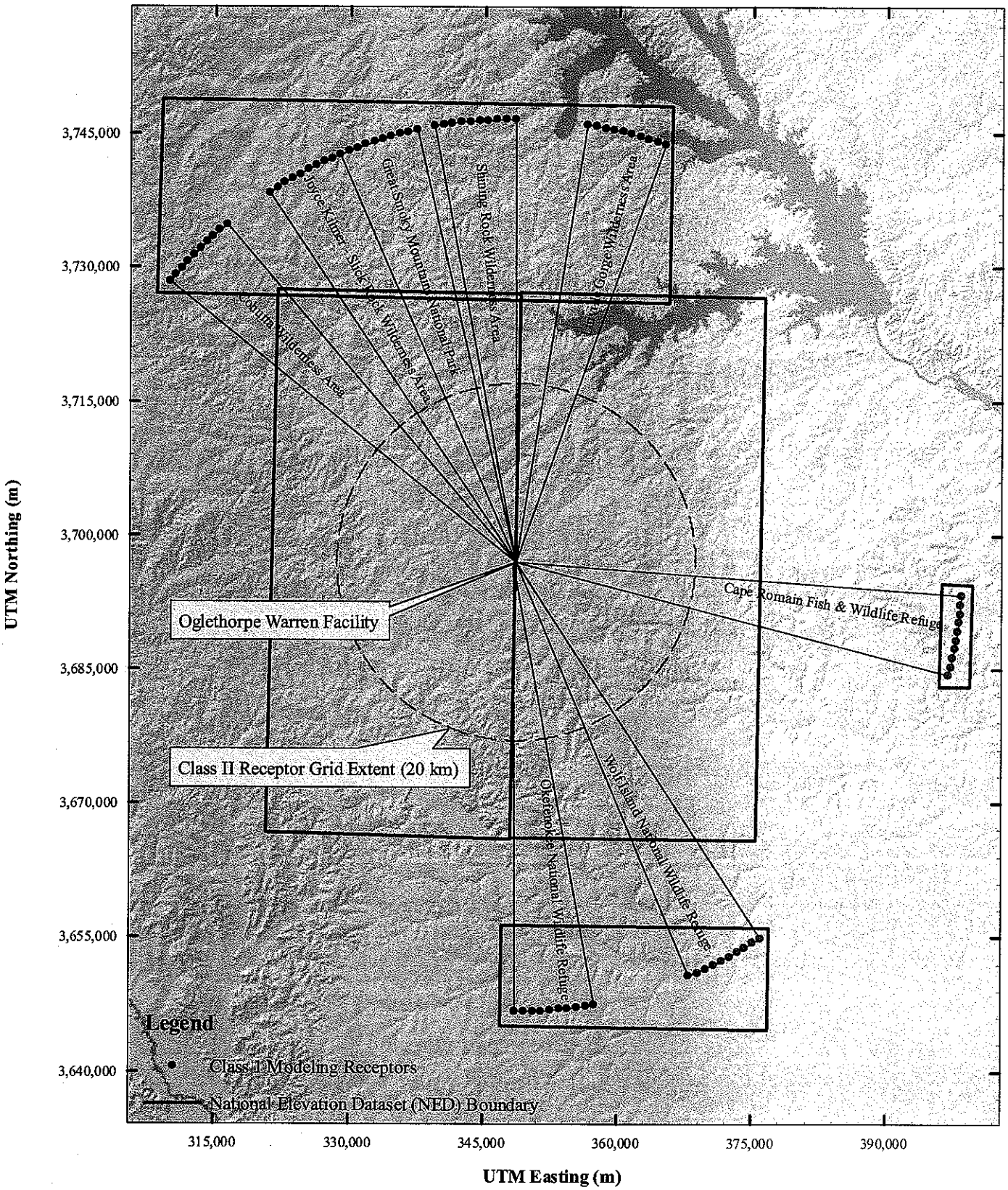
Plot files for various averaging periods were also created based on the following nomenclature:

AAAAYY.xxx where:

AAAA = averaging period (*1HR* = 1-hour, *3HR* = 3-hour, *4HR* = 4-hour, *8HR* = 8-hour, *24HH* = 24-hour, *M* = monthly, *A* = annual)
YY = modeled year (1989-1993)
xxx = plot file (*.plt* = plot)

Figure 1-1. Extent of NED Data Set Used for Terrain Processing

Oglethorpe Power Corporation Warren County Facility
Warrenton, Warren County, Georgia



Coordinates reflect UTM projection Zone 17, NAD83.
The shaded relief imagery was developed by ESRI using GTOPO30, SRTM, and NED elevation data from the USGS.

Trinity Consultants

Attachment 2

TAP Detailed AAC Development Tables

Table 2-1. Derivation of Long-term Acceptable Ambient Concentrations (AAC) for Georgia EPD[1,2]

