Appendix D
NONROAD Mobile Source Inventory Documentation

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1.0 NONROAD Model Mobile Sources

The nonroad mobile source category includes a diverse collection of equipment such as lawnmowers, chain saws, tractors, all terrain vehicles, fork lifts and construction equipment. The EPA included more than 80 different types of equipment in the NONROAD2008a model. To facilitate analysis and reporting, the EPA grouped the equipment types into twelve equipment categories. These include:

Recreational Equipment	Logging Equipment
Construction Equipment	Airport Service Equipment
Industrial Equipment	Underground Mining Equipment
Lawn & Garden Equipment	Oil Field Equipment
Agricultural Equipment	Railway Equipment
Commercial Equipment	Recreational Marine Equipment

Additionally, the emissions are broken out by five different engine types. These include: 2-stroke and 4-stroke spark engines, diesel engines, liquid propane gas and compressed natural gas fueled engines.

The NONROAD2008a model version was used to estimate emissions for York County as well as the Rock Hill Fort Mill Area Transportation Study (RFATS Metropolitan Planning Organization (MPO) portion of York County (also referred to as the York NA area), South Carolina within the Charlotte-Gastonia-Rock Hill, NC-SC (Metrolina) nonattainment area for the 1997 8-hour ozone NAAQS Redesignation Demonstration and Maintenance Plan. This latest version of the model was released to the public in July of 2009.

NONROAD2008a is the latest final release of the EPA NONROAD model that was first released in June of 2000, and incorporates several changes to improve its predictive ability over that of the previous version of the model. The primary change in this latest release is the inclusion of the emission reductions associated with two rules finalized in 2008: **Diesel (CI) recreational marine standards in the Locomotive/Marine final rule** (Federal Register Vol 73, No. 88, page 25098, May 6, 2008), and **Small Spark Ignition (SI) and SI Recreational Marine final rule** (Federal Register Vol 73, No. 196, page 59034, October 8, 2008). Since the main difference between NONROAD2008 and NONROAD2005 is the accounting for new exhaust and evaporative emission controls, the newer version predicts substantially less HC and CO, and somewhat less NO_x and PM emissions than NONROAD2005 with use of comparable scenario inputs.

In addition to the changes mentioned above, the NONROAD2008a model now has the ability to model the effects of ethanol blends on fuel tank and hose permeation. Towards that end, the model now accepts as inputs the ethanol blend market share and the average volume percent of ethanol in the blend.

The options files used to provide necessary inputs to the NONROAD2008a model were tailored to reflect South Carolina specific data. Copies of the input files are included in

Section 4.0 *Data Files* and the inputs themselves are described in the following paragraphs.

The gasoline RVP for each year was taken from the MOVES2010a default for York County for each year of interest. MOVES2010a is EPA's on-road mobile emissions model, and the default RVP data were taken from this model to maintain consistency.

Default values were used for the gas and CNG/LPG sulfur content. Both land and marine diesel content, as well as the ethanol blend market share and average volume percent of ethanol in the blend were obtained from suggested nationwide average fuel properties distributed by the EPA on the NONROAD model website.

Oxygen weight percent was calculated using the following equation recommended by the model itself:

OxyWtPct = ETOHBlendMktPct * ETOHVolPct * 0.35 * 0.01

We used temperature data for a typical July day as selected by North Carolina in their 8-hour ozone NAAQS redesignation demonstration and maintenance plan to maintain consistency within the Metrolina nonattainment area.

The model was set up to estimate the nonroad emissions from all types of equipment for York County for a typical July weekday for the years: 2010, 2013, 2016, 2019 and 2022. The model results directly provided the daily NO_x and VOC estimates for the whole county for each of the requested years. In order to reduce these whole county emissions to the emissions from within the York NA area, the NONROAD2008a model results were multiplied by the fraction of the population residing within the York NA area (75.8%) versus the total county population.

The ratio of the York NA area population to the county population was used to estimate emissions for the York NA area. Table 1-1 contains the 2005 population for York County. The York NA area population was determined from the RFATS MPO 2005 Baseline Socio-Economic Data (submitted to Charlotte in 2006). Using this data, the estimated York NA area population is 153,900, and 75.8 percent of York County's population is in the York NA area. This percentage was used to allocate the county-level emissions to the York NA area.

Table 1-1 Population Data

Population of York County	203,054
Population of York NA area	153,900
Percentage of Population in York NA area	75.8

For reporting purposes, the York NA area VOC and NO_x emissions are summarized by equipment type in table 1-2. In table 1-3, total VOC and NO_x emissions for the York NA area are summarized. The results for total VOC and NO_x as well as the emissions for most equipment types show a reduction in emissions for each successive year. These reduced emission projections are influenced by several factors, including expected future

changes in emission factors and activity levels. These changes are accounted for in the model.

Table 1-2 York Nonattainment Area VOC and NO_x Emissions by Equipment Type

Classification	2010	2013	2016	2019	2022
VOC Emissions (tons per day)					
Agricultural Equipment	0.013	0.011	0.009	0.008	0.007
Airport Equipment	0.000	0.000	0.000	0.000	0.000
Commercial Equipment	0.228	0.178	0.154	0.153	0.157
Construction and Mining Equipment	0.287	0.245	0.214	0.194	0.180
Industrial Equipment	0.082	0.044	0.026	0.020	0.018
Lawn and Garden Equipment	0.881	0.730	0.656	0.656	0.679
Logging Equipment	0.018	0.019	0.019	0.020	0.020
Pleasure Craft	0.347	0.273	0.213	0.165	0.131
Railroad Equipment	0.000	0.000	0.000	0.000	0.000
Recreational Equipment	0.232	0.210	0.178	0.145	0.132
VOC Totals	**2.088**	**1.709**	**1.469**	**1.361**	**1.325**
NO_x Emissions (tons per day)					
Agricultural Equipment	0.113	0.100	0.084	0.069	0.056
Airport Equipment	0.000	0.000	0.000	0.000	0.000
Commercial Equipment	0.173	0.153	0.134	0.122	0.113
Construction and Mining Equipment	2.008	1.686	1.294	0.989	0.781
Industrial Equipment	0.391	0.257	0.179	0.146	0.138
Lawn and Garden Equipment	0.196	0.157	0.139	0.134	0.133
Logging Equipment	0.028	0.020	0.011	0.006	0.004
Pleasure Craft	0.044	0.046	0.046	0.045	0.044
Railroad Equipment	0.002	0.002	0.001	0.001	0.001
Recreational Equipment	0.010	0.008	0.008	0.008	0.008
NO_x Totals	**2.965**	**2.428**	**1.897**	**1.521**	**1.279**

Table 1-3 Total Nonattainment Area NONROAD2008a Model Emissions Summary

Pollutant	2010	2013	2016	2019	2022
NO_X	2.965	2.428	1.897	1.521	1.279
VOC	2.088	1.709	1.469	1.361	1.325

2.0 **Aircraft Emissions**

Aircraft engines, like other engines, emit pollutants whenever the engines are in operation. However, the only emissions that are of concern for this inventory are the portion of the operation that occurs below the mixing layer. This is because the emissions tend to disperse whenever the aircraft is above the mixing layer and, therefore, has little or no effect on ground level ozone.

The aircraft operations of interest are termed the landing and takeoff (LTO) cycle. The cycle begins when the aircraft approaches the airport, descending below the mixing layer, lands and taxis to the gate. It continues as the aircraft idles at the gate and then taxis back out to the runway for the subsequent takeoff and climbout as it heads back to cruising altitudes, above the mixing layer.

Aircrafts can be categorized by use into four classifications: commercial, air taxis, general aviation and military. Commercial aircraft include those used for scheduled service transporting passengers, freight or both. Air taxis, or commuter aircraft, also fly scheduled service carrying passengers and/or freight but usually are smaller aircraft and operate on a more limited basis than commercial carriers. General aviation includes all other non-military aircraft used for recreational flying, personal transportation, and various other activities. Military aircraft cover a wide range of sizes, uses and operating missions. The military aircraft are treated as a separate classification since the LTO operations reported at the airports group all military aircraft together.

