DATE:    February 20, 2014

TO:      SJVAPSA Governing Board

FROM:    Samir Sheikh, Director of Strategies and Incentives
          Project Lead: Sheraz Gill

RE:      APPROVE AND AUTHORIZE THE CHAIR TO
          EXECUTE CONTRACT 14-1 CCOS WITH
          CHARLES E. SCHMIDT, PH.D. IN THE AMOUNT
          OF $86,880 FOR TESTING OF A VOC EMISSIONS
          SCREENING METHOD AND ASSESSMENT OF
          EMISSIONS FOR DAIRY SILAGE AND FEED, AND
          TO EXECUTE AGREEMENT 13-0220 WITH THE
          CALIFORNIA DEPARTMENT OF FOOD AND
          AGRICULTURE FOR CORRESPONDING
          CONTRIBUTION IN THE AMOUNT OF $6,880

RECOMMENDATION:

1. Approve and authorize the Chair to execute Contract 14-1 CCOS
   with Charles E. Schmidt, Ph.D. (Dr. Schmidt) in the amount of
   $86,880 for testing a screening method to estimate the VOC
   emissions potential of dairy silage and feed based on analysis of
   the composition of the silage and total mixed ration (TMR) and to
   assess emissions of VOCs, greenhouse gases, and select nitrogen
   compounds from dairy silage and TMR.

2. Execute Agreement 13-0220 with the California Department of
   Food and Agriculture (CDFA) to accept a contribution in the
   amount of $6,880 for the proposed contract. The $6,880 is in
   addition to the $80,000 that has been designated for silage
   emissions research in the CCOS fund.
BACKGROUND:

The Federal Clean Air Act and California law requires the San Joaquin Valley Air Pollution Control District (District) to regulate VOC emissions from various sources, including large agricultural operations. Recent research has demonstrated that dairy silage and TMR are significant sources of VOC emissions at dairy operations. District Rule 4570 (Confined Animal Facilities) requires dairies in the San Joaquin Valley to implement various mitigation measures to reduce VOC emissions from processes at dairy operations, including the management of dairy silage and TMR. The San Joaquin Valleywide Air Pollution Study Agency (Study Agency) Agricultural Technology Committee’s Dairy Subcommittee has identified specific focus areas where additional research is needed to increase understanding of emissions from dairy silage and TMR and to better evaluate the effectiveness of currently required and potential mitigation measures. Today’s recommendation would support research consistent with the research focus areas established by the Study Agency’s Agricultural Technology Committee.

DISCUSSION:

CDFA recently approved a contract with UC Davis in May 2013 in the amount of $219,610 for performance of a research project titled, “Development of Methodology to Assess Dairy Silage Management Practices to Reduce Emissions of Volatile Organic Compounds.” The goal of the UC Davis project is to develop a screening method to evaluate the effectiveness of potential VOC mitigation measures for silage and TMR based on measurement of the total purgeable VOCs of the ensiled dairy feeds.

The recommended research study would enhance the quantification of VOC emissions from dairy silage and TMR, on-site, through the use of flux chambers. These measurements will be used in conjunction with research from the UC Davis silage project by providing actual on-site emission measurements to enhance the usefulness of the data collected. The recommended study would be performed by Dr. Charles E. Schmidt, a leading expert in the research techniques necessary for this study.

Dr. Schmidt is a California-based consultant with vast experience in the environmental and air quality arena and is specifically experienced in the type of measurements that will be utilized for the proposed project. Dr. Schmidt’s qualifications include the following:

- Dr. Schmidt has worked as a consultant for over 30 years and has many years of experience developing project-specific technical approaches and directing applied research. While at Radian Corporation and under contract to the United

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States Environmental Protection Agency (US EPA), Dr. Schmidt developed the US EPA-recommended surface emission isolation flux chamber area source assessment technology and assisted in developing the Air Pathway Analysis (APA) approach recommended by the US EPA.

- Dr. Schmidt has extensive expertise in the utilization of flux chamber measurements in the field to quantify air pollutant emissions from area sources, including field measurements at dairy sources in the San Joaquin Valley and composting facilities, which require measurement techniques that would be similar to measurement techniques used for silage.

