



Memorandum

To: Pat Cummins, Tom Moore, Lee Alter (WRAP SSJF)

From: Mae Thomas, Paula Fields

Subject: Scope, Budget, and Schedule of SSJF “Emissions Inventory and Control Technology” Project Status

Date: July 12, 2005

As we discussed during the conference call on May 25, 2005, additional tasks have been requested of ERG that were not included in the original scope. Also, many of our resources have been expended on the original scope-of-work but not all work has been completed due to reasons explained during the call and discussed below. Therefore, we request additional funds to add new tasks and complete the original scope.

This memorandum presents justification for the additional funds for the original scope; work still remaining on the original scope and the resources needed to complete it, and a proposed revised schedule to complete all tasks under the Emissions Inventory and Control Technology Project (Table 1).

1.0 Effort Expended to Date on the Emissions Inventory and Control Technology Project

As stated above, in order to complete the original scope-of-work, more resources will be needed. The reason more resources are needed is primarily because the level of effort expended has been greater than anticipated and there have been some additional tasks completed that were not originally in the scope. The following list provides information on some of the tasks that required greater than expected effort or were off-scope items:

- Time was spent early in the project to retrieve and upload the WRAP EDMS inventory version 1.0 that we were to start with. Several attempts were made to get the needed information directly from the EDMS website. It was later determined that EDMS was not ready to provide such a large quantity of data and that the most efficient way would be to get the data files directly from the EDMS contractor.
- In improving the database, we used data from several past databases to gap fill information, especially control information. These databases had different source names and ID systems, especially the 1996 WRAP database as compared to the WRAP inventory 1.0. This required some time consuming hand matching of records.
- Using an interim version of the improved 2002 database prepared by our inventory team, the control technology team began determining where most of the SO₂ and NO_x emissions originate. In doing this detailed level of review of sources, several duplicate facilities were identified. This led to improved quality of the database, but required web searches and other data review to verify the duplication, which resulted in unexpected effort. In developing the

NO_x from EGU report, data was collected from utilities and vendors. Much back and forth with these sources was required to collect the needed information and obtain the necessary details to use the information collected.

- A more detailed analysis was conducted to determine the impacts of combustion controls for NO_x reduction than was originally anticipated. In order to factor in as many considerations and variations in boiler design and coal type, seven different bins of EGUs were developed. For each bin, several options were considered, and within each option the current controls of each unit were incorporated to the year constructed level of detail. This became almost a unit-by-unit analysis.
- The original scope included just the non-annex states in the SO₂ analysis; this has been expanded to all the WRAP states. This represents a slight increase in effort, mainly because of the need to revise some of our initial work. However, all the states will not be much additional work from doing the analysis on the non-annex states. Therefore, this will save WRAP resources over what it would take if the non-annex states analysis were conducted and then the annex states analysis had to be redone separately.
- We conducted an initial analysis of the CAMD data to try and determine the extent that EGUs operated at reduced rates during 2002. This analysis was nonconclusive, but has led to ongoing discussion regarding the need to conduct a more detailed analysis.
- Our data collection for projections has been much more extensive than anticipated. We have contacted (via email and telephone) over 40 persons from 25 different local, regional and state agencies. This has taken additional time to make the contact, get the initial information, and ask any necessary follow on questions.
- Although the state, local, and tribal review of the inventory has not yet been conducted, we now anticipate that this will require more resources than originally inspected. Originally, this review step was considered to be more a concept review rather than the detailed review called for at this time.
- Attending SSJF meetings was anticipated, however the level of effort required preparing for the meetings was not. For each meeting we have prepared about 5 presentations. Also, including the inter-RPO and WRAP board meetings, we have already exceeded the number of meetings budgeted.

2.0 Work to be Completed on Original Scope

- Determine whether there is any double counting between point and area source emissions for each state.
- Reconcile EGU control data in CAMD report with controls in EDMS.
- Add BART status descriptive information (i.e., “flag”) to inventory.
- QA stack parameters in inventory.
- Facilitate state, local, and tribal agency review of inventory.
- Provide final revised 2002 inventory in IDA format (for modeling). Upload revised 2002 inventory (NIF format), plus O&G and tribal inventories, to the WRAP EDMS
- Write inventory report.
- Finish quantifying impacts of projection information collected from state/local agencies.
- Develop projection factors (EGAS, DOE, demographic data input).
- Calculate projections (populate master database/spreadsheet).