Base year 2010 emissions for aircraft engines were projected from the 2007 emissions inventory prepared for the southeast regional haze planning organization Southeastern States Air Resource Managers, Inc. (SESARM). The emissions inventory was projected to future years by utilizing EPA's Economic Growth Analysis System (E-GAS) version 5 software. There are two major data sources that are used as growth indicators in EGAS 5.0: the Department of Energy's (DOE) *Annual Energy Outlook* and version 6.0 of Regional Economic Models, Inc. (REMI) state-level economic models. In general, DOE data are expected to be used as growth indicators for fuel combustion/production categories, while REMI data will be used for all other source categories. These EGAS Growth Factors will be provided with each category discussed. This project methodology was first used to develop a 2010 base year inventory and then to develop the future years of 2013, 2016, 2019, and 2022. Note that E-GAS 5.0 does not distinguish between piston and turbine activity, so the factor for General Aviation was applied to both the piston and turbine General Aviation activity data for each year of interest. The Air Taxi E-GAS 5.0 factor was likewise applied to both the piston and turbine Air Taxi activity data for each year of interest. Table 2-1 shows the E-GAS 5.0 growth factors used to estimate both aircraft and railroad emissions.

Table 2-1 E-GAS 5.0 Growth Factors for Aircraft and Railroad Emissions

SCC	Description	2010	2013	2016	2019	2022
2275050000	Aircraft_General Aviation	1.117925	1.231132	1.320755	1.40566	1.5
2275060000	Aircraft_Air Taxi	1.117925	1.231132	1.320755	1.40566	1.5
2285002006	Railroad_Diesel_Linehaul_Class I	1.06506	1.127711	1.212048	1.291566	1.378313
2285002007	Railroad_Diesel_Linehaul_Class II/III	1.06506	1.127711	1.212048	1.291566	1.378313

SESARM based the 2007 aircraft emissions primarily on EPA's 2008 NEI. For commercial aircraft, the emission estimation methodology relied on airport and aircraft-specific landing and take-off (LTO) data, coupled with mode and aircraft-specific emission rates from the FAA's Emission and Dispersion Modeling System (EDMS). LTO data for general aviation and air taxi were obtained from FAA's Terminal Area Forecasts (TAF) and 5010 Forms. This activity was assigned to jet and propeller-driven fractions, and fleet-average emission factors were then applied.

The 2008 emissions and LTO data were back-cast to 2007 using approach operations by airport and aircraft type compiled from the FAA's Air Traffic Activity Data System (ATADS) (FAA, 2010). The airport-level LTOs were assigned to counties and summed for the county. For counties with aircraft emissions without a county match in ATADS, state average growth factors were calculated and applied. These whole-county emissions were then multiplied by the percentage of York County population residing in the York NA area (Table 1-1) to obtain the York NA emissions. Note that York County only has General Aviation and Air Taxi aircraft activity.

Table 2-2 shows York NA area aircraft VOC and NO_x emissions by aircraft type, while Table 2-3 summarizes VOC and NO_x aircraft emissions for the York NA area.

Table 2-2 York Nonattainment Area NO_x and VOC Emissions by Aircraft Type (tons/day)

Classification	2010	2013	2016	2019	2022
Aircraft NO_x Emissions (Tons Per Day)					
Aircraft_General Aviation_Piston	0.001998	0.0022	0.00236	0.002512	0.002681
Aircraft_General Aviation_Turbine	0.000777	0.000856	0.000918	0.000977	0.001042
Aircraft_Air Taxi_Piston	2.51E-05	2.77E-05	2.97E-05	3.16E-05	3.37E-05
Aircraft_Air Taxi_Turbine	9.77E-06	1.08E-05	1.15E-05	1.23E-05	1.31E-05
Aircraft NO_x Total	0.00281	0.003094	0.003319	0.003533	0.00377
Aircraft VOC Emissions (Tons Per Day)					
Aircraft_General Aviation_Piston	2.31E-06	2.55E-06	2.73E-06	2.91E-06	3.1E-06
Aircraft_General Aviation_Turbine	0.048189	0.053069	0.056933	0.060592	0.064659
Aircraft_Air Taxi_Piston	1.35E-08	1.49E-08	1.59E-08	1.7E-08	1.81E-08
Aircraft_Air Taxi_Turbine	0.000281	0.00031	0.000332	0.000353	0.000377
Aircraft VOC Total	0.048473	0.053381	0.057267	0.060949	0.065039

Table 2-3 York Nonattainment Area VOC and NO_x Emissions (tons/day)

Pollutant	2010	2013	2016	2019	2022
VOC	0.048	0.053	0.057	0.061	0.065
NO_x	0.003	0.003	0.003	0.004	0.004

3.0 Railroad Locomotives

Railroads are categorized by size (Class I, Class 2) and passenger service. Class I railroads are long haul operations, while Class II and Class III railroads are short lines, serving localized markets. Base year 2010 emissions for railroad locomotive engines were projected from the 2007 SESARM emissions inventory. The projection from 2007 to 2010 was made using growth factors generated from the E-GAS 5.0.

For Class I line-haul locomotives, emissions are normally calculated by multiplying the amount of fuel consumed in the inventory area by pollutant-specific emission factors. This calculation is performed for each railroad. The results for each railroad are then summed to obtain the total Class I railroad emissions in the inventory area.

For Class I line haul, SESARM obtained 2007 emission estimates from the Eastern Regional Technical Advisory Committee (ERTAC, 2010a). ERTAC used the Federal Railroad Administration's GIS data to construct a dataset of link-level million gross tons per mile (MGT). Next the Railroad Fuel Consumption Index (RFCI) value was calculated for each railroad, which represents the number of GTM produced per gallon of diesel fuel. When applied to each link's GTM per year, link-based fuel consumption can be calculated. This methodology allows for a more accurate reflection of how GTM are actually concentrated across rail line route miles. Finally, the fuel consumed is multiplied by the various emission factors derived for each Class I rail line to determine link-level emissions for each pollutant. An important aspect is determining the fraction of locomotives that fall under each regulatory "Tier," since each Tier has an increasingly stringent emission rate for pollutants of concern.

Class II/III line haul emissions were also developed and distributed by ERTAC (ERTAC, 2010b). Generally, fuel consumption for all Class II/III railroads was obtained from the American Shortline and Regional Railroad Association and assigned to counties using route miles by rail line within each county. An average fuel use factor expressed in gallons per mile was then multiplied by the route miles to estimate fuel consumption by railroad and by county. Class II/III locomotives were all assumed to be uncontrolled with respect to emission rates used for estimating pollutant emissions. Class II/III rail emissions represent calendar year 2008, and as such were back-cast to 2007 using a surrogate growth indicator. A SESARM regional growth factor of 1.438 was developed using 2007 and 2008 total distillate fuel sales/deliveries to railroad consumers which were obtained from the DOE Energy Information Administration State Energy Data (DOE, 2009a).

There does not appear to be any significant amount of passenger rail activity in York County, and both EPA's 2005 and 2008 NEI show no emissions for passenger rail activity for York County. Therefore, only Class I and Class II/III emissions line haul emissions are present in these emissions calculations.

Whole county emissions were multiplied by the percentage of the county population residing in the York NA area (Table 1-1) to calculate the emissions for the York NA area. Table 3-1 shows York NA area emissions by railroad type, while Table 3-2 shows the total railroad emissions for the York NA area.

Table 3-1 York Nonattainment Area Railroad Emissions by Railroad Type (tons/day)

Classification	2010	2013	2016	2019	2022
Railroad NO_x Emissions (Tons Per Day)					
Railroad_diesel_linehaul locomotives Class I	0.2353	0.2492	0.2678	0.2854	0.3045
Railroad_diesel_linehaul locomotives Class II/III	0.0057	0.0060	0.0065	0.0069	0.0073
Railroad Total NO_x	0.2410	0.2552	0.2743	0.2923	0.3119
Railroad VOC Emissions (Tons Per Day)					
Railroad_diesel_linehaul locomotives Class I	0.0132	0.0139	0.0150	0.0160	0.0170
Railroad_diesel_linehaul locomotives Class II/III	0.0002	0.0002	0.0003	0.0003	0.0003
Railroad Total VOC	0.0134	0.0142	0.0152	0.0162	0.0173

Table 3-2 Railroad Emissions for the York Nonattainment Area (tons/day)

Pollutant	2010	2013	2016	2019	2022
VOC	0.013	0.014	0.015	0.016	0.017
NO_x	0.241	0.255	0.274	0.292	0.312

4.0 **Data File**

York County 2010 Run

Written by Nonroad interface at 2/16/2011 6:01:51 PM
This is the options file for the NONROAD program.
The data is separated into "packets" bases on common
information. Each packet is specified by an
identifier and a terminator. Any notes or descriptions
can be placed between the data packets.