- Dr. Schmidt has used the surface flux chamber methodology to provide high-quality, representative area source emissions data. The results of assessments performed by Dr. Schmidt’s have been used by air quality agencies, such as the South Coast Air Quality Management District (SCAQMD) and the District, to develop emission factors used for permitting and emission inventories and/or to evaluate the effectiveness of various controls and mitigation measures for air quality regulations.

- Dr. Schmidt was one of the first researchers to begin quantifying VOC emissions from feed sources at California dairies. Dr. Schmidt’s work was central in establishing dairy feed as potentially the largest contributor to total VOC emissions at dairies.

- In previous research efforts that were supported by the California Air Resources Board (ARB) and the District, Dr. Schmidt demonstrated the effective use of SCAQMD Method 25.3 to quantify total VOC emissions from dairy sources. Currently it does not appear that other methods have been as successful at quantifying total VOCs from dairy sources as SCAQMD Method 25.3.

Dr. Schmidt’s years of experience with the use of flux chambers to measure emissions from area sources, including sources on California dairies, in combination with his demonstrated ability in the use of SCAQMD Method 25.3 to quantify total VOC emissions from dairy feed brings a distinctive set of skills to the proposed project. The use of the same methods in the proposed project will also allow for continuity with the previously completed VOC studies at California dairies, facilitate comparisons with the results of the previously-completed studies, and allow the data from this proposed study to supplement the data set from the previous California dairy emission studies.

The Policy Committee approved the proposed project in December 2013. The Policy Committee recommends approval and authorization of Contract 14-1 CCOS with Charles E. Schmidt, Ph.D. in the amount of $86,880 for testing of a screening method to
APPROVE AND AUTHORIZE THE CHAIR TO EXECUTE CONTRACT 14-1 CCOS WITH CHARLES E. SCHMIDT, PH.D. IN THE AMOUNT OF $86,880 FOR TESTING OF A VOC EMISSIONS SCREENING METHOD AND ASSESSMENT OF EMISSIONS FOR DAIRY SILAGE AND FEED, AND TO EXECUTE AGREEMENT 13-0220 WITH THE CALIFORNIA DEPARTMENT OF FOOD AND AGRICULTURE FOR CORRESPONDING CONTRIBUTION IN THE AMOUNT OF $6,880

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estimate the VOC emissions potential of dairy silage and TMR based on analysis of the composition of the ensiled dairy feed. The final report should be completed by February 2015.

FISCAL IMPACT:

The total amount of funding required for the proposal is $86,880. The CCOS fund currently has $80,000 designated for silage emissions research. Agreement 13-0220 with CDFA will provide the remaining $6,880 required for the proposed project.

Attachments:
Attachment A: Contract 14-1 CCOS with Charles E. Schmidt, Ph.D. (34 pages)
Attachment B: Agreement 13-0220 with California Department of Food and Agriculture (20 pages)
APPROVE AND AUTHORIZE THE CHAIR TO EXECUTE CONTRACT 14-1 CCOS WITH CHARLES E. SCHMIDT, PH.D. IN THE AMOUNT OF $86,880 FOR TESTING OF A VOC EMISSIONS SCREENING METHOD AND ASSESSMENT OF EMISSIONS FOR DAIRY SILAGE AND FEED, AND TO EXECUTE AGREEMENT 13-0220 WITH THE CALIFORNIA DEPARTMENT OF FOOD AND AGRICULTURE FOR CORRESPONDING CONTRIBUTION IN THE AMOUNT OF $6,880

Attachment A:

(Contract No. 14-1 CCOS with Charles E. Schmidt, Ph.D.)
(34 PAGES)
CONTRACT NO. 14-1 CCOS

SAN JOAQUIN VALLEYWIDE AIR POLLUTI ON STUDY AGENCY

AND

CHARLES E. SCHMIDT, PH.D.

This Agreement, which shall be effective as of the _______ day of ____________, 2014, by
and between the SAN JOAQUIN VALLEYWIDE AIR POLLUTION STUDY AGENCY (hereafter
"STUDY AGENCY"), a joint powers agency, and CHARLES E. SCHMIDT, PH.D. (hereafter
"CONTRACTOR").

