



**QUALITY ASSURANCE
PROJECT PLAN
(FCEAP NEI QAPP)**

**ENVIRONMENTAL PROTECTION AGENCY
NATIONAL EMISSIONS INVENTORY (NEI)
EMISSIONS REPORTING**

Revised: 3/1/2016

SUBMITTED BY

**FORSYTH COUNTY OFFICE OF ENVIRONMENTAL
ASSISTANCE AND PROTECTION
A NORTH CAROLINA LOCAL PROGRAM**

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SECTION A – PROJECT MANAGEMENT

<i>QAPP Name: FCEAP NEI QAPP</i>	
Section:	A1
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A1. TITLE AND APPROVAL SHEET

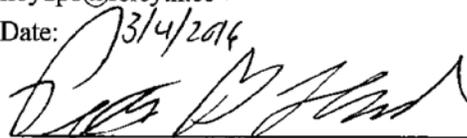
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A3. DISTRIBUTION LIST

Below is the list of all individuals and their organizations designed to receive the QAPP and any subsequent revisions. Paper copies will not be provided where equivalent access to an electronic copy is provided.

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- CAP Staff (Case Managers (CMs)) – Margie Ader, Amro Ali, Xiangjun Li, Paul Martin, and Rob Russ
- Administrative Staff – Joy Roach, Valerie Shores

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A4. PROJECT/TASK ORGANIZATION

The collection of emissions inventory data from Forsyth County point sources and its submission to U.S. EPA primarily involves two divisions of the Forsyth County Office of Environmental Assistance and Protection (FCEAP): the Compliance Assistance and Permitting (CAP) Division, and the Logistics and Support Services (LASS) Division. The Director of the Office of Environmental Assistance and Protection provides general oversight. Following are the services and listing of staff resources that are directly or indirectly involved with the collection and submission of emissions inventories in Forsyth County (**See Appendix A for organizational chart related to the Emissions Inventory**):

- 1) **Compliance Assistance and Permitting Division (CAP)** – The CAP staff, noted henceforth as “CMs” (Case Managers), is directly responsible for the substantive review of the inventory submittals from Forsyth County’s permitted facilities. Once the CM reviews an inventory, the data is manually entered to the Office’s in-house database unless the data was submitted in electronic form. The CAP Program Manager oversees the process of inventory review and coordinates with the EI QA manager to assure that data submittal, data entry, and QA demands meet submission timelines with the highest quality data possible. The staff of CAP consists of the following:
 - a) Program Manager (EI Project Manager) (1 FTE¹)
 - b) Assistant Program Manager (1 FTE)
 - c) 4 Senior Environmental Specialists (3 FTE + .75 FTE) and 1 Environmental Specialist (total - 4.75 FTEs)

¹FTE = Full Time Equivalent @ 40 hours/week – this allocation is for all duties performed in CAP and not specific to NEI duties

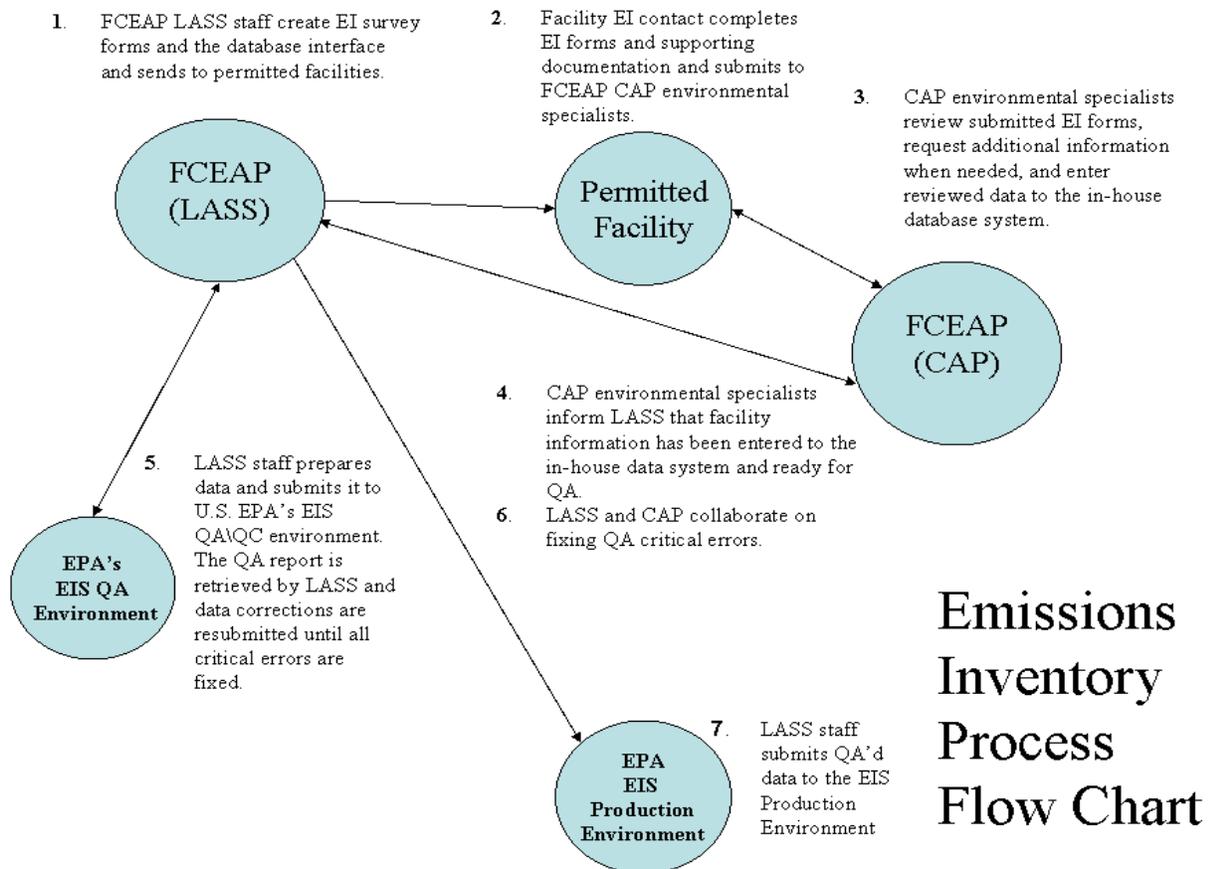
- 2) **Logistics and Support Services Division (LASS)** – The LASS staff are responsible for developing the EI survey forms, mailings, creating/maintaining the in-house data entry interface, QA/QC of the data to meet EPA’s EI system requirements, assisting CAP staff with data corrections, and final submission of the data to EPA through the EIS Gateway. LASS coordinates its activities and decisions with the EI Project Manager to assure that the survey forms and the data collected meet all of the requirements for both the EIS and for local program issues. The LASS staff consist of the following:
 - a) Program Manager (EI QA Manager, Grant Coordinator, maintains approved QAPP)
 - b) One Senior Environmental Specialist – EI Project Leader
 - c) One Senior Office Assistant – acts in a supporting role
 - d) Fiscal Technician – acts in a supporting role

- 3) **Director** - Oversees Office resources and responsibilities

Once data is collected, it is submitted to U.S. EPA, the principal data users. Data is used for planning, modeling, rule-making, identifying potential pollutant “hot spots” within the National-Scale Air Toxics Assessment (NATA) framework and other purposes. U.S. EPA also provides all emissions inventory data to the public.

A4.1 Roles and Responsibilities

This section outlines the activities of all participants in the emissions inventory process and contains a Data Flow Chart showing relationships and lines of communication among the groups of participants. The groups identified in the flow chart are further characterized by their description and the individuals involved with each group. An organizational chart as it relates to FCEAP staff interaction in the EI process is attached as Appendix A showing the staff titles and structure.



Emissions Inventory Process Flow Chart

The above flow chart shows the actual processing of the emissions inventory by the FCEAP staff that includes the following (Note: Titles shown in green reflect title on organizational chart in Appendix A):

1) Compliance and Permitting Division (CAP)

- a) Peter Lloyd, Senior Program Manager, EI Project Manager:
 - Oversees review of the EI submittals to FCEAP.

- Reviews survey forms and database interface for data input to assure they are meeting the requirements of the federal rules and the needs of the FCEAP for locally regulated pollutants.
- Assures all address and contact information is up to date and accurate.
- Reviews the population of facilities surveyed each year to assure completeness.
- Assures that data is entered into the in-house database in a timely manner so that all EI data can be submitted to U.S. EPA's production environment by the submittal deadline.
- Interacts with the QA Manager and staff in the QA process and assists CMs in understanding data requirements.
- Reviews work of the CMs to assure accuracy and completeness.

b) Jeff Ebbitt , **Assistant Program Manager** :

- Backs up the EI Project Manager.
- Manages the permitting and accepts EI submittals for review and entry into the in-house database system.
- Assists permitted facility contacts with questions and concerns for the completion of the annual EI submittals.

c) CAP Staff (CMs):

- Review EI submittals to check for accuracy and completeness.
- Once reviewed and all information is considered complete, data is entered into the in-house database system.
- Work closely with facility contacts and with LASS staff to assure that the data is complete and in the proper format for submittal to EPA's EIS Production environment.

CMs in CAP involved with the Emissions Inventory:

- i) Margie Ader – **Senior Environmental Specialist**
- ii) Amro Ali - **Senior Environmental Specialist**
- iii) ~~Xiangjun Li~~ Matthew Brickey –**Environmental Specialist** (revised 7/28/2017)
- iv) Paul Martin - **Senior Environmental Specialist**
- v) Rob Russ - **Senior Environmental Specialist**

2) **Logistics and Support Services (LASS)**

a) Bob Ragland, **Program Manager**, EI QA Manager (Preparer of QAPP) :

- Oversees QA and EI Data submission.
- Works with EI Project Leader to create and maintain NEI in-house database interface for data entry and trains staff and facility contacts in its use.

- Works with Project Leader to convert data to the format required for submission to EPA's EIS.
- Works with Project Leader to submit data to EPA's QA environment and provides feedback to Project Leader (CAP Manager) and/or the individual Environmental Specialists.
- Works with Project Manager and EI Project Leader to assess data quality and establish procedures for improved input and analysis.
- Provides guidance concerning whether the Office's EI program meets or exceeds the Section 105 Grant requirements set forth under the Office's Planning Agreement with EPA's Region 4.
- Maintains the approved QAPP.
- Oversees support services that the Senior Office Assistant or Fiscal Technician provide towards the completion of the Office's annual emissions inventory survey and submission period.

b) Steven Lyda, **Senior Environmental Specialist**, EI Project Leader:

- Works with LASS and CAP Program Managers to create EI survey forms and instructions based on EPA requirements and the Office's needs.
- Maintains and updates user interface.
- Sends the survey package, including forms, instructions, and the database interface to permitted point source facilities in Forsyth County.
- Assists the facility contacts and the FCEAP staff with using FCEAP's database interface and completing the survey forms.
- Works with QA Manager to train and support all users and in submitting reviewed data to U.S. EPA's QA and Production environments.
- Works with EI QA Manager with data conversion and its submittal to EPA's EIS system.

c) Valerie Shores (**Senior Office Assistant**)/Joy Roach (**Fiscal Technician**): These staff members have a supporting role in the EI program such as transferring calls, some data entry, and assisting the EI staff with administrative functions such as mailings, etc..

3) **FCEAP Director**

Minor Barnette, **Director**, has general oversight of the EI program including the allocation of resources and responsibilities. The Director maintains general knowledge of the program and advocates the Office's needs to Forsyth County's Manager, the Forsyth County Board of County Commissioners, and to U.S. EPA either directly or through agency associations such as the National Association of Clean Air Agencies (NACAA).

A5. PROBLEM DEFINITION/BACKGROUND

The Forsyth County Office of Environmental Assistance and Protection (FCEAP) is a federally designated air quality control agency exercising its authority within the boundaries of Forsyth County, NC. In 1970, the State of North Carolina granted FCEAP a Charter establishing it as a local air quality control agency. The N.C. Environmental Management Commission has general oversight to assure that FCEAP's air management program is comparable to the State's air quality program and that local regulations are no less stringent than the rules and regulations promulgated by the State. As a federally designated air program, FCEAP integrates Federal rules and regulations into its local ordinances in concurrence with the State's rule implementation. FCEAP also accepts Federal grant monies under Sections 103 and 105 of the Clean Air Act and commits to implement regulatory and policy measures outlined in the grants.

Emission inventories are critical for agency planning, modeling, and tracking efforts needed to attain or maintain compliance with the National Ambient Air Quality Standards for criteria pollutants such as ozone, particulate matter, nitrogen dioxide, sulfur dioxide, carbon monoxide, and lead. In the early 1990's, EPA developed a central repository of inventory data that is currently known as the National Emissions Inventory (NEI). Pursuant to its authority under the CAA, EPA has required SIPS/LIPs (State/Local Implementation Plans) to include inventories containing information regarding criteria pollutant emissions and their precursors (e.g., volatile organic compounds (VOC)). The requirements for emissions inventories, including both SIP and annual emissions inventory submittals, were revised, and promulgated under 40 CFR Part 51 entitled Air Emissions Reporting Requirements (*AERR*) on December 17, 2008. In 2015, EPA finalized improvements to the AERR by:

- Lowering the current threshold for reporting lead emissions sources as "point sources";
- Eliminating the requirement for state and local agencies to report emissions from wildfires and prescribed fires;
- Requiring agencies to report the inputs needed to model emissions from mobile sources;
- Removing the requirements for agencies to report daily and seasonal emissions, and;
- Clarifying, removing, or simplifying some current emissions reporting requirements.

The *AERR* combined and "harmonized" emissions reporting requirements found in two different locations: Subpart A of 40 CFR part 51 (the CERR) and 40 CFR 51.122 in subpart G (the NO_x SIP Call). *AERR* specifies the period and other regulatory requirements for reporting the criteria

pollutant portion of the emissions inventories. The *AERR* establishes requirements for S/L reporting of Sulfur Oxides, VOC, Nitrogen Oxides, Carbon Monoxide, Lead and lead compounds, Primary PM_{2.5}, Primary PM₁₀, and NH₃. It establishes the reporting requirements for all types of sources (Point, Area, Onroad Mobile, Nonroad Mobile, and Biogenic). It established reporting on an annual cycle for selected point sources and a 3-year cycle for all other sources.

In addition to the requirements set forth in *AERR*, FCEAP has committed to submit the point source criteria pollutant emissions inventory under the Region 4 Planning Agreement specific to Section 105 Grant Requirements. The grant commitment specifically states to *“Develop and submit to EPA, emissions inventory information for all applicable point sources, CAP pollutants and time frames consistent with the Air Emissions Reporting Requirements (AERR) Rule published in the December 17, 2008; 73 Federal Register 76539 and any clarifying or updated policy.”*

FCEAP also committed to submitting Hazardous Air Pollutant emissions under the Section 105 Grant Requirements. Following is the wording of that commitment: *“Review 2011 National Air Toxic Assessment (NATA) results during FY 15 and make revisions to your agency’s inventory. Support the Emission Inventory System (EIS) in reporting the 2014 National Emissions Inventory (NEI) for hazardous air pollutants. The EPA requests that state, local, and tribal air agencies submit emissions information updates for major point sources to EIS database annually or as requested by the EPA Office of Air Quality Planning and Standards.....”*

FCEAP meets the requirements of the *AERR* and its Grant commitments by submitting emissions data, including the pollutants mentioned in the *AERR* plus HAP emissions, from point source facilities (excluding airports) in Forsyth County. The North Carolina Department of Environmental Quality (NCDEQ) collects and reports Non-Point, Anthropogenic, Off-Road, Mobile, and Airport Emissions for sources within Forsyth County. NCDEQ has been collecting all non-point source data since the inception of the Emissions Inventory Program due to their regional modeling and planning needs. Prior to 2008, airports were a part of the non-point emissions and NCDEQ will continue to report airports as point sources in Forsyth County. FCEAP has given permission to NCDEQ to submit airport data directly to FCEAP’s data on the EIS Gateway.

Applications for the use of emission inventory data are numerous. In addition to use as a building block in developing a SIP/LIP that includes air quality control and maintenance strategies, other specific uses of this data either locally or at the national level include:

- Local oversight of point sources
- Public requests

- Use in the EPA National Annual Trends Report
- Compliance demonstrations
- Emission fee program
- Development of new methodologies and techniques to estimate emissions (emission factors)
- Document regulatory impact assessments
- Permitting
- Air quality assessments
- Human exposure modeling

A6. PROJECT/TASK DESCRIPTION

By collecting and submitting quality data, end users will have the best information necessary for air quality planning purposes and determining which pollutants are adversely affecting the environment in and surrounding Forsyth County. This section describes the work performed and the information collected during each inventory period. This includes the project schedule indicating the critical points such as starting and ending dates, quality assurance checkpoints, etc.

A6.1 Purpose/Background

FCEAP's duty of collecting an emissions inventory in Forsyth County is specific to point sources of air pollutant emissions (except airports). The North Carolina Department of Environmental Quality (NCDEQ) collects and reports Non-Point, Anthropogenic, Off-Road, Mobile, and Airport Emissions. Federal, state, and local agencies use the information collected in the emissions inventory for developing air quality control strategies and maintenance strategies on a local, regional, and national level as well as for public awareness and the identification of areas with respect to pollutant impact.