Pollutant	CAS No.	Formula	Mol. Wt. (g/mol)	Unit Risk $(\mu g/m^3)^{-1}$	Weight of Evidence	Inhalation RfC[3] (mg/m^3)	Annual AAC $(\mu g/m^3)$	24-hour AAC Required?
1,1,1-Trichloroethane	71-55-6	C2H3Cl3	133.42		D	1.00E+00	1.00E+03	Not Required
1,2-Dibromoethene	540-49-8	C2H2Br2	185.85			None	None	Need 24-hr TWA
2-Butanone (MEK)	78-93-3	C4H8O	72.1066		D	5.00E+00	5.00E+03	Not Required
2-Chloronaphthalene	91-58-7	C10H7Cl	162.62			None	None	Need 24-hr TWA
2-Chlorophenol	95-57-8	C6H5ClO	128.56			None	None	Need 24-hr TWA
Acenaphthene	83-32-9	C12H10	154.21		D	None	None	Need 24-hr TWA
Acenaphthylene	206-96-8	C12H8	152.21		D	None	None	Need 24-hr TWA
Acetaldehyde	75-07-0	CH3CHO	44.05	2.20E-06	B2	4.55E-03	4.55E+00	Not Required
Acetone	67-64-1	C3H6O	58.08		D	None	None	Need 24-hr TWA
Acetophenone	98-86-2	C8H8O	120.15		D	None	None	Need 24-hr TWA
Acrolein	107-02-8	CH2CHCHO	56.07		C	2.00E-05	2.00E-02	Not Required
Ammonia	7664-41-7	NH3	17.03			1.00E-01	1.00E+02	Not Required
Anthracene	120-12-7	C14H10	178.23		D	None	None	Need 24-hr TWA
Antimony	7440-36-0	Sb	121.76			None	None	Need 24-hr TWA
Arsenic	7440-38-2	As	74.92	4.30E-03	A	2.33E-07	2.33E-04	Not Required
Barium	7440-39-3	Ba	137.33		D	None	None	Need 24-hr TWA
Benzaldehyde	100-52-7	C7H6O	106.12			None	None	Need 24-hr TWA
Benzene	71-43-2	C6H6	78.11	7.80E-06	A	1.28E-04	1.28E-01	Not Required
Benzo(a)anthracene	56-55-3	C18H12	228.29	1.10E-04	B2	9.09E-05	9.09E-02	Not Required
Benzo(a)pyrene	50-32-8	C20H12	252.31	1.10E-03	B2	9.09E-06	9.09E-03	Not Required
Benzo(b)fluoranthene	205-99-2	C20H12	252.31	1.10E-04	B2	9.09E-05	9.09E-02	Not Required
Benzo(e)pyrene	192-97-2	C20H12	252.31			None	None	Need 24-hr TWA
Benzo(g,h,i)perylene	191-24-2	C22H12	276.33		D	None	None	Need 24-hr TWA
Benzo(b,k)fluoranthene	N/A	C24H14	302.37	1.10E-04	B2	9.09E-05	9.09E-02	Not Required
Benzo(j,k)fluoranthene	205-82-3	C20H12	252.31	1.10E-04	B2	9.09E-05	9.09E-02	Not Required
Benzo(k)fluoranthene	207-08-9	C20H12	252.31	1.10E-04	B2	9.09E-05	9.09E-02	Not Required
Benzoic acid	65-85-0	C7H6O2	122.12		D	None	None	Need 24-hr TWA
Beryllium	7440-41-7	Be	9.01		B1	2.00E-05	2.00E-02	Not Required
Bis(2-ethylhexyl)phthalate	117-81-7	C24H38O4	390.56	2.40E-06	B2	4.17E-03	4.17E+00	Not Required
Bromomethane	74-83-9	CH3Br	94.94		D	5.00E-03	5.00E+00	Not Required
Cadmium	7440-43-9	Cd	112.41	1.80E-03	B1	5.56E-06	5.56E-03	Not Required
Carbazole	86-74-8	C12H9N	167.21	5.70E-06	B2	1.75E-03	1.75E+00	Not Required
Carbon tetrachloride	56-23-5	CCl4	153.82	1.50E-05	B2	6.67E-04	6.67E-01	Not Required
Chlorine	7782-50-5	Cl2	70.91			2.00E-04	2.00E-01	Not Required
Chlorobenzene	108-90-7	C6H5Cl	112.56		D	1.00E+00	1.00E+03	Not Required
Chloroform	67-66-3	CHCl3	119.38		B2	9.80E-02	9.80E+01	Not Required
Chromium	7440-47-3	Cr	52.00		A	8.00E-06	8.00E-03	Not Required
Chromium VI	18540-29-9	Cr	52.00		A	8.00E-06	8.00E-03	Not Required
Chrysene	218-01-9	C18H12	228.29	1.10E-05	B2	9.09E-04	9.09E-01	Not Required
Cobalt	7440-48-4	Co	58.93			1.00E-04	1.00E-01	Not Required
Copper	7440-50-8	Cu	63.55		D	None	None	Need 24-hr TWA
o-Cresol	95-48-7	C7H8O	108.20		C	6.00E-01	6.00E+02	Not Required
m-Cresol, p-Cresol	108-39-4	C7H8O	108.20		C	6.00E-01	6.00E+02	Not Required
Crotonaldehyde	123-73-9	C4H6O	70.09		C	None	None	Need 24-hr TWA
Decachlorobiphenyl	2051-24-3	C12Cl10	498.66	1.00E-04	B2	1.00E-04	None	Need 24-hr TWA
Dibenzo(a,h)anthracene	53-70-3	C22H14	278.33	1.20E-03	B2	8.33E-06	8.33E-03	Not Required
Dichlorobenzene	95-50-1	C6H4Cl2	147.01		D	None	None	Need 24-hr TWA
Dichlorobiphenyl	2050-68-2	C12H8Cl2	223.10	1.00E-04	B2	1.00E-04	1.00E-01	Not Required
1,2-Dichloroethane	107-06-2	C2H4Cl2	99.00	2.60E-05	B2	3.85E-04	3.85E-01	Not Required
Dichlorophenol	120-83-2	C6H4Cl2O	163.00			None	None	Need 24-hr TWA
1,2-Dichloropropane	78-87-5	C3H6Cl2	113.00			4.0E-03	4.00E+00	Not Required
2,4-Dinitrophenol	51-28-5	C6H4N2O5	184.11			None	None	Need 24-hr TWA
Ethanol	64-17-5	C2H6O	46.07			None	None	Need 24-hr TWA
Ethylbenzene	100-41-4	C6H5C2H5	106.17		D	1.00E+00	1.00E+03	Not Required
Fluoranthene	206-44-0	C16H10	202.26		D	None	None	Need 24-hr TWA
Fluorene	86-73-7	C13H10	166.23		D	None	None	Need 24-hr TWA
Formaldehyde	50-00-0	HCHO	30.00		B1	9.80E-03	9.80E+00	Not Required
HCl	7647-01-0	HCl	36.46			2.00E-02	2.00E+01	Not Required
HF	7664-39-3	HF	20.01			1.40E-02	1.40E+01	Not Required
Heptachlorobiphenyl	28655-71-2	C12H3Cl7	395.32	1.00E-04	B2	1.00E-04	1.00E-01	Not Required
Hexachlorobenzene	118-74-1	C6Cl6	284.78	4.60E-04	B2	2.17E-05	2.17E-02	Not Required
Hexachlorobiphenyl	35065-27-1	C12H4Cl6	360.88	1.00E-04	B2	1.00E-04	None	Need 24-hr TWA
Hexanal (hexaldehyde)	66-25-1	C6H12O	100.16			None	None	Need 24-hr TWA
Heptachlorodibenzo-p-dioxins	35822-46-9	C12HCl7O2	425.31			None	None	Need 24-hr TWA
Heptachlorodibenzo-p-furans	67562-39-4	C12HCl7O	409.31		D	None	None	Need 24-hr TWA
Hexachlorodibenzo-p-dioxins	19408-74-3	C12H2Cl6O2	390.86	1.30E+00	B2	7.69E-09	7.69E-06	Not Required
Hexachlorodibenzo-p-furans	57117-44-9	C12H2Cl6O	374.87		D	None	None	Need 24-hr TWA
Indeno(1,2,3,c,d)pyrene	193-39-5	C22H12	276.33	1.10E-04	B2	9.09E-05	9.09E-02	Not Required
Iron	7439-89-6	Fe	55.847			None	None	Need 24-hr TWA
Isobutyraldehyde	78-84-2	C4H8O	72.11			None	None	Need 24-hr TWA
Isobutyl alcohol	78-83-1	C4H10O	74.12			None	None	Need 24-hr TWA
Lead	7439-92-1	Pb	207.20		B2	1.50E-03	1.50E+00	Not Required
Manganese	7439-96-5	Mn	54.94		D	5.00E-05	5.00E-02	Not Required
Mercury	7439-97-6	Hg	200.59		D	3.0E-04	3.00E-01	Not Required
Methane	74-82-8	CH4	16.04			None	None	Need 24-hr TWA
Methyl chloride (chloromethane)	74-87-3	CH3Cl	50.49		D	9.00E-02	9.00E+01	Not Required
2-Methylnaphthalene	91-57-6	C10H7CH3	142.20		D	None	None	Need 24-hr TWA
Methylene chloride (dichloromethane)	75-09-2	CH2Cl2	84.93	4.70E-07	B2	2.13E-02	2.13E+01	Not Required
Molybdenum	7439-98-7	Mo	95.94			None	None	Need 24-hr TWA
Monochlorobiphenyl	2051-62-9	C12H9Cl	188.6529	1.00E-04	B2	1.00E-04	1.00E-01	Not Required
Monochlorophenol	95-57-8	C6H5ClO	128.56			None	None	Need 24-hr TWA
Naphthalene	91-20-3	C10H8	128.19		C	3.00E-03	3.00E+00	Not Required
Nickel	7440-02-0	Ni	58.69		A	9.00E-05	9.00E-02	Not Required
2-Nitrophenol	88-75-5	C6H5NO3	139.11			None	None	Need 24-hr TWA
4-Nitrophenol	100-02-7	C6H5NO3	139.11			None	None	Need 24-hr TWA
Nonachlorobiphenyl	53742-07-7	C12HCl9	464.21	1.00E-04	B2	1.00E-04	None	Need 24-hr TWA
Octachlorobiphenyl	74472-52-9	C12H2Cl8	429.77	1.00E-04	B2	1.00E-04	None	Need 24-hr TWA

