

# **REQUEST FOR PROPOSALS**

## **CENTRAL CALIFORNIA OZONE STUDY (CCOS)**

### **Reinvestigation of September 2000 Ozone Episode in Central California**

**February 23, 2007**

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## 1. BACKGROUND

Alpine Geophysics, LLC (AG), OThree Chemistry, Research and Service, and ENVIRON International Corp (ENVIRON) carried out a study to provide photochemical modeling support in connection with the 1-hr ozone State Implementation Plan (SIP) developed for the Central California Ozone Study (CCOS) region. The specific goal of this study was to perform refined diagnostic and photochemical modeling analyses of the 16-20 September 2000 CCOS episode in order to improve model performance and reliability such that the episode could be used by the San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD) and California Air Resources Board (ARB) as a credible, reliable foundation upon which to base regulatory decision-making. The study objectives included:

- Assembling a team of modeling scientists and the necessary computational resources to seek ways of improving photochemical model performance for the 16-20 September 2000 CCOS ozone episode;
- Evaluating the procedures and assumptions used in the initial modeling of the September episode by technical staff at the ARB;
- Identifying opportunities for model improvement by developing a Model Performance Improvement Plan (MPIP) delineating the steps to be taken in producing a SIP-quality photochemical modeling database for the Sept 2000 episode. Implementing revisions to the plan through consultation with the ARB, SJVUAPCD, and stakeholders;
- Preparing refined emissions, meteorological, and photochemical model input files and establishing one or more new Base Case simulations of the 16-20 September 2000 episode;
- In accordance with the MPIP, performing thorough operational and scientific performance evaluations of the meteorological and ozone air quality models to assess the adequacy and reliability of the new Base Case simulation(s);
- Conducting corroborative modeling analyses (e.g., process analysis, evaluations of other CCOS episodes), to confirm or refute hypotheses developed in connection with the existing performance difficulties with the 16-20 September 2000 episode;
- Delivering the photochemical model input and output files, run scripts, and related documentation for the Final Base Case simulation to the ARB, facilitating independent replication of the team's ozone modeling efforts if desired; and
- Documenting the diagnostic analyses, model performance improvement activities and evaluation findings, and recommendations in a Final Report.

The study team developed a Model Performance Improvement Plan (MPIP) delineating the steps to be taken in producing a SIP-quality photochemical modeling database for the September 2000 episode. They then prepared refined emissions, meteorological, and photochemical model input files and established a base case simulation (Base B) for the episode. In accordance with the MPIP, a thorough operational and scientific performance evaluation was carried out for the MM5 meteorological and CAMx ozone air quality models to assess the adequacy and reliability of this base case. Finding substantial performance problems with the base case, most notably a systematic and large underprediction of hourly and daily maximum ozone concentrations, the team designed and carried out an intensive diagnostic study entailing over two-dozen model simulations with the MM5/CAMx system. Corroborative modeling analyses (e.g., Process Analysis, evaluations of other CCOS modeling episodes) were performed to test a broad range of hypotheses regarding the performance difficulties with the 16-20 September 2000 episode.

Within the time and resource constraints of this project, it was not possible to develop a SIP-quality ozone modeling episode satisfying EPA performance goals and established scientific practice. Accordingly, as directed by the study sponsors, a final report was prepared focusing on the range of hypotheses tested and the diagnostic experiments performed to explore the model performance issues. Complementing this final report and the earlier MPIP, the team produced over thirty (30) PowerPoint presentations, monthly technical progress reports, and other electronic files (e.g., Excel files) detailing the evolving results of this study. Furthermore, accompanying the final report were three CDs containing: (1) the results of the final base case MM5 performance evaluation, (2) the CAMx model surface and aloft performance evaluations for three CAMx simulations of the September 2000 and July-August 2000 CCOS episodes, and (3) the full set of Process Analysis results covering all three CAMx simulations. Lastly, the full set of model input and output files for the final base case simulation of the 16-20 September 2000 episode was delivered to the ARB on magnetic tape for others who might wish to duplicate or extend the modeling results.