FCEAP submits annual emissions data to EPA's National Emissions Inventory (NEI) database through EPA's Emissions Inventory System Exchange in the format required. Since FCEAP maintains its emissions inventory information in MS Access tables, the EIS Bridge tool created by EPA is used to convert MS Access data to the desired format (currently XML) so that it can be submitted to the EIS QA/QC environment. LASS and CAP staff work together to correct critical errors and other errors as deemed appropriate prior to final submittal. FCEAP submits the finalized data to the EIS production environment. At a minimum, data is provided annually in accordance with the Air Emissions Reporting Requirements (*AERR*) Rule published in the December 17, 2008 (73 Federal Register 76539). SIP inventory related emissions are sent to the North Carolina Department of Environmental Quality (NCDEQ). NCDEQ performs all modeling and analysis to provide strategies for attainment and/or maintenance of the National Ambient Air Quality Standards (NAAQS) in the Metropolitan Statistical Area that includes Forsyth County.

As required by the *AERR*, FCEAP conducts an annual inventory to document air emissions and provides this information to EPA. Forsyth County regulations [Forsyth County Air Quality Technical Code, Subchapter 3Q .0207 entitled *Annual Emissions Reporting*] require the reporting of annual emissions from all Title V permitted sources and any permitted source that emits 25 tons or more of NOx or VOCs by June 30 of each year. With the exception of landfills,

all Title V sources in Forsyth County meet the criteria for designation as Type B sources as defined in the point source definition table outlining the minimum reporting thresholds under Part 51 Subpart A Section 51.50 of *AERR*. FCEAP enters Title V facilities and facilities emitting 25 tons or more of NO_x or VOC annually to the EIS gateway, exceeding the minimum requirements set forth by *AERR*. In addition to submitting the emissions required by the *AERR*, FCEAP enters emissions from the remaining permitted facilities on an eight-year cycle coinciding with the permit renewal process for small facilities. FCEAP also inventories for hazardous air pollutants (HAPs) from all permitted facilities and submits these into EPA's Emissions Inventory System Exchange within the same framework of procedures and QA that are the basis of this Quality Assurance Project Plan.

Point Sources:

FCEAP collects emission inventory data by sending out either a hard copy or an electronic copy of a survey form to targeted facilities at the beginning of the annual inventory cycle. As explained in preceding paragraphs, Forsyth County facilities required to obtain air quality permits are the basis for selecting the annual list and the frequency they are required to submit a survey. The Case Managers (CMs), staff members of FCEAP's Compliance Assistance and Permitting (CAP) division, issue new permits and manage an assigned list of facilities for permit renewals and modifications. The CMs perform compliance inspections and review all submitted surveys and reports for conformity with applicable local and federal air regulations. The CMs have a demonstrated background of knowledge and experience, enabling them to assess the quality and completeness of data submitted in the annual emission inventory surveys. Facilities that do not return the emission inventory surveys by the specified date are subject to enforcement action by the CAP Senior Program Manager. Once staff approves the completeness and accuracy of data reported in the surveys (as noted through verification of items in the EI review checklist – see Section D1), data is entered into FCEAP's in-house database by the Case Managers or, in the case of digital submittals, uploaded to the system with the assistance of the LASS staff.

When all inventory information is complete and entered into the Office's in-house database, the LASS staff appends the data for the reporting cycle to the desired structured tables (EPA's "Staging Tables") needed for conversion to XML using EPA's EIS Bridge Tools. LASS submits the data to EPA's EIS Gateway QA/QC environment and retrieves the report identifying data quality issues. Once QA issues are resolved, LASS submits the final annual data into the production environment using the EIS Bridge Tool and EPA's CDX web node.

With respect to SIP inventory reporting, FCEAP provides the North Carolina Department of Environmental Quality (NCDEQ) with all point source data needed for NCDEQ to perform air quality maintenance\attainment demonstrations for the Metropolitan Statistical Area that

includes Forsyth County. NCDEQ collects and reports all non-point, mobile, and off-road emissions estimates for SIP and annual emission inventory purposes. FCEAP works with NCDEQ to provide information needed to document emissions data collected from point sources in Forsyth County, upon request.

As mentioned earlier in this document, FCEAP reports the EI for point sources (except airports) with area, non-point, mobile, and anthropogenic emission sources being generated and reported by NCDEQ. To facilitate NCDEQ's reporting of airport emissions into FCEAP's point source data, FCEAP provides NCDEQ permission to write airport emissions to FCEAP's point source emissions data in the EIS Gateway. It is also noted that Forsyth County submits emissions data from point sources that are smaller than those required under the AERR. To avoid the possibility of these smaller sources being counted twice in NCDEQ's area source submission, FCEAP supplies its annual emissions data to NCDEQ. Subsequently, NCDEQ utilizes SCC codes and combustion information to appropriately reduce their area source emissions in Forsyth County and avoid the potential of double counting.

A6.2 Description of Work to be Performed

- 1) *Data Expected:* Point source surveys will provide actual annual emissions to include in the National Emissions Inventory system. FCEAP plans to follow the time frame requirements of the *AERR* for the submittal of annual emissions information. Point source data is submitted as follows:
 - a) Facilities classified as Title V, and non-Title V facilities that emit 25 or more tons of VOC or NO_x, complete and submit emission inventory surveys annually to include actual annual emissions for both Criteria Pollutants and Hazardous Air Pollutants.
 - b) All other permitted facilities complete and submit emission inventory surveys on an 8-year cycle to include actual annual emissions for both Criteria Pollutants and Hazardous Air Pollutants. These facilities fall below the thresholds for reporting emissions in accordance with the *AERR* but are submitted with respect to FCEAP's Section 105 Grant commitments. Emissions from these small facilities vary by small percentages from year-to-year and emissions surveyed give a fairly accurate account of their annual emissions. Routine inspections and permit modifications allow FCEAP to assure these small facilities are inventoried annually should they cross the thresholds found in A6.2(a).
 - c) Once submitted, CMs review the surveys against a checklist of desired outcomes to assure completeness and accuracy. This checklist is found in Appendix C.
- 2) *Work to be performed* - In order to obtain the required emissions information in the format and units required, FCEAP utilizes the designs of the survey form and database interface to assure referential and data element integrity. The CMs review the data, enter it into the in-

house database, and complete a summary sheet and a checklist (see Appendix C) that is reviewed by the Senior Program Manager who is also the EI Project Manager. The EI Project Manager performs a review of the data to verify the quality of the survey's content and its completeness. The QA Manager and Project Leader perform a QA check on facility coordinates and data integrity for system uploads to EPA. More detail concerning activities involved with assuring data quality are as follows:

- a) *Emission Survey Forms* – FCEAP designs the emission surveys to include the required information to meet AERR, EIS referential integrity, and local needs. FCEAP expects 100% compliance with the retrieval of emissions data and enforces this requirement using each facility's permit conditions and renewal requirements found in the Forsyth County Air Quality Technical Code as vehicles for enforcement. Emission Survey Forms are designed in the following manner:
 - i) The EI Project Manager, EI Project Leader, and the EI QA Manager review the AERR, Section 105 Grant Requirements, EPA updates to the code tables, and the NEI Implementation Plan (IP) (referenced in section A9.3) developed by EPA to identify all elements required in the annual survey.
 - ii) The EI Project Leader develops the survey form and instructions. The form includes the selected data elements. The instructions provide the facility contacts with the desired units required for all numerical elements as outlined in the NEI IP. Included in the forms is information on where to find the code tables and pollutant tables to assure that data entered is acceptable.
 - iii) The EI Project Manager and EI QA Manager review the draft survey and instructions and edit as needed.
 - iv) FCEAP mails the survey and instructions to the targeted point source facilities. To help assure accuracy of data from the point sources, the most current code tables and pollutant tables are available on FCEAP's web site along with the survey forms and instructions. To find them, go to <http://www.forsyth.cc/EAP> and click on "Forms".
 - v) CAP staff (Case Managers (CMs)), assist their facility contacts (by phone and in person) with any questions they have in completing the required information.
- b) *MS Access Database Interface* – The EI QA Manager and the EI Project Leader develop the MS Access Interface with the parameters and data fields as defined in the NEI IP. The interface controls the entry of data to assure that proper formatting and units are used. Additionally, interface design assures that all stacks, emission units and processes entered to the system maintain referential integrity. Drop down boxes using the most recent code tables found in the NEI IP assure that all data elements are current and accurate. Annual activity surrounding the use of the interface and data entry are as follows:
 - i) The EI QA Manager, together with the EI Project Leader, updates the interface and creates general instructional material. If necessary, a training session is held to assure the CMs are familiar with using the interface.

- ii) The EI Project Manager, with the help of the QA Manager and Project Leader, creates or updates a step-by-step guide for the CMs to enter the data efficiently.
- iii) The CMs review their assigned facility surveys for completeness and accuracy. Once this initial review is complete, the CMs and/or the Senior Office Assistant, enter the data to the in-house NEI database in one of two ways:
 - (A) If the survey is submitted on a hard copy form, the CM or Senior Office Assistant enters the data. The QA Manager and QA Project Leader remain available for assistance throughout this process.
 - (B) Surveys submitted electronically (usually via a copy of the file on a Compact Disk) are reviewed by the CMs and approved for upload by the EI Project Manager. The facilities that submit data electronically utilize a public version of FCEAP's database interface that contains only their facility's data. Once approved, the EI Program Manager informs LASS that the electronic submittal is ready for uploading to the main in-house NEI database.
- c) *CAP staff - Case Managers (CM) and EI Project Manager Review* – As a small local air quality agency, individual staff are able to manage all regulatory and inspection duties for an assigned group of permitted facilities. This structure of case management provides the CM with a solid background that helps improve data review and quality control of emission surveys.
 - i) After FCEAP receives the surveys, the CMs work with the facility contacts through deficiency notifications by mail, email and/or phone calls until all data is complete and accurate and all checklist items (shown in Appendix C) have been properly addressed.
 - ii) Once the initial review of an emission survey is complete, the CMs enter the data into the in-house database or LASS staff uploads the digital submittals to this database.
 - iii) The CMs complete summary sheets of the reviews and the checklist. The CMs then make a copy of the emissions summary submitted by the facilities as well as the one generated by the in-house database system. A report of the stacks, emission units, and processes is also generated by the in-house database. All information is submitted to the EI Project Manager for review.
 - iv) The EI Project Manager reviews the summary data and, once approved, notifies LASS that the data is ready for final QA and submittal to EPA's EIS.
 - v) A more detailed description of the procedures followed by the CAP staff is found in Appendix C.
- d) *LASS final QA review and Submittal* - Once the EI Project Manager approves the work from the CMs, LASS puts the data through final QA and submittal in the following manner:
 - i) Using Google Earth, LASS checks the facility data coordinates to confirm that locations are accurate.

- ii) LASS transfers the data from the NEI database to blank staging tables by mapping the data elements using append queries excluding data used solely by FCEAP (e.g. local air toxics). Once in the staging tables, the DocumentHeader table is prepared in one of four ways to assure data routes through EPA's Exchange Server Web Client to the proper data environment. The four different environments to which the DocumentHeader directs the data are:
 - (A) QA Environment for the Facility Inventory Information
 - (B) QA Environment for Point Emissions Information
 - (C) Production Environment for Facility Inventory Information
 - (D) Production Environment for Point Emissions Information
- iii) LASS uses the Bridge Tool, supplied by EPA, to convert the data imported from the Staging Tables to XML format. The successful conversion of the data is the first stage for assuring that all stacks, units, processes, and emissions are properly associated (that there is referential integrity). If this conversion does not occur properly, then LASS reviews the data and informs the CAP CM who manages that facility of the problem requiring correction. Once resolved, the Bridge Tool converts the data to XML.
- iv) The converted XML data is zipped and uploaded to EPA's system using the Exchange Network Web Client provided by EPA. Data goes through two levels of QA, one for the Facility data and one for the Point Emissions data. At each level of QA, a feedback report is retrieved by FCEAP through the EIS Gateway. There are two levels of errors reported from EPA's QA environment:
 - (A) Critical Errors – these errors involve problems with missing or unidentifiable data elements, missing emissions, and other errors that must be corrected before the data is uploaded to the on-line facility data on EIS.
 - (B) Warnings – these are usually omissions of data that EPA would like to see included but are not critical for uploading the data to the on-line EIS website. LASS reviews the warnings and returns them to the CAP CM if it is a warning that FCEAP determines to be important.
- v) After all critical errors and select warnings are corrected and pass QA, the data is submitted into the production environment and published to EPA's EIS that is viewable on the Gateway.

- 3) *Special Personnel and Equipment Requirements:* The personnel that work directly with the emissions inventory program are those in the Compliance Assistance and Permitting Division (CAP) and the Logistics and Support Services Division (LASS). Following is an outline of staff training and equipment requirements:
- a) The Compliance Assistance and Permitting (CAP) staff are assigned a caseload of facilities that they track for all regulatory purposes including permitting, inspections, and reviewing reports/surveys including the emissions inventory. For this reason, they are

referred to as Case Managers (CMs). All have sufficient education/experience (four-year degree in environmental science or related field and two years experience or equivalent combination) to perform emission estimate calculations. The Senior Program Manager, who is also the EI Project Manager and a licensed Professional Engineer, oversees the work of CAP staff. He assures that data review is consistent and that the staff is properly trained to review emission inventory surveys.

- b) The Logistics and Support Services Division (LASS) include the EI QA Manager and the EI Project Leader who together have a combined experience at FCEAP of over 50 years. Many of these years were spent in performance of duties performed by CAP staff. This provides the experience needed to understand all facets of the emissions inventory program. Both participate in U.S. EPA Emissions Inventory on-line instruction, conference calls, workshops, and conferences to stay current with the Emissions Inventory requirements and are proficient in MS Access, the software FCEAP uses as the interface for collecting and transferring EI data. Both have had training in XML to become familiar with the data format required for submittal to EPA. LASS staff has rights to use EPA's EIS gateway and the Exchange Network Web Client and have a history of success in QA/QC and uploading data to EPA's Production environments as well as manual entry and drawing reports in the EIS.
 - c) All FCEAP personnel involved with the EI have adequate computer resources to handle data review and entry. LASS staff, the creators of the in-house user interface, provide training support to assure proper data entry, storage, and transfer. See Section A8 for further description of staff training.
 - d) FCEAP is connected to a Local Area Network system with all EI data stored on central servers managed by Forsyth County's Management Information Services Department (MIS). All data is backed up daily on a 30-day rotational basis. MIS supports the Office's software needs that include both MS Access[®] 2003 (used for design of interface distributed to facilities) and MS Access[®] 2007, the required format for submission of EI data using staging tables.
 - e) EPA provides FCEAP with a Bridge Tool that converts in-house data in MS Access[®] 2007 format to XML. LASS then uploads the properly formatted data to EPA's EIS through its Exchange Network Web Client.
- 4) *Assessment Techniques:* The following techniques will be utilized to evaluate the emission surveys for all emission types (including HAPs) submitted to FCEAP:
- a) Emissions evaluation when emission factors are used:
 - i) The Case Managers (CMs) evaluate appropriateness of federal emission factors used by the facilities by reviewing information found in EPA's Clearinghouse for Inventories and Emission Factors (CHIEF).
 - ii) Where facility-generated emission factors are used, the CMs assess the factors based on on-site stack test information (on file at FCEAP) or other engineering calculations

- based on material throughput and usage information. FCEAP considers source test data the best method for estimating process emissions from a source.
- iii) If vendor emission factors are used, the CMs compare the factors against other available information (e.g. CHIEF, other available source test data, etc.) to verify acceptability.
 - iv) If other emission factors are used, CMs will assess the acceptability of these based on availability of more generally used factors and good engineering judgment.
 - v) The general equation for evaluating emissions using emission factors is:

$$E = A \times EF \times (1 - ER/100)$$
where:
E = Emissions
A = Activity Rate
EF = Emission Factor, and
ER = % Overall Emission Reduction Efficiency
 - vi) In all cases, the CMs verify calculations on a subset of the submitted emissions using spreadsheets or manual calculations to verify that the calculations were done correctly.
- b) Emissions evaluations when material balance is used:
- i) CMs will evaluate emissions using Material Safety Data Sheets, other vendor information, facility inventory, or other facility-supplied information to assure completeness.
 - ii) Unless appropriate capture and control measures are clearly defined and measurable or waste solvent removal is supplied, throughputs are evaluated with the assumption of complete emission release of all VOC's and/or HAPs that are VOCs, with adjustments applied based on available controls for each specific pollutant. FCEAP will take into account specific instances where information may be supplied showing that a certain portion of a solvent is retained within the product. The general equation used to calculate VOC emissions using material balance is

$$EE = (U - M) \times SD$$
where:
EE = Emissions Estimate Per Period
U = Material Used (gallons solvent/period)
M = Material accounted for (gallons solvent/period)
SD = Solvent Density (pounds/gallons)
 - iii) Particulate emissions are evaluated based on known application rates and adherence properties associated with the equipment used in the process. Available controls specific to the pollutants will be used to adjust final emissions.
- c) When Continuous Emissions Monitors are used to report emissions, the evaluation will include the CM's assessment of the completeness of the monitoring data. This is the most complete type of source test data since it measures emissions over different types of operating conditions. All CMs inspect and permit their assigned facilities and are likely

to be aware of malfunctions, shutdowns, and other problems that may be associated with errors in data quality.