Table 2-1. Derivation of Long-term Acceptable Ambient Concentrations (AAC) for Georgia EPD[1,2]

Pollutant	CAS No.	Formula	Mol. Wt. (g/mol)	Unit Risk ($\mu g/m^3)^{-1}$	Weight of Evidence	Inhalation RfC[3] (mg/m^3)	Annual AAC ($\mu g/m^3$)	24-hour AAC Required?
Octachlorodibenzo-p-dioxins	3268-87-9	C12Cl8O2	459.75			None	None	Need 24-hr TWA
Octachlorodibenzo-p-furans	39001-02-0	C12Cl8O	443.76		D	None	None	Need 24-hr TWA
Pentachlorodibenzo-p-dioxins	36088-22-9	C12H3Cl5O2	356.42			None	None	Need 24-hr TWA
Pentachlorodibenzo-p-furans	57117-41-6	C12H3Cl5O	340.42		D	None	None	Need 24-hr TWA
Pentachlorobenzene	608-93-5	C6HCl5	250.34		D	None	None	Need 24-hr TWA
Pentachlorobiphenyl	25429-29-2	C12H5Cl5	326.43	1.00E-04	B2	1.00E-04	None	Need 24-hr TWA
Pentachlorophenol	87-86-5	C6HCl5O	266.40	5.10E-06	B2	1.96E-03	1.96E+00	Not Required
2-Pentanone	107-87-9	C5H10O	86.17			None	None	Need 24-hr TWA
Perylene	198-55-0	C20H12	252.31			None	None	Need 24-hr TWA
Phenanthrene	85-01-8	C14H10	178.24		D	None	None	Need 24-hr TWA
Phenol	108-95-2	C6H5OH	94.11		D	2.00E-01	2.00E+02	Not Required
Propanol	71-23-8	C2H5CHO	58.08			None	None	Need 24-hr TWA
Phosphorus	7723-14-0	P	30.97			7.00E-05	7.00E-02	Not Required
Potassium	7440-09-7	K	65.10			None	None	Need 24-hr TWA
Propionaldehyde	123-38-6	C3H6O	58.08			8.00E-03	8.00E+00	Not Required
Pyrene	129-00-0	C16H10	202.26		D	None	None	Need 24-hr TWA
Pyridine	110-86-1	C5H5N	79.10			None	None	Need 24-hr TWA
Selenium	7782-49-2	Se	78.96		D	2.00E-02	2.00E+01	Not Required
Silver	7440-22-4	Ag	107.90		D	None	None	Need 24-hr TWA
Sodium	7440-23-5	Na	22.99			None	None	Need 24-hr TWA
Strontium	7440-24-6	Sr	87.62			None	None	Need 24-hr TWA
Styrene	100-42-5	C6H5C2H3	104.16			1.00E+00	1.00E+03	Not Required
2,3,7,8-Tetrachlorodibenzo-p-dioxins	1746-01-6	C12H4Cl4O2	321.97	3.30E+01	B2	3.03E-10	3.03E-07	Not Required
Tetrachlorodibenzo-p-dioxins	1746-01-6	C12H4Cl4O2	321.97	3.30E+01	B2	3.03E-10	3.03E-07	Not Required
2,3,7,8-Tetrachlorodibenzo-p-furans	51207-31-9	C12H4Cl4O	305.98		D	None	None	Need 24-hr TWA
Tetrachlorodibenzo-p-furans	51207-31-9	C12H4Cl4O	305.98		D	None	None	Need 24-hr TWA
Tetrachlorobenzene	95-94-3	C6H2Cl4	215.8921			None	None	Need 24-hr TWA
Tetrachlorobiphenyl	26914-33-0	C12H6Cl4	291.99	1.00E-04	B2	1.00E-04	1.00E-01	Not Required
Tetrachloroethene	127-18-4	C2Cl2	165.80	5.90E-06	B2-C	1.69E-03	1.69E+00	Not Required
Tetrachlorophenol	58-90-2	C6H2Cl4O	231.89			None	None	Need 24-hr TWA
Thallium	7440-28-0	Tl	204.37			None	None	Need 24-hr TWA
Tin	7440-31-5	Sn	118.70			None	None	Need 24-hr TWA
Titanium	7440-32-6	Ti	47.87			None	None	Need 24-hr TWA
o-Tolualdehyde	529-20-4	C8H8O	120.15			None	None	Need 24-hr TWA
p-Tolualdehyde	104-87-0	C8H8O	120.15			None	None	Need 24-hr TWA
Toluene	108-88-3	C6H5CH3	92.15		D	5.00E+00	5.00E+03	Not Required
Trichlorobiphenyl	38444-78-9	C12H7Cl3	257.54	1.00E-04	B2	1.00E-04	1.00E-01	Not Required
Trichlorobenzene	120-82-1	C6H3Cl3	181.46		D	0.2	2.00E+02	Not Required
Trichloroethylene (trichloroethene)	79-01-6	C2HCl3	131.40	2.00E-06	B2-C	5.00E-03	5.00E+00	Not Required
Trichlorofluoromethane	75-69-4	CCl3F	137.38			None	None	Need 24-hr TWA
2,4,6-Trichlorophenol	88-06-2	C6H3CL3O	197.45	3.10E-06	B2	3.23E-03	3.23E+00	Not Required
Vanadium	7440-62-2	V	50.94			None	None	Need 24-hr TWA
Vinyl chloride	75-01-4	CH2CHCl	62.50		A	1.00E-01	1.00E+02	Not Required
o-Xylene	95-47-6	C8H10	106.16		D	1.00E-01	1.00E+02	Not Required
m/p-Xylenes	108-38-3	C8H10	106.16		D	1.00E-01	1.00E+02	Not Required
Yttrium	7440-65-5	Y	88.90			None	None	Need 24-hr TWA
Zinc	7440-66-6	Zn	65.39		D	None	None	Need 24-hr TWA