Since the work described above was performed, significant improvements have been made by NOAA to MM5-generated meteorological fields for the CCOS domain. The emissions inventory for the area has also undergone several improvements. Various other CCOS-sponsored characterization and data analysis projects are also providing new insights into key physical and chemical phenomena that influence ozone formation in the study domain. The proposed study will assess the current ability to provide an accurate simulation of ozone and related precursors in the CCOS domain.

## **2. TECHNICAL OBJECTIVES**

This project will involve an examination of the original CCOS modeling work carried out for the September 2000 episode. The study will be performed in two phases. Phase 1 will entail a review of the previous modeling and diagnostic studies performed by the Alpine Geophysics study team. Phase 1 will also involve a review of

recently completed and ongoing CCOS data analysis projects that may provide insights into needed improvements to the original September 2000 modeling. Further diagnostic studies will be undertaken, as appropriate. The product of Phase 1 will be a work plan describing proposed modifications to the modeling system and inputs.

Phase 2 of the study will involve the actual implementation of the recommended modifications to the modeling system and the assessment of model performance. Further diagnostic studies, revisions to inputs, and reevaluations of model performance will be conducted as allowed by the available budget. A final report and manuscript suitable for publication in a peer-reviewed journal will be prepared describing the work carried out and recommendations for further studies needed to diagnose and rectify any remaining model performance problems.

### **3. SCOPE OF WORK**

Phase 1 of this study will involve a review of previous studies, acquisition of modeling software, data files, and associated documentation, the conduct of initial diagnostic analyses, and the preparation of a work plan for further modeling efforts to be conducted in Phase 2. Phase 1 will include the following three tasks.

#### ***Task 1. Review Previous CCOS Studies***

The Contractor will review documentation of pertinent CCOS studies associated with modeling the September 2000 episode. These studies will include (but not be limited to):

- Previous modeling and diagnostic studies for the September 2000 episode conducted by the Alpine Geophysics team.
- Recent MM5 improvements and performance assessments conducted by NOAA, Sonoma Technology, Inc. (STI), T&B Systems, and UC Berkeley/Lawrence Berkeley National Laboratory.
- Recent updates to the summer 2000 emissions inventory prepared by ARB and STI.
- Recent updates to air quality modeling in Central California conducted by NOAA, STI, Georgia Tech, and UC Berkeley/Lawrence Berkeley National Laboratory.

Based on this review, the Contractor will identify the key findings of previous modeling efforts, giving particular attention to identified shortcomings in model performance for the September 2000 episode and any suggested means for rectifying such problems.

***Task 2. Acquire Modeling Software and Data Files and Conduct Initial Diagnostic Analyses.***

The Contractor will acquire all pertinent modeling software, input and output files, and available documentation for the September 2000 episode developed previously by the Alpine Geophysics team. The Contractor will also acquire updated MM5 output files generated by NOAA and recent emission inventory information developed by ARB. The Contractor will identify and conduct additional assessments of MM5 performance for the September episode (as needed) and will identify modifications to MM5 and inputs that may provide an improved representation of meteorological phenomena for the September episode. Changes to ozone precursor emissions relative to the original September modeling inventory will be characterized. An assessment will be made of the possible impacts of these emissions changes on original September modeling results. The Contractor will conduct further diagnostic assessments of the original September modeling results (as needed) and identify proposed changes to air quality model settings and inputs.

***Task 3. Prepare a Work Plan and Meet With CCOS Technical Committee***

Based on the findings of Tasks 1 and 2, the Contractor will prepare a draft work plan discussing the proposed efforts to be carried out in Phase 2 to improve air quality model performance for the September 2000 ozone episode. Priorities should be assigned to the proposed efforts. The draft work plan is to include a clear explanation of how model performance will be evaluated.