9/2005 epa: Add growth & tech years to PERIOD packet
and Counties & Retrofit files to RUNFILES packet.

PERIOD PACKET

This is the packet that defines the period for
which emissions are to be estimated. The order of the
records matter. The selection of certain parameters
will cause some of the record that follow to be ignored.
The order of the records is as follows:

1 - Char 10 - Period type for this simulation.
Valid responses are: ANNUAL, SEASONAL, and MONTHLY
2 - Char 10 - Type of inventory produced.
Valid responses are: TYPICAL DAY and PERIOD TOTAL
3 - Integer - year of episode (4 digit year)
4 - Char 10 - Month of episode (use complete name of month)
5 - Char 10 - Type of day
Valid responses are: WEEKDAY and WEEKEND

/PERIOD/
Period type : Monthly
Summation type : Typical day
Year of episode : 2010
Season of year :
Month of year : July
Weekday or weekend : Weekday
Year of growth calc:
Year of tech sel :
/END/

OPTIONS PACKET

This is the packet that defines some of the user
options that drive the model. Most parameters are
used to make episode specific emission factor
adjustments. The order of the records is fixed.
The order is as follows.

1 - Char 80 - First title on reports
2 - Char 80 - Second title on reports
3 - Real 10 - Fuel RVP of gasoline for this simulation
4 - Real 10 - Oxygen weight percent of gasoline for simulation
5 - Real 10 - Percent sulfur for gasoline
6 - Real 10 - Percent sulfur for diesel
7 - Real 10 - Percent sulfur for LPG/CNG
8 - Real 10 - Minimum daily temperature (deg. F)
9 - Real 10 - maximum daily temperature (deg. F)
10 - Real 10 - Representative average daily temperature (deg. F)
11 - Char 10 - Flag to determine if region is high altitude
Valid responses are: HIGH and LOW
12 - Char 10 - Flag to determine if RFG adjustments are made
Valid responses are: YES and NO

/OPTIONS/
Title 1 : YORK 2010 NONROAD
Title 2 : 2010
Fuel RVP for gas : 8.58
Oxygen Weight % : 2.62
Gas sulfur % : 0.0339
Diesel sulfur % : 0.0165
Marine Dsl sulfur %: 0.0319
CNG/LPG sulfur % : 0.003
Minimum temper. (F): 70.6
Maximum temper. (F): 90.1
Average temper. (F): 80.3
Altitude of region : LOW
EtOH Blend % Mkt : 78.8
EtOH Vol % : 9.5
/END/

REGION PACKET

This is the packet that defines the region for which
emissions are to be estimated.

The first record tells the type of region and
allocation to perform.

Valid responses are:
US TOTAL - emissions are for entire USA without state
breakout.

50STATE - emissions are for all 50 states
and Washington D.C., by state.

STATE - emissions are for a select group of states
and are state-level estimates

COUNTY - emissions are for a select group of counties
and are county level estimates. If necessary,
allocation from state to county will be performed.

SUBCOUNTY - emissions are for the specified sub counties
and are subcounty level estimates. If necessary,
county to subcounty allocation will be performed.

The remaining records define the regions to be included.
The type of data which must be specified depends on the
region level.

US TOTAL - Nothing needs to be specified. The FIPS
code 00000 is used automatically.

50STATE - Nothing needs to be specified. The FIPS
code 00000 is used automatically.

STATE - state FIPS codes

COUNTY - state or county FIPS codes. State FIPS
code means include all counties in the
state.

SUBCOUNTY - county FIPS code and subregion code.

/REGION/
Region Level : COUNTY
York County SC : 45091
/END/

or use -
Region Level : STATE

Michigan : 26000

SOURCE CATEGORY PACKET

This packet is used to tell the model which source
categories are to be processed. It is optional.
If used, only those source categories list will
appear in the output data file. If the packet is
not found, the model will process all source
categories in the population files.

Diesel Only -
:2270000000
:2282020000
:2285002015
Spark Ignition Only -
:2260000000
:2265000000
:2267000000
:2268000000
:2282005010
:2282005015
:2282010005
:2285004015
:2285006015

This is the packet that lists the names of output files
and some of the input data files read by the model. If
a drive:\path\ is not given, the location of the
NONROAD.EXE file itself is assumed. You will probably
want to change the names of the Output and Message files
to match that of the OPTion file, e.g., MICH-97.OPT,
MICH-97.OUT, MICH-97.MSG, and if used MICH-97.AMS.

/RUNFILES/
ALLOC XREF : data\allocate\allocate.xrf
ACTIVITY : data\activity\activity.dat
EXH TECHNOLOGY : data\tech\tech-exh.dat
EVP TECHNOLOGY : data\tech\tech-evp.dat
SEASONALITY : data\season\season.dat
REGIONS : data\season\season.dat
MESSAGE : c:\nonroad\outputs\york2010.msg
OUTPUT DATA : c:\nonroad\outputs\york2010.out

```
EPS2 AMS          :
US COUNTIES FIPS   : data\allocate\fips.dat
RETROFIT          :
/END/

-----------------------------------------------------
This is the packet that defines the equipment population
files read by the model.
-----------------------------------------------------
/POP FILES/
Population File    :c:\nonroad\data\pop\sc.pop
/END/

POPULATION FILE    : c:\nonroad\data\POP\MI.POP


-----------------------------------------------------
This is the packet that defines the growth files
files read by the model.
-----------------------------------------------------
/GROWTH FILES/
National defaults  : data\growth\nation.grw
/END/


/ALLOC FILES/
Air trans. empl.   :c:\nonroad\data\allocate\sc_airtr.alo
Undergrnd coal prod:c:\nonroad\data\allocate\sc_coal.alo
Construction cost  :c:\nonroad\data\allocate\sc_const.alo
Harvested acres    :c:\nonroad\data\allocate\sc_farms.alo
Golf course estab. :c:\nonroad\data\allocate\sc_golf.alo
Wholesale estab.   :c:\nonroad\data\allocate\sc_holsl.alo
Family housing     :c:\nonroad\data\allocate\sc_house.alo
Logging employees  :c:\nonroad\data\allocate\sc_loggn.alo
Landscaping empl.  :c:\nonroad\data\allocate\sc_lscap.alo
Manufacturing empl.:c:\nonroad\data\allocate\sc_mnfg.alo
Oil & gas employees:c:\nonroad\data\allocate\sc_oil.alo
Census population  :c:\nonroad\data\allocate\sc_pop.alo
Allocation File    :c:\nonroad\data\allocate\sc_rail.alo
RV Park establish. :c:\nonroad\data\allocate\sc_rvprk.alo
Snowblowers comm.  :c:\nonroad\data\allocate\sc_sbc.alo
Snowblowers res.   :c:\nonroad\data\allocate\sc_sbr.alo
Snowmobiles        :c:\nonroad\data\allocate\sc_snowm.alo
Rec marine inboard :c:\nonroad\data\allocate\sc_wib.alo
Rec marine outboard:c:\nonroad\data\allocate\sc_wob.alo
/END/
```

```
-----------------------------------------------------
This is the packet that defines the emssions factors
files read by the model.
-----------------------------------------------------
/EMFAC FILES/
THC exhaust        : data\emsfac\exhthc.emf
CO exhaust         : data\emsfac\exhco.emf
NOX exhaust        : data\emsfac\exhnox.emf
PM exhaust         : data\emsfac\exhpm.emf
BSFC               : data\emsfac\bsfc.emf
Crankcase          : data\emsfac\crank.emf
Spillage           : data\emsfac\spillage.emf
Diurnal            : data\emsfac\evdiu.emf
Tank Perm          : data\emsfac\evtank.emf
Non-RM Hose Perm   : data\emsfac\evhose.emf
RM Fill Neck Perm  : data\emsfac\evneck.emf
RM Supply/Return   : data\emsfac\evsupret.emf
RM Vent Perm       : data\emsfac\evvent.emf
Hot Soaks          : data\emsfac\evhotsk.emf
RuningLoss         : data\emsfac\evrunls.emf
/END/

-----------------------------------------------------
This is the packet that defines the deterioration factors
files read by the model.
-----------------------------------------------------
/DETERIORATE FILES/
THC exhaust        : data\detfac\exhthc.det
CO exhaust         : data\detfac\exhco.det
NOX exhaust        : data\detfac\exhnox.det
PM exhaust         : data\detfac\exhpm.det
Diurnal            : data\detfac\evdiu.det
Tank Perm          : data\detfac\evtank.det
Non-RM Hose Perm   : data\detfac\evhose.det
RM Fill Neck Perm  : data\detfac\evneck.det
RM Supply/Return   : data\detfac\evsupret.det
RM Vent Perm       : data\detfac\evvent.det
Hot Soaks          : data\detfac\evhotsk.det
RuningLoss         : data\detfac\evrunls.det
/END/

Optional Packets - Add initial slash "/" to activate

/STAGE II/
Control Factor     : 0.0
/END/
```

```
Enter percent control: 95 = 95% control = 0.05 x uncontrolled
Default should be zero control.

/MODELYEAR OUT/
EXHAUST BMY OUT    :
EVAP BMY OUT       :
/END/

SI REPORT/
SI report file-CSV :OUTPUTS\NRPOLLUT.CSV
/END/

/DAILY FILES/
DAILY TEMPS/RVP    :
/END/

PM Base Sulfur
 cols 1-10: dsl tech type;
 11-20: base sulfur wt%; or '1.0' means no-adjust (cert= in-use)
/PM BASE SULFUR/
T2        0.0350    0.02247
T3        0.2000    0.02247
T3B       0.0500    0.02247
T4A       0.0500    0.02247
T4B       0.0015    0.02247
T4        0.0015    0.30
T4N       0.0015    0.30
T2M       0.0350    0.02247
T3M       1.0       0.02247
T4M       1.0       0.02247
/END/
```

