

REQUEST FOR PROPOSALS

CENTRAL CALIFORNIA OZONE STUDY (CCOS)

Improvements to the Spatial and Temporal Representativeness of Modeling Emission Estimates

April 5, 2006

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1. BACKGROUND

Air quality modeling is typically performed with hourly temporal resolution on specific calendar days and with horizontal spatial resolution of a couple of kilometers. Acceptable air quality model performance at this temporal and spatial resolution requires quality model inputs that are representative of similar temporal and spatial scales. Additionally, the spatial and temporal resolution of emissions in future years can affect the ability of photochemical models to accurately portray the future. Part of the challenge in developing representative emissions inputs for base year and future year modeling is finding ways to use routinely available data, which are typically produced for purposes other than air quality modeling and are often estimated at a much coarser resolution than is needed. The purpose of this project is first to assess current methods for characterizing base year and future year anthropogenic modeling emissions inputs and identifying data limitations for which improved spatial and temporal characteristics could lead to significant model performance improvements. Then, once such limitations have been identified, this project calls for the development of specific methods and data sets to improve the representativeness of base year and future year emissions estimates.

Differences in ambient concentrations are due in part to temporal and spatial patterns of emissions. For example, the so-called “weekend effect,” whereby ozone can be as high or higher on weekends as on weekdays in spite of the fact that weekend emissions are typically lower, arises from day-of-week variations in precursor emissions coupled with the complex, non-linear interactions of precursor pollutants and meteorology. Day-of-week variations in emissions are not necessarily limited to weekday/weekend differences, but could involve variations among any days of the week to varying degrees. In addition, emissions in different regions may undergo different temporal variations on hourly, weekly, and seasonal time scales. For example, the day-of-week and hour-of-day use of agriculture-related emissions may differ significantly from one region to another. Some important issues that this project should examine are briefly described below.

Spatial and Temporal Allocation of Point and Area Source Emissions.

Point and area source emission estimates produced by air districts and the Air Resources Board are generally based on emission factors for annual emission estimates and activity data for entire counties (e.g. based on EPA’s AP-42 document). Point source emissions are developed from the ‘bottom up’, meaning that all of the emission processes at a facility are accounted for individually (i.e. at the device and process level). Spatial data are stored for each facility as well as individual stacks. Temporal data are assigned to each process. Temporal factors to adjust annual totals to hourly model inputs include monthly factors, day-of-week factors, and hourly factors. Although this allows for each process to be assigned its own temporal code, there can be discrepancies in the interpretation and assignment of the codes among users.

Each temporal code has assumptions built in. For example, the weekly temporal code allows for weekdays and weekend days to be distributed differently, but each individual code treats all weekdays the same (e.g. for a single day-of-week code, Wednesday and Friday get assigned the same relative activity). Although the codes would allow for variations by day, few data have been found to support the development of new codes. The conversion programs make assumptions about which hours of the day each temporal code assigns. For example, one specific temporal code defines a typical 8 a.m. to 5 p.m. operation. No provision is made if the process really begins at 6 a.m. or 11 p.m. Another assumption built into the temporal codes is that the emissions in future years from point and area sources have the same temporal distribution as in the base year.

Area sources use a 'top down' emissions inventory development approach. The 'top down' (annual, county-level) emission estimates must be disaggregated into hourly, grid-cell estimates, in a manner similar to that applied to the point sources. To adjust emissions temporally, three factors are applied to the annual average emissions. One factor is to approximate emissions in a particular month. Two factors are applied to approximate emissions for the day and hour in the same manner as point sources described above. These factors are developed from codes that are assigned to groups of emission categories by District and Air Resources Board emissions inventory staff. However, the focus of staff is generally on correct annual emission totals, so monthly, day-of-week, and hourly temporal codes do not always receive the attention that they should. The temporal codes (for both point and area sources) are frequently left blank, forcing the use of default values such as 24 hours per day, 7 days per week and an equal amount of emissions by month. This assumption could cause emissions to be underestimated if the emissions occur less frequently.

As for spatial disaggregation, each area source category is assigned a spatial surrogate that best represents where the emissions occur. The accuracy of this assignment varies considerably by category and region. For example, the assignment of "population" to distribute hair spray emissions may represent the actual distribution of emissions reasonably well. However, the assignment of "industrial employment" to emissions from natural gas internal combustion engines used in manufacturing and industrial operations may not provide a realistic representation of the emissions distribution. To complicate matters, not all spatial surrogates are available in all regions. To better reflect the change in spatial patterns in future years, different spatial surrogates are used for future years if they are available. These surrogates include population, housing and employment since they are generally derived from future year travel demand models provided by local Councils of Government (COGs) and Metropolitan Planning Organizations (MPOs). However, it is likely that the footprint of other spatial surrogates, such as those used to disaggregate emissions from agricultural sources, changes with time as well and is currently not reflected in future year modeling inventories.

On-Road Mobile Source Emissions Data Resolution. The Air Resources Board's mobile source model, EMFAC, is designed primarily to produce average

day-of-the-week emissions estimates for sub-county regions for different years. Currently, the Direct Travel Impact Model (DTIM) developed decades ago by Caltrans is used to generate spatial and temporal disaggregation factors by which daily, county-level EMFAC emissions estimates are allocated to grid cells by hour-of-day. DTIM is not used directly, since, for a variety of reasons, it cannot match EMFAC emissions estimates and EMFAC is California's official mobile source model. Most mobile source activity data used by EMFAC and DTIM are produced by COGs or MPOs for land use and transportation planning purposes. These agencies represent travel for an average weekday during peak travel times (e.g. August) to suit their needs; thus the available activity data do not account for explicit day-of-week variations. Similar to point and area sources, the spatial and temporal distribution of emissions from on-road motor vehicles is not well characterized in future years. ARB is working to develop future year transportation networks using data provided by the local COGs. Although emissions for future years produced by EMFAC are used in the development of future year modeling inventories, the emissions are currently spatially and temporally distributed according to base year transportation networks. Additionally, emissions on weekend days are distributed with the same spatial pattern as on weekdays because the travel demand models used by local COGs are developed for weekday travel. In other words, weekend emissions are adjusted to compensate for the volume of vehicles driven on weekend days, but they occur over the same time and place as on weekdays. Another possible source of inaccuracy may be high-emitting vehicles. High-emitting vehicles are included in the inventory, but little is known about their spatial and temporal distribution. Locally, the emissions from these vehicles could have a large impact on air quality.

Characterization of Heavy-Duty Truck Travel. As mentioned above, DTIM is used to allocate EMFAC emissions both spatially and temporally. Most of these trucks are registered, so it is assumed that the emissions are accounted for in EMFAC. However, the roadway networks that are available were primarily developed to represent light-duty, weekday travel. Due to the lack of information about how the temporal and spatial activity varies seasonally for trucks for both base and future years, the allocation of heavy-duty truck emissions is highly uncertain. Due to limitations in the transportation network data that are used in DTIM, the spatial and temporal allocation of heavy-duty truck activities are currently represented as a fraction of light-duty vehicle activities. However, it is known that heavy-duty trucks have different spatial and temporal patterns than light-duty vehicles. Although improvements to the day-of-week variations using vehicle counts are currently under way, there are still limitations. For example (and in addition to average day-of-week differences), truck activities can vary considerably by season and region. In the San Joaquin Valley, heavy-duty truck use can be high during harvesting time – operating on freeways as well as local roads and unpaved roads – and nearly zero at other times. Goods movement also plays a large role in the distribution of heavy-duty truck activity that is not represented by light-duty vehicle activities.