WITNESSETH:

WHEREAS, the California Department of Food and Agriculture (CDFA) has approved a
contract with the University of California, Davis (UC Davis) and has allocated funding in the amount of
$219,610 for performance of research titled “Development of Methodology to Assess Dairy Silage
Management Practices to Reduce Emissions of Volatile Organic Compounds”;

WHEREAS, CONTRACTOR's proposal for a research study to be performed in conjunction
with the aforementioned UC Davis research approved for funding through CDFA, titled "Addressing the
Issues of Total Hydrocarbon, Ozone Precursor, and Greenhouse Gases from Dairy Silage and
Management Practices Using Approved, Quantitative, Practical Assessment Technologies," dated March
15, 2013 (hereafter PROPOSAL), which is attached hereto and incorporated herein as Exhibit A of this
Agreement, was submitted to STUDY AGENCY requesting funding for the measurement of emissions
from ensiled dairy feed to support the goals of the UC Davis research;

WHEREAS, the PROPOSAL addresses areas of dairy silage and feed emissions that the
STUDY AGENCY Agricultural Technology Committee’s Dairy Subcommittee has identified as areas
that are in need of further research;

WHEREAS, the PROPOSAL will provide valuable information to help answer technical
questions and aid the STUDY AGENCY by gathering information that can be used to evaluate the
efficacy of various required and potential mitigation measures to reduce emissions of VOC from dairy feed and silage;

WHEREAS, STUDY AGENCY has requested CONTRACTOR to perform such services pursuant to the terms and conditions of the PROPOSAL (Exhibit A); and

WHEREAS, CONTRACTOR represents that it is qualified, 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 that the above recitals are incorporated and made part of this Agreement and further agree as follows:

1. SERVICES OF CONTRACTOR

1.1 CONTRACTOR, as an independent contractor, agrees to provide, to the reasonable satisfaction of the STUDY AGENCY, those expert consulting services requested to be performed as shown in the PROPOSAL, Exhibit A, of this Agreement. 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 shall be resolved by giving precedence in the following order of priority:

1.1.1 To the text of this Agreement.

1.1.2 To the Proposal (Exhibit A) especially regarding the Task/Scope and Work Products/Deliverables.

1.2 All services and work products that CONTRACTOR shall deliver to STUDY AGENCY hereunder shall be performed according to the work schedule and deadlines for performance identified in Exhibit A, except as modified in the text of this Agreement.

1.2.1 Upon determination by STUDY AGENCY that any assigned task is not feasible or that the final product will not be useful to the STUDY AGENCY, CONTRACTOR may be directed by STUDY AGENCY to either complete the task to the extent supported by the data or cease efforts on the specified task.

1.2.2 Should STUDY AGENCY direct CONSULTANT to cease efforts on a
specified task, CONSULTANT shall be compensated for services performed prior to said direction and for any reasonable costs to conclude efforts already in progress for the task.

1.2.3 STUDY AGENCY retains the authority to redirect any unexpended funding for any curtailed task to another task in progress, if it is determined by the STUDY AGENCY that another existing task requires such supplemental funding for satisfactory completion.

1.2.4 STUDY AGENCY shall not require, and CONSULTANT shall not undertake, any extra services in excess of the total compensation specified in this Agreement without formal amendment to this Agreement executed in the same manner as the Agreement.

1.2.5 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 PROPOSAL by providing notification to the STUDY AGENCY Program Manager of the need to rebudget and the ability of the revised budget to provide all required products as specified in Exhibit A without exceeding the total compensation authorized for this Agreement. All rebudgeting in excess of twenty percent (20%) requires the prior written approval of the STUDY AGENCY Program Manager. Under no circumstances shall the total for the revised budget exceed the total specified for this Agreement without formal amendment to this Agreement executed in the same manner as the Agreement.

1.3 CONTRACTOR shall provide its services through the following key person(s):

Principle Investigator: Dr. Charles E. Schmidt, Ph.D.

1.3.1 It is the express intent of the parties to preserve the respective teams of the aforementioned key person(s) through the entire term of this Agreement. In case of death, illness, or other incapacity of any of the foregoing key person(s), 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 person(s) without the prior, express written approval of the STUDY AGENCY.

1.3.2 With the exception of any subcontractors identified in paragraph 1.3 whose services are subject to the provisions of subparagraph 1.3.1, 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, or increase the compensation of CONTRACTOR under paragraph seven (7) 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.

1.4 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.

2. **TIME IS OF THE ESSENCE**

2.1 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 in accordance with the schedule set forth in Exhibit A, provided that CONTRACTOR is not caused unreasonable delay in such performance.