York 2013 Run

```
Written by Nonroad interface at 2/17/2011 1:28:23 PM
This is the options file for the NONROAD program.
The data is sperated into "packets" bases on common
information.  Each packet is specified by an
identifier and a terminator. Any notes or descriptions
can be placed between the data packets.

9/2005 epa: Add growth & tech years to PERIOD packet
  and Counties & Retrofit files to RUNFILES packet.

-------------------------------------------------------
```

PERIOD PACKET

This is the packet that defines the period for
which emissions are to be estimated. The order of the
records matter. The selection of certain parameters
will cause some of the record that follow to be ignored.
The order of the records is as follows:

1 - Char 10 - Period type for this simulation.
Valid responses are: ANNUAL, SEASONAL, and MONTHLY
2 - Char 10 - Type of inventory produced.
Valid responses are: TYPICAL DAY and PERIOD TOTAL
3 - Integer - year of episode (4 digit year)
4 - Char 10 - Month of episode (use complete name of month)
5 - Char 10 - Type of day
Valid responses are: WEEKDAY and WEEKEND

/PERIOD/
Period type : Monthly
Summation type : Typical day
Year of episode : 2013
Season of year :
Month of year : July
Weekday or weekend : Weekday
Year of growth calc:
Year of tech sel :
/END/

OPTIONS PACKET

This is the packet that defines some of the user
options that drive the model. Most parameters are
used to make episode specific emission factor
adjustments. The order of the records is fixed.
The order is as follows.

1 - Char 80 - First title on reports
2 - Char 80 - Second title on reports
3 - Real 10 - Fuel RVP of gasoline for this simulation
4 - Real 10 - Oxygen weight percent of gasoline for simulation
5 - Real 10 - Percent sulfur for gasoline
6 - Real 10 - Percent sulfur for diesel
7 - Real 10 - Percent sulfur for LPG/CNG
8 - Real 10 - Minimum daily temperature (deg. F)

9 - Real 10 - maximum daily temperature (deg. F)
10 - Real 10 - Representative average daily temperature (deg. F)
11 - Char 10 - Flag to determine if region is high altitude
Valid responses are: HIGH and LOW
12 - Char 10 - Flag to determine if RFG adjustments are made
Valid responses are: YES and NO

/OPTIONS/
Title 1 : YORK 2013 NONROAD
Title 2 : 2013
Fuel RVP for gas : 8.7
Oxygen Weight % : 2.62
Gas sulfur % : 0.0339
Diesel sulfur % : 0.0032
Marine Dsl sulfur %: 0.0044
CNG/LPG sulfur % : 0.003
Minimum temper. (F): 70.6
Maximum temper. (F): 90.1
Average temper. (F): 80.3
Altitude of region : LOW
EtOH Blend % Mkt : 78.8
EtOH Vol % : 9.5
/END/

REGION PACKET

This is the packet that defines the region for which emissions are to be estimated.

The first record tells the type of region and allocation to perform.

Valid responses are:
US TOTAL - emissions are for entire USA without state breakout.

50STATE - emissions are for all 50 states and Washington D.C., by state.

STATE - emissions are for a select group of states and are state-level estimates

COUNTY - emissions are for a select group of counties and are county level estimates. If necessary, allocation from state to county will be performed.

SUBCOUNTY - emissions are for the specified sub counties
and are subcounty level estimates. If necessary,
county to subcounty allocation will be performed.

The remaining records define the regions to be included.
The type of data which must be specified depends on the
region level.

US TOTAL - Nothing needs to be specified. The FIPS
code 00000 is used automatically.

50STATE - Nothing needs to be specified. The FIPS
code 00000 is used automatically.

STATE - state FIPS codes

COUNTY - state or county FIPS codes. State FIPS
code means include all counties in the
state.

SUBCOUNTY - county FIPS code and subregion code.

/REGION/
Region Level : COUNTY
York County SC : 45091
/END/

or use -
Region Level : STATE
Michigan : 26000

SOURCE CATEGORY PACKET

This packet is used to tell the model which source
categories are to be processed. It is optional.
If used, only those source categories list will
appear in the output data file. If the packet is
not found, the model will process all source
categories in the population files.

Diesel Only -
:2270000000

```
                :2282020000
                :2285002015
Spark Ignition Only -
                :2260000000
                :2265000000
                :2267000000
                :2268000000
                :2282005010
                :2282005015
                :2282010005
                :2285004015
                :2285006015
-----------------------------------------------------
 This is the packet that lists the names of output files
 and some of the input data files read by the model.  If
 a drive:\path\ is not given, the location of the
 NONROAD.EXE file itself is assumed.  You will probably
 want to change the names of the Output and Message files
 to match that of the OPTion file, e.g., MICH-97.OPT,
 MICH-97.OUT, MICH-97.MSG, and if used MICH-97.AMS.
-----------------------------------------------------
/RUNFILES/
ALLOC XREF        : data\allocate\allocate.xrf
ACTIVITY          : data\activity\activity.dat
EXH TECHNOLOGY    : data\tech\tech-exh.dat
EVP TECHNOLOGY    : data\tech\tech-evp.dat
SEASONALITY       : data\season\season.dat
REGIONS           : data\season\season.dat
MESSAGE           : c:\nonroad\outputs\york2013.msg
OUTPUT DATA       : c:\nonroad\outputs\york2013.out
EPS2 AMS          :
US COUNTIES FIPS  : data\allocate\fips.dat
RETROFIT          :
/END/

-----------------------------------------------------
This is the packet that defines the equipment population
files read by the model.
-----------------------------------------------------
/POP FILES/
Population File   : c:\nonroad\data\pop\sc.pop
/END/

POPULATION FILE   : c:\nonroad\data\POP\MI.POP
```

```
-----------------------------------------------------
This is the packet that defines the growth files
files read by the model.
-----------------------------------------------------
/GROWTH FILES/
National defaults  : data\growth\nation.grw
/END/


/ALLOC FILES/
Air trans. empl.   :c:\nonroad\data\allocate\sc_airtr.alo
Undergrnd coal prod:c:\nonroad\data\allocate\sc_coal.alo
Construction cost  :c:\nonroad\data\allocate\sc_const.alo
Harvested acres    :c:\nonroad\data\allocate\sc_farms.alo
Golf course estab. :c:\nonroad\data\allocate\sc_golf.alo
Wholesale estab.   :c:\nonroad\data\allocate\sc_holsl.alo
Family housing     :c:\nonroad\data\allocate\sc_house.alo
Logging employees  :c:\nonroad\data\allocate\sc_loggn.alo
Landscaping empl.  :c:\nonroad\data\allocate\sc_lscap.alo
Manufacturing empl.:c:\nonroad\data\allocate\sc_mnfg.alo
Oil & gas employees:c:\nonroad\data\allocate\sc_oil.alo
Census population  :c:\nonroad\data\allocate\sc_pop.alo
Allocation File    :c:\nonroad\data\allocate\sc_rail.alo
RV Park establish. :c:\nonroad\data\allocate\sc_rvprk.alo
Snowblowers comm.  :c:\nonroad\data\allocate\sc_sbc.alo
Snowblowers res.   :c:\nonroad\data\allocate\sc_sbr.alo
Snowmobiles        :c:\nonroad\data\allocate\sc_snowm.alo
Rec marine inboard :c:\nonroad\data\allocate\sc_wib.alo
Rec marine outboard:c:\nonroad\data\allocate\sc_wob.alo
/END/
-----------------------------------------------------
This is the packet that defines the emssions factors
files read by the model.
-----------------------------------------------------
/EMFAC FILES/
THC exhaust        : data\emsfac\exhthc.emf
CO exhaust         : data\emsfac\exhco.emf
NOX exhaust        : data\emsfac\exhnox.emf
PM exhaust         : data\emsfac\exhpm.emf
BSFC               : data\emsfac\bsfc.emf
Crankcase          : data\emsfac\crank.emf
Spillage           : data\emsfac\spillage.emf
Diurnal            : data\emsfac\evdiu.emf
Tank Perm          : data\emsfac\evtank.emf
Non-RM Hose Perm   : data\emsfac\evhose.emf
RM Fill Neck Perm  : data\emsfac\evneck.emf
```