- d) In some cases, electronic checks of emissions are verified using stand-alone programs such as the Landfill Gas Emissions Model (LANDGEM) or an emissions estimate spreadsheet provided by NCDEQ for Boilers, Asphalt Plants, etc.
 - e) Surveys that include emissions based on Engineering Judgment will include complete background information used to back up the emission estimates.
 - f) Stacks, Emission Units, and Process Units submitted in the emissions survey are compared with existing equipment listed in the permit as well as the CM's knowledge of the facility through regulatory inspections.
 - g) Facility coordinates are assessed using Google Earth and/or Forsyth County's GIS mapping system called GeoData Explorer.
 - h) Since all information on the survey forms generated by FCEAP is required to be completed, missing data is easily assessed.
- 5) *Schedule of Work* as required to meet the revised 12 month AERR schedule beginning with the 2009 Emissions Inventory (All dates are in the calendar year following the actual year being surveyed at the facilities):
- a) Preparation of surveys by LASS - February 15th
 - b) Survey reviewed by EI Project Manager and edited – Feb 15 – Feb 28th
 - c) Surveys mailed to facilities - March 1st
 - d) Receipt of completed surveys – June 30th
 - e) Internal review and data entry complete and approved by the EI Project Manager – September 30th
 - f) All data converted to XML and submitted the EIS QA environment – November 31st
 - g) All data corrected, passed QA and submittal to EPA – December 30th

A7. QUALITY OBJECTIVES AND CRITERIA FOR MEASUREMENT DATA

FCEAP’s Data Quality Objectives are to retrieve accurate and complete emissions surveys from the point source facilities required to submit inventories. The information should include all information required by both the *AERR* and FCEAP’s Section 105 grant commitments. The information should be submitted in the format and units required for submission into EPA’s Emission Inventory System (EIS). Additional information pertinent to local program concerns such as local air toxic emissions that are not on the list of national hazardous air pollutants is expected. FCEAP data objectives are as follows:

- 1) *Survey Designed to Meet AERR and 105 Grant Requirements* – To assure data requested in FCEAP’s emissions surveys meets regulatory and grant requirements, LASS reviews the *AERR*, the 105 Grant Commitments, and EPA’s Emissions Inventory Implementation Plan (IP). All data elements required by rule or grant commitment and data elements with *Criticality* ratings of “Critical” of *Type* “Present” in the IP are included in the survey. Data elements with *Criticality* ratings of “Warning” with *Type* “Present” are considered for inclusion to the survey if the data is deemed important to the program needs of FCEAP. All data elements associated to “Present” “Critical” data listed in the IP and deemed “Critical” in format or because it must be produced from a common list, such as data tables supplied by EPA, are included.

- 2) *100% compliance for return of emissions inventory surveys from the targeted facilities* - The requirement for Title V facilities to return emissions inventory surveys for selected pollutants on an annual basis are codified in Section 3Q .0207 of the Forsyth County Air Quality Technical Code (The Code). Other pollutants not included in Section 3Q .0207 are required by the authority in Section 3D .0202 (b)(10). The Code is located online by going to www.forsyth.cc/EAP then pulling down the Air Quality menu and clicking on “Air Quality Regulations – The Code”. The annual reporting by Title V permitted sources meets or exceeds the minimum reporting thresholds of at least Type B as defined in Part 51 Subpart A Section 51.50 of the *AERR*. Although the *AERR* does not require smaller permitted sources in Forsyth County to report emissions inventories, FCEAP commits to submit them under the 105 Grant agreements. To meet the commitment, FCEAP cites Section 3Q .0303(4) to require these small sources to submit an emissions inventory at the time of their permit renewal which is every 8 years.

Prior to each annual inventory, FCEAP maintains a list of facilities targeted to submit emissions inventories in an MS Excel spreadsheet. In this manner, the return and processing

of information is tracked and delinquencies are noted and pursued through demand letters and, when necessary, enforcement action until 100% compliance is achieved.

- 3) *100% of data requested from targeted facilities is retrieved and accurate* – If necessary, FCEAP has enforcement authority to assure compliance with the submittal of all emission survey requests from the targeted facilities. FCEAP meets its goals for data quality in the following ways:
- a) **CAP CM’s Review and Checklist** – The CMs review surveys submitted by the targeted facilities that they manage and compare the information against FCEAP’s EI checklist (see Appendix C). The checklist, along with the CM’s knowledge of the facility and relationship with the facility contact, help ensure that the data reviewed is complete and accurate.
 - b) **Certification Statement** - The survey also includes a Certification Statement signed by a “Responsible Official” of the company after all of the forms have been completed. A Responsible Official is one of the following:
 - i) For a corporation: a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation, or a duly authorized representative of such person if the representative is responsible for the overall operation of one or more manufacturing, production, or operating facilities;
 - ii) For a partnership or sole proprietorship: a general partner or the proprietor, respectively; or
 - iii) For a municipality, state, federal, or other public agency: a principal executive officer or ranking elected official.
 - c) **Data Entry to In-House NEI Database** – the in-house NEI database has its own set of checks to assure data integrity and that all data elements comply with code tables and range requirements outlined in EPA’s NEI\EIS Implementation Plan. The data is entered into the main FCEAP NEI database in two ways:
 - i) Entry by the CMs and/or the Senior Office Assistant after review of the hard copy surveys submitted by the facilities- In these cases, the CM’s are directly involved with data input and the data relationships.
 - ii) Data entered into a digital copy of the NEI by the facility contacts – In these cases, the CMs review the digital data along with background information submitted by the facility. Once the CM review is complete and the work is reviewed by the EI Project Manager, the digital copy from the facility is appended to the main NEI database.

In both of the above cases, a report summarizing emissions is available for the CMs to compare their data entry to the summary sheets supplied by the facilities to assure accuracy and identify discrepancies.

- d) **EI Project Manager Review** – The EI Project Manager reviews the work of the CMs for any deficiencies and assures the components of the checklist (Section D1) are complete. He audits the summary sheet data generated by the facility versus the one generated by FCEAP's in-house system to determine data entry or calculation errors. A report of the stacks, emission units, and processes generated by the in-house database is also reviewed to ensure all processes are entered and the correct SCC and NAICS are used.
 - e) **LASS QA and Data Submittal Checks**– The EI QA Manager and EI Project Leader submit the data through the web client to EPA's QA environment for final review of the data before publication.
- 4) *100 % of all data retrieved from targeted facilities is entered to EPA's Emissions Inventory System (EIS)* – The EI Project Manager manages a list of those facilities targeted for emissions inventory surveys and tracks progress from receipt to the entry of data into the in-house database system. The EI Project Manager is also the supervisor of the CAP CMs and has direct control over the activities of the CMs and their completion of the review and entry of the emission surveys.

LASS staff, responsible for final QA and submittal of data to EPA, maintains a separate list of the facilities required to submit inventories in order to track their progress through the QA and data submittal process. By the end of the reporting period, both lists are compared for completeness to assure that all required data has been reviewed and submitted.

A8. SPECIAL TRAINING REQUIREMENTS/CERTIFICATION

All staff of the CAP and LASS Divisions involved with the emissions inventory have a minimum of a four-year degree in environmental science or related field. All have had college level courses in science, math, and/or engineering. All staff have a minimum of 2 years experience in environmental compliance, permitting, and evaluating emission inventory surveys. Staff also receive periodic training on air pollution topics .

The EI Project Manager is a certified Professional Engineer and oversees the review of EI data.

The EI QA Manager and/or EI Project leader attend the Emissions Inventory national conferences when possible. They also attend conference calls and web training when available. Both have had advanced training in MS Access and other software systems to enable them to provide a framework for data entry, storage, and submittal.

The Director of FCEAP is an active member of the National Association of Clean Air Agencies (NACAA) and the Carolinas Air Pollution Control Association (CAPCA) and works closely with these professional organizations and Metro 4/SESARM to keep staff up-to-date regarding issues important to this region.

A9. DOCUMENTATION AND RECORDS

This element includes information concerning the management of project documents and records. This includes how information will be retained and stored along with any backup procedures for electronic data.

A9.1 Purpose/Background

Maintenance of emissions inventory records is important for providing local, state, and federal air quality agencies a source of comparative data needed to plan air quality improvement strategies. An example is the maintenance and validation of emissions data used for the baseline year when the area is declared non-attainment for ozone. Currently, FCEAP maintains records in accordance with Forsyth County's *Records Retention and Disposition Schedule* that states that all U.S. Environmental Protection Agency (EPA) Reports may be destroyed after 2 years. However, FCEAP will maintain annual emissions inventories and any subsequent inventory information until such time, no sooner than 2 years, when it deems all reference value ends or until the County's *Records Retention and Disposition Schedule* clearly defines a time frame for acceptably destroying the records, whichever is latest.

Since the electronic submittal of emissions inventories is a report, all records associated with the submission will be retained for a minimum of 2 years but as late as deemed necessary for reference purposes. Records to be maintained are:

- 1) Point Source Surveys and documentation used for calculations
- 2) Completed checklists and summary emissions
- 3) Electronic files of each year's inventory submission

A9.2 Information Included in the Reporting Packages

As described in Section A6.1, the only data reported to EPA from FCEAP is point source emissions inventory data. For the point source inventory, FCEAP will determine the required data elements found in the *AERR* along with those needed to comply with the agency's 105 Grant Commitments as the basis for information included in reporting EI data. FCEAP will also use the sections in EPA's most recent version of the NEI/EIS Implementation Plan entitled *Reporting Instructions for Facility Inventory* and *Reporting Instructions for Point Emissions* as guides for developing data format and additional elements required to assure data integrity. All EI data will be submitted electronically using EPA's Exchange Network Web Client to publish our data to EPA's EIS.

State of North Carolina Department of Environmental Quality (NCDEQ) Emission Report: FCEAP submits the EI package to NCDEQ at the end of each reporting year. NCDEQ maintains responsibility for establishing attainment status with regards to the National Ambient Air Quality Standards through regional modeling and developing the SIP. With minimal modifications, FCEAP adopts by reference the SIP developed by NCDEQ.

A9.3 References

Following are references used to provide guidance and compile the inventory.

Air Emissions Reporting Requirements (AERR) <http://www.epa.gov/air-emissions-inventories/air-emissions-reporting-requirements-aerr>

AP 42, Fifth Edition – Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources - <http://www.epa.gov/ttn/chief/ap42/index.html>

Emissions Inventory Improvement Program – Technical Support Series Volume 2
<http://www.epa.gov/ttn/chief/eiip/techreport/volume02/index.html>

Emission Inventory Improvement Program, Volume I, Introduction and Use of EIIP Guidance for Emissions Inventory Development, EPA-454/R-09-004a, July 1997
<http://www.epa.gov/ttn/chief/eiip/techreport/volume01/index.html>

Emission Inventory Improvement Program, Volume II, Point Sources Preferred and Alternative Methods, EPA-454/R-97-004b, July 1997
<http://www.epa.gov/ttn/chief/eiip/techreport/volume02/ii02.pdf>

Emission Inventory Improvement Program, Volume VII, Data Management Procedures

EPA CHIEF Bulletin Board - <http://www.epa.gov/ttn/chief>

EPA QAPP Guidance: <http://www.epa.gov/QUALITY/qs-docs/g5-final.pdf>

EPA December 2002 Guidance for Quality Assurance Project Plans, EPA QA/G-5 and Region 3 draft template

Landfill Gas Emissions Model (LANDGEM) -
<http://www.epa.gov/ttn/catc/products.html#software>

NEI\EIS Implementation Plan - <http://www.epa.gov/ttn/chief/net/neip/index.html>

SECTION B - MEASUREMENT/DATA ACQUISITION

This element discusses quality control activities routinely performed and lists checks FCEAP will follow to assess/demonstrate reliability and confidence in emissions inventory information.

B5. QUALITY CONTROL REQUIREMENTS

The focus of FCEAP's attention in Quality Control of emission inventory data is twofold:

- 1) Data submission to FCEAP where the data is reviewed, verified, then entered into the in-house NEI database, and
- 2) Data submission to the EPA's EIS where data is taken through its final QA and production to the EIS.

B5.1 Data Submissions to FCEAP

Following are Quality Control Requirements for Emissions Inventory data submissions to FCEAP:

- 1) All emission calculations shall be traceable to source reporting or local agency acceptable estimation methods.
- 2) LASS will verify all coordinates for accuracy through either Google Earth or Forsyth County's GeoData Explorer mapping system.
- 3) All addresses shall be physical addresses, not PO boxes. Names of emissions sources shall include the corporate name and site/location.
- 4) FCEAP CM's use checklists (See Section D1) to document the steps taken to review and qualify the submitted data by source, test, or emissions estimation method.
- 5) Surveys shall be certified with the signature of a Responsible Official for each facility submitting a survey.
- 6) FCEAP's in-house NEI database is designed and upgraded to provide embedded conformity with the data requirements expected to enable upload to EPA's EIS. The most up-to-date Code tables are embedded in the in-house NEI database to provide users a drop down user-friendly means for entering proper codes in the fields where EPA codes are required (see link to code tables via the NEI/EIS Implementation Plan in Section A9.3). Newly entered data is

then restricted to values present in the drop down menus to assure data accuracy with EIS requirements. Numeric fields are formatted to assure that data ranges and decimal floats comply with ranges and values set forth in the NEI/EIS Implementation Plan. Relationships created in the in-house database tables assure the presence of required and associated data elements (e.g. stacks, emission units, and processes). A summary facility-wide emissions report provides the CMs with a means to ultimately assure that emissions data was entered correctly and corresponds with the reviewed summaries submitted by the point source facilities. To assure that data submitted in the surveys complies with the data entry requirements of both the in-house database and EPA's EIS, FCEAP provides both the electronic interface or hard copy survey forms and instructions (see Appendix B) to guide the point source facilities in submitting data that complies with the following guidelines:

- a) Addresses
 - i) Each record in Facility Site may have only one Location Address describing the physical location of its front door or main entrance.
 - ii) Each Location Address must be associated with one and only one Transmittal Information or Site record.
- b) Site
 - i) Each Site will have one or more Emission Units.
 - ii) Each Emission Unit will be associated with one and only one Site.
- c) Emission Unit
 - i) Each Emission Unit will have one or more Emission Process(es).
 - ii) Each Emission Process will be associated with one and only one Emission Unit.
- d) Geographic Location
 - i) Each Site will have one and only one Geographic Location and Geographic Coordinates.
 - ii) Each Geographic Location or set of Coordinates may have one or more Sites.
- e) Control Strategy
 - i) Each Control Strategy may be defined for more than one Emission Unit or Process within a single facility if the Processes or Units emit to separate Release Points that are not a part of the same release point apportionment, however
 - ii) A given Emission Process may be affected by one and only one Control Strategy. This Control Strategy is a collection of pollution abatement procedures, programs, and control device trains collectively called "Control Measures".
 - iii) A Control Strategy must contain one or more pollutant-specific Control Measures.
- f) Operating Activity
 - i) Each emission process will have one operating activity record for any reporting period.
 - ii) Each operating activity record must be associated with one or more pollutant emissions for any reporting period.