2.2 CONTRACTOR's obligation under this Agreement shall be deemed discharged
after all tasks identified in the exhibits incorporated in subparagraph 1.1 have been completed.

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 February 28, 2015, 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**

   4.4.1 STUDY AGENCY may immediately suspend or terminate this Agreement, in whole or in part, where in the determination of STUDY AGENCY there is:
4.4.1.1 An illegal or improper use of funds;

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

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

4.4.1.4 Improperly performed services; or

4.4.1.5 Any other breach of the Agreement.

4.4.2 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.

4.4.3 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.

4.4.4 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 OWNERSHIP, INSPECTION, AND PUBLICATION

5.1 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 Program Manager while this Agreement is in force.

5.2 Upon termination or expiration of this Agreement, CONTRACTOR shall provide the STUDY AGENCY all such data developed through conduct of the project which is in its (including its subcontractors’, subconsultants’, or agents’) possession, without any reservation of right or title not otherwise enumerated herein. Accordingly, 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 nonconfidential data received, collected, produced, or developed by CONTRACTOR under this Agreement, subject to STUDY AGENCY’s exclusive ownership rights stated herein.

5.3 After termination or expiration of this Agreement, should CONTRACTOR subsequently include data collected for the study for other evaluations and publications, STUDY AGENCY requests a notification of publication and/or a copy of the article or manuscript published.

6. REPORTS

6.1 CONTRACTOR shall provide progress reports in accordance with the reporting requirements in subparagraph 1.1 unless, during performance of the Agreement, an alternative schedule is specified by the STUDY AGENCY Project Manager and agreed to by CONTRACTOR in response to critical issues or suspension of schedule.

6.2 CONTRACTOR shall participate in teleconference calls to discuss the progress reports upon request by the STUDY AGENCY Project Manager.

6.3 CONTRACTOR shall place the following language in a conspicuous place on all 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, 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 the total sum of EIGHTY SIX THOUSAND EIGHT HUNDRED EIGHTY DOLLARS ($86,880) for satisfactory services performed under this Agreement. Said sum includes all costs and expenses incurred by CONTRACTOR in performing 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 when specified services and work products have been satisfactorily delivered. Progress payments shall be subject to review by the STUDY AGENCY Program Manager and the STUDY AGENCY Technical Committee. Progress payments shall be made upon receipt of a work product/deliverable specified by this Agreement, an invoice, and a completed claim for payment form which is attached as Exhibit B and incorporated herein by reference. Invoices will be sent to Study Agency Project Manager, San Joaquin Valleywide Air Pollution Study Agency, 1990 East Gettysburg Avenue, Fresno, CA, 93726. With respect to the service or work product delivered, the invoice shall set forth in detail, in accordance with the Agreement budget, the amount of time expended on the project, including the classification of personnel involved in such time expenditure. 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 Upon request by the STUDY AGENCY, 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.

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

7.7 STUDY AGENCY shall withhold payment equal to ten percent (10%) of each invoice until completion of work specified in subparagraph 1.1 and approval by the STUDY AGENCY Program Manager and the STUDY AGENCY Technical Committee. When STUDY AGENCY has accepted final work as complete, it is CONTRACTOR's responsibility to submit an invoice in triplicate for the retention withheld.

7.8 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 may be terminated at any time by giving CONTRACTOR thirty (30) days' prior written notice.

7.9 In no event shall compensation paid by STUDY AGENCY to CONTRACTOR for the performance of all services under this Agreement exceed EIGHTY SIX THOUSAND EIGHT HUNDRED EIGHTY DOLLARS ($86,880).

7.10 CONTRACTOR shall submit all invoices within 180 days of the termination of this Agreement.

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 paragraph 4 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. **INDEMNIFICATION**

CONTRACTOR agrees to indemnify, save, hold harmless, and at STUDY AGENCY's request and at CONTRACTOR's sole expense, defend STUDY AGENCY, its boards, committees, representatives, officers, agents, and employees from and against any and all costs and expenses (including reasonable attorney's fees and litigation costs), damages, liabilities, claims, and losses (whether in contract, tort, or strict liability, including, but not limited to, personal injury, death, property damage, or copyright infringement) which arise or are alleged to arise directly or indirectly out of any act or omission of CONTRACTOR, its officers, agents, or employees in their performance of this Agreement or out of the operations conducted by CONTRACTOR, save and except claims or litigation arising out of the sole negligence or sole willful misconduct of STUDY AGENCY.

