The Emission Inventory Preparation Plan

Kris Ray
Air Resource Program
Confederated Tribes of the Colville Reservation
P.O. Box 150, Nespelem, WA 99155
kris.ray@colvilletribes.com

An emission inventory preparation plan (IPP) is an important tool which provides guidance before conducting the inventory. The Air Resource program of the Confederated Tribes of the Colville Reservation utilizes the Tribal Emission Inventory Software Solution (TEISS) program IPP wizard to focus our effort in conducting our emission inventory. The IPP wizard is a menu based program that allows Tribal air programs to fill in the desired information for categories and panels, and then print a complete implementation plan. An effective IPP will describe how data will be collected; what information exists already; how to collect additional data and describe how the information will be reported. The IPP assists air managers about what data to include and how it should be used before the inventory begins. A complete IPP defines which facilities, SCC codes, emission factors and pollutants measured will be part of the effort. This plan can be used to inform Tribal administrators, EPA and the public of the scope and use of the emission inventory. This paper discusses how we effectively utilized the wizard to prepare our inventory preparation plan for the 2008 base year.

INTRODUCTION

The Reservation of the Colville Confederated Tribes encompasses 1.4 million acres or 2,100 square miles of diverse landscapes. Precipitation ranges from 8 inches in the southwest corner to 25 in the northeast corner. Vegetation varies from shrub-steppe to grand fir - cedar forest communities. The major land uses include agriculture, commercial forest, rangeland and residential. The Colville Indian Reservation is home to the Lakes, Colville, San Poil, Nespelem, Southern Okanogan, Moses/Columbia, Palus, Nez Perce, Methow, Chelan, Entiat and Wenatchi bands. The reservation is occupied by 7,587 residents (2000 census), about 5,000 are Colville Tribal members (61%) and their families and the rest are non-Colville members.

The reservation is covered under the Federal Air Rules for Reservations (FARR), a subsidiary of the Clean Air Act promulgated in April of 2005 for EPA Region 10. The purpose of the rules was to close a regulatory gap concerning basic air quality on the 39 reservations within the region. Adoption of the rules also focused tribal interest in air quality and increased the establishment of air programs. After several years of program implantation the need for emission inventories (EI) became apparent and soon was an integral part of many work plans. Inventories could close the knowledge gap on pollution sources and the amounts being emitted within the exterior boundaries of the reservations. Similarly, on a national scale, EIs were being conducted by many Tribes. Many of these first efforts utilized consultants to inventory and write reports. The results were used to determine the need for a Tribal air quality control program and ambient air monitoring. Tribes were also encouraged to submit data to the National Emissions Inventory to fill the information gap across the country that reservations comprised. To make the entire EI process more accessible the Tribal Emission Inventory Software Solution (TEISS) program was developed by Lake Environmental, Inc. for the Tribal Data Development Working Group (TDDWG) of the Western Regional Air Partnership (WRAP) under a grant from EPA.

To conduct any inventory and write a report the investigators need to have an idea of why they are proposing the work and a clear understanding or how it should be conducted. Further, they should understand the quality of data needed and possible uses of the information. All of these concerns are addressed in an Inventory Preparation Plan and make data entry and writing an EI report much easier.

DISCUSSION

The TEISS program provides Tribes with a platform to enter data, compile totals, track emissions and submit results but without proper preparations these functions may be problematic. The inherent nuances of the program make the IPP essential to a quality end product that provides useful information. The IPP wizard is composed of categories and panels the user fills in with pertinent information that will lead to a well documented plan. If a program does not desire to utilize the IPP wizard the information requested in the categories and panels are useful in any plan.

The first category is for background information about the Tribe and Reservation and consists of two panels. Here the Reservations area and location map can be entered on the summary panel (Figure 1). This panel also becomes the title page for the IPP. A description of the Reservation's landscape, precipitation, plant communities and populations are entered in the second panel, Reservation Environment. How much information is provided depends on the potential audience for the IPP. If the plan is written for an air quality department then detail could be minimal. If the general public or membership is the main audience then greater details are needed to set the stage for the remainder of the plan. Our information was condensed from the natural resources department's Integrated Resource Management Plan. Other sources of such data may include the general Reservation's description from a web site or other reports. The map can be developed in ArcMap and imported as a pdf file complete with titles and other useful information.

Figure 1. Example of general location map.