2. PURPOSE AND DESCRIPTION OF THE STUDY

This project seeks to improve current and future model performance by improving upon the spatial and temporal characterization of emissions used for air quality model simulations. The contractor(s) will first select areas of improvement based on a prioritization scheme that considers the impact of the associated emissions as well as the availability of quality, routinely collected data. Second, where routine data are not available, the project allows for a Phase 2 component to collect needed field data. Contractors may wish to consider teaming to provide an increased level of expertise on the various tasks.

This study will first evaluate the CCOS base and future year anthropogenic emission inventories with respect to how well they characterize the spatial and temporal patterns that exist in emissions based upon a review of relevant studies as well as known or suspected issues like those mentioned above. From this evaluation, the contractor will provide 1) a refined identification of issues and needed improvements and 2) a prioritized list of recommended work that can be made to improve the spatial and temporal representativeness of base and future year anthropogenic modeling emissions estimates. The evaluation process will involve communication with ARB's SIP Gridded Inventory Coordination Group (run by ARB Modeling staff) and the Emission Inventory Technical Advisory Committee (EITAC). The evaluation process will also require working closely with other CCOS contractors: 1) Sonoma Technology, Inc. (Contract 05-3CCOS, "Comparison of Ambient Measurements to Emissions Representations for Modeling"), 2) Dr. Charles Blanchard (Contract 05-6CCOS, "Understanding Relationships Between Changes in Ambient Ozone and Precursor Concentrations and Changes in VOC and NO_x Emissions from 1990 to 2004 in Central California") and 3) Sonoma Technology, Inc. ("Development of Gridded Spatial Allocation Factors for the State of California, July 2001). Information on these projects can be found at the Study Agency website located at: <http://www.arb.ca.gov/airways/crpags/RFPs/default.htm> or contact Cheryl Taylor at cataylor@arb.ca.gov. Recommendations will include, for example: suggested methodological or procedural changes, identification of routinely collected data that are more suitable than existing data, or the conduct of activity data collection. The prioritization will be cost-benefit based and take into account the resources required to make each improvement and an estimated impact of each recommended improvement on model performance. In other words, this will not necessarily mean that the source categories with the largest emissions will have the highest priority. Rather, it may be that some of the source categories may have small emissions, but are critically located or highly reactive such that their emissions have a direct impact on local ozone formation.

Second, if approved by the CCOS Technical Committee, data will be collected to derive appropriate adjustments to the CCOS emission inventories to properly account for spatial or temporal variations in NO_x, TOG and CO emissions from major sources of emissions. Prior to embarking on a unique, one-time field study, consideration should first be given to collaborating with other government agencies to enhance routine data collection or archival and/or method development using routinely collected data.

3. SCOPE OF WORK

This project will be conducted in two phases: an assessment phase and an implementation phase. In the assessment phase, the contractor will review relevant information regarding the spatial and temporal variations in actual emissions related activity and evaluate how well these variations are characterized in the CCOS gridded emission inventories for both base and future years. In the second phase, the contractor will identify and, if necessary, develop new methods based on contemporary, routine data sources or, where necessary, collect the data to derive appropriate adjustments to the CCOS emission inventories. Phase 2 requires approval by the CCOS Technical Committee before work is begun.

Phase 1 – Assessment Phase:

The findings and conclusions from other relevant studies should be examined to ascertain whether the CCOS emission inventories adequately account for the expected spatial allocation and temporal variations in NO_x, TOG and CO emissions. The contractor will utilize the latest available modeling inventory developed for the July-August 2000 base case. The CCOS Technical Committee will specify which future years will be reviewed, but no more than three years will be chosen. The contractor should in this phase identify specific improvements to the emission inventory that may be necessary.

Task 1- Kickoff Meeting.

Before work on the project begins, the Contractor will attend a one-day meeting with the CCOS Technical Committee in Sacramento, California. The Contractor will present an overview of the proposed strategy to conduct the assessments of temporal and spatial variations in the CCOS emission inventories (the 2000 base year plus three future years). The CCOS Technical Committee will determine which future year inventories will be reviewed in Tasks 2 and 3 no later than at the conclusion of this meeting.

Task 2- Assess the accuracy of temporal variations in the CCOS emission inventories. Review the basis for temporal variations in the NO_x, TOG and CO emission inventories for CCOS (the 2000 base year plus up to three future years). Consideration should be given to monthly, day-of-week and hourly adjustments. This task should focus on characterizing variations on any day of the week (i.e. beyond just the weekend effect). Consideration of point, area, and on-road and off-road mobile sources should be made. The latest gridded modeling inventories available at project commencement will be used, as provided by ARB. The findings and conclusions from other relevant studies should be examined to ascertain whether the CCOS emission inventories adequately account for expected temporal variations in NO_x, TOG and CO emissions. Reconcile the current methods and data with their relative importance in the CCOS modeling inventories. Discuss whether there are issues with statistical robustness of representing emissions when, for example, there are only ten weekends during the summer. Prepare a technical memorandum for

review and approval by the CCOS Technical Committee, recommending ways to improve the temporal variations in the CCOS emission inventories. Rank suggested improvements by cost and significance of improvement to the inventories.

Task 3 - Assess the accuracy of spatial variations in the CCOS emission inventories. Review the basis for spatial variations in the NO_x, TOG, and CO emission inventories for CCOS (the 2000 base year plus up to three future years). Consideration of point, area, and on-road and off-road mobile sources should be made. The latest gridded modeling inventories available at project commencement will be used, as provided by ARB. The findings and conclusions from other relevant studies should be examined to ascertain whether the CCOS emission inventories adequately account for expected spatial variations in NO_x, TOG, and CO emissions. Reconcile the current methods and data with their relative importance in the CCOS modeling inventories. Prepare a technical memorandum for review and approval by the CCOS Technical Committee, recommending ways to improve the spatial variations in the CCOS emission inventories. Rank suggested improvements by cost and significance of improvement to the inventories.

Task 4 – Document findings of Phase 1, develop a work plan for Phase 2, and meet with the Technical Committee. Prepare a draft final report discussing the findings of Phase 1 activities. If the Phase 1 findings indicate that cost-effective improvements could be made, prepare a draft work plan for proposed Phase 2 activities, including a discussion of schedule and required budget. Participate in a one-day meeting with the CCOS Technical Committee in Sacramento, California to discuss the findings of Tasks 2 and 3, receive comments on the draft final report for Phase 1 and, if appropriate, the draft work plan for Phase 2. Based on the comments received, prepare and submit a final report for Phase 1 and, if appropriate, a final work plan for Phase 2. Work on tasks in Phase 1 is not to commence prior to receipt of written authorization from the Technical Committee.

Phase 2 – Implementation Phase:

Note to respondents: The technical efforts associated with Tasks 5 through 10 below are illustrative of the types of data collection that may be considered by the Technical Committee. These tasks may be modified, deleted or replaced with new ones based on the findings of Task 4. Contractors are encouraged to be creative and inventive as to tasks that could be accomplished in Phase 2 and may propose alternative tasks to be considered. Contractors may bid on one or all of the tasks in Phase 2. The Technical Committee reserves the right to combine multiple bids or portions of bids into a single contract. Tasks should result in meaningful, specific improvements to the spatial and temporal data used to develop modeling inventories. Existing data should be used where available.