11. **INSURANCE**

11.1 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:

11.1.1 Comprehensive general liability insurance with minimum limits of coverage in the amount of One Million Dollars ($1,000,000) per occurrence;

11.1.2 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 One Million Dollars ($1,000,000) per occurrence;

11.1.3 Workers Compensation Insurance, in accordance with California law.

11.2 Except for workers' compensation insurance, such insurance policies shall name STUDY AGENCY, its officers, agents, and employees, individually and collectively, as additional insureds for liability arising out of CONTRACTOR's work performed for STUDY AGENCY. 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 canceled or changed without a minimum of thirty (30) days' advance, written notice given to
STUDY AGENCY.

11.3 Prior to the commencement of performing its obligations under this Agreement,
CONTRACTOR shall provide certificates of insurance and additional insured endorsements 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 insureds as required under
this Agreement.

11.4 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.

11.5 If the CONTRACTOR is a government entity, then it may self-insure such of those
risks identified in paragraphs 11.1.1 through 11.1.3 of this Agreement, provided, however, that:

11.5.1 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;

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

11.5.3 All those provisions identified in subparagraph 11.2 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.

12. AUDITS AND INSPECTIONS

12.1 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.

12.2 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.

12.3 Because this Agreement exceeds Twenty-five Thousand Dollars ($25,000), CONTRACTOR shall be subject to the examination and audit of the Auditor General for a period of three (3) years after final payment under contract (Health & Safety Code Section 38041).

13. NOTICES

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

STUDY AGENCY PROGRAM MANAGER:
John DaMassa, Chief
Modeling and Meteorology Branch
Planning & Technical Support Division
Air Resources Board
P.O. Box 2815
Sacramento, California 95812

STUDY AGENCY PROJECT MANAGER:
Jim Swaney, P.E. Permit Services Manager
San Joaquin Valley Air Pollution Control District
1990 East Gettysburg Avenue
Fresno, CA 93726

STUDY AGENCY TECHNICAL COMMITTEE CHAIR:
Ajith Kaduwela
Modeling and Meteorology Branch
Planning & Technical Support Division
Air Resources Board
P.O. Box 2815
Sacramento, California 95812

CONTRACTOR:
Dr. Charles Schmidt, Ph.D.
19200 Live Oak Road
Red Bluff, CA 96080
(530) 529-4256
SCHMIDTCE@aol.com

13.2 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.

14. GOVERNING LAW

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

14.2 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.

15. DISPUTES

In the event there is a dispute regarding or related to this Agreement, CONTRACTOR and
STUDY AGENCY shall meet and will attempt to resolve the dispute. If the dispute cannot be resolved,
the CONTRACTOR and STUDY AGENCY will involve a representative from the California Air
Resources Board. If the parties are still unable to informally resolve the dispute each party can pursue its
claims in a California Court of competent jurisdiction.
16. COMPLIANCE WITH LAWS

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

16.2 CONTRACTOR certifies by signing this Agreement that CONTRACTOR is not presently debarred, suspended, proposed for debarment, declared ineligible, voluntarily excluded from participation, or otherwise excluded from or ineligible for participation under federal assistance programs. CONTRACTOR must ensure that all subcontractors employed for conduct of this project certify to CONTRACTOR compliance with this provision of law.

16.3 CONTRACTOR agrees that it will not discriminate against any employee or applicant for employment because of race, color, creed, sex, disability, age, or national origin. CONTRACTOR agrees to take affirmative action to ensure that employment applicants and that employees are treated during employment without regard to their race, color, creed, sex, disability, age, or national origin. CONTRACTOR agrees and assures that it shall not discriminate on the basis of race, color, sex, or national origin in the award and performance of any third party contract. CONTRACTOR agrees to comply with all applicable provisions of other Federal laws, regulations, and directives pertaining to and prohibiting discrimination that are applicable, except to the extent the Federal Government determines otherwise in writing.

16.4 To the extent authorized by Federal law, CONTRACTOR agrees to facilitate participation by Disadvantaged Business Enterprises (DBEs) in the Project and assures that any third party contractor of the Project will facilitate participation by DBEs in the Project to the extent applicable.