The Contractor will submit a draft work plan for Phase 2 activities within three months of initiating the study. The Contractor will prepare a presentation summarizing the findings of Tasks 1 and 2 and the recommendations for Phase 2 efforts described in the draft work plan. The Contractor will give the presentation at a one-day meeting of the CCOS Technical Committee to be held at ARB offices in Sacramento, California. Based on comments provided by the Technical Committee, the Contractor will implement suitable revisions and submit a final work plan for Phase 2 activities. The final work plan will be submitted within 30 days of receipt of comments from the Technical Committee.

**NOTE: Work on Tasks 4 through 6 is not to be initiated prior to approval of the final work plan and receipt of authorization from the ARB Program Manager.**

Phase 2 of this study will involve implementation of the proposed technical analyses and model improvement efforts described in the approved final work plan. This portion of the study will also include the preparation of a final report and journal manuscript as well as the delivery of software, data files and suitable documentation in electronic format. Phase 2 will include the following three tasks.

#### ***Task 4. Conduct Updated Modeling for September 2000 Episode***

The Contractor will implement efforts to improve the simulation of the September 2000 ozone episode in accordance with the final work plan. This will include preparation of revised emissions, meteorological, initial and boundary condition, and other inputs, as appropriate. If necessary, new MM5 simulations will be made to generate meteorological inputs for the air quality model. The air quality model will be exercised using the revised inputs and an assessment of model performance will be undertaken. The Contractor will analyze the modeling results in light of the findings of the earlier study conducted by the Alpine Geophysics team to ascertain the correctness of the suggested reasons as to why model performance at that time was not satisfactory. The Contractor will also compare the results from the present study with those for the same September episode period being developed in the CCOS seasonal ozone modeling study being carried out by UC Berkeley and the Lawrence Berkeley National Laboratory. The Contractor will identify any remaining shortcomings in performance and suggest possible means to rectify any such problems. The Contractor will conduct further simulations and diagnostic studies in accordance with the final work plan and authorized budget.

In the event that model improvement efforts that can be implemented within the authorized budget fail to yield adequate performance and if the Contractor can identify further analyses or improvements that are thought to hold sufficient promise of rectifying the existing performance problems, the Contractor may submit a technical memorandum identifying proposed improvements.

#### ***Task 5. Reporting and Meeting***

During the course of the study, the Contractor will submit monthly progress reports summarizing the work carried out during the reporting period, unanticipated problems, and proposed means for resolving such problems.

The Contractor will prepare a draft final report that discusses the work carried out in Tasks 1 through 4 as well as a draft manuscript suitable for submission to a peer-reviewed journal. The Contractor will submit both the draft final report and manuscript to the Technical Committee for review and comments. The Contractor will work with the Technical Committee to identify a suitable journal for publication of the manuscript.

The Contractor will prepare a presentation summarizing the key findings of the study to be given at a one-day meeting of the Technical Committee to be held at ARB offices in Sacramento, California. The draft report and manuscript will be finalized including suitable responses to comments provided by the Technical Committee. The

Contractor will be responsible for submitting the manuscript to the journal for review and comments and for the preparation and submittal of a final version of the manuscript. The Contractor will be responsible for paying any page charges or other publication costs. The Contractor may include in the project budget sufficient funding to cover such publication costs.

#### ***Task 6. Provision of Data, Software, and Documentation***

At the end of the study, the Contractor will transfer all data sets, computer codes, and customized software developed or used in this study as well as documentation for all of these items to ARB staff in a well organized and documented electronic package.

#### **4. REFERENCES**

Copies of CCOS reports can be found at:

<http://www.arb.ca.gov/airways/ccos/ccos.htm>

#### **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 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**

A budget of \$80,000 has been allocated for this study.