- iii) Each pollutant emission from a process will be associated with only one operating activity record for any reporting period.
- g) Pollutant Emissions
 - i) Each emission of a pollutant from a given process will be associated with one and only one emission calculation method for any reporting period.
 - ii) Emissions of the following pollutants will be reported in tons:
 - (A) Particulate Matter \leq 10 microns in aerodynamic diameter
 - (B) Particulate Matter \leq 2.5 microns in aerodynamic diameter
 - (C) Sulfur Dioxide
 - (D) Oxides of Nitrogen
 - (E) Volatile Organic Compounds
 - (F) Carbon Monoxide
 - (G) Ozone (emitted directly as O₃)
 - (H) Lead
 - (I) Chlorine
 - (J) Fluorine
 - (K) Hydrazine
 - (L) Hydrogen Chloride
 - (M) Hydrogen Fluoride
 - (N) Hydrogen Sulfide
 - (O) Methyl Chloroform
 - (P) Perchloroethylene
 - (Q) Phosphine
 - (R) Tertiary Butyl Acetate
 - h) All pollutant emissions identified as Hazardous Air Pollutants will be reported in pounds.
- 7) The EI Project Manager will audit all work performed by the CMs. LASS staff will perform final QA on the data prior to its submittal to EIS.
- 8) Non-reactive volatile organic compounds as found in 40 CFR 51.100 will not be included as VOC. The most current list to this date (February, 2016) include:
 - methane; ethane; methylene chloride (dichloromethane); 1,1,1-trichloroethane (methyl chloroform); 1,1,2-trichloro-1,2,2-trifluoroethane (CFC-113); trichlorofluoromethane (CFC-11); dichlorodifluoromethane (CFC-12); chlorodifluoromethane (HCFC-22); trifluoromethane (HFC-23); 1,2-dichloro 1,1,2,2-tetrafluoroethane (CFC-114); chloropentafluoroethane (CFC-115); 1,1,1-trifluoro 2,2-dichloroethane (HCFC-123); 1,1,1,2-tetrafluoroethane (HFC-134a); 1,1-dichloro 1-fluoroethane (HCFC-141b); 1-chloro 1,1-difluoroethane (HCFC-142b); 2-chloro-1,1,1,2-tetrafluoroethane (HCFC-124); pentafluoroethane (HFC-125); 1,1,2,2-tetrafluoroethane (HFC-134); 1,1,1-trifluoroethane (HFC-143a); 1,1-

difluoroethane (HFC-152a); parachlorobenzotrifluoride (PCBTF); cyclic, branched, or linear completely methylated siloxanes; acetone; perchloroethylene (tetrachloroethylene); 3,3-dichloro-1,1,1,2,2-pentafluoropropane (HCFC-225ca); 1,3-dichloro-1,1,2,2,3-pentafluoropropane (HCFC-225cb); 1,1,1,2,3,4,4,5,5,5-decafluoropentane (HFC 43-10mee); difluoromethane (HFC-32); ethylfluoride (HFC-161); 1,1,1,3,3,3-hexafluoropropane (HFC-236fa); 1,1,2,2,3-pentafluoropropane (HFC-245ca); 1,1,2,3,3-pentafluoropropane (HFC-245ea); 1,1,1,2,3-pentafluoropropane (HFC-245eb); 1,1,1,3,3-pentafluoropropane (HFC-245fa); 1,1,1,2,3,3-hexafluoropropane (HFC-236ea); 1,1,1,3,3-pentafluorobutane (HFC-365mfc); chlorofluoromethane (HCFC-31); 1 chloro-1-fluoroethane (HCFC-151a); 1,2-dichloro-1,1,2-trifluoroethane (HCFC-123a); 1,1,1,2,2,3,3,4,4-nonafluoro-4-methoxy-butane (C₄F₉OCH₃ or HFE-7100); 2-(difluoromethoxymethyl)-1,1,1,2,3,3,3-heptafluoropropane ((CF₃)₂CF₂OCH₃); 1-ethoxy-1,1,2,2,3,3,4,4,4-nonafluorobutane (C₄F₉OC₂H₅ or HFE-7200); 2-(ethoxydifluoromethyl)-1,1,1,2,3,3,3-heptafluoropropane ((CF₃)₂CF₂OC₂H₅); methyl acetate; 1,1,1,2,2,3,3-heptafluoro-3-methoxy-propane (n-C₃F₇OCH₃, HFE-7000); 3-ethoxy- 1,1,1,2,3,4,4,5,5,6,6,6-dodecafluoro-2-(trifluoromethyl) hexane (HFE-7500); 1,1,1,2,3,3,3-heptafluoropropane (HFC 227ea); methyl formate (HCOOCH₃); 1,1,1,2,2,3,4,5,5,5-decafluoro-3-methoxy-4-trifluoromethyl-pentane (HFE-7300); propylene carbonate; dimethyl carbonate; *trans*-1,3,3,3-tetrafluoropropene; HCF₂OCF₂H (HFE-134); HCF₂OCF₂OCF₂H (HFE-236cal2); HCF₂OCF₂CF₂OCF₂H (HFE-338pcc13); HCF₂OCF₂OCF₂CF₂OCF₂H (H-Galden 1040x or H-Galden ZT 130 (or 150 or 180)); *trans* 1-chloro-3,3,3-trifluoroprop-1-ene; 2,3,3,3-tetrafluoropropene; 2-amino-2-methyl-1-propanol; and perfluorocarbon compounds which fall into these classes: (i) Cyclic, branched, or linear, completely fluorinated alkanes;

- (ii) Cyclic, branched, or linear, completely fluorinated ethers with no unsaturations;
- (iii) Cyclic, branched, or linear, completely fluorinated tertiary amines with no unsaturations; and
- (iv) Sulfur-containing perfluorocarbons with no unsaturations and with sulfur bonds only to carbon and fluorine.

B5.2 Data Submissions to EPA's EIS

To assure data quality and to achieve successful transference of data from FCEAP's database to EPA's EIS, the following guidelines are followed:

- 1) Each Transmittal to the EIS will be associated with one or more Site/Source records with the following conditions:
 - i) Each Site/Source will be associated with only one Transmittal Information record.

- ii) Each Transmittal will be associated with one contact from the LASS division of FCEAP or, in rare cases, the EI Project Manager.
- 2) LASS staff performs final QA on the data prior to its final transmittal by doing the following:
 - a) Appending the data from the in-house database to Staging Tables, supplied by EPA.
 - b) Converting the data in the Staging Tables to XML using EPA's Bridge Tool. Errors in conversion are usually due to improper relationships between components and are fixed by LASS until conversion is accomplished.
 - c) LASS compresses the XML file and submits the data in two parts into the EIS QA\QC environment using EPA's Network Web Client. The two parts are:
 - i) Facility Inventory data consisting of the following tables:
 - (A) DocumentHeader
 - (B) FacilitySite
 - (C) FacilitySiteCoordinates
 - (D) Emissions Unit
 - (E) Emissions Process
 - (F) ReleasePoint
 - (G) ReleasePointApportionment
 - ii) Point Inventory data consisting, at a minimum, of the following tables:
 - (A) DocumentHeader
 - (B) FacilitySite
 - (C) EmissionsUnit
 - (D) EmissionsProcess
 - (E) ReportingPeriod
 - (F) Emissions
 - d) The EIS QA\QC system provides FCEAP with feedback concerning problems with structure, range and floats, proper codes, and missing data for each submission into the Facility Inventory and the Point Inventory QA Environments. The feedback reports provide both critical errors and warnings.
 - i) Critical errors must be fixed in order for data to be accepted into the EIS system. All critical errors are addressed and fixed through communications with the CM in CAP who manages the facility's inventory review unless the error is inherent in the in-house database itself and requires adjustment by LASS staff.
 - ii) FCEAP addresses warnings where calculations may conflict with the entered data (e.g. stack velocity and flow rates), some range warnings, or if the data is of specific interest to FCEAP.
 - e) Once all data has been through EPA's QA\QC environment, with all critical errors and pertinent warnings corrected, the data is produced into the EIS.

- 3) LASS staff annually review the most up-to-date NEI\EIS Implementation Plan (IP) and make changes to the in-house database accordingly to assure year-to-year data compliance with the expectations found in the AERR, the Grant requirements, and the guidelines set forth in the IP.

B10. DATA MANAGEMENT

This element provides an overview of the management of the data generated. The process and hardware and software equipment for data/information handling and storage throughout the life cycle of the project are identified here.

B10.1 Project Data Management Process

FCEAP manages Emissions Inventory data using MS Office Suite[®] software on personal workstations networked to servers operated at a central location by Forsyth County's Management Information Services (MIS) Department. Staff must log on to individual workstations. All workstations provide adequate disk and RAM storage to perform all data entry and maintenance requirements. In the case of catastrophic damage to a workstation, FCEAP has in-house staff that provide support and MIS provides support when effort is required beyond resources and capabilities of FCEAP staff. FCEAP also has a number of laptop computers capable of logging into the network should a workstation become out-of-service for a significant length of time. FCEAP workstations lock down after 5 minutes of inactivity requiring staff to log in again to the system. Servers are backed up daily on a 30 day rotation so all data for the past month is available should something happen to current data. LASS creates frequent back-up copies of the NEI database when doing maintenance and other potential data altering activity.

B10.2 Record Maintenance and Location

Completed emission inventory surveys are maintained in files at the following locations:

- 1) Non-confidential information in Case Manager office files
- 2) Confidential information in locked files in FCEAP office
- 3) Completed summary reports are maintained in Case Manager office files.

Databases used for information storage as well as written/email correspondence between FCEAP and the facility contacts are located on servers located in the Server Room of Forsyth County's Management Information Services Department at the Forsyth County Government Center.

B10.3 Emission Inventory (EI) Data Processing Procedures

Following are the procedures and software requirements FCEAP uses to process EI data from the point of data entry to submittal into EPA's EIS system.

- 1) Mailed EI Survey – The EI survey sent to the targeted facilities is created using the following software:
 - a) Hard Copy Survey Form – MS Excel 2003[®] or MS Excel 2007[®]
 - b) Survey Form Instructions and Cover Letter– MS Word 2003[®] or MS Word 2007[®]

- 2) On-Line EI Survey – found here <http://www.forsyth.cc/EAP> (click on “Printable Forms” then go to the Emissions Inventory section) are in the following formats:
 - a) Survey Form – MS Excel 2003[®] or MS Excel 2007[®]
 - b) Code Tables and Pollutant List – MS Excel 2003[®] or MS Excel 2007[®]– These are not sent to the facilities but are referred to in the instructions so that preparers may access them. To FCEAP’s knowledge, all preparers have access to FCEAP’s website.
 - c) EI Instructions and EI Cover Letter – These are created in Word 2003[®] or MS Word 2007[®] then converted to .pdf using Adobe Acrobat Pro.

- 3) Digital EI Survey – a digital copy of the EI survey is created using MS Access 2003[®]. FCEAP includes the last inventory data submitted by the facility so that respondents may edit previous data and add/delete data as needed. Facilities having MS Access 2003[®] or later are capable of using this system.

- 4) Process and Procedures for Data Transfer to EPA – Once data has been entered into the in-house NEI database either directly by the CMs or by transfer of data into the system by LASS, the following takes place concerning data transfer, conversion, and submittal to EPA’s EIS:
 - a) *Data transfer from the in-house NEI database to blank EPA supplied staging tables* – transferring data from the in-house NEI database to the blank EPA staging tables is performed incrementally as data for facilities are approved by the EI Project Manager (see A6.2 (2) *Work to be Performed* for details of the approval process) in the following manner:
 - i) Staging Tables are cleared of any previous data.
 - ii) Facilities to be moved to the Staging Tables are tagged in the main NEI database and appended to the appropriate Staging Tables.
 - iii) Newly filled Staging Table file is renamed so that LASS staff can track their individual work.
 - b) *Preparing data in the Staging Tables for Submittal into EPA’s QA and Production Environment via their online Exchange Network Web Client-*
 - i) The DocumentHeader Table, one of the Staging Tables, is opened and modified in one of the following ways:
 - (A) The Property-Submission Type = QA; Property-DataCategory = FacilityInventory, or
 - (B) The Property-Submission Type = QA; Property-DataCategory = Point, or

- (C) The Property-Submission Type = Production; Property-DataCategory = FacilityInventory, or
- (D) The Property-Submission Type = Production; Property-DataCategory = Point
- ii) The Bridge Tool, supplied by EPA, is then used to convert the data imported from the Staging Tables to Extensible Markup Language (XML) that is compliant with EPA's XML schema required for data transfer.
 - iii) The newly created XML file is zipped as required by the Exchange Network.
 - iv) LASS staff log into the Exchange Network and submit the file to the *IAMLdap* domain.
 - v) Email notification is returned to LASS stating that the data has been received, and a separate email follows stating that the data has been processed.
 - vi) Once the data is processed, LASS logs onto EPA's EIS Gateway, retrieves the feedback report and, when necessary, goes back through the QA process until all errors are corrected and the data has gone through the Production stage as "Complete".
 - vii) In general, data should be submitted through the QA and Production environments for FacilityInventory prior to QA for the Point data. This is especially important if there are new or deleted processes or units since these are first established with the Facility upload. Otherwise, subsequent Point QA submittals will demonstrate critical errors due to yet non-existent process and unit IDs.

SECTION C - ASSESSMENT/OVERSIGHT

As previously stated, FCEAP submits inventory information for all of its permitted sources. Otherwise, only about 10% of facilities in Forsyth County must submit their emissions in accordance with the AERR. The other 90% of the facilities are submitted due to commitments made in the 105 federal grant and to provide FCEAP one source for reviewing local emissions. FCEAP submits only emissions from point sources for each annual emissions inventory. The State of North Carolina's Department of Environmental Quality (NCDEQ) submits all non-point, mobile, off-road, airport, and anthropogenic emission estimates for Forsyth County. Since FCEAP is a local air agency, there is not a central office with oversight capabilities to assess the EI program outside of the procedures outlined in the other sections of this Quality Assurance Project Plan. However, due to the small size of the agency and the fact that most of the facilities that are inventoried are small sources, FCEAP provides a comprehensive review of 100% of submitted surveys that are also QA'd with some redundancy between CAP's EI Project Manager and LASS (managed by the EI QA Manager). An example of this is as follows:

100% of the surveys submitted for the emissions year are audited by the EI Project Manager in the following way:

- verification that emissions entered in the NEI database match emissions reported by the facility,
- verification that emission factors are acceptable,
- verification of calculations,
- verification that reported emissions are reasonable based on the facilities' classification, industry sector, and earlier submittals,
- verification of other items found in the checklist in Section D1 entitled *Data Review, Validation, and Verification Requirements*.

The EI Project Manager is also the CAP Program Manager and has direct supervision of the Case Managers doing the reviews. If the EI Project Manager identifies a potential problem with the emission inventory during the review, the report is returned to the Case Manager for correction and/or clarification. After the CAP Program Manager approves the Inventory Review Report, he notifies the LASS Program Manager (also the EI QA Manager). LASS is a separate Division within FCEAP and the EI Project Manager has no direct influence over the duties of LASS. For that reason, LASS offers a separate and independent QA with some overlap concerning the completeness and quality of the data. By design, LASS develops the in-house NEI database system so that the quality control requirements found in Section B5 are met. The functionality of EPA's Bridge Tool and submittal of EI data to EPA's QA Environment provides a rigorous

review of the survey data concerning structure, completeness, and acceptability of data within specified parameters for range and significant figures. LASS QA staff interpret the reports received from EPA's QA environment and returns them to the EI Project Manager to assure correction of the data from his staff. The LASS QA staff also check facility coordinates for accuracy using Google Earth. The final verification that all data was reported correctly into the EI in-house system is the comparison of the emissions reports as reviewed by the EI Project Manager included in his duties outlined above. Once EPA develops a means to report facility-wide emissions summaries, 100% of these will be checked against FCEAP's in-house summaries to assure data was submitted and summarized accurately.

SECTION D - DATA VALIDATION AND USABILITY

D1. DATA REVIEW, VALIDATION, AND VERIFICATION REQUIREMENTS

FCEAP receives emissions inventory surveys in one of two methods:

- 1) Facilities submit the data on hard-copy forms created by FCEAP, or
- 2) Facilities submit data on digital forms created in MS Access by FCEAP. This method allows data to be directly appended to the in-house database once reviewed.

In both cases, the facilities are required to submit background information (emission factors, calculations, etc.) that enables FCEAP to verify all calculated data. FCEAP includes only required data on both methods simplifying the completeness review for the Case Managers who review the surveys. They may continue the data review process or cease a review depending on the extent and type of information that is missing. Further review may find deficiencies that make it more efficient to make a formal request for more information later in the review process.

Once the review is complete including checking calculations, verifying emission factors, and other information (referenced on the checklist above), it is entered into the in-house NEI database (unless it was submitted electronically). Once entered, the Case Manager does a final check of the summary emissions by referencing the survey summary emission sheet against the summary sheet calculated by the in-house database report system (Note: Data submitted electronically has the summary report feature embedded for comparison.) If at any point within the process the Case Manager requires corrections and/or other information from the facility being reviewed, FCEAP has the authority under Section 3D .0202 of the Forsyth County Air Quality Technical Code to demand the information necessary to complete the review. After the Case Managers' final check and entry of data, the summary sheets, checklists, and other relevant background information are submitted to the EI Project Manager who has oversight of the review process and performs an initial QA. Once the Project Manager signs off on the review, he informs LASS that the data is ready for the final QA/QC analysis. This is the analysis performed to assure data is valid and consistent with the format and ranges set forth in EPA's *Emission Inventory System Inventory Plan (EIS-IP)*.

The Case Managers use the Emissions Inventory Review Checklist shown in Appendix C to provide consistency in their reviews.

D2. VALIDATION AND VERIFICATION METHODS

FCEAP’s LASS division performs validation and verification of the survey data to assure its acceptability into EPA’s EIS system.

Validation and verification is performed in the following ways:

- 1) In-house database design – The design of the in-house NEI database includes relationships that assure stack, emission unit, and process IDs are consistent and complete throughout the tables. Where possible, LASS formatted the data elements to meet the size and range requirements set forth in the *EIS-IP*. To assure that codes and terminology used in the NEI are consistent with the code tables provided by EPA, LASS downloads the most recent code tables and incorporates them in the in-house NEI database as drop down boxes where the user must enter the proper codes to be acceptable. The ability to add processes, stacks, units, and codes validates that they are acceptable and are consistent with the requirements in the *EIS-IP*.

- 2) EPA’s Bridge Tool – FCEAP submits its data using MS Access 2003[®] tables as the staging point for data transition to the final XML data format accepted by EPA for upload into their EIS data system. EPA provides “Staging Tables” into which LASS appends the completed data elements so that they may be properly reformatted into XML after importing to the new Access-based Bridge Tool, supplied by EPA. Data structure is partially verified by the Bridge Tool’s ability to transform the data properly to XML.