RM Supply/Return : data\emsfac\evsupret.emf
RM Vent Perm : data\emsfac\evvent.emf
Hot Soaks : data\emsfac\evhotsk.emf
RuningLoss : data\emsfac\evrunls.emf
/END/

This is the packet that defines the deterioration factors
files read by the model.

/DETERIORATE FILES/
THC exhaust : data\detfac\exhthc.det
CO exhaust : data\detfac\exhco.det
NOX exhaust : data\detfac\exhnox.det
PM exhaust : data\detfac\exhpm.det
Diurnal : data\detfac\evdiu.det
Tank Perm : data\detfac\evtank.det
Non-RM Hose Perm : data\detfac\evhose.det
RM Fill Neck Perm : data\detfac\evneck.det
RM Supply/Return : data\detfac\evsupret.det
RM Vent Perm : data\detfac\evvent.det
Hot Soaks : data\detfac\evhotsk.det
RuningLoss : data\detfac\evrunls.det
/END/

Optional Packets - Add initial slash "/" to activate

/STAGE II/
Control Factor : 0.0
/END/
Enter percent control: 95 = 95% control = 0.05 x uncontrolled
Default should be zero control.

/MODELYEAR OUT/
EXHAUST BMY OUT :
EVAP BMY OUT :
/END/

SI REPORT/
SI report file-CSV :OUTPUTS\NRPOLLUT.CSV
/END/

/DAILY FILES/
DAILY TEMPS/RVP :
/END/

PM Base Sulfur
 cols 1-10: dsl tech type;
 11-20: base sulfur wt%; or '1.0' means no-adjust (cert= in-use)
/PM BASE SULFUR/
T2 0.0350 0.02247
T3 0.2000 0.02247
T3B 0.0500 0.02247
T4A 0.0500 0.02247
T4B 0.0015 0.02247
T4 0.0015 0.30
T4N 0.0015 0.30
T2M 0.0350 0.02247
T3M 1.0 0.02247
T4M 1.0 0.02247
/END/

York 2016 Run

Written by Nonroad interface at 2/17/2011 1:32:24 PM
This is the options file for the NONROAD program.
The data is sperated into "packets" bases on common
information. Each packet is specified by an
identifier and a terminator. Any notes or descriptions
can be placed between the data packets.

9/2005 epa: Add growth & tech years to PERIOD packet
 and Counties & Retrofit files to RUNFILES packet.

PERIOD PACKET

This is the packet that defines the period for
which emissions are to be estimated. The order of the
records matter. The selection of certain parameters
will cause some of the record that follow to be ignored.
The order of the records is as follows:

1 - Char 10 - Period type for this simulation.
Valid responses are: ANNUAL, SEASONAL, and MONTHLY
2 - Char 10 - Type of inventory produced.
Valid responses are: TYPICAL DAY and PERIOD TOTAL
3 - Integer - year of episode (4 digit year)
4 - Char 10 - Month of episode (use complete name of month)
5 - Char 10 - Type of day
Valid responses are: WEEKDAY and WEEKEND

/PERIOD/
Period type : Monthly
Summation type : Typical day
Year of episode : 2016
Season of year :
Month of year : July
Weekday or weekend : Weekday
Year of growth calc:
Year of tech sel :
/END/

OPTIONS PACKET

This is the packet that defines some of the user
options that drive the model. Most parameters are
used to make episode specific emission factor
adjustments. The order of the records is fixed.
The order is as follows.

1 - Char 80 - First title on reports
2 - Char 80 - Second title on reports
3 - Real 10 - Fuel RVP of gasoline for this simulation
4 - Real 10 - Oxygen weight percent of gasoline for simulation
5 - Real 10 - Percent sulfur for gasoline
6 - Real 10 - Percent sulfur for diesel
7 - Real 10 - Percent sulfur for LPG/CNG
8 - Real 10 - Minimum daily temperature (deg. F)
9 - Real 10 - maximum daily temperature (deg. F)
10 - Real 10 - Representative average daily temperature (deg. F)
11 - Char 10 - Flag to determine if region is high altitude
Valid responses are: HIGH and LOW
12 - Char 10 - Flag to determine if RFG adjustments are made
Valid responses are: YES and NO

/OPTIONS/
Title 1 : YORK 2016 NONROAD
Title 2 : 2016
Fuel RVP for gas : 8.7
Oxygen Weight % : 2.62
Gas sulfur % : 0.0339
Diesel sulfur % : 0.0011
Marine Dsl sulfur %: 0.0056
CNG/LPG sulfur % : 0.003

Minimum temper. (F): 70.6
Maximum temper. (F): 90.1
Average temper. (F): 80.3
Altitude of region : LOW
EtOH Blend % Mkt : 78.8
EtOH Vol % : 9.5
/END/

REGION PACKET

This is the packet that defines the region for which emissions are to be estimated.

The first record tells the type of region and allocation to perform.

Valid responses are:

US TOTAL - emissions are for entire USA without state breakout.

50STATE - emissions are for all 50 states and Washington D.C., by state.

STATE - emissions are for a select group of states and are state-level estimates

COUNTY - emissions are for a select group of counties and are county level estimates. If necessary, allocation from state to county will be performed.

SUBCOUNTY - emissions are for the specified sub counties and are subcounty level estimates. If necessary, county to subcounty allocation will be performed.

The remaining records define the regions to be included. The type of data which must be specified depends on the region level.

US TOTAL - Nothing needs to be specified. The FIPS code 00000 is used automatically.

50STATE - Nothing needs to be specified. The FIPS code 00000 is used automatically.

STATE - state FIPS codes

COUNTY - state or county FIPS codes. State FIPS code means include all counties in the state.

SUBCOUNTY - county FIPS code and subregion code.

/REGION/
Region Level : COUNTY
York County SC : 45091
/END/

or use -
Region Level : STATE
Michigan : 26000

SOURCE CATEGORY PACKET

This packet is used to tell the model which source categories are to be processed. It is optional. If used, only those source categories list will appear in the output data file. If the packet is not found, the model will process all source categories in the population files.

Diesel Only -
:2270000000
:2282020000
:2285002015
Spark Ignition Only -
:2260000000
:2265000000
:2267000000
:2268000000
:2282005010
:2282005015
:2282010005
:2285004015
:2285006015

This is the packet that lists the names of output files and some of the input data files read by the model. If a drive:\path\ is not given, the location of the

NONROAD.EXE file itself is assumed. You will probably
want to change the names of the Output and Message files
to match that of the OPTion file, e.g., MICH-97.OPT,
MICH-97.OUT, MICH-97.MSG, and if used MICH-97.AMS.