For the purpose of technical and cost proposal evaluation, respondents should bid separately on:

1) Phase 1 (Tasks 1 through 4)

2) Tasks 5 through 10 individually, plus any individually

3) Proposed alternative tasks

The contractor selected for Phase 1 will complete Tasks 1, 2, 3, and 4 even if Phase 2 tasks are not approved. For each individual task (Tasks 5 through 10 and/or any proposed tasks), the cost for providing data to ARB (Task 11) and documentation (Task 12) should be included with each tasks' cost proposal. In addition, the cost for attending one meeting in Sacramento at the completion of Phase 2 should be provided separately. These original cost estimates provided by the bidder will be used in selecting the contractor for individual tasks in Phase 2 (Tasks 5 through 10 and/or any proposed tasks). However, contractors selected for individual tasks in Phase 2 will likely be required to submit a modified work plan and corresponding budget after the completion of Phase 1. Providing separate technical and cost proposals will allow the CCOS Technical Committee (CCOS TC) flexibility in selecting which, if any, tasks are to be approved for Phase 2.

Task 5 – Improve point source characterizations. For the largest point sources within the domain, gather information on facility operating schedules, including possible schedule changes in the future. Use information already obtained from local air districts if available. “Largest point sources” refers to any facility with emissions greater than 100 tons per year of NO_x, TOG or CO. Identify sources of routine data that could be applied to generate day-specific operation information. Determine possible ways to incorporate the operating information into the modeling inventories. Then provide the data to ARB and district staff in a format determined by the contract manager.

Task 6 – Improve area source characterizations. Identify and incorporate new sources of routinely available data to improve spatial and temporal area source emissions in either base and/or future years. For example, if emissions from jet engines were determined to be important, what available data could be used to better represent the spatial and temporal distributions of these emissions in either base and/or future years? If necessary, conduct surveys to improve the spatial and temporal data for emissions categories that have significant NO_x, TOG or CO emissions in either base and/or future years. With input from ARB and district staffs, process the survey results for use in the CCOS emission inventories.

Task 7 – Improve the characterization of seasonal trucks. Conduct a field study, if other data sources are not available, to collect data to develop factors to reflect the use of seasonal trucks in the CCOS domain that could be applied during the preparation of on-road motor vehicle modeling inventories. Consideration should be given to instrumenting seasonal trucks with data loggers and/or conducting surveys. The contractor will work closely with the ARB and districts to determine the locations for sampling and when sampling would occur. The contractor will

develop a method to apply the factors to each road type and county in the CCOS domain for all years from 1999 through 2030.

Task 8 – Improve the characterization of on-road mobile sources during the summer. Conduct a field study, if other data sources are not available, to collect data to develop factors to reflect the changes in driving patterns on summer weekdays and weekend days. Major shifts in driving patterns occur in the summer due to vacations and schools not being in session. Additionally, driving patterns can be very different on weekend days than weekdays. The contractor should consider the change in driving patterns for both light-duty and heavy-duty vehicles.

Task 9– Improve the characterization of trucks used to move goods. Conduct a field study, if approved by the CCOS Technical Committee, to collect data to improve our understanding of the use of trucks moving containerized goods at ports, intermodal facilities (truck to train), and distribution centers (truck to truck) in the CCOS domain both now and in the future, if possible. While working closely with the ARB and district staffs, choose a statistically representative sample of trucks for study, with consideration of paying truck operators to participate. Instrument the trucks to collect location, RPM and speed data using a data logger. Collect idling time if possible. Require drivers of instrumented trucks to complete a daily survey describing the purpose and destination of each trip. Collect license plate data to obtain age, weight class and engine characteristics of each truck.

Task 10 – Options for DTIM replacement. Investigate options for replacing the Direct Travel Impact Model (DTIM) to grid on-road motor vehicle emissions.

Task 11 – Provision of Data, Software, and Documentation. Transfer all data sets, computer code, and customized software as well as documentation for all tasks for which the contractor is responsible to ARB staff in a well organized and documented electronic package.

Task 12 – Final Report and Journal Paper. The contractor will prepare a draft final report that discusses the work carried out in Phases 1 and 2 (if approved) and submit it to the Technical Committee for review. The report may be an extension of the Phase 1 draft report completed as part of Task 4. Present and discuss the findings of the study at a one-day CCOS Technical Committee meeting in Sacramento, California. At this meeting, the Contractor will describe the data collected during Phase 2 of the study, the results of the data collection effort and how the data can be used to improve the emission inventory. If only Phase 1 is carried out, no Phase 2 final meeting would be necessary. Responding to comments provided by the Technical Committee, prepare and submit a final report. The Contractor shall also prepare a draft journal paper, and submit it to the Technical Committee for review. Upon review and revision, the Contractor shall identify a journal to submit for publication, and do so upon concurrence of the Technical Committee. The Contractor should include in the proposed project budget sufficient funds to cover all journal-related publication costs.

4. REFERENCES

Sonoma Technology, Inc. Development of Gridded Spatial Allocation Factors for the State of California, July 2001.

Sonoma Technology, Inc. Central California Ozone Study (CCOS) project “Comparison of Ambient Measurements to Emissions Representations for Modeling.” 2005 – 2006.

Blanchard, C. Central California Ozone Study (CCOS) project “Understanding Relationships Between Changes in Ambient Ozone and Precursor Concentrations in Changes in VOC and NOx Emissions from 1990 to 2004 in Central California.” 2005 – 2006.

5. MANAGEMENT STRUCTURE

The CCOS is a program involving many sponsors and participants. Three entities are involved in the overall management of the Study. The San Joaquin Valleywide Air Pollution Study Agency, a joint powers agency (JPA) formed by the nine counties in the Valley, directs the fund-raising and contracting aspects of the Study. A Policy Committee comprised of four voting blocks (State, local, and federal government, and the private sector) provides guidance on the Study objectives and funding levels. The Policy Committee approves all proposal requests, contracts, and reports. A Technical Committee (CCOS TC) parallels the Policy Committee in membership and provides overall technical guidance on proposal requests, direction and progress of work, contract work statements, and reviews all technical reports produced from the Study.

On a day-to-day basis, the ARB is responsible for management of the Study under the direction of the Program Manager, Chief of the ARB Modeling and Meteorology Branch. The ARB monitors contracts with the participants and is the primary interface between Contractors, the Policy and Technical Committees, and the JPA. Members of the Technical Committee are active participants in modeling analyses and in the review of proposals, reports, and publications.

6. STUDY BUDGET

This project will be funded in two phases; total funding for both phases is not to exceed \$450,000. Respondents should allocate sufficient funding for Phase 1 activities to ensure the development of a sound plan for Phase 2 efforts. It is expected that a majority of the total available funding will be dedicated to Phase 2 activities. If the total costs associated with Phase 1 tasks are estimated to exceed \$75,000, then adequate justification should be provided in the proposal. In evaluating responses to this solicitation, consideration will be given

to the cost-effectiveness of each respondent's proposal. At least \$250,000 should be allocated to address mobile sources.