- Facilitate state and local agency review (i.e., include check for permit limits) of projection factors and results.
- Upload projections to EDMS.
- Write projections report.
- Respond to comments on NO_x from EGUs report.
- Conduct SO₂ analysis and write report.
- Conduct analysis on NO_x from other sources (including O&G) and write report.
- Prepare inventories for the 3-5 control scenarios.
- Complete final inventories on three tribal Title V sources.
- Verify that Tohono O'odham Nation, Colville Tribe and Yakama Nation do not have any minor sources.
- Incorporate oil and gas tribal information with tribal point source information.
- Write report on reservation-specific inventories.
- Facilitate ITEP/Tribal review of results
- Attend 2 additional SSJF meetings

3.0 New Tasks for Emissions Inventory and Control Technology Project

Four new tasks have been identified for ERG to complete under the Emissions Inventory and Control Technology Project. These are discussed in detail below.

3.1 Incorporating the latest NEI revisions in EDMS

EPA has received revisions to the draft 2002 NEI for the following state, local, or tribal areas, which we will obtain, review, and incorporate into the revised 2002 emissions inventory for:

- AZ, Maricopa County: Area sources
- AZ, Salt River Pima-Maricopa Tribe: Point sources
- CA, Cortina Indian Rancheria of Wintun Indians: Area sources
- CO: Area sources
- ID: Area and Point sources
- ID, Shoshone Tribe: Point sources
- MT, Assiniboine and Sioux Tribes of the Fort Peck Indian Reservation: Point sources
- NM, Albuquerque: Area and Point sources
- OR: Area and Point sources
- UT: Area and Point sources
- WA: Point sources

We recommend that these updates be added to the revised 2002 inventory in order to provide the most complete set of data as are available, and to take advantage of work already conducted by the States to QA and revise their inventories for 2002. Also, we can incorporate stack parameter revisions that agencies submitted to EPA. For the most part, the point source revisions submitted are minor. For area sources, though, some states such as Oregon and Colorado submitted extensive revisions. Also, it may be necessary to re-check for double counting based on these new submittals.

It has been assumed that changes and comments made to EDMS since January 2005 submitted by states, locals and tribes are either included with the NEI comments or are minor comments. However, we know that a facility in Alaska was added to EDMS, but not to the NEI. We will request the Alaska data and include it in the 2002 revised inventory; however, we will not do any review of changes submitted to the EDMS at this time.

This additional work performed will be documented in the inventory task deliverables (draft and final).

3.2 Projecting Tribal Point and Area (O&G) Source Emissions

After the emissions for 2002 are developed for seven tribes covered by an existing task, it is necessary to project these emissions and enter them into the EDMS. This effort is based upon the point and area source (i.e., oil and gas) data obtained for the following tribes¹:

- Ute Mountain Ute (CO, UT, NM) -- Area/oil and gas sources
- Arapahoe and Shoshone of the Wind River Reservation (WY):
 - Two point sources: 1 gas plant, 1 chemical/sulfur manufacturing plant
 - Area/oil and gas sources
- Navajo Nation (AZ, UT, NM):
 - 13 point sources: 8 gas compressor stations, 1 coal mine, 4 gas plants
 - Area/Oil and Gas Sources
- Yakama Nation (WA) – Two point sources: 1 fertilizer manufacturer, 1 forest products (door skins, wood waste boilers, surface coating)
- Colville Tribe (WA) – Two point sources: 2 forest products manufacturing (veneers, plywood, wood waste boilers use for process steam and electricity)
- Warm Springs Reservation – One point source (data still pending)
- Tohono O’Odham (AZ) – One point source: copper mine

Point Source Projections. ERG will estimate emissions for the tribal point sources (all of which are Title V sources) by projecting 2002 emissions (developed under an existing task) to 2018. Projection factors will be developed using information collected from the appropriate EPA Region, to ensure that effects due to any recent (post-2002) controls, consent orders, retirements, or other impacts are taken into consideration. The Emissions Growth Analysis System (EGAS), Version 5.0 model will be used to estimate growth factors for the appropriate industries. We will use the same growth factors, based on industrial sector, as we are using for the non-tribal sources. ERG will coordinate with ENVIRON on the point oil and gas sources so as to take advantage of data collected by ENVIRON on oil and gas sector growth, that may be applicable to the point source projections.