The next category, Overview, provides detailed information about the Reservation in five panels. The first two panels, geographic area, and health and environment just provide more background details but begin to explain the where and why of the EI. National and local statistics for health concerns should be explained and cited under the second panel. Any environmental concerns specific to the Reservation that affect people's health should be documented here. The greater the detail the higher the confidence the reader will have that an EI will be of use. Information can be found at a variety of sources including Indian Health Services (HIS), US Census, local clinics, and organizations like the Asthma and Allergy Foundation of America (AAFS) or the American Lung Association. In the third panel, potential impacts, greater details of pollution sources can be given with ties to why they are of concern. Cite the facility and the pollutant of concern from both on and off reservation sources. Using wildfires as an example, the plan would state the seasonal nature of fires, smoke from out of the area, local fires, air stagnation and the expected result for at risk populations. If your program is conducting an EI then the attainment statues should be known. Give details and explain what each possibility, attainment, non-attainment or unclassifiable, represents. Also include a history of how and why the designation was given. The last panel provides a history for past EI work conducted. Titles, authors and location of these endeavors should be given. A general discussion of each effort with an indication of

quality of the report would be very useful to justify why a quality EI should be conducted this time. Several attempts have previously been made to conduct an EI on the Colville Reservation to varying degrees of success. Because of the time lag and data quality of these efforts we decided to start over.

Starting with the Emissions Inventory category, greater details and thought will be required to fill in the requested information. On the fist panel, seven standard EI uses are given that can be checked if it applies and one box titled other. These are useful to identify end uses of the data but the comments section provides the opportunity to explain and understand the choices. The EI practitioner should be very clear and concise regarding uses of the information. Understanding the uses will set the tone for the remainder of the IPP and the final EI report. An explanation for trend could be; "By conducting successive EIs over a long period of time trends can be established on the number of sources and the quantity of emissions". Combined the explanation for each checked box explains the justifications for conducting an EI and what the general expectations for the results are.

Details on the types of sources the EI will cover are entered in the next panel and include point, area, mobile and biogenic. Be aware that sources such as gasoline filling stations can be entered in point or area in the input tree. This would be the best time to decide exactly which sources go under which designation and should be listed by category, faculty type and name. The last panel in the category defines what pollutant the EI will cover. Again check boxes give the user a choice, which are criteria, air toxics, ammonia or other. A specific list of pollutants should be listed in the comments portion of the panel. A tie in to the health and environment panel would show continuity through the categories. Lastly, the base year for the EI will be entered in the data boxes provided.

Taking the time to fully understand and research the information for the panels in the inventory resources category will save time and effort when entering data. On the existing data panel be as specific as the information available, that is list all documents that could be used for each source. In EPA Region 10, Title V facilities must apply for a permit, receive a permit, submit yearly Fee calculation worksheets, and an emissions report. Additionally, any air quality inspection reports would be useful. For sources off Reservation documentation, can be found through the states and the National Emission Inventory (NEI) website. Learn about and document all information resources at this stage in the planning process. The extra time will be worth the effort when data entry in TEISS begins. The documents identified will not only have emissions information, but also corporate names, addresses, hours of operation, throughput and many other critical data. In some instances the easiest information to find is what is being emitted and the hardest the throughput in compatible units. Most of these problems can be resolved during the research conducted for this panel and an understanding of the TEISS input tree. Check boxes to describe how estimates will be obtained include AP-42, agencies, testing and documents for EPA and states. Obtaining information on processes and emission factors (EF) from AP-42 requires the least effort but is not available for all instances. Emissions estimates can be calculated based on a variety of options with include stack tests, industry standards, state EF and what appears to be incomprehensible calculation from facility reports. The comments section should identify what EF each facility and process will use, AP-42 or another source.

The collection methods panel should not be a repeat of the information entered under existing data. A simple statement that all data will be collected using identified documents could suffice. If a survey or inventory will be needed to obtain the data then this panel can become very detailed and extensive. The example given in the wizard "*Will create a survey to determine what fuels are used in reservation home"* is a simple statement with a great deal of unsaid work. The tab should reference the survey plan and standard operation procedures (SOP) and be provided as an attachment to the IPP. If a program plans to conduct surveys adequate lead time to finish them need to be planned for.