The Contractor is to provide an estimate for Tasks 1, 2, 3, and 4 if the contractor is bidding on Phase 1. The Contractor is also to provide an estimate for tasks in Phase 2 individually, as described in the Scope of Work. For each individual task (Tasks 5 through 10 or any proposed alternative tasks), the cost for providing data to ARB (Task 11) and documentation (Task 12) should be delineated with that task. Additionally, the cost for attending one meeting in Sacramento at the end of Phase 2 should also be provided. It is recognized that there may be some uncertainty concerning the scope of Phase 2 activities. A cost estimate for Phase 2 should be made based on the Contractor's assessment of the most likely data collection efforts possible given the total cost and emission inventory improvements expected. Some adjustments to the budget for Phase 2 are expected based on the findings of Phase 1 and the results of the other CCOS emission inventory projects (STI, Blanchard).

7. SCHEDULE

The work is to be carried out in two phases. Phase 1 is to provide information that is useful to those involved in SIP modeling activities in time for use in preparation of the 2006 SIP updates for central and northern California. The study is to be completed within one year. Shown below is an approximate time line for the various stages of this contract. Potential Contractors can assume that comments on draft documents will be received within 30-days following submittal.

- Release of the RFP April 5, 2006
- Submission of bids May 2, 2006
- Contract Initiation June 15, 2006 (tentative)
- Project kickoff meeting Within 3 weeks of contract initiation
- Submit draft technical memorandum (Task 2) 3 months after contract initiation
- Submit final technical memorandum (Task 2) 2 weeks after receipt of comments on draft technical memorandum
- Submit draft technical memorandum (Task 3) 3 months after contract initiation
- Submit final technical Memorandum (Task 3) 2 weeks after receipt of comments on draft technical memorandum
- Submit draft Phase 1 report and draft Phase 2 work plan 4 months after contract initiation

- Task 4 workshop Within 5 months after contract initiation
- Submit final Phase 1 report and final Phase 2 work plan 30 days after receipt of comments on draft final report and draft work plan
- Tasks 5 through 10, as modified by Task 4 results Program Manager authorizes start following approval by CCOS TC; provide monthly status reports; complete within 14 months following contract initiation
- Submit draft final report, draft manuscript, software, data files, and documentation 16 months after contract initiation
- Task 12 meeting Within 17 months after contract initiation
- Submit final report and final manuscript 18 months after contract initiation

8. ADMINISTRATION

The group selected to conduct this work will report to the ARB Program Manager. The period of performance of this contract will be 18 months, with work expected to commence in approximately June 2006. Contract performance is not to begin until a contract is fully approved by the San Joaquin Valleywide Air Pollution Study Agency.

9. CONTRACT REQUIREMENTS

A. Reporting and Other Requirements

The Contractor will submit two technical memoranda upon completion of Tasks 2 and 3, respectively. The Contractor shall deliver a draft final report discussing the findings of Phase 1. Responding to comments provided by the Technical Committee, the Contractor will submit a final Phase 1 report within one month of receipt of comments from the Technical Committee. If the Phase 1 findings indicate that cost-effective improvements could be made, the Contractor shall deliver a draft work plan describing the activities proposed in Phase 2. Responding to comments provided by the Technical Committee, the Contractor will submit a final work plan for Phase 2 within one month of receipt of comments from the Technical Committee. Upon completion of the technical work, the Contractor will submit a draft final report and a draft manuscript suitable for publication in a peer reviewed journal. The Contractor will also deliver all software, data files, and appropriate documentation in accordance with the specifications provided in the work plan. Within 30 days of receipt of comments

from the Technical Committee, the Contractor will submit a final report and a final manuscript for submission to a suitable technical journal for peer review and publication.

The Contractor will attend three one-day meetings: at project kickoff and upon completion of Tasks 4 and 12. It should be assumed that these meetings will be held in Sacramento, California.

The Contractor shall deliver monthly progress reports to the ARB Program Manager. Payment of invoices will not be made until receipt of the associated progress report.

The Contractor shall deliver invoices to the ARB Program Manager. With respect to the payment period completed, the invoices shall set forth in detail by task, in accordance with the contract budget, charges for time expended on the project, including classification of personnel involved in such time expenditure, and the monthly, weekly, or hourly rates for such personnel, as appropriate. The invoices shall also contain an itemization of all materials used for the project, including the purpose of its use and its cost. All work billed for in each invoice must be covered in an associated progress report. Therefore, if invoicing is done more frequently than quarterly, progress reports coincident with the payment period must also be provided.

The Contractor shall deliver: 1) technical memoranda discussing results of Task 2 and 3 activities, 2) a draft final report for Phase 1, 3) a draft work plan for Phase 2 (if cost-effective improvements could be made), 4) a draft final report for Phases 1 and 2 (if Phase 2 is approved by the CCOS TC), 5) and a draft manuscript for publication. The contractor will supply for each deliverable two hardcopies, one electronic copy in Adobe Acrobat (PDF) format, and one in Microsoft Word (DOC) format. The Contractor will receive comments on these reports within 30 days of submission, with revisions due within 30 days after receipt of review comments (also with 2 hardcopies, PDF, and DOC versions). The Contractor will be responsible for paying all costs associated with publication of the manuscript.

All model source codes, input and output files, and pertinent documentation will be provided in accordance with the specifications developed in the Phase 2 work plan.

B. Correspondence

All technical correspondence regarding this contract should be sent to the Program Manager at the address listed below:

Mr. John DaMassa, Chief
Modeling & Meteorology Branch
Planning and Technical Support Division
California Air Resources Board
Program Manager
Central California Air Quality Studies
1001 "I" Street

Sacramento, California 95814

C. Contract Language

A copy of the contract language is presented in Appendix A. Any proposed revisions to the contract language **must** be included as part of the proposal. Questions regarding the contract should be directed to the JPA attorney at the address provided below:

Mr. Philip Jay
San Joaquin Valleywide Air Pollution Study Agency Counsel
San Joaquin Valley Unified Air Pollution Control District
1990 East Gettysburg Avenue
Fresno, California 93727
(559) 230-6033

10. PROPOSAL PREPARATION AND EVALUATION GUIDELINES

A. Proposal Contents

Proposals should convey a maximum of technical content related to the relevant task with a minimum of extraneous material. Proposals should convey a high degree of technical understanding and innovation while demonstrating the ability to present complex scientific results to technically qualified decision-makers. Vague references to “standardized”, “EPA”, “ARB”, or other unexplained and non-documented methods will be considered unresponsive and rejected.

The proposal should be clear and concise (typically not more than 30 pages maximum for each question or task, and preferably exclusive of resumes and proponent facilities/experience, which should also be minimal and can be incorporated by reference to a corporate web site). The proposal should address the following issues:

1. *The technical approach for answering each question/task.* The technical approach should build upon, verify or challenge, and add to existing knowledge. The technical approach should include re-formulation or better articulation of the tasks, a brief summary of current knowledge on the topic from central California and elsewhere (where relevant), available methods to answer the questions and a rationale for selecting the proposed method(s), a description of the analysis approach and the data to be used, methods to verify the generality of the results, methods to qualify the conclusions, and a brief outline for the final report and publication.
2. *Staffing, management oversight, and data management.* Extensive management oversight is not solicited or encouraged, as it is expected that each task will require substantial commitment and participation of an experienced specialist in the area with appropriate delegation to support personnel.