1. Acceptable Ambient Concentrations (AACs) were developed based on Georgia EPD's *Guideline for Ambient Impact Assessment of Toxic Air Pollutant Emissions* . Revised June 21, 1998.
2. Annual AACs are based on U.S. EPA's Integrated Risk Information System (IRIS) reference concentration (RfC) or Dose-response Tables for unit risk. If IRIS/Dose Response data was not available, then a 24-hr AAC was evaluated.
3. Equal to the Inhalation RfC or the appropriate cancer risk for the Weight of Evidence (1 in 1,000,000 for A, 1 in 100,000 for B, in in 10,000 for C or D) divided by the Unit Risk, converted to mg/m^3.

Table 2-2. Derivation of 24-hr Acceptable Ambient Concentrations (AAC) for Georgia EPD [1]

Pollutant	24-hr AAC Required?	CAS No.	Formula	Mol. Wt. (g/mol)	24-hr Rating 1. OSHA TWA (ppm)	24-hr Rating 1. OSHA TWA (mg/m^3)	24-hr Rating 2. ACGIH TWA (ppm)	24-hr Rating 2. ACGIH TWA (mg/m^3)	24-hr Rating 3. NIOSH TWA (ppm)	24-hr Rating 3. NIOSH TWA (mg/m^3)	24-hr Rating 4. LD50 (rat)[2] (mg/kg)	Rating Available 24-hour TWA (mg/m^3)	24-hour AAC[3] ($\mu g/m^3$)
1,2-Dibromoethene	Need 24-hr TWA	540-49-8	C2H2Br2	185.85	None		None		None			None	None
2-Chloronaphthalene	Need 24-hr TWA	91-58-7	C10H7Cl	162.62	None		None		None			None	None
2-Chlorophenol	Need 24-hr TWA	95-57-8	C6H5ClO	128.56	None		None		None		670	19.4	15.4
Acenaphthene	Need 24-hr TWA	83-32-9	C12H10	154.21	None		None		None			None	None
Acenaphthylene	Need 24-hr TWA	206-96-8	C12H8	152.21	None		None		None			None	None
Acetone	Need 24-hr TWA	67-64-1	C3H6O	58.08	1,000	2,400	500	1,188	250	590		2,400	1,905
Acetophenone	Need 24-hr TWA	98-86-2	C8H8O	120.15	None		10	49	None		500	49	38.9
Anthracene	Need 24-hr TWA	120-12-7	C14H10	178.23		0.20	None			0.10		0.2	0.16
Antimony	Need 24-hr TWA	7440-36-0	Sb	121.76		0.50		0.50		0.50		0.5	0.40
Barium	Need 24-hr TWA	7440-39-3	Ba	137.33		0.50		0.50		0.50		0.5	0.40
Benzaldehyde	Need 24-hr TWA	100-52-7	C7H6O	106.12	None		None		None		500	15	11.5
Benzo(e)pyrene	Need 24-hr TWA	192-97-2	C20H12	252.31	None		None		None			None	None
Benzo(g,h,i)perylene	Need 24-hr TWA	191-24-2	C22H12	276.33	None		None		None			None	None
Benzoic acid	Need 24-hr TWA	65-85-0	C7H6O2	122.12	None		None		None		500	15	11.5
Copper	Need 24-hr TWA	7440-50-8	Cu	63.55		0.1		0.2		1		0.1	0.079
Crotonaldehyde	Need 24-hr TWA	123-73-9	C4H6O	70.09	2	6	None		2	6		6	4.8
Decachlorobiphenyl	Need 24-hr TWA	2051-24-3	C12Cl10	498.66		0.5		0.5	None		3,980	0.5	0.40
Dichlorobenzene	Need 24-hr TWA	95-50-1	C6H4Cl2	147.01	None		25	150.3	None		500	150	119
Dichlorophenol	Need 24-hr TWA	120-83-2	C6H4Cl2O	163.00	None		None		None		500	15	11.5
2,4-Dinitrophenol	Need 24-hr TWA	51-28-5	C6H4N2O5	184.11	None		None		None		50	1.5	1.2
Ethanol	Need 24-hr TWA	64-17-5	C2H6O	46.07	1,000	1,900	None		1,000	1,900	5,000	1,900	1,508
Fluoranthene	Need 24-hr TWA	206-44-0	C16H10	202.26	None		None		None			None	None
Fluorene	Need 24-hr TWA	86-73-7	C13H10	166.23	None		None		None			None	None
Hexachlorobiphenyl	Need 24-hr TWA	35065-27-1	C12H4Cl6	360.88		0.5		0.5	None		3,980	0.5	0.40
Hexanal (hexaldehyde)	Need 24-hr TWA	66-25-1	C6H12O	100.16	None		None		None		4,890	142	113
Heptachlorodibenzo-p-dioxins	Need 24-hr TWA	35822-46-9	C12HCl7O2	425.31	None		None		None			None	None
Heptachlorodibenzo-p-furans	Need 24-hr TWA	67562-39-4	C12HCl7O	409.31	None		None		None			None	None
Hexachlorodibenzo-p-furans	Need 24-hr TWA	57117-44-9	C12H2Cl6O	374.87	None		None		None			None	None
Iron	Need 24-hr TWA	7439-89-6	Fe	55.85	None		None		None			None	None
Isobutyraldehyde	Need 24-hr TWA	78-84-2	C4H8O	72.11	None		None		None		0.50	0.01	0.012
Isobutyl alcohol	Need 24-hr TWA	78-83-1	C4H10O	74.12	100	300	50	150	50	150	500	300	238
Methane	Need 24-hr TWA	74-82-8	CH4	16.04	None		1,000	656	None			656	521
2-Methylnaphthalene	Need 24-hr TWA	91-57-6	C10H7CH3	142.20	None		0.5	2.91	None			2.9	2.3
Molybdenum	Need 24-hr TWA	7439-98-7	Mo	95.94		15		0.5	None			15	11.9
Monochlorophenol	Need 24-hr TWA	95-57-8	C6H5ClO	128.56	None		None		None		670	19	15.4
2-Nitrophenol	Need 24-hr TWA	88-75-5	C6H5NO3	139.11	None		None		None		1,297	38	29.9
4-Nitrophenol	Need 24-hr TWA	100-02-7	C6H5NO3	139.11	None		None		None		50	1.5	1.2
Nonachlorobiphenyl	Need 24-hr TWA	53742-07-7	C12HCl9	464.21		0.5		0.5	None		3,980	0.5	0.40
Octachlorobiphenyl	Need 24-hr TWA	74472-52-9	C12H2Cl8	429.77		0.5		0.5	None		3,980	0.5	0.40
Octachlorodibenzo-p-dioxins	Need 24-hr TWA	3268-87-9	C12Cl8O2	459.75	None		None		None			None	None
Octachlorodibenzo-p-furans	Need 24-hr TWA	39001-02-0	C12Cl8O	443.76	None		None		None			None	None
Pentachlorodibenzo-p-dioxins	Need 24-hr TWA	36088-22-9	C12H3Cl5O2	356.42	None		None		None			None	None
Pentachlorodibenzo-p-furans	Need 24-hr TWA	57117-41-6	C12H3Cl5O	340.42	None		None		None			None	None