## **7. SCHEDULE**

The study is to be completed within 12 months. Shown below is a 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 February 23, 2007
- Submission of bids April 6, 2007
- Contract Initiation Mid May 2007
- Submit draft work plan Within 3 months of contract initiation
- Task 3 meeting Within 4 months of contract initiation
- Submit final work plan 30 days after receipt of TC comments
- Submit draft final report, draft manuscript, software, data files, and documentation Within 10 months of contract initiation
- Task 5 meeting Within 11 months of contract initiation
- Submit final report and final manuscript Within 12 months of 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 12 months, with work expected to commence in approximately mid May of 2007. 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**

In Task 3, the Contractor will deliver a draft work plan describing the modeling improvements for the September 2000 episode as well as associated documentation, software and data deliverables to be performed or provided in Tasks 4 through 6 of this study. Responding to comments provided by the Technical Committee, the Contractor will submit a final work plan within one month of receipt of comments from the Technical Committee. At the end of the study, the Contractor will submit a draft final report

discussing the findings of the complete study, as well as 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 two one-day meetings in conjunction with the performance of Tasks 3 and 5. It should be assumed that these meetings will be held in Sacramento, California.

The Contractor will 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 will 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 a draft work plan in Task 3 and a draft final report and draft manuscript for publication in Task 5, each with 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 may include provisions in the project budget to cover costs associated with publication of the manuscript.

All modeling software used or developed in this study, input and output files, and pertinent documentation will be provided in accordance with the specifications indicated in the 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 considerable knowledge and experience in the application of emissions, meteorological and photochemical models. The team should have experience in assessing model performance and in diagnosing and rectifying model performance problems. Awareness should also be evident of measurements collected in central California during the CCOS summer 2000 field measurement program as well as pertinent completed and ongoing CCOS studies. 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. 07-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 reinvestigate the September 2000 ozone episode in Central California;

**WHEREAS**, STUDY AGENCY released its Request for Proposal entitled "Reinvestigation of September 2000 Episode in Central California" dated February 23, 2007 ("the RFP"), which is incorporated herein, to those persons determined by STUDY AGENCY to be capable of reinvestigating the September 2000 ozone episode in Central California;

**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 exist 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 \$80,000.

**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

**13.5.3** All those provisions identified in subparagraph 13.2 of this Agreement concerning the relationship of CONTRACTOR's primary and STUDY AGENCY's excess insurance to each other, the requirement of CONTRACTOR delivering a certificate of insurance or other suitable evidence to STUDY AGENCY, and the cancellation/change of insurance requirements shall apply to such self-insurance plan.

#### **14. AUDITS AND INSPECTIONS**

**14.1** CONTRACTOR shall at any time during business hours, and as often as STUDY AGENCY may deem necessary, make available to STUDY AGENCY for examination all of its records and data with respect to the matters covered by this Agreement.

CONTRACTOR shall, upon request by STUDY AGENCY, permit STUDY AGENCY to audit and inspect all of such records and data necessary to ensure CONTRACTOR's compliance with the terms of this Agreement.

**14.2** CONTRACTOR shall maintain books, records, documents, and other evidence pertaining to the reimbursable time and materials and hold them available for audit and inspection by STUDY AGENCY for a minimum of three (3) years from the date this Agreement is completed or otherwise terminated.

**15. BUDGET**

**15.1** CONTRACTOR shall be authorized to rebudget funds up to a maximum of twenty percent (20%) between major categories in the contract budget as contained in Exhibit A. All rebudgeting in excess of twenty percent (20%) requires the prior written approval of the Chief of the Modeling and Meteorology Branch, Planning and Technical Support Division, Air Resources Board, or his representative. Under no circumstances shall the total contract amount exceed \$80,000.

**16. NOTICES**

**16.1** The persons and their addresses having authority to give and receive notices under this Agreement include the following:

STUDY AGENCY: John DaMassa, Chief  
Modeling and Meteorology Branch  
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 \_\_\_\_\_  
Chair

By \_\_\_\_\_  
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 \_\_\_\_\_  
Title \_\_\_\_\_

By \_\_\_\_\_  
Philip M. Jay  
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 \_\_\_\_\_  
Title \_\_\_\_\_

By \_\_\_\_\_  
Roger W. McCoy  
Finance Officer