3. *A brief statement of qualifications for the proposed participants and a description of the duties they will perform, including a specific discussion of relatively recent project experience. Greater detail may be incorporated by reference to a corporate website (preferred) or as a standard package. Extensive corporate experience is not as important as the qualifications of the principals who will be dedicated to the proposed task.*
4. *The estimated budget for each task should be summarized on the cost reporting form shown in Table 1. This cost summary form should be supplemented with appended documentation detailing:*
 - a. Commitments and hourly rates for personnel.
 - b. Types and costs for travel, equipment, or supplies procured as part of the project.
 - c. One-time costs that apply to all tasks, but that are only listed in one (identify the costs and the tasks in which they are included or excluded).
 - d. Expected cost increases such as annual salary adjustments should also be specified. It is anticipated that this contract will be awarded on a time and materials basis with a maximum (not to exceed) value.
5. *The management approach for dealing with routine operations, unexpected problems, and changes in work scope.*
6. *A project schedule, describing the start and end dates for each task, and the completion date for each deliverable specified in the scope of work.*

B. Guidelines and Criteria for Proposal Evaluation

Respondents should demonstrate (1) knowledge and experience in the development of emission inventories and in the characterization of spatial and temporal variability of emissions estimates (as needed by air quality simulation models), (2) knowledge of the uncertainties associated with current emissions estimates, (3) an awareness of existing databases that may support the development of improved emissions estimates, and (4) innovative approaches for improving current emission inventories. A good understanding should be shown of the SIP process and historical ozone attainment demonstrations in central California. Groups of tasks and individual tasks as indicated in Section 3, Scope of Work will be rated independently. The following specific criteria will be used to evaluate the proposals:

1. Technical approach for implementing the tasks specified under the Scope of Work. (30 points)

2. The experience, competence, capability, and commitment of the proposed personnel to be assigned to the project. (30 points)
3. The proponent's technical performance on similar, past projects and the extent to which the participant can draw directly on past experience in meeting the requirements of the RFP. (25 points)
4. The overall proposed cost of the work as well as cost-effectiveness, and the proponent's willingness to enter into a contractual agreement that minimizes the risk of cost overrun. (15 points)

C. Conflict of Interest Requirements

Government Code Section 1090 generally prohibits a public official from being financially interested in a contract which he or she has made or participated in an official capacity. Under certain circumstances, persons who perform work pursuant to a contract with a government agency may be subject to the restrictions of Government Code Section 1090.

With respect to CCOS, this means that based on participation in the planning of the Study, certain consultants are precluded from participating in all or some of the post-planning contracts. This preclusion would apply to these consultants as either a prime Contractor or a Subcontractor. In most cases, whether a particular consultant is eligible to bid will depend on an analysis of all of the circumstances surrounding the consultant's earlier participation in CCAQS and the work that the consultant now proposes to perform.

Any response to this RFP which includes a paid participant who is ineligible based on Government Code Section 1090 will be rejected during the format review of the proposals.

Questions concerning the eligibility of a potential bidder must be directed to the JPA attorney at the address provided below prior to the preparation of a proposal:

Mr. Philip Jay
San Joaquin Valleywide Air Pollution Study Agency Counsel
San Joaquin Valley Unified Air Pollution Control District
1990 East Gettysburg Avenue
Fresno, California 93727
(559) 230-6033

D. Submittal Requirements

An original and two (2) hardcopies of your proposal and an electronic PDF file of the proposal shall be sent with a cover letter to the ARB Program Manager, Mr. John DaMassa, at the address listed in the Contract Requirements section. Hand carried or express mail packages may be delivered to Mr. John DaMassa at the California Air Resources Board, 1001 "I" Street, Sacramento, California 95814.

**TABLE 1
PROPOSAL BUDGET SUMMARY**

DIRECT COSTS:

- 1. Labor & Employee Fringe Benefits (provide detailed breakdown by task and employee on separate sheet [including Subcontractors]) \$ _____
- 2. Equipment (provide detailed breakdown on separate sheet) \$ _____
- 3. Travel & Subsistence \$ _____
- 4. Electronic Data Processing \$ _____
- 5. Photocopying/Printing/Mail/Telephone/FAX \$ _____
- 6. Materials and Supplies \$ _____
- 7. Miscellaneous (please specify) \$ _____

TOTAL DIRECT COST: \$ _____

INDIRECT COSTS:

- 8. Overhead (specify rate) \$ _____
- 9. General & Administrative Expenses (specify rate) \$ _____
- 10. Other Indirect Costs (please specify) \$ _____
- 11. Fee or Profit (specify rate) \$ _____

TOTAL INDIRECT COST: \$ _____

TOTAL DIRECT AND INDIRECT COST: \$ _____

APPENDIX A
CONTRACT LANGUAGE

CONTRACT NO. 06-x CCOS
SAN JOAQUIN VALLEYWIDE AIR POLLUTION STUDY AGENCY
AND
CONTRACTOR

This Agreement, which shall be effective upon the *DATE*, by and between the SAN JOAQUIN VALLEYWIDE AIR POLLUTION STUDY AGENCY (hereafter "STUDY AGENCY"), a joint powers agency, and *CONTRACTOR* (hereafter "CONTRACTOR").

WITNESSETH:

WHEREAS, STUDY AGENCY has the need to *TASK*;

WHEREAS, STUDY AGENCY released its Request for Proposal entitled "*RFP TITLE*" dated *DATE* ("the RFP"), which is incorporated herein, to those persons determined by STUDY AGENCY to be capable of *TASK*

WHEREAS, *CONTRACTOR* responded to said RFP by sending STUDY AGENCY its Proposal, dated *DATE*, ("the Proposal"), which is incorporated herein;

WHEREAS, STUDY AGENCY has requested *CONTRACTOR* to perform such services pursuant to the terms and conditions of its RFP; and

WHEREAS, *CONTRACTOR* represents that it is willing and able to perform the foregoing services requested by STUDY AGENCY pursuant to the terms and conditions thereof.

NOW, THEREFORE, the parties hereby agree as follows:

1. EMPLOYMENT OF CONTRACTOR

1.1 STUDY AGENCY shall employ *CONTRACTOR* as an independent Contractor to provide, to the reasonable satisfaction of the STUDY

AGENCY, those expert consulting services requested to be performed pursuant to Exhibit A of this Agreement, "Scope of Work," which is attached hereto and incorporated herein, the RFP, and the Proposal. In the event of any conflict between or among the terms and conditions of this Agreement, the exhibits incorporated herein, and the documents referred to and incorporated herein be resolved by giving precedence in the following order of priority:

1.1.1 To the text of this Agreement, Exhibit A, "Scope of Work," to this Agreement, Exhibit B, "Schedule of Deliverables"; and

1.1.2 To the RFP.

1.2 In addition to those obligations stated in paragraph 1.1 of this Agreement, CONTRACTOR shall provide STUDY AGENCY with one (1) reproducible master copy of each written work product completed pursuant to this Agreement, one (1) bound copy of each written work product, one (1) electronic copy in Adobe Acrobat, and one (1) electronic copy in Microsoft Word.

1.3 All work product that CONTRACTOR shall deliver to STUDY AGENCY hereunder shall be performed according to the work schedule and deadlines for performance identified in Exhibit B, "Schedule of Deliverables," to this Agreement, which is attached hereto and incorporated herein.

1.4 CONTRACTOR shall provide its services through the following key persons: *KEY PERSONS*.

1.5 It is the express intent of the parties to preserve the respective teams of the aforementioned key persons through the entire term of this Agreement. In case of death, illness, or other incapacity of any of the foregoing key persons, CONTRACTOR shall use its best efforts to promptly provide a replacement key person of at least equal professional ability and experience as the key person replaced, without additional cost to STUDY AGENCY. CONTRACTOR may add to or replace persons on its support staff without STUDY AGENCY's approval, provided, however, that replacement support staff personnel shall be of at least equal ability as the person(s)

replaced. Notwithstanding anything else stated to the contrary in this Agreement, it is understood that CONTRACTOR may not replace any of the aforementioned key persons without the prior, express written approval of the STUDY AGENCY.