/RUNFILES/
ALLOC XREF : data\allocate\allocate.xrf
ACTIVITY : data\activity\activity.dat
EXH TECHNOLOGY : data\tech\tech-exh.dat
EVP TECHNOLOGY : data\tech\tech-evp.dat
SEASONALITY : data\season\season.dat
REGIONS : data\season\season.dat
MESSAGE : c:\nonroad\outputs\york2016.msg
OUTPUT DATA : c:\nonroad\outputs\york2016.out
EPS2 AMS :
US COUNTIES FIPS : data\allocate\fips.dat
RETROFIT :
/END/

This is the packet that defines the equipment population
files read by the model.

/POP FILES/
Population File : c:\nonroad\data\pop\sc.pop
/END/

POPULATION FILE : c:\nonroad\data\POP\MI.POP

This is the packet that defines the growth files
files read by the model.

/GROWTH FILES/
National defaults : data\growth\nation.grw
/END/

/ALLOC FILES/
Air trans. empl. :c:\nonroad\data\allocate\sc_airtr.alo
Undergrnd coal prod:c:\nonroad\data\allocate\sc_coal.alo
Construction cost :c:\nonroad\data\allocate\sc_const.alo
Harvested acres :c:\nonroad\data\allocate\sc_farms.alo
Golf course estab. :c:\nonroad\data\allocate\sc_golf.alo
Wholesale estab. :c:\nonroad\data\allocate\sc_holsl.alo

Family housing :c:\nonroad\data\allocate\sc_house.alo
Logging employees :c:\nonroad\data\allocate\sc_loggn.alo
Landscaping empl. :c:\nonroad\data\allocate\sc_lscap.alo
Manufacturing empl.:c:\nonroad\data\allocate\sc_mnfg.alo
Oil & gas employees:c:\nonroad\data\allocate\sc_oil.alo
Census population :c:\nonroad\data\allocate\sc_pop.alo
Allocation File :c:\nonroad\data\allocate\sc_rail.alo
RV Park establish. :c:\nonroad\data\allocate\sc_rvprk.alo
Snowblowers comm. :c:\nonroad\data\allocate\sc_sbc.alo
Snowblowers res. :c:\nonroad\data\allocate\sc_sbr.alo
Snowmobiles :c:\nonroad\data\allocate\sc_snowm.alo
Rec marine inboard :c:\nonroad\data\allocate\sc_wib.alo
Rec marine outboard:c:\nonroad\data\allocate\sc_wob.alo
/END/

This is the packet that defines the emssions factors
files read by the model.

/EMFAC FILES/
THC exhaust : data\emsfac\exhthc.emf
CO exhaust : data\emsfac\exhco.emf
NOX exhaust : data\emsfac\exhnox.emf
PM exhaust : data\emsfac\exhpm.emf
BSFC : data\emsfac\bsfc.emf
Crankcase : data\emsfac\crank.emf
Spillage : data\emsfac\spillage.emf
Diurnal : data\emsfac\evdiu.emf
Tank Perm : data\emsfac\evtank.emf
Non-RM Hose Perm : data\emsfac\evhose.emf
RM Fill Neck Perm : data\emsfac\evneck.emf
RM Supply/Return : data\emsfac\evsupret.emf
RM Vent Perm : data\emsfac\evvent.emf
Hot Soaks : data\emsfac\evhotsk.emf
RuningLoss : data\emsfac\evrunls.emf
/END/

This is the packet that defines the deterioration factors
files read by the model.

/DETERIORATE FILES/
THC exhaust : data\detfac\exhthc.det
CO exhaust : data\detfac\exhco.det
NOX exhaust : data\detfac\exhnox.det
PM exhaust : data\detfac\exhpm.det
Diurnal : data\detfac\evdiu.det

```
Tank Perm          : data\detfac\evtank.det
Non-RM Hose Perm   : data\detfac\evhose.det
RM Fill Neck Perm  : data\detfac\evneck.det
RM Supply/Return   : data\detfac\evsupret.det
RM Vent Perm       : data\detfac\evvent.det
Hot Soaks          : data\detfac\evhotsk.det
RuningLoss         : data\detfac\evrunls.det
/END/
```

Optional Packets - Add initial slash "/" to activate

```
/STAGE II/
Control Factor     : 0.0
/END/
```

Enter percent control: 95 = 95% control = 0.05 x uncontrolled
Default should be zero control.

```
/MODELYEAR OUT/
EXHAUST BMY OUT    :
EVAP BMY OUT       :
/END/

SI REPORT/
SI report file-CSV :OUTPUTS\NRPOLLUT.CSV
/END/

/DAILY FILES/
DAILY TEMPS/RVP    :
/END/
```

PM Base Sulfur
cols 1-10: dsl tech type;
11-20: base sulfur wt%; or '1.0' means no-adjust (cert= in-use)

```
/PM BASE SULFUR/
T2        0.0350    0.02247
T3        0.2000    0.02247
T3B       0.0500    0.02247
T4A       0.0500    0.02247
T4B       0.0015    0.02247
T4        0.0015    0.30
T4N       0.0015    0.30
T2M       0.0350    0.02247
T3M       1.0       0.02247
T4M       1.0       0.02247
/END/
```

York 2019 Run

Written by Nonroad interface at 2/17/2011 1:35:26 PM
This is the options file for the NONROAD program.
The data is sperated into "packets" bases on common
information. Each packet is specified by an
identifier and a terminator. Any notes or descriptions
can be placed between the data packets.

9/2005 epa: Add growth & tech years to PERIOD packet
and Counties & Retrofit files to RUNFILES packet.

PERIOD PACKET

This is the packet that defines the period for
which emissions are to be estimated. The order of the
records matter. The selection of certain parameters
will cause some of the record that follow to be ignored.
The order of the records is as follows:

1 - Char 10 - Period type for this simulation.
Valid responses are: ANNUAL, SEASONAL, and MONTHLY
2 - Char 10 - Type of inventory produced.
Valid responses are: TYPICAL DAY and PERIOD TOTAL
3 - Integer - year of episode (4 digit year)
4 - Char 10 - Month of episode (use complete name of month)
5 - Char 10 - Type of day
Valid responses are: WEEKDAY and WEEKEND

/PERIOD/
Period type : Monthly
Summation type : Typical day
Year of episode : 2019
Season of year :
Month of year : July
Weekday or weekend : Weekday
Year of growth calc:
Year of tech sel :
/END/

OPTIONS PACKET

This is the packet that defines some of the user options that drive the model. Most parameters are used to make episode specific emission factor adjustments. The order of the records is fixed. The order is as follows.

1 - Char 80 - First title on reports
2 - Char 80 - Second title on reports
3 - Real 10 - Fuel RVP of gasoline for this simulation
4 - Real 10 - Oxygen weight percent of gasoline for simulation
5 - Real 10 - Percent sulfur for gasoline
6 - Real 10 - Percent sulfur for diesel
7 - Real 10 - Percent sulfur for LPG/CNG
8 - Real 10 - Minimum daily temperature (deg. F)
9 - Real 10 - maximum daily temperature (deg. F)
10 - Real 10 - Representative average daily temperature (deg. F)
11 - Char 10 - Flag to determine if region is high altitude
Valid responses are: HIGH and LOW
12 - Char 10 - Flag to determine if RFG adjustments are made
Valid responses are: YES and NO

/OPTIONS/
Title 1 : YORK 2019 NONROAD
Title 2 : 2019
Fuel RVP for gas : 8.7
Oxygen Weight % : 2.62
Gas sulfur % : 0.0339
Diesel sulfur % : 0.0011
Marine Dsl sulfur %: 0.0055
CNG/LPG sulfur % : 0.003
Minimum temper. (F): 70.6
Maximum temper. (F): 90.1
Average temper. (F): 80.3
Altitude of region : LOW
EtOH Blend % Mkt : 78.8
EtOH Vol % : 9.5
/END/

REGION PACKET

This is the packet that defines the region for which emissions are to be estimated.

The first record tells the type of region and allocation to perform.

Valid responses are:
US TOTAL - emissions are for entire USA without state breakout.

50STATE - emissions are for all 50 states and Washington D.C., by state.

STATE - emissions are for a select group of states and are state-level estimates

COUNTY - emissions are for a select group of counties and are county level estimates. If necessary, allocation from state to county will be performed.

SUBCOUNTY - emissions are for the specified sub counties and are subcounty level estimates. If necessary, county to subcounty allocation will be performed.