- 3) Submission to EPA’s EIS QA and Production environments – two LASS staff members, the EI QA Manager and the EI Project Leader have log-on and data submittal rights into EPA’s EIS online system. LASS uses EPA’s Exchange Network (or CDX) Web Client to transmit the data into the EIS system. Once the data is converted to XML by the Bridge Tool, LASS sets up the staging tables and transmits them as described in item number 4) of Section B10.3 entitled *Emission Inventory (EI) Data Processing Procedures*. There are two parts to the QA process in the EIS: the Facility Inventory QA and the Point Emissions QA. Both parts inform LASS in advance if certain data would be rejected if it were otherwise put into production. Each part validates different components of the surveyed data.
 - a) Facility Inventory QA – The EIS QA for the Facility Inventory section checks to assure that all stacks, emission units, and processes are properly related and that facility-related data elements (NAICS code, coordinates, etc.) are properly coded or within size/range requirements. The EIS QA system generates a report of its findings and puts it on the on-line *EIS Gateway*. LASS logs into the Gateway and downloads the reports. Any data errors or missing data is reported to the responsible CAP Case Manager for correction until all data is approved. Once the facility data passes QA, LASS publishes it to the

EPA's EIS using the CDX Web Client. The data can then be checked on the *EIS Gateway*.

- b) Point Emissions QA – Once LASS publishes the facility data to the EIS¹, LASS prepares the emissions portion of the data for submission to the QA environment. This portion includes the emissions data, operating parameters, and reporting period information. Reports are generated similar to those described in the Facility Inventory QA. LASS retrieves the reports and identified errors or missing data are corrected by the Case Managers and then submitted until all data is approved for final production. The successful production of this data is verification that it passed all critical QA requirements.

- 4) LASS Facility Coordinate Checks – LASS manually checks all facility coordinates on Google Earth or Forsyth County's GeoData Explorer system to assure the location entered accurately identifies the location of the facility. Where entrances were used as the focus of the geographic coordinates, some facilities identify this as the front door where others identify it as the front gate.

¹ Unless the full set of stacks, emission units, and/or processes exist in the EIS, LASS does not QA point emissions until the facility inventory portion has been both QA'd and put into production. This is because the QA process for point emissions references already published unit and process data, especially their unit identifying numbers.

D3. RECONCILIATION WITH DATA QUALITY OBJECTIVES (DQO)

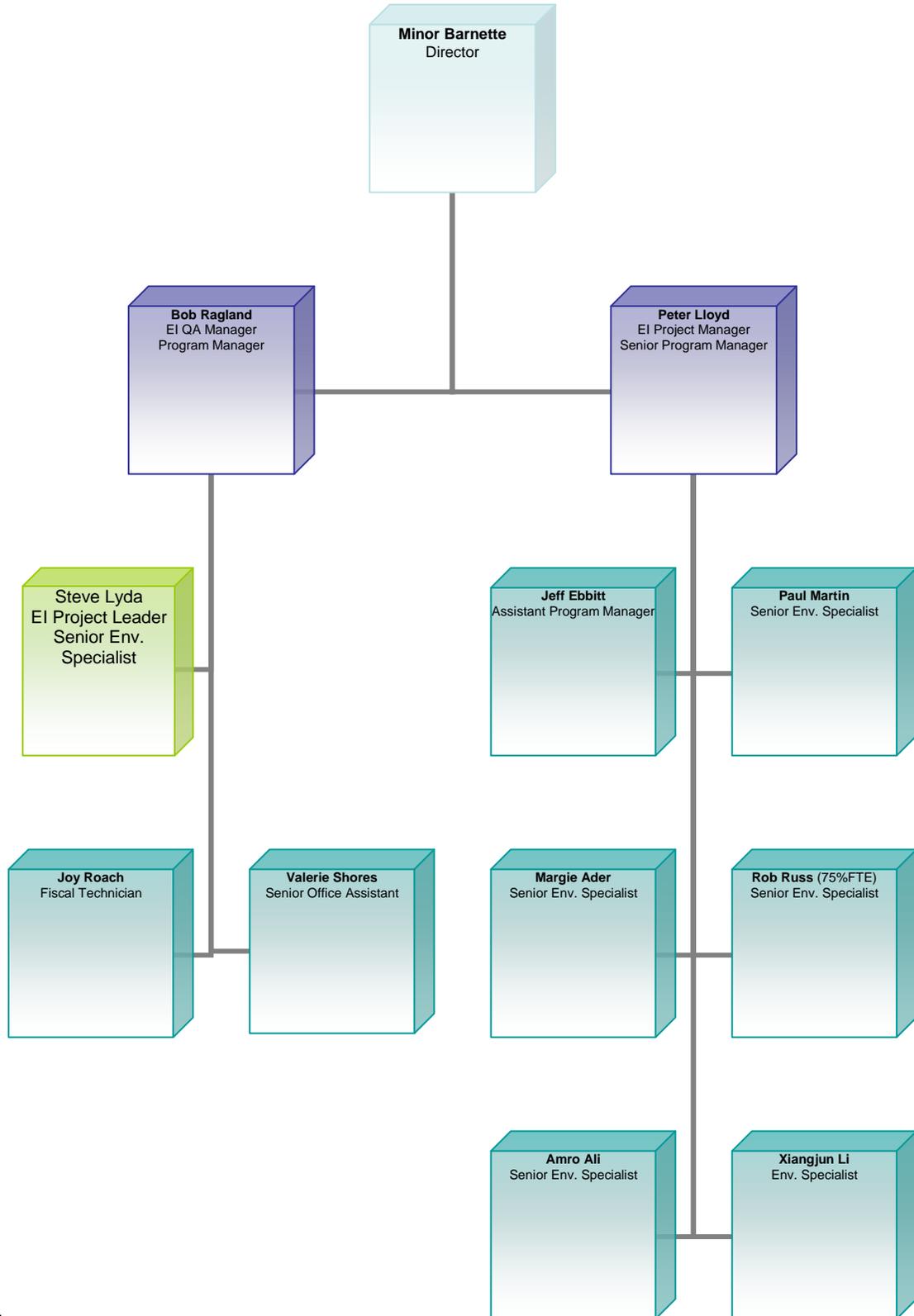
U.S. EPA, who is also the primary data user, primarily determines the surveyed data elements. Other data users are the North Carolina Department of Environmental Quality (NCDEQ), FCEAP, and the public. FCEAP will focus reconciliation of data we supply with our DQOs (see Section A7) primarily driven by requirements within FCEAP's federal air grants, the *AERR*, and/or critical elements found in the Emissions Inventory Implementation Plan (*EI-IP*). Following are FCEAP's methods and periods for reconciling changing data needs of the data users.

- 1) Changes in data needs outlined in FCEAP's Federal 103/105 Air Grants – Each year FCEAP negotiates the conditions of its Section 103 and Section 105 Federal Air Grants. Typically, changes in grant conditions will either become effective within the year the condition is accepted by FCEAP or the condition will have a time frame that FCEAP will agree to. FCEAP will reconcile current EI operating procedures with changes in the air grants within the time frames negotiated in each annual review of the air grant conditions.
- 2) Changes in the *AERR* and the *EI-IP* – At a minimum, the EI Project Manager, QA Project Manager, and the EI Project Leader will meet at the beginning of each annual survey season to review changes in the *AERR* and *EI-IP*. Every effort will be made to incorporate new or modified data requests within the survey year that is currently under preparation.
- 3) Data needs of NCDEQ - Since both FCEAP and NCDEQ have similar objectives, it is expected that if FCEAP meets the needs of U.S. EPA that the surveyed data will be suitable to NCDEQ. NCDEQ currently provides Forsyth County EI data to U.S. EPA for all other sources outside of the point source information. Should U.S. EPA and NCDEQ conflict on data submission requirements pertinent to Forsyth County, FCEAP will evaluate the problem at that time and determine an appropriate course of action. FCEAP will inform U.S. EPA of its decision in writing and/or modify the QAPP in response to such an unexpected event.
- 4) Data errors found in FCEAP's in-house system – data errors caused or allowed by FCEAP's in-house NEI database will be corrected as soon as possible following discovery of the problem or prior to the next survey season, depending on the extent of the change that needs to be made. In the majority of cases, changes will be ongoing.
- 5) At the end of each reporting year or if data errors are reoccurring, FCEAP's QA review process is evaluated to determine if revisions or additional controls are warranted.
- 6) Most of the data needed by FCEAP is within the data elements set forth in the *EI-IP*. Where related data can assist with internal data needs, FCEAP adds data elements to the in-house NEI database without affecting the EIS submittals.

- 7) Changes in pollutants – FCEAP has a system in place to review rule changes on a regular basis. As pollutants are added or their status changes (e.g. VOC or non-VOC), FCEAP will modify them for the survey year following publication in the Federal Register provided FCEAP deems it necessary to comply with U.S. EPA’s guidelines set forth in the *AERR* and *EI-IP*.
- 8) Where EI actual emissions exceed permit allowables, FCEAP has the authority within the FCAQTC to investigate the discrepancies and leverage compliance where applicable.
- 9) FCEAP personnel involved with the EI meet on an ongoing basis throughout each survey year to reconcile problems or to clarify issues that are not evident within the *EI-IP* or during the actual submission of EI data to the EIS Gateway.
- 10) Where U.S. EPA and FCEAP are in disagreement on data requirements and what FCEAP submits, FCEAP will respond to U.S. EPA concerns as soon as possible and will negotiate in good faith until reconciliation is achieved.

APPENDIX A

Emissions Inventory Project Management Organizational Chart



QAPP Name: **FCEAP NEI QAPP**

Section: Appendix B

Revision Date: **03/01/2016**

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APPENDIX B

EXAMPLE FCEAD EMISSIONS INVENTORY SURVEY

INSTRUCTIONS

for the
Forsyth County Office of Environmental Assistance and Protection
Air Pollutant Emissions Inventory
Calendar Year 2014 Emissions

Who Must Report CY2014 Emissions

Pursuant to Chapter 3 of the Forsyth County Air Quality Control Ordinance and Technical Code (“the Code”), Subchapter 3Q, Rule .0207 and Subchapter 3D, Rule .0202, each facility receiving this inventory package is required to complete an emissions inventory and send it to the Forsyth County Office of Environmental Assistance and Protection (“the EAP”).

What To Report

You must report the best estimate of your facility’s actual calendar year 2014 emissions of all listed pollutants except greenhouse gases. Inclusion of greenhouse gases in the EAP’s emissions inventory is voluntary. You must report CY2014 emissions from all emission sources, including unpermitted sources, except those from which emissions are considered negligible. These sources are listed below under “Sources Not Required To Be Reported”. Excess emissions during start-up, shut-down and malfunctions are to be included in the reported totals for all but Title V facilities. However, if you do need to report excess emissions for a non-Title V facility, please contact EAP first so that we may provide you with additional instructions. Due to permit fee rules, Title V facilities should estimate emissions under such circumstances according to what would have occurred under “normal” operating conditions.

How To Report

Use the enclosed forms to report emissions. Only one copy of each form has been included with this package so please make copies of the forms before filling them out. **Do not use forms from a previous year to report your emissions.** If you prefer to complete the forms on your computer, they are available in Microsoft Excel™ spreadsheet format on the EAP’s website at <http://www.forsyth.cc/EAP/forms.aspx> . You must print and submit your completed forms. The EAP will not accept emissions inventory data submitted as a spreadsheet file. If your facility has previously submitted an emission inventory, the inventory package sent to you includes a report showing your facility’s Emission Release Point, Emission Unit and Process information as it appears in the EAP’s emission inventory database. This information will be useful since you **are required to use the existing Emission Release Point IDs, Emission Unit IDs and Process IDs when preparing the inventory.** As explained in more detail under “Estimating Your Facility’s Emissions”, supporting documentation including emission factors, calculations, and other information that was used to estimate your facility’s emissions must accompany your submittal.

EPA’s emissions inventory system makes extensive use of codes. The printing and mailing of the Code Lists is cost prohibitive, therefore an Excel™ spreadsheet containing the Code Lists and the List of Pollutants to be reported is available for downloading from the EAP web page specified above. If you are unable to access the website, please call the EAP and we will supply you with the Code Lists.

In lieu of using paper emission inventory forms, the EAP strongly encourages you to submit your facility’s inventory via a database developed by this department. You must have MS Access™ 2003 or higher installed on your computer to take advantage of this method. Facilities that have previously submitted an emission inventory will be provided with a database prefilled with data from the most recent submittal. This provides a time-saving opportunity for the inventory preparer since stack, emission source and process data will already be in the database. Facilities that report emissions via database must submit a printed “Facility Emissions Summary” report which includes a “Certification Statement” that must be signed by a Responsible Official for your facility. This report is produced by the database.

Whether submitting the inventory on paper forms or via database, supporting calculations and other information used to determine your emissions must be included. This may be accomplished with spreadsheets, Word documents, etc. or hard copy.

If you wish to submit your inventory via Access database, please contact the EAP for the latest version. **Do not use a previous year's version of the database to report emissions or previous mistakes corrected during the QA process will be repeated.** Facilities that have already submitted an emissions inventory via the database and want to continue doing so must contact the EAP to obtain the latest version. Anyone who wants training in the use of the emission inventory database may call and make an appointment for one-on-one assistance.

When To Report

The completed inventory forms must be returned to the EAP no later than **June 30, 2015**. If you complete your inventory using the Access database, you may submit your inventory on optical media (CD or DVD), flash drive or via email attachment sent to forsythead@gmail.com. If you submit your inventory via email, please follow up with a phone call or separate email to verify that EAP has received the information. If you have questions, problems, or want to make other arrangements for transfer of data, feel free to call Steve Lyda at (336)703-2444. for assistance.

Sources Not Required To Be Reported

Title V facilities should not inventory sources described in Subchapter 3Q, Rule .0503(7) *Insignificant activities because of category*. Similarly, non-TV facilities should not include sources described in Subchapter 3Q .0102(c)(1) *Activities exempted because of category*. The Code can be found at <http://forsyth.cc/EAP/Documents/code.pdf>.

Reporting Fugitive Emissions

Small, Exclusionary Small and Synthetic Minor facilities do not need to report emissions of fugitive particulate matter from sources located outside of buildings (haul roads, storage piles, etc). All other fugitive emissions from these facilities must be reported.

Title V Facilities must report fugitive emissions as indicated below:

- a) If the fugitive-emitting process or activity is located outside of a building and not listed in Table 1, the emissions from this process or activity must be reported in the inventory;
- b) If the source of fugitives is listed in Table 1 and the facility is described in Table 2, the emissions from this process or activity must be reported in the inventory;
- c) If the source of fugitive emissions is listed in Table 1, but not listed in Table 2, the emissions from this process or activity need not be reported in this inventory.

Table 1: (Fugitive emissions excluded from reporting for Title V facilities if located outside of buildings not listed in Table 2)

Open coal and mineral or other similar product storage piles
Open waste storage piles and handling (i.e. mineral fines, agricultural trash)
Manual material handling (such as front end loaders) and coal handling operations
Particulate emissions from open-top product and aggregate storage bins/silos
Conveyors, conveyor drop points and material screens
All sources at concrete batching plants other than unloading to silos
Haul roads
Pumps, flanges and valves associated with volatile organic liquid processing or handling

Table 2: (Fugitive emissions must be included for Title V)

Coal cleaning plants (with thermal dryers)
Primary lead smelters
Fuel conversion plants
Secondary metal production plants
Chemical process plants
Fossil-fuel boilers (or combinations thereof) > 250 million British thermal units per hour heat input

Petroleum storage and transfer units with a total storage capacity exceeding 300,000 barrels
Fossil-fuel-fired steam electric plants of more than 250 million British thermal units per hour heat input
All other stationary source categories regulated by a standard promulgated under section 111 or 112 of the Clean Air Act, but only with respect to those air pollutants that have been regulated for that category. This includes Maximum Achievable Control Technology (MACT), New Source Performance Standards (NSPS) and New Source Performance Standards for Hazardous Pollutants (NESHAPS).

Confidential Information

North Carolina General Statute §143-215.3C(b) provides that “emissions data” as defined in 40 CFR 2.301, is not entitled to confidential treatment. However, certain information which, if made public, would divulge methods or processes entitled to protection as “trade secrets” shall be considered confidential pursuant to N.C. Gen. Stat. §132-1.2. Consistent with the U.S. Environmental Protection Agency’s published policy guidance on evaluating such confidential determinations, “emissions data” generally includes, but is not limited to, the information requested on ALL of the Air Pollutant Emissions Inventory forms. The EAP’s position with regard to what data may not be held as confidential includes quantities of pollutants emitted, operating hours, fuel usage, control device information, emission estimation method and other items related to the calculations and subsequent modeling analyses, “in so far as these data are necessary to calculate emission data.” All information submitted via Inventory forms and/or database is considered public information. After verification, it will be sent to EPA and eventually make its way into the public domain. However, some information provided with the background documentation may qualify for confidential treatment.

If you wish to claim information as confidential, you must state in writing how public disclosure of the information would divulge methods or processes entitled to protection as trade secrets. Please submit information that has been “purged” of data for which the claim of confidentiality is made. The confidential information should then be submitted separately and should be clearly identified and stamped “confidential”. Within ninety (90) days of the receipt of the request for confidentiality, the Director of EAP, or a designee, will issue a preliminary determination regarding whether or not the information is entitled to confidential treatment. Data submitted under a claim of confidentiality will not be subject to public disclosure, except as authorized under N.C. Gen. Stat. §143-215.3C(b) and (d). If you have any questions about confidential information, please contact Peter Lloyd at the EAP.