1.6 Subject to any express limitations established by STUDY AGENCY as to the degree of care and amount of time and expense to be incurred and any other limitations expressly contained in this Agreement, CONTRACTOR shall perform the services under this Agreement with that level of due care and skill ordinarily exercised by other qualified professional consultants in the field of CONTRACTOR's expertise under similar circumstances at the time the services are being performed.

1.7 CONTRACTOR may retain such subContractors and/or subconsultants as CONTRACTOR deems necessary to assist CONTRACTOR in completing the work under this Agreement. Such subContractors and subconsultants, if any, shall be expressly approved in writing by STUDY AGENCY before they are retained to perform work under this Agreement. CONTRACTOR's use of any such subContractors or subconsultants shall not, in any way whatsoever, relieve CONTRACTOR of its obligations under subparagraph 1.1 of this Agreement. It is understood that CONTRACTOR shall be STUDY AGENCY's sole point of contact in the performance of the services covered by this Agreement.

1.8 CONTRACTOR's obligation under this Agreement shall be deemed discharged only after all tasks identified in paragraph 1.1 have been completed and approved by the STUDY AGENCY "Technical Committee."

2. NO THIRD-PARTY BENEFICIARIES

2.1 It is understood that CONTRACTOR's services under this Agreement are being rendered only for the benefit of STUDY AGENCY, and no other person, firm, corporation, or entity shall be deemed an intended third-party beneficiary of this Agreement.

3. TERM

3.1 This Agreement shall become effective upon execution by the parties and shall continue until terminated as provided herein. In no event shall the term of this Agreement extend past *DATE*, without the express, written consent of the parties hereto.

4. TERMINATION

4.1 STUDY AGENCY shall have the right to terminate this Agreement at its discretion, and without cause, at any time upon the giving to CONTRACTOR thirty (30) days' advance, written notice of an intention to terminate. If STUDY AGENCY terminates this Agreement in such event, CONTRACTOR shall be compensated for services satisfactorily provided to STUDY AGENCY up to the date of termination, as reasonably determined by STUDY AGENCY, together with such additional services performed after termination which are expressly authorized in writing by STUDY AGENCY to wind up such work.

4.2 The parties hereto may mutually agree to terminate this Agreement at any time, and in such case, upon any terms as are mutually agreeable, provided that such agreement is made pursuant to a written amendment to this Agreement.

4.3 CONTRACTOR shall have the right to terminate this Agreement immediately if:

4.3.1 STUDY AGENCY defaults in the payment of any sum due to be paid to CONTRACTOR; and

4.3.2 Such default for failure to pay or failure to perform any other obligation hereunder continues thirty (30) days after written notice thereof has been provided by CONTRACTOR to STUDY AGENCY.

4.4 Breach of Agreement: STUDY AGENCY may immediately suspend or terminate this Agreement, in whole or in part, where in the determination of STUDY AGENCY there is:

4.4.1 An illegal or improper use of funds;

4.4.2 A failure to comply with any term of this Agreement;

4.4.3 A substantially incorrect or incomplete report submitted to STUDY AGENCY;

4.4.4 Improperly performed services; or

4.4.5 Any other breach of the Agreement.

In no event shall any payment by STUDY AGENCY constitute a waiver by STUDY AGENCY of any breach of this Agreement or any default which may then exists on the part of CONTRACTOR. Neither shall such payment impair or prejudice any remedy available to STUDY AGENCY with respect to the breach or default. STUDY AGENCY shall have the right to demand of CONTRACTOR the repayment to STUDY AGENCY of any funds disbursed to CONTRACTOR under this Agreement which in the judgment of STUDY AGENCY were not expended in accordance with the terms of this Agreement. CONTRACTOR shall promptly refund any such funds upon demand.

In addition to immediate suspension or termination, STUDY AGENCY may impose any other remedies available at law, in equity, or otherwise specified in this Agreement.

In the event of any breach of this Agreement, STUDY AGENCY, upon the recommendation of the Policy Committee, may, without prejudice to any of its other legal remedies, terminate this Agreement upon five (5) days' written notice to CONTRACTOR. In such event, STUDY AGENCY shall pay CONTRACTOR only the reasonable value of the services theretofore rendered by CONTRACTOR as may be agreed upon by the parties or determined by a court of law, but not in excess of the total Agreement price.

5. DATA

5.1 No reports, professional papers, information, inventions, improvements, discoveries or data obtained, prepared, assembled, or developed by CONTRACTOR pursuant to this Agreement shall be released or made available (except as otherwise provided herein) without prior written approval of the Chief of the Modeling and Meteorology Branch, Planning & Technical Support Division, Air Resources Board.

The consent of the Chief of the Modeling and Meteorology Branch, Planning & Technical Support Division, Air Resources Board, shall not be unreasonably withheld.

5.2 All models used must be in the public domain. All model codes, inputs, and outputs, and data obtained, prepared, assembled or developed shall be provided to the Program Manager in a magnetic media acceptable to the Program Manager

6. REPORTS

6.1 CONTRACTOR shall place the following language in a conspicuous place on all monthly progress reports and on the final report:

"The statements and conclusions in this report are those of the Contractor and not necessarily those of the California Air Resources Board, the San Joaquin Valleywide Air Pollution Study Agency, or its Policy Committee, their employees or their members. The mention of commercial products, their source, or their use in connection with material reported herein is not to be construed as actual or implied endorsement of such products."

7. COMPENSATION/INVOICING

7.1 STUDY AGENCY agrees to pay CONTRACTOR and CONTRACTOR agrees to receive compensation at the rate specified in paragraph 7.6 of this Agreement.

7.2 The amount to be paid to CONTRACTOR under this Agreement includes all sales and use taxes incurred pursuant to this Agreement, if any, including any such taxes due on equipment purchased by CONTRACTOR. CONTRACTOR shall not receive additional compensation for reimbursement of such taxes and shall not decrease work to compensate therefor.

7.3 Advance payments shall not be permitted. Payments will be permitted only at which time-equivalent services have been satisfactorily rendered. Progress payments shall be subject to review by the ARB Program Manager and the STUDY AGENCY Technical Committee. Progress payments shall be made monthly

upon receipt of an invoice, a monthly progress report, and a claim for payment form, which is attached as Exhibit C and incorporated herein by reference. Invoices will be sent to Chief, Modeling and Meteorology Branch, Planning & Technical Support Division, Air Resources Board, P.O. Box 2815, Sacramento, CA 95812. With respect to the payment period completed, the invoice shall set forth in detail, in accordance with the Agreement budget, charges for time expended on the project, including the classification of personnel involved in such time expenditure, and the monthly, weekly, or hourly rates for such personnel, as appropriate. The invoice shall also contain an itemization of all materials used for the project, including the purpose of their use and their cost. Payment shall be made within thirty (30) days of receipt of the invoice.

7.4 Concurrently with the invoice, CONTRACTOR shall certify (i.e., through copies of issued invoices, checks, or receipts) that complete payment has been made to any and all subContractors and subconsultants as provided.