The remaining records define the regions to be included. The type of data which must be specified depends on the region level.

US TOTAL - Nothing needs to be specified. The FIPS code 00000 is used automatically.

50STATE - Nothing needs to be specified. The FIPS code 00000 is used automatically.

STATE - state FIPS codes

COUNTY - state or county FIPS codes. State FIPS code means include all counties in the state.

SUBCOUNTY - county FIPS code and subregion code.

```
-----------------------------------------------------
/REGION/
Region Level      : COUNTY
York County SC    : 45091
/END/

or use -
Region Level      : STATE
Michigan          : 26000
-----------------------------------------------------
```

SOURCE CATEGORY PACKET

This packet is used to tell the model which source
categories are to be processed. It is optional.
If used, only those source categories list will
appear in the output data file. If the packet is
not found, the model will process all source
categories in the population files.

Diesel Only -
:2270000000
:2282020000
:2285002015
Spark Ignition Only -
:2260000000
:2265000000
:2267000000
:2268000000
:2282005010
:2282005015
:2282010005
:2285004015
:2285006015

This is the packet that lists the names of output files
and some of the input data files read by the model. If
a drive:\path\ is not given, the location of the
NONROAD.EXE file itself is assumed. You will probably
want to change the names of the Output and Message files
to match that of the OPTion file, e.g., MICH-97.OPT,
MICH-97.OUT, MICH-97.MSG, and if used MICH-97.AMS.

/RUNFILES/
ALLOC XREF : data\allocate\allocate.xrf
ACTIVITY : data\activity\activity.dat
EXH TECHNOLOGY : data\tech\tech-exh.dat
EVP TECHNOLOGY : data\tech\tech-evp.dat
SEASONALITY : data\season\season.dat
REGIONS : data\season\season.dat
MESSAGE : c:\nonroad\outputs\york2019.msg
OUTPUT DATA : c:\nonroad\outputs\york2019.out
EPS2 AMS :
US COUNTIES FIPS : data\allocate\fips.dat

```
RETROFIT          :
/END/

-----------------------------------------------------
This is the packet that defines the equipment population
files read by the model.
-----------------------------------------------------
/POP FILES/
Population File    : c:\nonroad\data\pop\sc.pop
/END/

POPULATION FILE    : c:\nonroad\data\POP\MI.POP


-----------------------------------------------------
This is the packet that defines the growth files
files read by the model.
-----------------------------------------------------
/GROWTH FILES/
National defaults  : data\growth\nation.grw
/END/


/ALLOC FILES/
Air trans. empl.   :c:\nonroad\data\allocate\sc_airtr.alo
Undergrnd coal prod:c:\nonroad\data\allocate\sc_coal.alo
Construction cost  :c:\nonroad\data\allocate\sc_const.alo
Harvested acres    :c:\nonroad\data\allocate\sc_farms.alo
Golf course estab. :c:\nonroad\data\allocate\sc_golf.alo
Wholesale estab.   :c:\nonroad\data\allocate\sc_holsl.alo
Family housing     :c:\nonroad\data\allocate\sc_house.alo
Logging employees  :c:\nonroad\data\allocate\sc_loggn.alo
Landscaping empl.  :c:\nonroad\data\allocate\sc_lscap.alo
Manufacturing empl.:c:\nonroad\data\allocate\sc_mnfg.alo
Oil & gas employees:c:\nonroad\data\allocate\sc_oil.alo
Census population  :c:\nonroad\data\allocate\sc_pop.alo
Allocation File    :c:\nonroad\data\allocate\sc_rail.alo
RV Park establish. :c:\nonroad\data\allocate\sc_rvprk.alo
Snowblowers comm.  :c:\nonroad\data\allocate\sc_sbc.alo
Snowblowers res.   :c:\nonroad\data\allocate\sc_sbr.alo
Snowmobiles        :c:\nonroad\data\allocate\sc_snowm.alo
Rec marine inboard :c:\nonroad\data\allocate\sc_wib.alo
Rec marine outboard:c:\nonroad\data\allocate\sc_wob.alo
/END/
-----------------------------------------------------
This is the packet that defines the emssions factors
```

files read by the model.

/EMFAC FILES/
THC exhaust : data\emsfac\exhthc.emf
CO exhaust : data\emsfac\exhco.emf
NOX exhaust : data\emsfac\exhnox.emf
PM exhaust : data\emsfac\exhpm.emf
BSFC : data\emsfac\bsfc.emf
Crankcase : data\emsfac\crank.emf
Spillage : data\emsfac\spillage.emf
Diurnal : data\emsfac\evdiu.emf
Tank Perm : data\emsfac\evtank.emf
Non-RM Hose Perm : data\emsfac\evhose.emf
RM Fill Neck Perm : data\emsfac\evneck.emf
RM Supply/Return : data\emsfac\evsupret.emf
RM Vent Perm : data\emsfac\evvent.emf
Hot Soaks : data\emsfac\evhotsk.emf
RuningLoss : data\emsfac\evrunls.emf
/END/

This is the packet that defines the deterioration factors
files read by the model.

/DETERIORATE FILES/
THC exhaust : data\detfac\exhthc.det
CO exhaust : data\detfac\exhco.det
NOX exhaust : data\detfac\exhnox.det
PM exhaust : data\detfac\exhpm.det
Diurnal : data\detfac\evdiu.det
Tank Perm : data\detfac\evtank.det
Non-RM Hose Perm : data\detfac\evhose.det
RM Fill Neck Perm : data\detfac\evneck.det
RM Supply/Return : data\detfac\evsupret.det
RM Vent Perm : data\detfac\evvent.det
Hot Soaks : data\detfac\evhotsk.det
RuningLoss : data\detfac\evrunls.det
/END/

Optional Packets - Add initial slash "/" to activate

/STAGE II/
Control Factor : 0.0
/END/
Enter percent control: 95 = 95% control = 0.05 x uncontrolled
Default should be zero control.

```
/MODELYEAR OUT/
EXHAUST BMY OUT    :
EVAP BMY OUT       :
/END/

SI REPORT/
SI report file-CSV :OUTPUTS\NRPOLLUT.CSV
/END/

/DAILY FILES/
DAILY TEMPS/RVP    :
/END/

PM Base Sulfur
 cols 1-10: dsl tech type;
 11-20: base sulfur wt%; or '1.0' means no-adjust (cert= in-use)
/PM BASE SULFUR/
T2        0.0350    0.02247
T3        0.2000    0.02247
T3B       0.0500    0.02247
T4A       0.0500    0.02247
T4B       0.0015    0.02247
T4        0.0015    0.30
T4N       0.0015    0.30
T2M       0.0350    0.02247
T3M       1.0       0.02247
T4M       1.0       0.02247
/END/
```

York 2022 Run

```
Written by Nonroad interface at 2/17/2011 1:38:24 PM
This is the options file for the NONROAD program.
The data is sperated into "packets" bases on common
information.  Each packet is specified by an
identifier and a terminator. Any notes or descriptions
can be placed between the data packets.

9/2005 epa: Add growth & tech years to PERIOD packet
  and Counties & Retrofit files to RUNFILES packet.

-----------------------------------------------------

                PERIOD PACKET
```

This is the packet that defines the period for
which emissions are to be estimated. The order of the
records matter. The selection of certain parameters
will cause some of the record that follow to be ignored.
The order of the records is as follows:

1 - Char 10 - Period type for this simulation.
Valid responses are: ANNUAL, SEASONAL, and MONTHLY
2 - Char 10 - Type of inventory produced.
Valid responses are: TYPICAL DAY and PERIOD TOTAL
3 - Integer - year of episode (4 digit year)
4 - Char 10 - Month of episode (use complete name of month)
5 - Char 10 - Type of day
Valid responses are: WEEKDAY and WEEKEND

/PERIOD/
Period type : Monthly
Summation type : Typical day
Year of episode : 2022
Season of year :
Month of year : July
Weekday or weekend : Weekday
Year of growth calc:
Year of tech sel :
/END/

OPTIONS PACKET

This is the packet that defines some of the user
options that drive the model. Most parameters are
used to make episode specific emission factor
adjustments. The order of the records is fixed.
The order is as follows.