Definitions

Area HAP source – any stationary source of hazardous air pollutants that is not a major source. See definition of Major HAP Source

Billable Pollutants – pollutants for which Title V facilities must pay a “per-ton” emissions fee. The billable pollutants are PM10, SO2, NOx, VOC, Ozone, Chlorine, Fluorine, Hydrazine, Hydrogen Chloride, Hydrogen Fluoride, Hydrogen Sulfide, Methyl Chloroform, Methylene Chloride, Perchloroethylene and Phosphine.

CO - carbon monoxide

Condensable Particulate Matter - defined as the material that is collected in the back half of an EPA Reference Method 5 sampling train. It is material that is in the vapor phase at stack conditions but condenses or reacts to form solid or liquid PM upon cooling in the ambient air. *Condensable particulate matter should be included in PM-10 and PM-2.5.* There are emission factors for condensable PM for many combustion sources.

Control Device – Equipment used to destroy or remove air pollutants before discharge to the ambient air. Examples of control devices are fabric filters (“baghouses”), wet scrubbers, electrostatic precipitators, carbon adsorption units, flares, cyclones, etc.

Criteria Pollutants – Pollutants and their precursors for which national maximum ambient concentrations, or “criteria” have been established by EPA due to their health and/or environmental effects. The criteria pollutants are

Particulate Matter less than 10 micrometers in mean aerodynamic (PM-10) Sulfur Dioxide (SO₂), Oxides of nitrogen (NO_x), Volatile Organic Compounds (VOC), Carbon Monoxide (CO), Lead (Pb) and Ozone.

Exclusionary Small Facility - Facility opting to limit its potential to emit pollutants in order to avoid Title V permitting through use of Section 3Q .0800 Rules in the Code.

Emission Release Point – Structure designed to exhaust gasses from a facility into the ambient air, i.e., a stack, chimney, vent or other functionally equivalent opening.

Emission Unit – Equipment or stationary object from which air pollutants are emitted, either directly or indirectly, including the origin of fugitive emissions.

Fugitive Emissions - Defined by the Code as “. . . those emissions which could not reasonably pass through a stack, chimney, vent or other functionally equivalent opening.”

Greenhouse Gases (GHGs)- Gases that absorb and emit radiation within the thermal infrared range. This process is the fundamental cause of “the greenhouse effect”, which warms the earth’s surface and lower atmosphere. For purposes of this inventory, the greenhouse gases are Carbon Dioxide (CO₂), Methane, Nitrous Oxide (N₂O), Sulfur Hexafluoride (SF₆), Perfluorocarbons (PFCs), and Hydrofluorocarbons (HFCs). Reporting of GHGs is voluntary for the EAP’s emissions inventory.

Hazardous Air Pollutants (HAPs) - Specific pollutants identified in Section 112 of the 1990 Clean Air Act Amendment as harmful to health and welfare. HAPs are denoted in the “List of Pollutants” by “HAP” in the pollutant type column.

In-process fuel – fuel that is burned inherent with an Emission Unit’s function, whose combustion products cannot be separately quantified from each “Process.” Examples are direct-fired tenter frames, asphalt drum mixers, etc. where the combustion and process gases are mixed and quantification of the total emissions is possible, but not necessarily quantification of the separate process emissions.

Major HAP source – Section 112 of the Clean Air Act defines a “major source” is any stationary source (including all emission points and units located within a contiguous area and under common control) of air pollution that has the potential to emit, considering controls, 10 tons per year or more of any HAP or 25 tons or more per year of any combination of HAPs.

NO_x - Oxides of Nitrogen (for inventory purposes, report as tons of NO₂ equivalent)

PM – Particulate Matter is finely divided solid or liquid material, other than uncombined water, emitted to the ambient air, inclusive of all particle sizes capable of being air borne.

PM-10 - Airborne particulate matter less than or equal to 10 microns in aerodynamic diameter.

PM-2.5- Airborne particulate matter less than or equal to 2.5 microns in aerodynamic diameter.

Process – an operating scenario associated with an Emission Unit. A Process defines the way the equipment comprising the Emission Unit operates on an actual and day-to-day basis and determines the emissions from that Emission Unit. There should be at least one Process for each Emission Unit. Emission Units may have more than one process. For example, if a boiler (an “Emission Unit”) is capable of running on both oil and natural gas, each fuel would be considered a separate “Process”, with emissions calculated separately for each process based on the quantities of each fuel used by the boiler.

Regulated Air Pollutant - The most common regulated air pollutants are shown on the “List of Pollutants” that is included in this emissions inventory package. The list is not all inclusive, however. For a more thorough definition of “regulated air pollutant” you may view a memorandum that addresses this subject on the EPA’s website at <http://www.epa.gov/ttn/oarpg/t5/memoranda/rapdef.pdf>

Small Facility - A facility that is not a Title V facility, Synthetic Minor facility, or Exclusionary Small facility.

SO₂ - Sulfur Dioxide (for inventory purposes do not include SO₃, Sulfur Trioxide and H₂SO₄, Sulfuric Acid)

Synthetic Minor Facility - A facility that would be a Title V facility except for the fact that its potential emissions are limited to below Title V threshold levels by physical or operational limitations on the capacity of the facility to emit an air pollutant. Such limitations must be enforceable by the U.S. Environmental Protection Agency.

Toxic Air Pollutants (TAPs) - Specific pollutants determined to be carcinogens, toxics or irritants. These pollutants are listed in Section 3D .1100 of the CODE and are denoted in the "List of Pollutants" by "TAP" in the pollutant type column.

Title V Facility - A facility that has or will have potential emissions of 100 tons per year or more of at least one regulated air pollutant; or 10 tons per year or more of at least one hazardous air pollutant; or 25 tons per year or more of all hazardous air pollutants combined.

TSP - Total Suspended Particulate - a measure of the particulate content of ambient air, it is not a regulated air pollutant as defined in 40 CFR 70.2. However, for purposes of this inventory, TSP is considered to be PM that has become airborne and is generally less than or equal to 100 microns in aerodynamic diameter.

VOC - Volatile Organic Compound - any compound of carbon, excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate. The following organic compounds have been determined to have negligible photochemical reactivity and should not be included as Volatile Organic Compounds (note that some are HAPs and/or TAPs and should be reported, but not included in the VOC total):

2-(difluoromethoxymethyl)-1,1,1,2,3,3,3-heptafluoropropane	HFC- 245ca (1,1,2,2,3-pentafluoro propane)HFC-236ea (1,1,1,2,3,3-hexafluoropropane)**
2-(ethoxydifluoromethyl)-1,1,1,2,3,3,3-heptafluoropropane	HFC-245ea (1,1,2,3,3-pentafluoropropane)
Acetone	HFC 227ea (1,1,1,2,3,3,3-heptafluoropropane)**
Ethane	HFC-236fa (1,1,1,3,3,3-hexafluoropropane)**
Methane	HFC 43-10mee (1,1,1,2,3,4,4,5,5,5-deca-fluoropentane)
Methyl acetate	HFC-152a (1,1-difluoroethane) **
Methyl chloroform (1,1,1-trichloroethane)*	
Methyl formate	HFE-7000 (1,1,1,2,2,3,3-heptafluoro-3-methoxy-propane)
Methylene chloride (dichloromethane)*	HFE-7100 (1,1,1,2,2,3,3,4,4 nonafluoro-4-methoxybutane)
Parachlorobenzotrifluoride (PCBTf)	HFE-7200 (1-ethoxy-1,1,2,2,3,3,4,4,4-nonafluorobutane)
Perchloroethylene (tetrachloroethylene)*	HFE-7500 also known as HFE-s702, T-7145 and L-15381
Siloxanes, cyclic, branched, or completely methylated linear	(3-ethoxy-1,1,1,2,3,4,4,5,5,6,6,6-dodecafluoro-2-(trifluoromethyl) hexane)
t-Butyl Acetate*	
CFC-11 (trichlorofluoromethane)	HCFC-123 (1,1,1-trifluoro 2,2- dichloroethane)
CFC-12 (dichlorodifluoromethane)	HCFC-123a (1,2-dichloro-1,1,2- trifluoro-ethane)
CFC-115 (chloro-pentafluoroethane)	HCFC-124 (2-chloro-1,1,1,2-tetra- fluoroethane)
CFC-114 (1,2-dichloro 1,1,2,2-tetra fluoroethane)	HCFC-141b (1,1-dichloro-1-fluoroethane)
CFC-113 (1,1,2-trichloro -1,2,2- trifluoroethane)	HCFC-142b (1-chloro 1,1-difluoroethane)
HFC-23 (trifluoromethane **)	HCFC-151a (1 chloro 1-fluoroethane)
HFC-32 (difluoro-methane) **	HCFC-22 (chloro- difluoromethane)
HFC-125 (pentafluoroethane) **	HCFC-225ca (perchloroethylene (tetrachloroethylene))
HFC-161 (ethylfluoride)**	HCFC-225cb (1,3-dichloro -1,1,2,2,3-pentafluoro propane)
HFC-143a (1,1,1-trifluoroethane)	HCFC-31 (chlorofluoromethane);
HFC-134a (1,1,1,2-tetra-fluoroethane) **	
HFC-134 1,1,2,2-tetra fluoroethane **	
HFC-245eb (1,1,1,2,3- pentafluoropropane)	Perfluorocarbon compounds which fall into these classes:
HFC-245fa (1,1,1,3,3- pentafluoropropane)**	i. Cyclic, branched, or linear, completely fluorinated alkanes,
HFC-365mfc (1,1,1,3,3-pentafluorobutane)**	ii. Cyclic, branched, or linear, completely fluorinated ethers with no unsaturations,
	iii. Cyclic, branched, or linear, completely fluorinated tertiary amines with no unsaturations, and
	iv. Sulfur containing perfluorocarbons with no unsaturations and with sulfur bonds only to carbon and fluorine.”

* This pollutant is specifically listed as a Non-Criteria Regulated Air Pollutant on the Facility Emissions Summary page.

** This pollutant is a greenhouse gas .

Estimating Your Facility's Emissions

General

The EAP realizes the difficulty of obtaining accurate emissions estimates and requests that you prepare this information carefully and thoroughly. Most of the facilities required to complete this inventory have successfully completed an emissions inventory before, therefore, the topic of *how* to estimate emissions will not be discussed in detail in these instructions. If you are unfamiliar with emission factors or estimating emissions, it would be beneficial for you to read the "Basic Information" on EPA's CHIEF website, <http://www.epa.gov/ttn/chief/efpac/abefpac.html>. This site also provides several resources for emission factors and other emission estimation tools. Generally, the most accurate emissions estimates will be obtained through use of site specific data such as stack test results and mass balance. These methods are not applicable or practical for certain emission sources, however, and emission factors or other methods must be used. You may need to obtain additional information from your chemical suppliers and other vendors, corporate offices and/or environmental consultants. As in previous years, you should use the most current emission factors and estimation programs available.

Actual emissions must be calculated using the operating hours for each emission unit, production rates, control equipment, and types of materials processed, stored, or combusted during the calendar year being inventoried. **Emissions should be expressed in units of tons per year for billable/criteria pollutants and in pounds per year for all other air pollutants.**

To accurately quantify emissions, use emissions monitoring or other test data when available. If emission factors are used, care should be taken to choose the most valid and current emission factors for the particular process. Any non-published factors (e.g. draft emission factors) must be well documented and justified as part of the submittal. You may also use data provided by the suppliers for your facility. For example, Material Safety Data Sheets may be used as a basis for mass balance calculations for a surface coating operation. The origin of your data sources and methods for estimating emissions must be clearly and completely documented so that the pollutant quantities can be independently recreated by the EAP reviewer. In order for the inventory to be considered complete, the calculations used to determine actual emissions must be included with the submitted inventory.

The inventory preparer is responsible for identifying all regulated pollutants emitted by the facility. The List of Pollutants is primarily composed of specific HAPs and TAPs but is NOT all-inclusive with regard to VOC and Particulate Matter. For example, many solvents used/emitted by industry are not HAPs and are not on the list but are VOC and must be reported in the inventory as such.

Similarly, some compounds may be a member of a "family" of HAPs. Emissions of all these compounds must be quantified and included in the totals for the applicable "family" of pollutants. If individual compounds are included in the pollutant their emissions must also be reported individually. An example of this is "Glycol Ethers", which are commonly used in paints and inks. The Federal HAPs list includes "Glycol Ethers" and defines which glycol ethers are considered to be HAPs by describing molecular structure, not by name. Some glycol ether emissions have been overlooked in previous inventories simply because the inventory preparer was unaware that a particular compound was a glycol ether. Resources such as the NC DAQ's "Glycol Ethers Compilation" search page at <http://daq.state.nc.us/toxics/glycol/> are available to determine which compounds are in the family of glycol ethers.

If a pollutant can be characterized by more than one pollutant category, its emissions should be included in each applicable category. For example, if a spray booth emits 2 tons of Hexyl Cellosolve™ (a glycol ether, HAP and VOC), 5 tons of methyl ethyl ketone (a HAP and VOC) and 5 tons of naphtha, (a VOC) the emissions summary for this process should reflect not only the two speciated HAPs, Hexyl Cellosolve™ and methyl ethyl ketone, but also 2 tons of Glycol Ethers and 12 tons of VOC.

If you are using a previous submittal to help prepare your inventory please be aware that pollutant codes may have been changed, added, or omitted from this year's pollutant list. This is especially true of speciated HAPs that were members of a family. For example, in a previous inventory, Beryllium, Beryllium Chloride, Beryllium Fluoride, Beryllium Nitrate, Beryllium Oxide, Beryllium Sulfate and "Beryllium & Compounds" may have been reported separately. These, and any other Beryllium compounds, must now be reported in aggregate as simply Beryllium.

Where to get emission factors and other emissions estimation tools

The North Carolina Department of Environment and Natural Resources, Division of Air Quality (DAQ) has created spreadsheets to aid in calculating emissions from certain facilities. Among these are oil, gas, coal and wood combustion, incinerators, stone quarries and stone crushing, various woodworking operations and asphalt plants. The spreadsheets are available for downloading from DAQ's website at http://daq.state.nc.us/cgi-bin/permit_forms.cgi?type=sheets

The EPA has developed many resource documents, databases and programs that are useful for emissions estimation. They are available for downloading at no charge from the ClearingHouse for Inventories and Emission Factors (CHIEF) on the EPA's TTNWeb website at <http://www.epa.gov/ttn/chief/>. Some of these sources are listed below.

Compilation of Air Pollutant Emission Factors, (AP-42), Volume 1: Stationary Point & Area Sources, 5th Edition, and Supplements

This voluminous document is the most common source for emission factors. You may download the sections you need from the CHIEF website at <http://www.epa.gov/ttn/chief/ap42/index.html>. For a few sources, the most recent factors may be draft factors. If you wish to use draft factors, please discuss the matter with your facility's case manager at the EAP beforehand.

Locating and Estimating Air Toxic Emissions from Sources of . . .

These documents provide emission factors, for sources of specific pollutants. Some of these documents may be downloaded from the CHIEF web page at <http://www.epa.gov/ttn/chief/le/index.html>

WebFIRE is a searchable, web-based application at <http://cfpub.epa.gov/webfire/>. It provides access to emission factors and stack test data. WebFIRE data may also be downloaded as a .csv file to be imported into MS Access.

Other Emission Factor and Emission Estimation Tools are available at <http://www.epa.gov/ttn/chief/efpac/esttools.html>. These tools include:

- **TANKS:** TANKS estimates volatile organic compound (VOC) and hazardous air pollutant (HAP) emissions from fixed- and floating-roof storage tanks.
- **Speciate:** SPECIATE is EPA's repository of Total Organic Compound (TOC) and Particulate Matter (PM) speciated profiles for a variety of sources for use in source apportionment studies.
- **LandGEM:** The Landfill Gas Emissions Model (LandGEM) is an automated estimation tool with a Microsoft Excel interface that can be used to estimate emission rates for total landfill gas, methane, carbon dioxide, nonmethane organic compounds, and individual air pollutants from municipal solid waste landfills. It is available from the EPA's Clean Air Technology Center.
- **Water9:** WATER9, a wastewater treatment model, consists of analytical expressions for estimating air emissions of individual waste constituents in wastewater collection, storage, treatment, and disposal facilities; a database listing many of the organic compounds; and procedures for obtaining reports of constituent fates, including air emissions and treatment effectiveness.

Reporting Your Facility's Emissions

Facility Site Information form

Complete this form to provide facility location and contact information.

Facility Name: the name of your facility.

Facility ID #: the first five digits of your facility's permit number (e.g., If the permit number is 00883R6, then the Facility ID is 00883).

Additional Info: If applicable, specify a plant site name, location, etc. (e.g., "North Quarry", "KTM/EXC Plant 200", Husaberg Road Site").

North American Industry Classification System (NAICS) Code: the NAICS code system is a means for classifying business activity in North America. The codes can be found online at <http://www.naics.com/search.htm> or in the Code List spreadsheet. Please verify that the NAICS code entered is a valid code listed in the Code List spreadsheet.

Facility Address: the street address, city, and zip code of the facility, i.e., the facility's physical location. Do not use a post office box number for the facility address.