Enter all persons that have any responsibility for any aspect of the EI under the roles and responsibility panel. Make sure to include their complete position title and role in the process. Contact

information for these individuals will be given under key personnel in the next category. The tips for this panel suggest an organizational chart of the roles identified, an example is given as Attachment 1. Confirm with these individuals that they have the skills and time to participate, and then give them a time frame for work to be completed. The next panel, resources for conducting EI, is a time and funding estimate. At minimum, estimate personnel hours needed to complete all aspects of the EI including the IPP, data entry, report writing and presentations. The last panel, deals with the what, who and where of data management. We are storing data as a TEISS file, TEISS backup zip file on several computers and a server, and on CD. The backup zip file will also be sent to Region 10 EPA. All documents used to gather data such as Title V reports and fee schedules will be kept on file at the Air Quality Program Office.

The QA/QC category represents the most difficult information to include in the plan. The first panel is relatively simple with only contact information for the QA coordinator, technical reviewer and key personnel. The key personnel come from the roles and responsibility panel previously filled in. The data quality objectives (DQO) and procedures panels are the most time consuming to fill in properly. Essentially these are equivalent to a Quality Assurance Project Plan (QAPP) and require a detailed discussion. Our program established a two part principal study question: What are the major sources of air pollution and associated emission levels within the outside boundaries of the Reservation? Which leads to the secondary question: What are the appropriate reduction strategies to develop and implement to address the sources? We also tried to tie the DQO to EPA region 10 and NEI requirements. The procedures panel finishes off the QA/QC category with details on how the DQO will be met. The Colville EI was conducted as a Level IV inventory and requires a minimum completeness and reasonableness checks. These are followed by peer reviews by EPA and ITEP before submittal to NEI. The QA/QC procedures can be very detailed in this section if the practitioner has experience with the TEISS program. The program offers many opportunities for checks and should be taken advantage of.

The last category, documentation and presentation, explains how the EI will be presented. The TEISS program does not generate a complete EI report but only a summation of data. A written narrative of the results is essential to conveying the EI information to the public, staff and Tribal Council. Plan to include an executive summary that provides the essence of the inventory, but does not include many details. Also consider presenting the report as a Power Point, mentioning the facts given in the executive summary.

CONCLUSION

Completing an Inventory Preparation Plan may seem as arduous as conducting the inventory but the effort will save time, and frustration. The IPP wizard allows information to be systematically entered but does have several limitations. These include no formatting capability; minimal guidance on some panels; and it is incapable of accepting tables, figures or pictures. If written in a well thought out manner much of the background information from the plan will be included in the EI narrative. During the next EI preparation year the IPP will provide the needed guidance for remembering why and how the process works.

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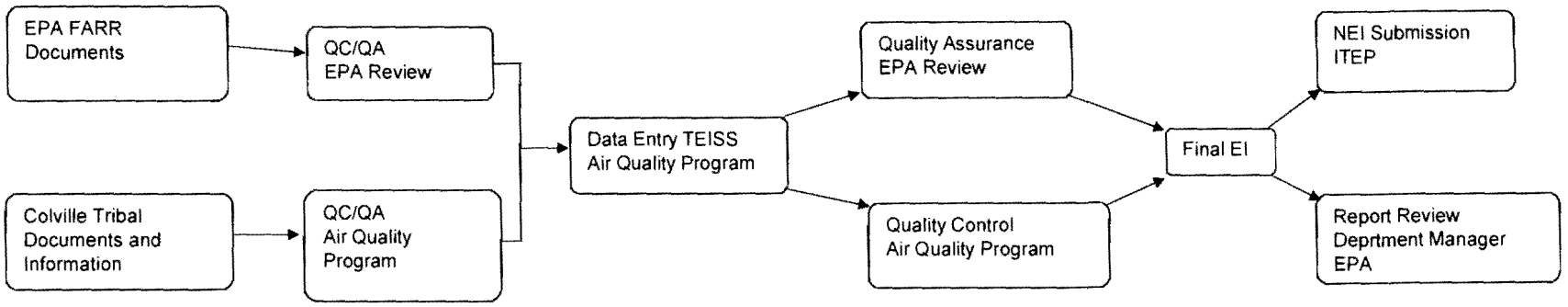
Attachment 1 Organizational Chart 2008 Emission Inventory, Confederated Tribes of the Colville Reservation



Primary Decision Maker - Air Quality Program Manager

KEY WORDS
Emission Inventory
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