1 - Char 80 - First title on reports
2 - Char 80 - Second title on reports
3 - Real 10 - Fuel RVP of gasoline for this simulation
4 - Real 10 - Oxygen weight percent of gasoline for simulation
5 - Real 10 - Percent sulfur for gasoline
6 - Real 10 - Percent sulfur for diesel
7 - Real 10 - Percent sulfur for LPG/CNG
8 - Real 10 - Minimum daily temperature (deg. F)
9 - Real 10 - maximum daily temperature (deg. F)
10 - Real 10 - Representative average daily temperature (deg. F)

11 - Char 10 - Flag to determine if region is high altitude
Valid responses are: HIGH and LOW
12 - Char 10 - Flag to determine if RFG adjustments are made
Valid responses are: YES and NO

/OPTIONS/
Title 1 : YORK 2022 NONROAD
Title 2 : 2022
Fuel RVP for gas : 8.7
Oxygen Weight % : 2.62
Gas sulfur % : 0.0339
Diesel sulfur % : 0.0011
Marine Dsl sulfur %: 0.0055
CNG/LPG sulfur % : 0.003
Minimum temper. (F): 70.6
Maximum temper. (F): 90.1
Average temper. (F): 80.3
Altitude of region : LOW
EtOH Blend % Mkt : 78.8
EtOH Vol % : 9.5
/END/

REGION PACKET

This is the packet that defines the region for which
emissions are to be estimated.

The first record tells the type of region and
allocation to perform.

Valid responses are:
US TOTAL - emissions are for entire USA without state
breakout.

50STATE - emissions are for all 50 states
and Washington D.C., by state.

STATE - emissions are for a select group of states
and are state-level estimates

COUNTY - emissions are for a select group of counties
and are county level estimates. If necessary,
allocation from state to county will be performed.

SUBCOUNTY - emissions are for the specified sub counties

and are subcounty level estimates. If necessary, county to subcounty allocation will be performed.

The remaining records define the regions to be included. The type of data which must be specified depends on the region level.

US TOTAL - Nothing needs to be specified. The FIPS code 00000 is used automatically.

50STATE - Nothing needs to be specified. The FIPS code 00000 is used automatically.

STATE - state FIPS codes

COUNTY - state or county FIPS codes. State FIPS code means include all counties in the state.

SUBCOUNTY - county FIPS code and subregion code.

/REGION/
Region Level : COUNTY
York County SC : 45091
/END/

or use -
Region Level : STATE
Michigan : 26000

SOURCE CATEGORY PACKET

This packet is used to tell the model which source categories are to be processed. It is optional. If used, only those source categories list will appear in the output data file. If the packet is not found, the model will process all source categories in the population files.

Diesel Only -
:2270000000
:2282020000
:2285002015

Spark Ignition Only -
:2260000000
:2265000000
:2267000000
:2268000000
:2282005010
:2282005015
:2282010005
:2285004015
:2285006015

This is the packet that lists the names of output files
and some of the input data files read by the model. If
a drive:\path\ is not given, the location of the
NONROAD.EXE file itself is assumed. You will probably
want to change the names of the Output and Message files
to match that of the OPTion file, e.g., MICH-97.OPT,
MICH-97.OUT, MICH-97.MSG, and if used MICH-97.AMS.

/RUNFILES/
ALLOC XREF : data\allocate\allocate.xrf
ACTIVITY : data\activity\activity.dat
EXH TECHNOLOGY : data\tech\tech-exh.dat
EVP TECHNOLOGY : data\tech\tech-evp.dat
SEASONALITY : data\season\season.dat
REGIONS : data\season\season.dat
MESSAGE : c:\nonroad\outputs\york2022.msg
OUTPUT DATA : c:\nonroad\outputs\york2022.out
EPS2 AMS :
US COUNTIES FIPS : data\allocate\fips.dat
RETROFIT :
/END/

This is the packet that defines the equipment population
files read by the model.

/POP FILES/
Population File : c:\nonroad\data\pop\sc.pop
/END/

POPULATION FILE : c:\nonroad\data\POP\MI.POP

This is the packet that defines the growth files

files read by the model.

/GROWTH FILES/
National defaults : data\growth\nation.grw
/END/

/ALLOC FILES/
Air trans. empl. :c:\nonroad\data\allocate\sc_airtr.alo
Undergrnd coal prod:c:\nonroad\data\allocate\sc_coal.alo
Construction cost :c:\nonroad\data\allocate\sc_const.alo
Harvested acres :c:\nonroad\data\allocate\sc_farms.alo
Golf course estab. :c:\nonroad\data\allocate\sc_golf.alo
Wholesale estab. :c:\nonroad\data\allocate\sc_holsl.alo
Family housing :c:\nonroad\data\allocate\sc_house.alo
Logging employees :c:\nonroad\data\allocate\sc_loggn.alo
Landscaping empl. :c:\nonroad\data\allocate\sc_lscap.alo
Manufacturing empl.:c:\nonroad\data\allocate\sc_mnfg.alo
Oil & gas employees:c:\nonroad\data\allocate\sc_oil.alo
Census population :c:\nonroad\data\allocate\sc_pop.alo
Allocation File :c:\nonroad\data\allocate\sc_rail.alo
RV Park establish. :c:\nonroad\data\allocate\sc_rvprk.alo
Snowblowers comm. :c:\nonroad\data\allocate\sc_sbc.alo
Snowblowers res. :c:\nonroad\data\allocate\sc_sbr.alo
Snowmobiles :c:\nonroad\data\allocate\sc_snowm.alo
Rec marine inboard :c:\nonroad\data\allocate\sc_wib.alo
Rec marine outboard:c:\nonroad\data\allocate\sc_wob.alo
/END/

This is the packet that defines the emssions factors
files read by the model.

/EMFAC FILES/
THC exhaust : data\emsfac\exhthc.emf
CO exhaust : data\emsfac\exhco.emf
NOX exhaust : data\emsfac\exhnox.emf
PM exhaust : data\emsfac\exhpm.emf
BSFC : data\emsfac\bsfc.emf
Crankcase : data\emsfac\crank.emf
Spillage : data\emsfac\spillage.emf
Diurnal : data\emsfac\evdiu.emf
Tank Perm : data\emsfac\evtank.emf
Non-RM Hose Perm : data\emsfac\evhose.emf
RM Fill Neck Perm : data\emsfac\evneck.emf
RM Supply/Return : data\emsfac\evsupret.emf
RM Vent Perm : data\emsfac\evvent.emf

```
Hot Soaks          : data\emsfac\evhotsk.emf
RuningLoss         : data\emsfac\evrunls.emf
/END/

-----------------------------------------------------
This is the packet that defines the deterioration factors
files read by the model.
-----------------------------------------------------
/DETERIORATE FILES/
THC exhaust        : data\detfac\exhthc.det
CO exhaust         : data\detfac\exhco.det
NOX exhaust        : data\detfac\exhnox.det
PM exhaust         : data\detfac\exhpm.det
Diurnal            : data\detfac\evdiu.det
Tank Perm          : data\detfac\evtank.det
Non-RM Hose Perm   : data\detfac\evhose.det
RM Fill Neck Perm  : data\detfac\evneck.det
RM Supply/Return   : data\detfac\evsupret.det
RM Vent Perm       : data\detfac\evvent.det
Hot Soaks          : data\detfac\evhotsk.det
RuningLoss         : data\detfac\evrunls.det
/END/

Optional Packets - Add initial slash "/" to activate

/STAGE II/
Control Factor     : 0.0
/END/
Enter percent control: 95 = 95% control = 0.05 x uncontrolled
Default should be zero control.

/MODELYEAR OUT/
EXHAUST BMY OUT    :
EVAP BMY OUT       :
/END/

SI REPORT/
SI report file-CSV :OUTPUTS\NRPOLLUT.CSV
/END/

/DAILY FILES/
DAILY TEMPS/RVP    :
/END/

PM Base Sulfur
 cols 1-10: dsl tech type;
```

```
 11-20: base sulfur wt%; or '1.0' means no-adjust (cert= in-use)
/PM BASE SULFUR/
T2        0.0350    0.02247
T3        0.2000    0.02247
T3B       0.0500    0.02247
T4A       0.0500    0.02247
T4B       0.0015    0.02247
T4        0.0015    0.30
T4N       0.0015    0.30
T2M       0.0350    0.02247
T3M       1.0       0.02247
T4M       1.0       0.02247
/END/
```