The work performed, and data used to project tribal point sources will be included in the tribal inventory report (draft and final).

¹ Note that the Jicarilla Apache Tribe (NM) is included in the ERG/ENVIRON scope of work for the 2002 point and oil and gas inventory development; however, to date that tribe has not chosen to release its data. If that tribe chooses to release its 2002 data in the future, it will be included in the projections task.

Area/Oil and Gas Projections. To project the 2002 area source emissions from oil and gas operations on tribal lands to 2018, ENVIRON will obtain data on future oil and gas development from several sources. Several bureaus within the Department of the Interior provide estimates of future oil and gas development in specific production zones. ENVIRON is currently reviewing the Bureau of Land Management's (BLM) Resource Management Plans for oil and gas development in the western states. If these include information on development on tribal lands, that information will be distinguished from development on State lands and documented for possible use in projections. Also, the Bureau of Indian Affairs (BIA) is expected to be an important resource for information on the future leasing of tribal lands for oil and gas development; they will be contacted to obtain any management plans or growth projections that the agency has produced for the Navajo Nation, the Ute Mt. Ute and the Wind River Reservation. Information will also be collected for the Jicarilla Apache if that tribe chooses to participate in this study.

ENVIRON efforts in creating the 2002 oil and gas emission inventory have already led them to contacts in the tribal energy departments. It is expected that these contacts and their colleagues will prove to be the most important source of information on future oil and gas development. Each of the tribal energy department will be contacted to obtain specific data, such as number of wells planned and/or production estimates, to use in the projections. Similarly, tribal environmental departments will be contacted to obtain any information available on controls planned for oil and gas emission sources.

If none of these resources are able to provide information on future oil and gas development, then ENVIRON will default to using the projections offered by the Energy Information Administration. In all cases, the method developed for making projections will be presented to the appropriate representative of the tribe. If revisions are suggested, the method will be modified.

All data sources and methods will be documented as part of the overall tribal oil and gas emissions report.

3.3 Collecting California Emissions Data and Documentation for 2002 and 2018

The California Air Resources Board (ARB) has developed and submitted county-level 2002 emissions to the NEI, which ERG has reviewed as part of our inventory review task. Also, ARB has developed projections for 2005, and in five year increments to 2020, which are available on their website (California Almanac or Emissions and Air Quality, 2005 Edition). This task provides the resources for a minimum of two meetings by ERG and ENVIRON staff with ARB (in Sacramento) to discuss ARB's 2002 inventory methods pertaining to oil and gas sources, answer some questions pertaining to our review of their non-oil and gas 2002 inventory, and provide details on methods and data pertaining to projections to 2018 for all point and area sources. This work is to document approaches for estimating emissions and *not* to make inventory improvements.

ERG will attend the first meeting at ARB, with ENVIRON, with two objectives:

1. To pose several questions related to our review of their 2002 inventory; and
2. To obtain documentation on their methods and data for projecting future year emissions to 2018. (Note that ARB's current projections are for 2015 and 2020, so input will also be solicited for making a 2018 projection.) ERG will also inquire as to ARB's methods for including "current control measures through 2004" and "future control measures" as documented in the Almanac.

To prepare for this meeting, ERG/ENVIRON will compile an example set of inventory documentation to illustrate the level of detail and comprehensiveness of the documentation we request for ARB. Based on the information collected from ARB, ERG/ENVIRON will summarize or otherwise include these details in the projections deliverables (draft and final). Note that the scope of this task may be altered to include some limited research in the future.

3.4 Developing Monthly Temporal Profiles for EGUs

The objective of this task is to develop temporal profiles for EGUs in the WRAP states. The WRAP RMC would use these temporal profiles during modeling of the WRAP 2002 and 2018 EGU emissions. In the past, the RMC has used default SMOKE temporal profiles, developed mainly from data for EGUs operating in the eastern U.S. and widely accepted not to accurately depict temporal distribution of emissions from EGUs in the West. WRAP EGU temporal profiles can be developed using hourly continuous emissions monitoring data (CEM), as reported to EPA's Clean Air Market's Division (CAMD) for the Acid Rain Program. The CAMD data were used recently in developing *hourly* temporal profiles for the VISTAS RPO². These monthly temporal profiles will represent a significant improvement over the SMOKE defaults, and would be used for both 2002 and 2018 modeling (i.e., would not impact Relative Reduction Factors).