Table 2-2. Derivation of 24-hr Acceptable Ambient Concentrations (AAC) for Georgia EPD [1]

Pollutant	24-hr AAC Required?	CAS No.	Formula	Mol. Wt. (g/mol)	24-hr Rating 1. OSHA TWA (ppm)	24-hr Rating 1. OSHA TWA (mg/m^3)	24-hr Rating 2. ACGIH TWA (ppm)	24-hr Rating 2. ACGIH TWA (mg/m^3)	24-hr Rating 3. NIOSH TWA (ppm)	24-hr Rating 3. NIOSH TWA (mg/m^3)	24-hr Rating 4. LD50 (rat)[2] (mg/kg)	Rating Available 24-hour TWA (mg/m^3)	24-hour AAC[3] ($\mu g/m^3$)
Pentachlorobenzene	Need 24-hr TWA	608-93-5	C6HCl5	250.34	None		None		None			None	None
Pentachlorobiphenyl	Need 24-hr TWA	25429-29-2	C12H5Cl5	326.43		0.5		0.5	None		3,980	0.5	0.40
2-Pentanone	Need 24-hr TWA	107-87-9	C5H10O	86.17	200	700	None		150	530	1,600	700	556
Perylene	Need 24-hr TWA	198-55-0	C20H12	252.31	None		None		None			None	None
Phenanthrene	Need 24-hr TWA	85-01-8	C14H10	178.24		0.2	None		None	0.1		0.2	0.16
Propanol	Need 24-hr TWA	71-23-8	C2H5CHO	58.08	200	500	200	500	200	500	500	500	397
Potassium	Need 24-hr TWA	7440-09-7	K	65.10	None		None		None			None	None
Pyrene	Need 24-hr TWA	129-00-0	C16H10	202.26		0.2	None			0.1		0.2	0.16
Pyridine	Need 24-hr TWA	110-86-1	C5H5N	79.10	5	15	1	3	5	15	500	15	11.9
Silver	Need 24-hr TWA	7440-22-4	Ag	107.90		0.01		0.01		0.01		0.01	0.0079
Sodium	Need 24-hr TWA	7440-23-5	Na	22.99	None		None		None			None	None
Strontium	Need 24-hr TWA	7440-24-6	Sr	87.62	None		None		None			None	None
2,3,7,8-Tetrachlorodibenzo-p-fura	Need 24-hr TWA	51207-31-9	C12H4Cl4O	305.98	None		None		None			None	None
Tetrachlorodibenzo-p-furans	Need 24-hr TWA	51207-31-9	C12H4Cl4O	305.98	None		None		None			None	None
Tetrachlorobenzene	Need 24-hr TWA	95-94-3	C6H2Cl4	215.89	None		None		None			None	None
Tetrachlorophenol	Need 24-hr TWA	58-90-2	C6H2Cl4O	231.89	None		None		None			None	None
Thallium	Need 24-hr TWA	7440-28-0	Tl	204.37		0.1		0.1				0.1	0.079
Tin	Need 24-hr TWA	7440-31-5	Sn	118.70		2		2		2		2	1.6
Titanium	Need 24-hr TWA	7440-32-6	Ti	47.87		15	None		None			15	11.9
o-Tolualdehyde	Need 24-hr TWA	529-20-4	C8H8O	120.15	None		None		None			None	None
p-Tolualdehyde	Need 24-hr TWA	104-87-0	C8H8O	120.15	None		None		None			None	None
Trichlorofluoromethane	Need 24-hr TWA	75-69-4	CCl3F	137.38	1,000	5,600	None		None			5,600	4,444
Vanadium	Need 24-hr TWA	7440-62-2	V	50.94	None		None		None			None	None
Yttrium	Need 24-hr TWA	7440-65-5	Y	88.90		1		1		1		1	0.79
Zinc	Need 24-hr TWA	7440-66-6	Zn	65.39	None		None		None			None	None

1. Acceptable Ambient Concentrations (AACs) were developed based on Georgia EPD's Guideline for Ambient Impact Assessment of Toxic Air Pollutant Emissions. Revised June 21, 1998. 24-hr AACs are based on Occupational Safety and Health Administration (OSHA) Permissible Exposure Limits (PEL). If OSHA data was not available, American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLV) were used. If neither OSHA nor ACGIH were available, National Institute for Occupational Safety and Health (NIOSH) Recommended Exposure Limits (REL) were used. If none of the aforementioned limits were available, then Lethal Dose – 50% (LD50) Standards were used.