Latitude and Longitude: Geographic coordinates of the facility's general entrance. Common ways for determining lat/longs are by using Google Earth (<http://earth.google.com>) or Forsyth County's Geo-Data Explorer website (<http://www.forsyth.cc/tax/geodata.aspx>), or similar GIS websites. Please report latitude and longitude in decimal degrees, *not* in degrees, minutes and seconds. Latitude coordinates in Forsyth County should be between 35.972730 and 36.261614. Longitude coordinates should be between -80.035433 and -80.516445.

Horizontal Collection Method: code for the method used to determine the lat/long coordinates. If you use the County's Geo-Data Explorer or other aerial photo-based method to determine lat/longs, the proper code is "019". If you use Google Earth or some other satellite photo-based online mapping site, the code is "020". If you use a standard hand held GPS to locate your facility, the code would be "016". For other options, see "Horizontal Collection Method" in the Code List spreadsheet.

Horizontal Reference Datum Code: code that represents the reference datum used in determining the lat/long coordinates. The county's Geo-Data Explorer utilizes the North American Datum of 1983, the code for which is "002". The code for World Geodetic System 1984, which is used by Google Earth, is 003.

Geographic Reference Point Code: code that represents the place for which geographic coordinates were established. The EAP prefers that the coordinates for the general plant entrance are specified, the code for which is "101". For other options, see Geographical Reference Point Code in the Code List spreadsheet.

Facility Contact: name, title, telephone number, fax number and email address of an on-site emissions inventory contact person. This person does not have to be the person who prepared the report, but should be someone familiar with the details of the report.

Inventory Preparer Contact: name, title, telephone number, fax number and email address of the person who completed this emissions inventory, if different from Facility Contact.

Responsible Official: name, title, telephone number, fax number and email address of facility owner or "responsible official" as defined in 40 CFR 70.2.

Emission Release Point form

Complete as many forms as necessary to describe the facility's Emission release Points. If you have determined Emission Release Point parameters via a stack test, please use those actual data.

ER Point ID#: unique alphanumeric ID assigned by you to an Emission Release Point to distinguish one from another. The ERP ID# can be up to 10 characters in length. If you have already established an ID for a stack, vent or fugitive source in a previous emissions inventory, do not change it. For facilities that have submitted an inventory before, this information is included in the report provided with the inventory package showing Emission Release Point, Emission Unit and Process information. If you have not established an ID for a stack, vent or fugitive source in a previous emission inventory, you should use the equipment IDs specified in your permit, as available.

Emission Release Point Description: describe the ERP in 100 characters or less. Usually stacks and vents are described by the process they exhaust. For example, "Boiler #4 Stack" or "Cement Silo Bin Vent"

ERP Type: code for physical configuration of the release point.

<u>Code</u>	<u>Emission Release Point Type</u>	<u>Code</u>	<u>Emission Release Point Type</u>
01	FUGITIVE EMISSIONS	04	GOOSE NECK
02	VERTICAL DISCHARGE	05	VERTICAL WITH RAIN CAP
03	HORIZONTAL DISCHARGE	06	DOWNWARD-FACING VENT

Height: the physical distance in feet from the ground to the top of the ERP.

Diameter: the inside diameter in feet of the ERP at its exit point. If the emission point is not round, specify the actual dimensions in the description and enter the equivalent diameter using the following equation:

$$\text{Diameter} = 2 \times L \times W / (L+W) \text{ where } L \text{ is the length and } W \text{ is the width}$$

Flow: volume of gas exhausted by stack in Actual Cubic Feet per **Minute**. This parameter must be reported to the nearest tenth (e.g., 14500.0) and should be between 0.1 and 12000000 for non-fugitive release points. Numerals only – no commas.

Temperature: the temperature of the gas as it exits the emission point in degrees Fahrenheit. Must be between 30 and 3500.

Velocity: average velocity of gas in Feet per **Second** as it exits the vent or stack. This parameter must be to the nearest tenth (e.g., 145.7) and should be between 0.1 and 400, inclusive for non-fugitive release points. If the stack has a raincap, is horizontal or is downturned, enter the flow but leave velocity blank.

Please ensure that stack parameters produce flow and velocity that are reasonable according to good engineering practice and the physical laws of the universe. For an all too common example, stack diameter and flow combinations that produce supersonic exhaust gas velocity indicate an error. You may use the formulas below to check the validity of your reported parameters. Reported flow/velocity should not vary from calculated flow/velocity by more than 5 percent.

$$F = V \times 188.5 \times r^2 \quad \text{and} \quad V = \frac{F}{188.5 \times r^2} \quad \text{Where: } F = \text{flow in ACFM, } V = \text{velocity in ft/sec, and } r = \text{radius in feet}$$

Dist. To Fenceline: distance in feet from ERP to facility's fence line or other point beyond which the general public has access. The information is needed by EPA's air quality modelers to more accurately predict the residual risk of HAP emissions beyond the facility's property boundary.

Processes Exhausted Through This Release Point: ID#'s of Processes exhausted through the stack or vent. The Process ID# entered here must exactly match the Process ID# entered on the Process, Emissions and Control System form.

Emission Unit form

Use this form to list each Emissions Unit for which emissions are to be reported. Up to twelve units may be listed on one page. Grouping of emission units is allowed under certain conditions, especially when it simplifies emissions reporting and is consistent with the manner in which equipment is listed in the facility's air quality permit. An example of this would be grouping ten paint spray booths together where the emissions are estimated as a group and no distinct regulations apply to some booths and not the others.

Grouping of emission units should be limited to:

- ✓ Sources where there are similar hours of operation,
- ✓ Same or very similar emission release points,
- ✓ Same regulatory applicability,
- ✓ No single emission unit emits greater than 10 tons of VOC or NO_x
- ✓ Groups of equipment operating as a system

Further grouping may be done at the process level based on types of fuel and emission factors.

Emission Unit Description: a description of the equipment or object from which emissions originate, e.g., "Aprilia Boiler #4 – 57 MMBtu/hr – NG/Oil", "Two-Piece Metal Can Production Line", or "Coal Handling."

Emission Unit ID: unique alphanumeric identifier used to distinguish each Emission Unit at the facility. The Emission Unit ID may be up to ten alphanumeric characters in length. If you have already established an ID for an Emission Unit in a previous emissions inventory, please do not change it. For facilities that have submitted an inventory before, this information is included in the report provided with the inventory package showing Emission Release Point, Emission Unit and Process information. If you have not established an ID for a stack, vent or fugitive source in a previous emission inventory, you should use the IDs shown in your permit, as available.

Unit Type Code: this code identifies the type of emissions unit activity and is found in the Code List.

Unit Design Capacity: if the Emissions Unit has Unit Type Code 100, 120, 140, 150, 160, 180, or 200, report its maximum continuous throughput capacity. For all other unit types, leave blank.

Design Capacity Units: this code specifies the unit of measure for the Design Capacity, if reported and is found in the Code List.

Process, Emissions and Control System form

This form is to be used for identifying each Process and its associated control devices and emissions.

A Process form must be completed for each operating scenario at each Emission Unit. If additional space is required to list pollutants, please use the "Process, Emission and Control System - (continued)" form.

Process Description: a description of the process, e.g., "Boiler #4 – Natural Gas", "Boiler #4 – Oil", "Two-Piece Metal Can Coating – Inside Spray", "Fugitive Emissions from Coal Pile."

Process ID: a unique alphanumeric identifier associated with a process. One commonly used approach is to append a process identifier to the related Emission Unit ID. For example if the EU ID for Boiler #4 is "B4", the Process IDs for NG and oil combustion could be "B4-NG" and "B4-OIL". The Process ID may be up to ten alphanumeric characters in length. If you have already established an ID for a Process in a previous emissions inventory, do not change it. If you are assigning an ID for the first time, use the Process IDs found in your permit when possible.

Emission Unit, Emission Release Points: list the Emission Unit and the Emission Release Point(s) this process is associated with.

Source Classification Code: is used as a primary identifying data element for processes in many of EPA's databases. Report the most appropriate SCC for the process. NC DENR and Michigan DEQ both have very good SCC code query websites at <https://xapps.ncdenr.org/qaq/scs/SCCFinder.jsp> and http://www.deq.state.mi.us/maers/scs_query.asp respectively. The codes are also listed on the "SCC" tab in the Code List spreadsheet.

Operating Hours: actual number of hours per year that the process equipment operated during the inventory year.

Percent production between April 1st and October 31st: percent of process throughput for the seven month ozone season as compared to the whole year.

Material Code: code for the material or fuel processed. See Code List spreadsheet. For example, the “material” for a boiler might be #2 fuel oil , the code for which is “58”. The exact material used or produced by the process may not be listed. Please select the closest match possible.

Material I/O Code: a descriptor indicating whether material is used or produced or simply passes through the process.

Code	Material I/O Description
I	PROCESS MATERIAL USED (INPUT)
O	PROCESS MATERIAL PRODUCED (OUTPUT)
E	EXISTING MATERIAL PASSES THRU IN STATIC MANNER

Throughput: numeric value quantifying the amount of specified material that went through this process during the inventory year.

Units Code: code expressing unit of measure for material throughput. See “Throughput Units” in the Code List.

Calculation Data Source: report the source of throughput/activity data e.g., “fuel purchased”, “widget production records”, “hour meter on #4 Dryer”, etc. Maximum length 50 characters.

Control Approach: description of the control approach applied to a process. For each Control Approach there must also be at least one Control Measure and one controlled Pollutant. If there are no downstream control measures for the process, leave blank. Since at this time there is no requirement for a unique ID number for each control approach, please attempt to provide a unique descriptor. This could be achieved simply by choosing a description that refers to the process being controlled. For example, “Aprilia Grinder pulse jet baghouse”, “OSSA Printer#1 (EP-1) carbon adsorption”, etc.

Control Approach Percent Capture: an estimate of the portion of an emissions stream that is collected and routed to the control measures when the system is operating as designed, reported as a percent.

First Emissions Inventory Year Controls Active: the first emissions inventory year for which the control approach was implemented. If this information is unknown, and the controls were installed before 1990, use 1990.

Emissions Year Controls Permanently Shutdown: leave blank if control measures are in place and active. If the control measure(s) are no longer in place, report last emissions inventory year for which the control approach was active. If it was active part of the current inventory year before it was shut down, please leave this blank until the next inventory.

Control Measure Code(s): code used to identify the device(s) or practice(s) used to reduce one or more pollutants. If a Control Approach is listed, at least one Control Measure and controlled pollutant must be entered. Control Measure codes can be found in the code list spreadsheet.

Pollutant Name: the name of the Pollutant. Emissions of all pollutants on the “List of Pollutants” found in the Code List spreadsheet must be reported, as well as any other Regulated Air Pollutants.

Pollutant Code: code or Chemical Abstracts Service (CAS) number associated with the Pollutant. See the “List of Pollutants”. You must report all listed pollutants. Additionally, if the process emits a compound that is not listed, you must include its mass in the inventory as VOC or Particulate Matter whichever is applicable. If a Control Approach is listed, at least one pollutant must be entered as being controlled (see Control Efficiency). Verify that the Pollutant code entered is a valid code included in the Code List spreadsheet.

Yearly Emissions: the best estimate of the actual quantity of each air pollutant emitted by the process during the inventory year. For criteria and “billable” pollutants (see definitions) please report emissions in tons. For all other pollutants, report emissions in pounds.

Units: specify whether emissions were reported in tons or pounds. For criteria and “billable” pollutants, emissions must be reported in tons. For all other pollutants, emissions must be reported in pounds.

Calculation Method: code for the method used to estimate emissions. Found in the code list.

Control Efficiency: mass of the emissions collected by the entire control system divided by the mass of emissions emitted by the process, expressed as a percentage. Control efficiency should be entered for all pollutants where emissions were calculated using the control approach. If emissions are calculated using a “controlled” emission factor, you are encouraged but not required to report a control approach, control measure and a controlled pollutant efficiency at this time.

Note regarding control device data: The entire Control Approach section and the Control Efficiency data element found under the pollutant emissions section should be left blank when there are no emission controls for the process. They may be left blank if the emission factors used are “controlled” factors (i.e., the factor accounts for controls). However, these sections must be completed if the control efficiency is applied to reduce emissions in your calculations

Facility Emissions Summary Form

Sum the emissions data from the individual “Process, Emission, and Control System” forms on this form. If you need additional space for listing pollutants, use the “FACILITY EMISSIONS SUMMARY - (continued)” form. If you complete the inventory forms using your computer instead of hardcopy forms, please **do not** re-sort the criteria and billable pollutants that are already listed on this form. Preserving the sort order is necessary for the EAP staff to enter the information accurately

Shut Down Equipment Form

List emissions-related equipment (stacks, process equipment, etc.) that has been shut down since the facility's last emissions inventory, along with the corresponding ID and the approximate date the equipment was shut down. If a shutdown process is associated with the shutdown of an emissions unit, these processes will be automatically archived when their corresponding emissions unit is listed as shut down. Do not list as shut down any stacks or units that operated during the year being inventoried. These should be done in the next inventory cycle.

Certification Form

The owner, operator or responsible official for your facility must certify the accuracy and completeness of the information reported by signing and dating the certification statement. This certification statement applies to all the information supplied on the inventory forms and should be signed only after the forms have been completed and reviewed. Forms submitted by Title V facilities **must** be certified by a “Responsible Official” as defined in 40 CFR 70.2. Print or type, in the space provided, the name and title of the person who signs the statement.

What to do with the completed Forms

After you have completed the forms, retain copies for yourself and mail the forms, supporting calculations and emission factor documentation to:

Forsyth County Office of Environmental Assistance and Protection
Forsyth County Government Center
201 N Chestnut St, 5th Floor
Winston-Salem, NC 27101-4120

Those reporting their facility’s emissions via database should be aware that emailing the database as an mdb file may fail without notification. To avoid this problem,:

1. Change the .mdb extension of your file name to .aok or .txt.
2. Send the database to the following email address: lydask@forsyth.cc
3. If you don’t receive an acknowledgment, please call or email Steve Lyda (336-703-2444 / lydask@forsyth.cc) to make sure your information was properly received before June 30th. Be sure to include your phone number in case there is a problem.
4. You may also send the database via CD, DVD or flash drive.

If you have any questions about completing your facility's emissions inventory using the inventory database, contact Steve Lyda at 336-703-2444. If you have questions regarding estimating and reporting emissions from specific processes at your facility, please contact your case manager at the Office of Environmental Assistance and Protection at (336) 703-2440.

Forsyth County Office of Environmental Assistance and Protection Air Pollutant Emissions Inventory

Facility Site Information - CY2014 Emissions

Facility Name:				Facility ID:	
Additional Info:				NAICS Code:	
Facility Street Address:					
Facility Address Line 2:					
City:			State:	NC	Zip Code:
Facility Latitude:			Facility Longitude:		
Horizontal Collection Method Code:		Horizontal Reference Datum Code:		Geographic Reference Point Code:	
Facility Contact:					
Title:					
Telephone Number:			Fax Number:		
Email Address:					
Inventory Preparer:					
Inventory Preparer Company Name:					
Telephone Number:			Fax Number:		
Email Address:					
Facility Responsible Official:					
Title:					
Telephone Number:			Fax Number:		
Email Address:					

Forsyth County Office of Environmental Assistance and Protection Air Pollutant Emissions Inventory

EMISSION UNIT - CY2014 Emissions

Facility Name:				Facility ID:	
Emission Unit Description:				Emission Unit ID:	
Unit Type Code:		Unit Design Capacity:		Design Capacity Units:	
Emission Unit Description:				Emission Unit ID:	
Unit Type Code:		Unit Design Capacity:		Design Capacity Units:	
Emission Unit Description:				Emission Unit ID:	
Unit Type Code:		Unit Design Capacity:		Design Capacity Units:	
Emission Unit Description:				Emission Unit ID:	
Unit Type Code:		Unit Design Capacity:		Design Capacity Units:	
Emission Unit Description:				Emission Unit ID:	
Unit Type Code:		Unit Design Capacity:		Design Capacity Units:	
Emission Unit Description:				Emission Unit ID:	
Unit Type Code:		Unit Design Capacity:		Design Capacity Units:	
Emission Unit Description:				Emission Unit ID:	
Unit Type Code:		Unit Design Capacity:		Design Capacity Units:	
Emission Unit Description:				Emission Unit ID:	
Unit Type Code:		Unit Design Capacity:		Design Capacity Units:	
Emission Unit Description:				Emission Unit ID:	
Unit Type Code:		Unit Design Capacity:		Design Capacity Units:	
Emission Unit Description:				Emission Unit ID:	
Unit Type Code:		Unit Design Capacity:		Design Capacity Units:	
Emission Unit Description:				Emission Unit ID:	
Unit Type Code:		Unit Design Capacity:		Design Capacity Units:	
Emission Unit Description:				Emission Unit ID:	
Unit Type Code:		Unit Design Capacity:		Design Capacity Units:	

SHUTDOWN EQUIPMENT - CY2014 Emissions

Facility Name:		Facility ID#:	
EMISSION RELEASE POINTS			
Emission Release Point Description		ERP ID#	Shutdown Date
EMISSION UNITS			
Emission Unit Description		EU ID#	Shutdown Date
PROCESSES			
Process Description		Process ID#	Shutdown Date

CERTIFICATION STATEMENT - CY2014 Emissions

Facility Name:	Facility ID#:
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The statement below must be signed by the facility's responsible official after all other forms have been completed.