The VISTAS contractor, Alpine Geophysics, will assist ERG in this task with the main objective of developing *monthly* temporal profiles for the WRAP EGUs. In addition, Alpine will develop fuel-group profiles (e.g., coal, oil/gas, combined cycle, other). Also, ERG will match the hourly CAMD data to the 2002 WRAP revised inventory EGUs to facilitate the use of the profiles (by fuel-grouping) to individual WRAP units. ERG/Alpine will document the process, data used, calculations, assumptions, and summarize findings in a draft memo for WRAP SSJF and stakeholder review. Based on comments received, the memo will be modified and finalized.

Details of the technical approach are contained in a separate memo prepared for the WRAP SSJF Projections Work Group (Subject: Proposed Procedure, Cost, and Schedule for Development of Monthly Temporal Profiles for WRAP Electric Generating Units (EGUs), July 12, 2005).

4.0 Proposed Revised Schedule

Table 1 shows our revised project schedule reflecting the new work to be added, and revised dates for existing work based upon the dates discussed during our conference call on May 25, 2005, input from the Projections and EGU NOx Work Groups, and discussions with WRAP

² "Development of Hourly Inventories Using CEM-Based Data," by Greg Stella of Alpine Geophysics and presented to the 14th Annual Emissions Inventory Conference, April 14, 2005, Las Vegas, Nevada.

staff. Although we are aware of the critical dates provided in the conference call of July 1 (for completion of the 2002 EI revision) and September 1 (for completion of the projections), we do not believe that all the remaining and new work can be completed to accommodate these dates. However, the Table 1 provides dates to complete the work as close to the critical dates as possible, and allows time for state/local/tribal agency (S/L/T) review of the draft deliverables. If this is not acceptable, we are open to discussing the work goals further to arrive at a more acceptable schedule.

**Table 1. Revised Schedule:
WRAP SSJF Emissions Inventory and Control Technology Project**

Task	Milestone/Deliverable	Date (2005)
1B	Complete draft 2002 EI O&G improvements	June 1
3	Complete activity data collection for tribal inventories	June 8
1A, 1B	Post for S/L/T review: revised 2002 inventory (non-O&G)	July 15
1A, 1B	Receive comments: revised 2002 inventory	Week of July 29
2A	Submit draft report: SO ₂ controls	
1B	Submit draft documentation: 2002 O&G inventory	
3	Submit draft report: 2002 tribal inventories, including O&G	
1A	Submit IDA format to RMC: revised 2002 inventory (including tribal and O&G)	As soon as possible after July 29
1B	Receive comments: 2002 O&G inventory draft documentation	Week of August 15
2C	Submit draft report: NO _x controls for other sources	
2A	Receive comments: SO ₂ controls draft report	
2B	Submit final report: NO _x from EGUs	
3	Receive comments: 2002 tribal inventories draft report	
1A, 1B, 3	Load into EDMS: final revised 2002 inventory, including tribal and O&G	Week of August 22
1A	Submit draft final report: 2002 inventory (non-O&G)	Week of August 29
2C	Receive comments: NO _x controls for other sources draft report	
2A	Submit final report: SO ₂ controls	
1B, 1C	Post for S/L/T review: draft 2018 base case projections and documentation (including O&G)	
1A	Receive comments: 2002 inventory (non-O&G) draft final report	Week of September 5
1B, 1C	Receive comments: draft 2018 base case projections and documentation (including O&G)	Week of September 12
2C	Submit final report: NO _x controls for other sources	
3	Submit draft final report: Tribal inventories (2002, 2018)	
1A	Submit final report: 2002 inventory (non-O&G)	Week of September 19
1B	Submit final report: O&G inventory (2002, 2018)	Week of September 26
1B, 1C	Submit IDA format and load into EDMS: 2018 projections	Week of October 3
1C	Submit draft final report: 2018 projections (non-O&G)	
2	Submit draft report: 3 to 5 proposed 2018 control strategy scenario inventories	Week of October 10
3	Receive comments: Tribal inventories (2002, 2018) draft final report	
1C	Receive comments: 2018 projections (non-O&G) draft final report	Week of October 17
2	Receive comments: 3-5 proposed 2018 control scenario inventories draft report	
1C	Submit final report: 2018 projections (non-O&G)	Week of October 31
3	Submit final report: Tribal inventories (2002, 2018)	
2	Load into EDMS: 3 to 5-2018 control strategy scenarios inventories	