2. LD50 values are reported in datasheets from http://cameochemicals.noaa.gov/.

3. TWA rating converted from 40 hr/wk std to 168 hr/wk. The safety factor of 300 for known carcinogens is conservatively applied to all pollutants. Values converted from mg/m^3 to $\mu g/m^3$.

Table 2-3. Derivation of 15-minute Acceptable Ambient Concentrations (AAC) for Georgia EPD[1]

Pollutant	CAS No.	Formula	Mol. Wt. (g/mol)	OSHA Ceiling (ppm)	OSHA Ceiling (mg/m³)	ACGIH STEL (ppm)	ACGIH STEL (mg/m³)	NIOSH STEL (ppm)	NIOSH STEL (mg/m³)	Ceiling or STEL[2] (mg/m³)	15-minute AAC[3] (µg/m³)
1,1,1-Trichloroethane	71-55-6	C2H3Cl3	133.42	None		450	2,456	350	1,910	2,455.6	245,558.3
1,2-Dibromoethene	540-49-8	C2H2Br2	185.85	None		None		None		None	None
2-Butanone (MEK)	78-93-3	C4H8O	72.11	None		300	885	300	885	884.7	88,474.4
2-Chloronaphthalene	91-58-7	C10H7Cl	162.62	None		None		None		None	None
2-Chlorophenol	95-57-8	C6H5ClO	128.56	None		None		None		None	None
Acenaphthene	83-32-9	C12H10	154.21	None		None		None		None	None
Acenaphthylene	206-96-8	C12H8	152.21	None		None		None		None	None
Acetaldehyde	75-07-0	CH3CHO	44.05	None		25	45	None		45.0	4,504.1
Acetone	67-64-1	C3H6O	58.08	None		750	1,782	None		1,781.6	178,159.5
Acetophenone	98-86-2	C8H8O	120.15	None		None		None		None	None
Acrolein	107-02-8	CH2CHCHO	56.07	None		0.10	0.25	0.30	0.80	0.3	25.0
Ammonia	7664-41-7	NH3	17.03	None		35	27	35	27	27.0	2,700.0
Anthracene	120-12-7	C14H10	178.23	None		None		None		None	None
Antimony	7440-36-0	Sb	121.76	None		None		None		None	None
Arsenic	7440-38-2	As	74.92	None		None			0.002	0.0	0.2
Barium	7440-39-3	Ba	137.33	None		None		None		None	None
Benzaldehyde	100-52-7	C7H6O	106.12	None		None		None		None	None
Benzene	71-43-2	C6H6	78.11	5	15.97	2.5	7.99	1	3.19	16	1,597.3
Benzo(a)anthracene	56-55-3	C18H12	228.29	None		None		None		None	None
Benzo(a)pyrene	50-32-8	C20H12	252.31	None		None		None		None	None
Benzo(b)fluoranthene	205-99-2	C20H12	252.31	None		None		None		None	None
Benzo(e)pyrene	192-97-2	C20H12	252.31	None		None		None		None	None
Benzo(g,h,i)perylene	191-24-2	C22H12	276.33	None		None		None		None	None
Benzo(b,k)fluoranthene	N/A	C24H14	302.37	None		None		None		None	None
Benzo(j,k)fluoranthene	205-82-3	C20H12	252.31	None		None		None		None	None
Benzo(k)fluoranthene	207-08-9	C20H12	252.31	None		None		None		None	None
Benzoic acid	65-85-0	C7H6O2	122.12	None		None		None		None	None
Beryllium	7440-41-7	Be	9.01		0.005	None		None		0.01	0.5
Bis(2-ethylhexyl)phthalate	117-81-7	C24H38O4	390.56	None		None			10	10	1,000
Bromomethane	74-83-9	CH3Br	94.94	20	80	None		None		80	8,000
Cadmium	7440-43-9	Cd	112.41		0.3	None		None		0.3	30
Carbazole	86-74-8	C12H9N	167.21	None		None		None		None	None
Carbon tetrachloride	56-23-5	CCl4	153.82	25	157	10	63	None		157	15,728
Chlorine	7782-50-5	Cl2	70.91	1	3	1	2.9	0.5	1.45	3	300
Chlorobenzene	108-90-7	C6H5Cl	112.56	None		None		None		None	None
Chloroform	67-66-3	CHCl3	119.38	50	240	None		None		240	24,000
Chromium	7440-47-3	Cr	52.00	None		None		None		None	None
Chromium VI	18540-29-9	Cr	52.00	None		None		None		None	None
Chrysene	218-01-9	C18H12	228.29	None		None		None		None	None
Cobalt	7440-48-4	Co	58.93	None		None		None		None	None
Copper	7440-50-8	Cu	63.55	None		None		None		None	None
o-Cresol	95-48-7	C7H8O	108.20	None		None		None		None	None
m-Cresol, p-Cresol	108-39-4	C7H8O	108.20	None		None		None		None	None
Crotonaldehyde	123-73-9	C4H6O	70.09	None		0.3	0.86	None		0.86	86
Decachlorobiphenyl	2051-24-3	C12Cl10	498.66	None			1	None		1	100
Dibenzo(a,h)anthracene	53-70-3	C22H14	278.33	None		None		None		None	None
Dichlorobenzene	95-50-1	C6H4Cl2	147.01	50	300	50	300	50	300	300	30,000
Dichlorobiphenyl	2050-68-2	C12H8Cl2	223.10	None			1	None		1	100
1,2-Dichloroethane	107-06-2	C2H4Cl2	99.00	100	405	None		2	8	405	40,491
Dichlorophenol	120-83-2	C6H4Cl2O	163.00	None		None		None		None	None
1,2-Dichloropropane	78-87-5	C3H6Cl2	113.00	None		None		None		None	None
2,4-Dinitrophenol	51-28-5	C6H4N2O5	184.11	None		None		None		None	None
Ethanol	64-17-5	C2H6O	46.07	None		1000	1884	None		1,884	188,425
Ethylbenzene	100-41-4	C6H5C2H5	106.17	None		125	545	125	545	545	54,500
Fluoranthene	206-44-0	C16H10	202.26	None		None		None		None	None
Fluorene	86-73-7	C13H10	166.23	None		None		None		None	None
Formaldehyde	50-00-0	HCHO	30.00	2	2.5	0.3	0.4	0.1	0.1	2.45	245
HCl	7647-01-0	HCl	36.46	5	7	2	3	5	7	7	700
HF	7664-39-3	HF	20.01	None		2	1.6	6	5	1.6	163.7
Heptachlorobiphenyl	28655-71-2	C12H3Cl7	395.32	None			1	None		1	100
Hexachlorobenzene	118-74-1	C6Cl6	284.78	None		None		None		None	None
Hexachlorobiphenyl	35065-27-1	C12H4Cl6	360.88	None			1	None		1	100
Hexanal (hexaldehyde)	66-25-1	C6H12O	100.16	None		None		None		None	None
Heptachlorodibenzo-p-dioxins	35822-46-9	C12HCl7O2	425.31	None		None		None		None	None
Heptachlorodibenzo-p-furans	67562-39-4	C12HCl7O	409.31	None		None		None		None	None
Hexachlorodibenzo-p-dioxins	19408-74-3	C12H2Cl6O2	390.86	None		None		None		None	None
Hexachlorodibenzo-p-furans	57117-44-9	C12H2Cl6O	374.87	None		None		None		None	None
Indeno(1,2,3,c,d)pyrene	193-39-5	C22H12	276.33	None		None		None		None	None
Iron	7439-89-6	Fe	55.85	None		None		None		None	None
Isobutyraldehyde	78-84-2	C4H8O	72.11	None		None		None		None	None
Isobutyl alcohol	78-83-1	C4H10O	74.12	None		None		None		None	None
Lead	7439-92-1	Pb	207.20	None		None		None		None	None
Manganese	7439-96-5	Mn	54.94		5	None			3	5	500
Mercury	7439-97-6	Hg	200.59		0.04	None			0.1	0.04	4
Methane	74-82-8	CH4	16.04	None		None		None		None	None
Methyl chloride (chloromethane)	74-87-3	CH3Cl	50.49	200	413	100	206	None		413	41,299
2-Methylnaphthalene	91-57-6	C10H7CH3	142.20	None		None		None		None	None
Methylene chloride (dichloromethane)	75-09-2	CH2Cl2	84.93	125	434	None		None		434	43,420
Molybdenum	7439-98-7	Mo	95.94	None		None		None		None	None
Monochlorobiphenyl	2051-62-9	C12H9Cl	188.65	None			1	None		1	100
Monochlorophenol	95-57-8	C6H5ClO	128.56	None		None		None		None	None
Naphthalene	91-20-3	C10H8	128.19	None		15	75	15	75	75	7,500
Nickel	7440-02-0	Ni	58.69	None		None		None		None	None
2-Nitrophenol	88-75-5	C6H5NO3	139.11	None		None		None		None	None
4-Nitrophenol	100-02-7	C6H5NO3	139.11	None		None		None		None	None
Nonachlorobiphenyl	53742-07-7	C12HCl9	464.21	None			1	None		1	100
Octachlorobiphenyl	74472-52-9	C12H2Cl8	429.77	None			1	None		1	100