7.5 It is understood that all expenses incidental to CONTRACTOR's performance of services under this Agreement shall be borne exclusively by CONTRACTOR.

7.6 In no event shall compensation paid by STUDY AGENCY to CONTRACTOR for the performance of all services under this Agreement exceed COST.

7.7 STUDY AGENCY shall be solely responsible for payment and not any of the parties to the Joint Powers Agreement forming the STUDY AGENCY.

7.8 STUDY AGENCY shall withhold payment equal to ten percent (10%) of each monthly invoice until completion of work requested by the STUDY AGENCY Technical Committee on the tasks specified in Exhibit A and approval by the ARB Program Manager and the STUDY AGENCY Technical Committee. It is CONTRACTOR's responsibility to submit an invoice in triplicate for the ten percent (10%) withheld.

7.9 The terms of this Agreement and the services to be provided thereunder are contingent on the approval of funds by the appropriating government agency. Should sufficient funds not be allocated, the services provided may be modified or this Agreement terminated at any time by giving CONTRACTOR thirty (30) days' prior written notice.

8. EXTRA SERVICES

8.1 CONTRACTOR shall not undertake any extra services not enumerated herein unless expressly authorized by STUDY AGENCY through an amendment to this Agreement, which shall be executed in the same manner as this Agreement, or by express, written authorization if such extra services are being performed by CONTRACTOR to wind up its services under this Agreement pursuant to subparagraph 4.1 of this Agreement.

8.2 When such extra services are being performed, CONTRACTOR shall keep complete records showing that STUDY AGENCY requested such extra services, the hours and description of activities worked by each person who worked on the project, the reason for such extra services, and all the costs and charges applicable to the extra services authorized.

9. INDEPENDENT CONTRACTOR

9.1 In performance of the work, duties, and obligations assumed by CONTRACTOR under this Agreement, it is mutually understood and agreed that CONTRACTOR, including any and all of CONTRACTOR's officers, agents, and employees, will at all times be acting and performing as an independent Contractor, and shall act in an independent capacity and not as an officer, agent, servant, employee, joint venturer, partner, or associate of the STUDY AGENCY or the Policy Committee.

9.2 Furthermore, STUDY AGENCY shall have no right to control, supervise, or direct the manner or method by which CONTRACTOR shall perform its work and function. However, STUDY AGENCY shall retain the right to administer this Agreement so as to verify that CONTRACTOR is performing its obligations in accordance

with the terms and conditions thereof. CONTRACTOR and STUDY AGENCY shall comply with all applicable provisions of law and the rules and regulations, if any, of governmental authorities having jurisdiction over matters the subject thereof.

9.3 Because of its status as an independent Contractor, CONTRACTOR shall have absolutely no right to employment rights and benefits available to STUDY AGENCY employees. CONTRACTOR shall be solely liable and responsible for providing all legally required employee benefits. In addition, CONTRACTOR shall be solely responsible and save STUDY AGENCY harmless from all matters relating to payment of CONTRACTOR's employees, including compliance with Social Security, withholding, and all other regulations governing such matters. It is acknowledged that during the term of this Agreement, CONTRACTOR may be providing services to others unrelated to STUDY AGENCY or to this Agreement.

10. MODIFICATION

10.1 Any matters of this Agreement may be modified from time to time by the written consent of all the parties without, in any way, affecting the remainder.

11. NON-ASSIGNMENT

11.1 Neither party shall assign, transfer, or subcontract this Agreement nor their rights or duties under this Agreement without the prior, express written consent of the other party.

12. INDEMNIFICATION

12.1 CONTRACTOR agrees to indemnify, save, hold harmless, and at STUDY AGENCY's request, defend STUDY AGENCY, its boards, committees, representatives, officers, agents, and employees from and against any and all costs and expenses (including reasonable attorneys fees and litigation costs), damages, liabilities, claims, and losses (whether in contract, tort, or strict liability, including, but not limited to, personal injury, death, and property damage) occurring or resulting to STUDY AGENCY which arises from any negligent or wrongful acts or omissions of CONTRACTOR, its

officers, agents, subContractors, subconsultants, or employees in their performance of this Agreement, and from any and all costs and expenses (including reasonable attorneys fees and litigation costs), damages, liabilities, claims, and losses (whether in contract, tort, or strict liability, including, but not limited to, personal injury, death, and property damage) occurring or resulting to any person, firm, corporation, or entity who may be injured or damaged when such injury or damage arises from any negligent or wrongful acts, or omissions of CONTRACTOR, its officers, agents, subContractors, subconsultants, or employees in their performance of this Agreement.

13. INSURANCE

13.1 Without limiting STUDY AGENCY's right to obtain indemnification from CONTRACTOR or any third parties, CONTRACTOR, at its sole expense, shall maintain in full force and effect the following insurance policies throughout the term of this Agreement:

13.1.1 Comprehensive general liability insurance with minimum limits of coverage in the amount of _____ Million Dollars (\$) per occurrence;

13.1.2 Commercial automobile liability insurance for owned and non-owned vehicles which covers bodily injury and property damage with a combined single limit with minimum limits of coverage in the amount of _____ Million Dollars (\$) per occurrence;

13.1.3 Workers Compensation Insurance, in accordance with California law.

13.2 Such insurance policies shall name STUDY AGENCY, its officers, agents, and employees, individually and collectively, as additional insured but only insofar as the operations under this Agreement are concerned. Such coverage for additional insured shall apply as primary insurance, and any other insurance, or self-insurance, maintained by STUDY AGENCY, its officers, agents, and employees shall be excess only and not contributing with insurance provided under CONTRACTOR's policies

herein. This insurance shall not be cancelled or changed without a minimum of thirty (30) days' advance, written notice given to STUDY AGENCY.

13.3 Prior to the commencement of performing its obligations under this Agreement, CONTRACTOR shall provide certificates of insurance on the foregoing policies, as required herein, to STUDY AGENCY stating that such insurance coverages have been obtained and are in full force; that STUDY AGENCY, its officers, agents, and employees will not be responsible for any premiums on the policies; that such insurance names STUDY AGENCY, its officers, agents, and employees, individually and collectively, as additional insured, but only insofar as the operations under this Agreement are concerned; that such coverage for additional insured shall apply as primary insurance, and any other insurance or self-insurance maintained by STUDY AGENCY, its officers, agents, and employees, shall be excess only and not contributing with insurance provided under CONTRACTOR's policies herein. This insurance shall not be cancelled or changed without a minimum of thirty (30) days' advance, written notice given to the STUDY AGENCY.

13.4 In the event CONTRACTOR fails to keep in effect at all times insurance coverage as herein provided, STUDY AGENCY may, in addition to other remedies it may have, suspend or terminate this Agreement upon the occurrence of such event.

13.5 If the CONTRACTOR is a government entity, then it may self-insure such of those risks identified in paragraphs 13.1.1 through 13.1.3 of this Agreement, provided, however, that:

13.5.1 STUDY AGENCY, its officers, agents, and employees, individually and collectively, shall be named as additional insured (except for Workers Compensation Insurance) on CONTRACTOR's self-insurance plan, but only insofar as the operations under this Agreement are concerned;

13.5.2 Such self-insurance plan shall be reasonably satisfactory to STUDY AGENCY; and

Planning & Technical Support Division
Air Resources Board
P.O. Box 2815
Sacramento, CA 95812

CONTRACTOR: *CONTACT PERSON*
ADDRESS

16.2 Any and all notices between STUDY AGENCY and CONTRACTOR provided for or permitted under this Agreement or by law shall be in writing and shall be deemed duly served when personally delivered to one of the parties, or in lieu of such personal services, when deposited in the United States mail, postage prepaid, addressed to such party.