Responsible official means one of the following:

- (1) For a corporation: a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation, or a duly authorized representative of such person if the representative is responsible for the overall operation of one or more manufacturing, production, or operating facilities;
- (2) For a partnership or sole proprietorship: a general partner or the proprietor, respectively; or
- (3) For a municipality, State, Federal, or other public agency: Either a principal executive officer or ranking elected official.

"I hereby certify that I have reviewed the information contained in my facility's 2014 emissions report and that, to the best of my knowledge and belief, the information is true, accurate and complete."

Signature _____ Date _____

Name/Title _____
PRINT name and title

QAPP Name: **FCEAP NEI QAPP**

Section: Appendix C

Revision Date: **03/01/2016**

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APPENDIX C

EMISSIONS INVENTORY DATA REVIEW

Emissions Inventory Review Checklist

Premise: _____ CM: _____ Date: _____

	Y	N	NA	Resolved	Add Info Requested
Administrative Completeness					
A1. Have the forms been filled out completely?	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
A2. Was the certification form signed by a responsible official? (Electronic submittals must be accompanied with a hard copy of the certification and emissions summary.)	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
A2. Did the facility's survey include supporting calculations and information necessary to verify emissions (including hard copies for electronic submittals)?	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
Quality Assurance Review					
Q1. Was the appropriate NAICS code assigned to the facility and verified?	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
Q2. Do the LATLONG coordinates correctly identify the location of the facility (use Geodata Explorer or Google Earth)?	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
Q3. Were all sources of emissions required to be reported included in the survey?	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
Q4. Were all stacks, emission units, and processes properly assigned ID numbers and consistently related to each other appropriate for data integrity?	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
Q5. Have stacks, emission units, and processes from the most recent inventory data been compared to current data and flagged for removal or update as necessary?	<input type="checkbox"/>				
Q6. Were the processes assigned appropriate SCC codes and verified?	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
Q7. Are the Exhaust Flow and Exit Gas Velocity on the STACKS PAGE consistent and reasonable (speed of sound is 1126 ft/s)?	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
Q8. Concerning all pollutants:					
a. Were all pollutants reported in the appropriate units (tons for CAPs and Billable Pollutants, and lbs for HAPs/TAPs) and summarized appropriately?	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
b. Have all speciated pollutants (VOCs and HAPs) been correctly aggregated to their larger pollutant category(ies)?	<input type="checkbox"/>				
c. Have PM species been evaluated for appropriateness of reporting? Is PM Primary reported in all cases?	<input type="checkbox"/>				
d. Were emissions calculated using accepted emission factors and methods and verified?	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
e. Were all controls assigned appropriate control efficiencies and applied to targeted pollutants correctly? Are capture efficiencies greater than or equal to control efficiencies (capture efficiencies are typically 100%)?	<input type="checkbox"/>				
f. Do all of the pollutants identified make sense for the process units surveyed?	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>

A formal letter requesting additional information should be requested to correct significant errors in the submission. Minor corrections may be addressed via email. In either case the facility must be informed of all corrections and submit corrected information.

If 'No' provide explanation in summary

- g. Do the calculated totals of the pollutant emissions fall within expected amounts based on your review of the throughputs and knowledge of the facilities historical emissions?
If 'No' provide explanation in summary
- h. Are emissions below annual limits allowed in the permit (e.g. TAPs, Synthetic Minor)?
If 'No' provide explanation in summary
- i. Do emissions agree with reports required in the permit?
If 'No' provide explanation in summary
- j. For non-TV facilities with NOx or VOC emissions > 25 tpy, does the permit require annual reporting under Rule 3Q .0207?
If 'No' provide explanation in summary
- k. Have emission totals been compared to NEI reporting thresholds.
- l. Do the emissions reported on the "Facility Emissions Summary" form submitted by the facility match the Facility Emissions Summary report from the NEI database
- Q9. Was "Year Collected" entered under "Processes, Controls, Emissions" tab?

Documentation

- D1. Emissions Inventory Review Document.
Brief discription of the facility and processes.
Brief discussion of deficiencies and additional information requests.
Brief discussion of aggregate pollutant species.
Brief discussion on appropriate reporting of PM10 and PM2.5
Explanation of the calculation methods and emission factors used.
Comparison with previous inventory, permit reports and other reality checks.
Explanation of any annual emission limit exceedances.
- D2. Sample calculations (may be provided as an attachment, e.g. spreadsheet).
- D3. Copy of "Facility Emissions Summary" form submitted by the facility
- D4. Facility Emissions Summary report from the NEI database.
- D5. Facility-Units-Stacks report from the NEI database.
- D6. Emissions Inventory Review Checklist.

Emissions Inventory Data Review

Emissions inventories submitted by permitted facilities in Forsyth County are reviewed for accuracy and completeness then entered into NEI format by CAP staff. The following procedure explains the process used by CAP staff and management to ensure the emissions inventories are complete, accurate and reasonable. The steps performed for this procedure are documented using the EI Review Checklist and the Emissions Inventory Data Review Report.

Administrative Completeness Review

Inventories are required to be submitted no later than June 30. Inventory submittals should be reviewed for administrative completeness within 30 days after they are received (no later than July 31). In order for a submittal to be considered administratively complete the following items must be included:

Paper Submittals

- A1. **Completely filled out forms.**
- A2. **Certification statement signed by a Responsible Official.**
- A3. **Calculations and supporting information.**

Electronic Submittals

- A1. **The electronic database file** (the file should be opened and browsed to ensure data fields are populated).
- A2. **A hard copy of the certification statement signed by a Responsible Official and a hard copy of the Facility Emissions Summary.**
- A3. **Calculations and supporting information.**

If the submittal is not administratively complete, a formal letter should be sent to the facility requesting the missing items.

Inventory Data QA Review

The following comprise the substantive review of the data submitted by the facility. Any Significant deficiencies identified during this review must be corrected by the facility. A formal letter requesting additional information should be requested to correct significant errors in the submission. Minor corrections may be addressed via email. In either case the facility must be informed of all corrections and submit corrected information.

- Q1. **Was the appropriate NAICS code assigned to the facility?** Review the description for the NAICS code reported by the facility to verify that it is a valid code and consistent with the operations. The codes and descriptions are available in the drop down box and should be verified here. The NAICS code and description is also included in the Facility-Units-Stacks report from the NEI database. If the report is blank the NAICS code is not valid and needs to be changed.
- Q2. **Do the LAT\LONG coordinates correctly identify the location of the facility (use Geodata Explorer or Google Earth)?** This data is reported on the FACILITY SITE INFORMATION form and should indicate the entrance to the facility property. In Geodata Explorer, the longitude in the lower left corner of the screen is incorrectly

reported as a positive value. LAT/LONG decimal degrees can be entered directly into Google Earth to view the reported location for verification.

- Q3. **Were all sources of emissions required to be reported included in the survey?** This determination should be made based on the sources listed in the permit in addition to your knowledge of insignificant activities (3Q .0102(c)(2)) at the facility.
- Q4. **Were all stacks, emission units, and processes properly assigned ID numbers and consistently related to each other appropriate for data integrity?** Verify that all Emission Release Points, Emission Units and Processes have unique ID numbers with no more than 10 characters. Make sure the Emission Unit ID number and “Release Point ID number entered on the “Process, Emissions & Control System” form matches the ID number assigned on the “Emission Unit” and “Stack” forms.
- Q5. **Have stacks, emission units, and processes from the most recent inventory data been compared to current data and flagged for removal or update as necessary?** Processes, Emission Units, and Stacks that are no longer in operation must be retired from the NEI system. For facilities that have not reported under the current NEI system, the baseline data is from the 2002 inventory. Review the listed processes, emission units and stacks in the NEI database. Change the status code to “PS” if an item is permanently shut down or “TS” if an item is temporarily shut down. The last inventory year must also be entered for items that are shut down. The status code for items that are shut down during the inventory year should not be changed until the following inventory year. New stacks, emission units and processes must be added in the Facility, Stacks, and Units Data Entry Screen.
- Q6. **Were the processes assigned appropriate SCC codes?** Review the descriptions for the SCC codes reported by the facility for each process to verify that it is a valid code and consistent with the operations. The codes and descriptions are available in the drop down box in the NEI database and should be verified here. The SCC codes and descriptions are also included in the Facility-Units-Stacks report from the NEI database. If the SCC description does not appear on this report the code is not valid and needs to be changed.
- Q7. **Are the calculations for ACFM on the EMISSION RELEASE POINT page correct?** These values should be entered on this form for each stack and are related as follows:

$$\text{Exhaust Flow (ACFM)} = \text{Velocity (ft/sec)} \times 60 \times 3.14 \times (\text{Radius(ft)})^2$$

Perform this calculation for each stack. (For stacks that are not round the equivalent diameter should be reported by the facility using the equation: $diameter = 2 \times L \times W / (L + W)$ where L is the length and W is the width.) If the Exhaust Flow and Exit Gas Velocity are inconsistent, only enter the parameter that is most representative of actual operation.

- Q8. **Concerning all pollutants:**
- a. **Were all pollutants reported in the appropriate units (tons for CAPs and Billable NCAPs and lbs for HAPs/TAPs) and summarized appropriately?** Criteria pollutants, PM10, PM2.5, SO2, NOx, CO, VOC, Lead, and Billable pollutants should be entered in tons in the NEI database. All other pollutants should

be entered in pounds. If a pollutant appears twice on the Facility Emissions Summary report it is entered in the incorrect units for one or more processes. Refer to Process Emissions to identify these processes.

- b. **Have all speciated pollutants (VOCs and HAPs) been correctly aggregated to their larger pollutant category(ies)?** Aggregate pollutants such as VOC and glycol ethers include many different compounds. Some of these compounds are also pollutants that must be reported individually. Verify that the emissions reported for aggregate pollutants include the emissions reported for specific pollutants included in the aggregate pollutant category. For example, pollutants such as Glycol methyl ether, Methyl Cellosolve, and Carbitol Acetate are Glycol Ethers. To determine if a specific pollutant is a glycol ether, go to <http://daq.state.nc.us/toxics/glycol/> and search by CAS # (Pollutant #).
- c. **Have PM species been evaluated for appropriateness of reporting?** The NEI includes five PM pollutant categories:
- Primary PM10
 - Filterable PM10
 - Primary PM2.5
 - Filterable PM2.5
 - Condensible PM (all Condensible PM is assumed to be PM2.5)

The NEI\AERR requires reporting of PM10 and PM2.5 when reliable information is available. If good information supporting PM2.5 emissions is not available, these emissions should generally not be reported. In addition, EPA requests reporting of the filterable and condensable fractions when information is available in addition to total (Primary) emissions. If good information supporting filterable and condensible emissions is not available, only report the primary emissions.

If PM2.5 is reported, PM10 must also be reported and PM10 emissions must be greater or equal to the PM2.5 emissions.

If filterable and/or condensable PM is reported, Primary PM must also be reported.

- d. **Were emissions calculated using accepted emission factors and methods?** The origin of emission factors used in the calculations must be provided and the calculations must be repeatable. Verify that the inputs used in calculations, spreadsheets, and models are reasonable. Repeat at least one of the calculations by hand or using a spreadsheet to verify the result. If a standard spreadsheet or emissions model was used, run the spreadsheet or model to verify the results.
- e. **Were all controls assigned appropriate control efficiencies and applied to targeted pollutants correctly?** If a Control Approach is entered, at least one pollutant must have a value for Total Control entered in the Emissions section. Verify that the assigned control efficiencies are reasonable, e.g. 99.9% PM control efficiency would be questionable for a cyclone. Verify that only the appropriate species are assigned a control efficiency, e.g. VOC emissions should not be assigned a control efficiency for a cyclone.

If emissions are calculated using a “controlled” emissions factor, a control approach is not required, however, if this information is provided it should be entered unless it is clearly inaccurate. If emissions are calculated by applying capture/control efficiency to an uncontrolled emission factor a control approach must be entered.

The Capture Efficiency in the CONTROL APPROACH must be greater than or equal to the Eff% reported for a pollutant. Capture Efficiency % is commonly 100%.

- f. **Do all of the pollutants identified make sense for the process units surveyed?**
This determination is based on your knowledge of the process. If you are not familiar with a process you should refer to a Statement of Basis for the permit or consult with a colleague.
- g. **Do the calculated totals of the pollutant emissions fall within expected amounts based on throughputs and the facility’s historic emissions?** Compare the reported emissions to the most recent inventory on file. If there is a large disparity, determine the cause (e.g. reduced production, revised emission factors) and document this in the emissions inventory review summary. If a previous inventory is not available another method may be used such as a comparison to the facilities potential emissions (Actual emissions should be a fraction of potential emissions approximately analogous to hours of operation.).
- h. **Are emissions below annual limits allowed in the permit (e.g. TAPs, Synthetic Minor)?** If the operating permit for the facility includes annual emission limits, verify that the reported emissions are below the limits. If reported emissions exceed a limit, this should be investigated further and enforcement action taken as appropriate.
- i. **Do emissions agree with reports required in the permit?** If the permit for a facility includes conditions requiring emissions or material usage reports, verify that these emissions or material usages match the emissions reported in the inventory.
- j. **For non-TV facilities with NO_x or VOC emissions > 25 tpy, does the permit require reporting under Rule 3Q .0207?** If NO_x or VOC emissions for a non-TV source are greater than 25 tpy and annual emissions inventory reporting is not required, a note should be made to include this requirement during renewal. In addition, Steve should be notified to ensure the facility receives an inventory package annually.
- k. **Have emission totals been compared to reporting thresholds (only pollutants that exceed the thresholds need to be entered)?** If facility-wide emissions for a pollutant are below the reporting threshold the pollutant does not need to be entered for the corresponding emission units. If a reporting threshold is not provided for a pollutant it should be entered.
- l. **Do the emissions reported on the "Facility Emissions Summary" form match the Facility Emissions Summary report from the NEI database?** All submittals, paper and electronic must include a hard copy of the Facility Emissions Summary. After the data have been QA’d and entered in the NEI database, the Facility Emissions Summary submitted by the facility should be compared to the Facility

Emissions Summary report from the NEI database (facilities reporting electronically are required to submit a **hard copy** of the Facility Emissions Summary with the certification). If these summaries are not the same, the reason for the differences should be identified and corrected as appropriate.

- Q9. **Was "Year Collected" entered under "Processes, Controls, Emissions" tab?** The year collected should only be entered after all data have been entered. This field is used to determine when data entry is complete and ready for QA processing in the NEI environment.

Emissions Inventory Review Report

This report is assembled by the case manager after the data provided by the facility have been determined acceptable the data entered in the NEI database. The report is reviewed by the CAP Division Manager and approved as appropriate. After the report is approved, the CAP Division Manager Notifies the CRIS Division Manager that the inventory is ready for QA processing in the NEI environment.

- D1. **Emissions Inventory Review Summary.** The summary documents the quality assurance performed by the Department of the emissions inventory data submitted by the facility. The following information should be addressed in this document:
- a. **Brief description of the facility and processes.** The description should include the facility classification and enough information to allow identification of appropriate NAICS and SCC codes as well as appropriate emission factors and calculation methods.
 - b. **Brief discussion of deficiencies and additional information requests.** Provide an overview of deficiencies found in the inventory submitted by the facility and how they were addressed, e.g. formal request.
 - c. **Brief discussion of aggregate pollutant species.** The discussion should state whether aggregate pollutants were reported and what steps were taken to verify the completeness of the aggregation.
 - d. **Brief discussion on appropriate reporting of PM10 and PM2.5.** The discussion should state whether reliable PM2.5 emissions and/or filterable and condensible fractions were provided. If so, the source of the information used to determine PM2.5 and/or filterable and condensible fractions should be stated.
 - e. **Explanation of the calculation methods and emission factors used.** State how emissions were calculated, e.g. AP-42 emission factors, mass balance, standardized spreadsheet.
 - f. **Comparison with previous inventory, permit reports and other reality checks.** Explain the method used to determine whether the reported emissions are reasonable. If there is a large change in the reported emissions, explain the reason for the difference.

- g. **Explanation of any annual emission limit exceedances.** State the emission limits that were compared to reported emissions to verify compliance. If an exceedance is discovered, provided a brief explanation of the action taken or planned.
- D2. **Sample calculations.** Provide one or more calculations reproducing the calculation provided by the facility. This should be done for each method included in the inventory. If calculations were verified with a standard spreadsheet, this may be attached in lieu of recreating the calculations.
- D3. **Copy of "Facility Emissions Summary" form submitted by the facility.** The summary submitted by the facility is compared to the emissions summary report produced by the NEI database. If the summaries are different, the data entered in the database is or the form(s) submitted by the facility must be corrected.
- D4. **Facility Emissions Summary report from the NEI database.** In addition to the check explained above, this summary is used to verify that emissions have been entered using the correct units, i.e. tons for criteria and billable pollutants and pounds for all other pollutants.
- If a pollutant appears twice on the Facility Emissions Summary report it is entered in the incorrect units for one or more processes.
- D5. **Facility-Units-Stacks report from the NEI database.** This report allows verification of the NAICS and SCC codes entered in the database and provides an overview of the processes entered for the facility.
- If the report is blank the NAICS code is not valid and needs to be changed.
 - If the SCC description does not appear on this report the code is not valid and needs to be changed.

Emissions Inventory Review Checklist. Attach the checklist to the end of the report.