Table 2-3. Derivation of 15-minute Acceptable Ambient Concentrations (AAC) for Georgia EPD[1]

Pollutant	CAS No.	Formula	Mol. Wt. (g/mol)	OSHA Ceiling (ppm)	OSHA Ceiling (mg/m^3)	ACGIH STEL (ppm)	ACGIH STEL (mg/m^3)	NIOSH STEL (ppm)	NIOSH STEL (mg/m^3)	Ceiling or STEL[2] (mg/m^3)	15-minute AAC[3] ($\mu g/m^3$)
Octachlorodibenzo-p-dioxins	3268-87-9	C12Cl8O2	459.75	None		None		None		None	None
Octachlorodibenzo-p-furans	39001-02-0	C12Cl8O	443.76	None		None		None		None	None
Pentachlorodibenzo-p-dioxins	36088-22-9	C12H3Cl5O2	356.42	None		None		None		None	None
Pentachlorodibenzo-p-furans	57117-41-6	C12H3Cl5O	340.42	None		None		None		None	None
Pentachlorobenzene	608-93-5	C6HCl5	250.34	None		None		None		None	None
Pentachlorobiphenyl	25429-29-2	C12H5Cl5	326.43	None		1		None		1	100
Pentachlorophenol	87-86-5	C6HCl5O	266.40	None		None		None		None	None
2-Pentanone	107-87-9	C5H10O	86.17	None		None		None		None	None
Perylene	198-55-0	C20H12	252.31	None		None		None		None	None
Phenanthrene	85-01-8	C14H10	178.24	None		None		None		None	None
Phenol	108-95-2	C6H5OH	94.11	None		None		15.6	60	60	6,000
Propanol	71-23-8	C2H5CHO	58.08	None		400	950	250	625	950	95,018
Phosphorus	7723-14-0	P	30.97	None		None		None		None	None
Potassium	7440-09-7	K	65.10	None		None		None		None	None
Propionaldehyde	123-38-6	C3H6O	58.08	None		None		None		None	None
Pyrene	129-00-0	C16H10	202.26	None		None		None		None	None
Pyridine	110-86-1	C5H5N	79.10	None		None		None		None	None
Selenium	7782-49-2	Se	78.96	None		None		None		None	None
Silver	7440-22-4	Ag	107.90	None		None		None		None	None
Sodium	7440-23-5	Na	22.99	None		None		None		None	None
Strontium	7440-24-6	Sr	87.62	None		None		None		None	None
Styrene	100-42-5	C6H5C2H3	104.16	200	852	40	170	100	425	852	85,202
2,3,7,8-Tetrachlorodibenzo-p-dioxins	1746-01-6	C12H4Cl4O2	321.97	None		None		None		None	None
Tetrachlorodibenzo-p-dioxins	1746-01-6	C12H4Cl4O2	321.97	None		None		None		None	None
2,3,7,8-Tetrachlorodibenzo-p-furans	51207-31-9	C12H4Cl4O	305.98	None		None		None		None	None
Tetrachlorodibenzo-p-furans	51207-31-9	C12H4Cl4O	305.98	None		None		None		None	None
Tetrachlorobenzene	95-94-3	C6H2Cl4	215.89	None		None		None		None	None
Tetrachlorobiphenyl	26914-33-0	C12H6Cl4	291.99	None		1		None		1	100
Tetrachloroethene	127-18-4	C2Cl2	165.80	200	1,356	100	678	None		1,356	135,624
Tetrachlorophenol	58-90-2	C6H2Cl4O	231.89	None		None		None		None	None
Thallium	7440-28-0	Tl	204.37	None		None		None		None	None
Tin	7440-31-5	Sn	118.70	None		None		None		None	None
Titanium	7440-32-6	Ti	47.87	None		None		None		None	None
o-Tolualdehyde	529-20-4	C8H8O	120.15	None		None		None		None	None
p-Tolualdehyde	104-87-0	C8H8O	120.15	None		None		None		None	None
Toluene	108-88-3	C6H5CH3	92.15	300	1,131	None		150	560	1,131	113,067
Trichlorobiphenyl	38444-78-9	C12H7Cl3	257.54	None		1		None		1	100
Trichlorobenzene	120-82-1	C6H3Cl3	181.46	None		5	40	5	40	40	4,000
Trichloroethylene (trichloroethene)	79-01-6	C2HCl3	131.40	200	1,075	25	134	None		1,075	107,485
Trichlorofluoromethane	75-69-4	CCl3F	137.38	None		1,000	5,600	1,000	5,600	5,600	560,000
2,4,6-Trichlorophenol	88-06-2	C6H3CL3O	197.45	None		None		None		None	None
Vanadium	7440-62-2	V	50.94		0.1	None			0.05	0.10	10
Vinyl chloride	75-01-4	CH2CHCl	62.50	5	13	None		None		13	1,278
o-Xylene	95-47-6	C8H10	106.16	None		150	655	150	655	655	65,500
m/p-Xylenes	108-38-3	C8H10	106.16	None		150	655	150	655	655	65,500
Yttrium	7440-65-5	Y	88.90	None		None		None		None	None
Zinc	7440-66-6	Zn	65.39	None		None		None		None	None