17. DISPUTES

17.1 In the event a dispute between CONTRACTOR and the ARB Program Manager, CONTRACTOR should first discuss the problem informally with the ARB Program Manager. If the dispute is not resolved, the following two-step procedure shall be followed by both parties:

17.1.1 CONTRACTOR and the ARB Program Manager shall each write to the STUDY AGENCY Technical Committee stating the issues in the dispute and the basis for their positions. The STUDY AGENCY Technical Committee shall make a determination within fourteen (14) working days after receipt of the written communications from CONTRACTOR and ARB Program Manager. The STUDY AGENCY Technical Committee shall notify CONTRACTOR and the ARB Program Manager in writing of the decision and the reasons therefor.

17.1.2 If CONTRACTOR or the ARB Program Manager disagrees with the STUDY AGENCY Technical Committee's decision, written notice shall be provided to the other party of an intention to seek non-binding third-party mediation of the dispute. Both parties must agree to submit to mediation. The dispute shall be considered by a panel of three (3) experts in the field of dispute. Each party shall have

the right to select one panelist. The selected panel will then select a third member. The panel shall set a hearing date, time, and place convenient to the parties within thirty (30) days of panel selection. Within five (5) working days of the hearing date, each party shall submit a written statement to the panel and the other party setting forth the issues and arguments to be presented. The hearing shall be informal with an opportunity for both parties to present their arguments. The panel shall provide the parties with a written decision within thirty (30) days of the hearing. The decision shall be binding on the parties, unless referred to the Governing Board within thirty (30) days. The costs of the panel shall be borne equally by the parties.

17.1.3 If either party has so requested, the matter shall be heard by the STUDY AGENCY Board, and the Board's determination shall be final.

18. POLITICAL ACTIVITY PROHIBITED

18.1 None of the funds, materials, property, or services provided under this Agreement shall be used for any political activity, or to further the election or defeat of any candidate for public office contrary to federal or state laws, statutes, regulations, rules or guidelines.

19. LOBBYING PROHIBITED

19.1 None of the funds provided under this Agreement shall be used for publicity, lobbying, or propaganda purposes designed to support or defeat legislation before the Congress of the United States of America or the Legislature of the State of California.

20. CONFLICT OF INTEREST

20.1 No officer, employee, or agent of STUDY AGENCY who exercises any function or responsibility for planning and carrying out the services provided under this Agreement shall have any direct or indirect personal financial interest in this Agreement. CONTRACTOR shall comply with all federal and state conflict of interest laws, statutes, and regulations which shall be applicable to all parties and

beneficiaries under this Agreement and any officer, agent, or employee of STUDY AGENCY.

21. COMPLIANCE WITH LAWS

21.1 CONTRACTOR shall comply with all federal and state laws, statutes, regulations, rules, and guidelines which apply to its performance under this Agreement.

22. SEVERABILITY

22.1 In the event that any one or more provisions contained in this Agreement shall for any reason be held to be unenforceable in any respect by a court of competent jurisdiction, such holding shall not affect any other provisions of this Agreement, and the Agreement shall then be construed as if such unenforceable provisions are not a part hereof.

23. TIME IS OF THE ESSENCE

23.1 It is understood that for CONTRACTOR's performance under this Agreement, time is of the essence. The parties reasonably anticipate that CONTRACTOR will, to the reasonable satisfaction of STUDY AGENCY, complete all services to be provided hereunder by *DATE*, provided that CONTRACTOR neither causes nor is caused unreasonable delay in such performance.

24. GOVERNING LAW

24.1 Venue for any action arising out of or relating to this Agreement shall only be in Fresno County, California.

24.2 The rights and obligations of the parties and all interpretation and performance of this Agreement shall be governed in all respects by the laws of the State of California.

25. BINDING UPON SUCCESSORS

25.1 This Agreement, including all covenants and conditions maintained herein, shall be binding upon and inure to the benefit of the parties, including their respective successors-in-interest, assigns, and legal representatives.

26. INSPECTION AND RELEASE OF DATA

26.1 Upon termination or expiration of this Agreement, all data which is received, collected, produced, or developed by CONTRACTOR under this Agreement shall become the exclusive property of STUDY AGENCY, provided, however, CONTRACTOR shall be allowed to retain a copy of any non-confidential data received, collected, produced, or developed by CONTRACTOR under this Agreement, subject to STUDY AGENCY's exclusive ownership rights stated herein. Accordingly, CONTRACTOR shall surrender to STUDY AGENCY all such data which is in its (including its subContractors, subconsultants, or agents) possession, without any reservation of right or title not otherwise enumerated herein.

26.2 STUDY AGENCY shall have the right, at reasonable times during the term of this Agreement, to inspect and reproduce any data received, collected, produced, or developed by CONTRACTOR under this Agreement. No reports, professional papers, information, inventions, improvements, discoveries, or data obtained, prepared, assembled, or developed by CONTRACTOR, pursuant to this Agreement, shall be released or made available (except to STUDY AGENCY) without prior, express written approval of STUDY AGENCY while this Agreement is in force.

27. NONDISCRIMINATION

27.1 The provisions of Exhibit D, the "Nondiscrimination Clause," is attached hereto and incorporated herein.

28. ENTIRE AGREEMENT

28.1 This Agreement, including all attached exhibits and documents which are referred to and incorporated herein, constitutes the entire agreement between CONTRACTOR and STUDY AGENCY with respect to the subject matter hereof and supersedes all previous negotiations, proposals, commitments, writings, advertisements, publications, and understandings of any nature whatsoever unless expressly included in this Agreement.

29. WAIVER

29.1 No waiver of any breach of this Agreement shall be held to be a waiver of any other or subsequent breach. All remedies afforded in this Agreement shall be taken and construed as cumulative, that is, in addition to every other remedy provided therein or by law. The failure of STUDY AGENCY to enforce at any time any of the provisions of this Agreement or to require at any time performance by CONTRACTOR of any of the provisions therefor, shall in no way be construed to be a waiver of such provisions nor in any way affect the validity of this Agreement or any part thereof or the right of STUDY AGENCY to thereafter enforce each and every such provision.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement as of the day and year first hereinabove written through their respective duly appointed and authorized representatives.

STUDY AGENCY
SAN JOAQUIN VALLEYWIDE AIR
POLLUTION STUDY AGENCY

CONTRACTOR

By _____

By _____

Chair

Print Name and Title

Tax I.D. No.

Recommended for approval:
SAN JOAQUIN VALLEYWIDE AIR
POLLUTION STUDY AGENCY
POLICY COMMITTEE

Approved as to legal form:
SAN JOAQUIN VALLEY UNIFIED AIR
POLLUTION CONTROL STUDY
AGENCY

By _____

By _____

Philip M. Jay

Title _____

Study Agency Counsel

Recommended for approval:
SAN JOAQUIN VALLEYWIDE AIR
POLLUTION STUDY AGENCY
TECHNICAL COMMITTEE

Approved as to accounting form:
SAN JOAQUIN VALLEY UNIFIED AIR
POLLUTION CONTROL STUDY
AGENCY

By _____

By _____

Roger W. McCoy

Title _____

Finance Officer