1. Acceptable Ambient Concentrations (AACs) were developed based on Georgia EPD's *Guideline for Ambient Impact Assessment of Toxic Air Pollutant Emissions*. Revised June 21, 1998.
2. If OSHA data were not available, ACGIH TLVs were used. If neither OSHA nor ACGIH were available, NIOSH REL values were used.
3. 15-min AACs are based on a safety factor of 10. Converted from mg/m3 to $\mu g/m^3$.

Attachment 3

Soils and Vegetation Table for Additional Impacts Analysis

Table 3-1. Vegetation Impact Analysis

Pollutant	Averaging Period	Emission Rate[1] (g/s)	Maximum Impact at 1 g/s[2] (µg/m³)	Total Concentration[3] (µg/m³)	Vegetation Sensitivity[4] Sensitive (µg/m³)	Intermediate (µg/m³)	Resistant (µg/m³)	Secondary NAAQS (µg/m³)	Minimum Threshold (µg/m³)	Threshold Exceeded?
SO_2[5]	1-Hour	35.255	2.015	71.04	917	-	-	N/A	917	No
	3-Hour	13.221	1.270	16.79	786	2,096	13,100	1,300	786	No
	Annual	1.763	0.050	0.09	-	18	-	N/A	18	No
NO_2[6]	4-Hour	109.070	1.197	130.56	3,760	9,400	16,920	N/A	3,760	No
	8-Hour	109.070	0.983	107.22	3,760	7,520	15,040	N/A	3,760	No
	1-Month	14.543	0.152	2.21	-	564	-	N/A	564	No
	Annual	14.543	0.050	0.73	-	94	-	100	94	No
CO[7]	1 -wk	141.019	0.480	67.69	1,800,000	-	18,000,000	N/A	1,800,000	No
PM_{10}[8]	24-Hour	Varies	N/A	< 150	-	-	-	150	150	No
	Annual	Varies	N/A	< 50	-	-	-	50	50	No
H_2S	4-Hour	N/A	-	-	28,000	-	560,000	N/A	N/A	No
Ethylene	3-4-Hour	N/A	-	-	-	47	-	N/A	N/A	No
	24-Hour	N/A	-	-	-	1.2	-	N/A	N/A	No
Fluorine[9]	10-days	7.05E-02	0.480	3.38E-02	-	0.5	-	N/A	0.5	No
Beryllium	1-Month	1.65E-04	0.152	2.51E-05	-	0.01	-	N/A	0.01	No
Lead[10]	3-Months	4.95E-04	0.152	7.52E-05	-	1.5	-	0.15	2	No

1. Emission rates as included in the Significance Analysis or Air Toxics Modeling Analysis. Different multipliers may be applied to various averaging periods.
2. For simplicity a 1 g/s emission rate was utilized in AERMOD for all pollutants other than PM. Values shown are first highest highs unless otherwise noted.
3. For SO_2, NO_2, and CO, value is based on the facility impacts only since the MSLs were not exceed; value calculated based on the maximum impact for 1 g/s multiplied by the potential emission rate.
4. Screening concentrations based on Table 3.1 in *Screening Procedure for Impact of Air Pollution Sources on Plants, Soil and Animals* , EPA, December 12, 1980. Minimum values noted if range listed.
5. Multiplier of 20 applied to the proposed BACT limit.
6. Annual NO_X emission rate as modeled for PSD requirements for annual averaging period. Multiplier of 7.5 was applied for both the 4-hour and 8-hour averaging periods.
7. CO emission rate as modeled for PSD requirements for 8-Hour averaging period. Maximum impact is for 24-hour averaging period since AERMOD does not calculate a weekly averaging period.
8. Refer to the supplemental PM10 NAAQS analysis for a demonstration that total impacts are below the NAAQS for events at which the proposed facility is significant (i.e., above the SILs).
9. Emission rate based on short term HF emissions. Maximum impact is for 24-hour averaging period since AERMOD does not calculate a 10-day averaging period.
10. Maximum impact is for 1-Month averaging period since AERMOD does not calculate a 3-Month averaging period.