16.5 CONTRACTOR acknowledges that the provisions of the Program Fraud Civil Remedies Act of 1986, as amended, 31 U.S.C. § 3801 et seq and U.S. DOT regulations, "Program Fraud Civil Remedies," 49 C.F.R. Part 31, apply to its actions pertaining to this Project. Contractor certifies or affirms the truthfulness and accuracy of any statement it has made, it makes, it may make, or causes to
be made, pertaining to the underlying contract or the EPA assisted project for which this contract work is being performed.

16.6 CONTRACTOR also acknowledges that if it makes, or causes to be made, a false, fictitious, or fraudulent claim, statement, submission, or certification to the Federal Government under a contract connected with a project that is financed in whole or in part with Federal assistance originally awarded by EPA under the authority of 49 U.S.C. § 5307, the Government reserves the right to impose the penalties of 18 U.S.C. § 1001 and 49 U.S.C. § 5307(n)(1) on the CONTRACTOR, to the extent the Federal Government deems appropriate.

16.7 The CONTRACTOR agrees to comply with mandatory standards and policies relating to energy efficiency which are contained in the state energy conservation plan issued in compliance with the Energy Policy and Conservation Act.

17. NO THIRD-PARTY BENEFICIARIES

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.

18. POLITICAL ACTIVITY PROHIBITED

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

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

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. MODIFICATION

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.

22. SEVERABILITY

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. NON-ASSIGNMENT

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.

24. BINDING UPON SUCCESSORS

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.

25. ENTIRE AGREEMENT

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.
26. WAIVER

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.

27. COUNTERPARTS

This Agreement may be executed in counterparts, and each of those counterparts shall be deemed an original for all purposes.
IN WITNESS WHEREOF, the parties hereto have executed this Agreement as of the day and
year first herein above written through their respective duly appointed and authorized representatives.

STUDY AGENCY
San Joaquin Valleywide Air
Pollution Study Agency

By __________________________
Judith Case McNairy, Chair

CONTRACTOR
Charles E. Schmidt, Ph.D.

By __________________________

Print Name and Title

Tax I.D. No.

Recommended for approval:
San Joaquin Valleywide Air Pollution
Study Agency

Jith Kaduwela
Chair, Technical Committee

Approved as to legal form:
San Joaquin Valley Unified Air Pollution
Control District

Annette Ballatore-Williamson
District Legal Counsel

Recommended for approval:
San Joaquin Valleywide Air Pollution
Study Agency

Lynn Terry, Chair

Approved as to accounting form:
San Joaquin Valley Unified Air Pollution
Control District

Mehri Barati, C.P.A., Fiscal Officer
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STUDY AGENCY
San Joaquin Valleywide Air Pollution Study Agency

By ________________________________

Judith Case McNairy, Chair

CONTRACTOR
Charles E. Schmidt, Ph.D.

By ________________________________

Print Name and Title
269-54-3684

Tax I.D. No.

Recommended for approval:
San Joaquin Valleywide Air Pollution Study Agency

Ajith Kaduwela
Chair, Technical Committee

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Lynn Terry, Chair

Approved as to legal form:
San Joaquin Valley Unified Air Pollution Control District

Annette Ballatore-Williamson
District Legal Counsel

Approved as to accounting form:
San Joaquin Valley Unified Air Pollution Control District

Mehri Barati, C.P.A., Fiscal Officer
CE Schmidt, Ph.D.
Environmental Consultant

March 15, 2013

JP Cativiela, Program Manager
CARES
915 L Street, #C-438
Sacramento, CA 95814

Proposal:
Development of Methodology to Assess Dairy Silage Management Practices to Reduce
Emissions of Volatile Organic Compounds

"Addressing the Issues of Total Hydrocarbon, Ozone Precursor, and Greenhouse
Gases (CH4, CO2, N2O, NO, NO2) from Dairy Silage and Management Practices Using
Approved, Quantitative, Practical Assessment Technologies"

Abstract:
This proposal is in support of and in conjunction with the Technical Proposal dated February 25,
2013 that was submitted to Dairy CARES by Dr. Deanne Meyer, the lead Principle Investigator
for the UC Davis team investigating the development of methodologies to assess dairy silage
management practices to reduce emissions of volatile organic compounds. Specifically, this
proposal describes the scope and cost information in support of Task 1- Develop total purgeable
VOC (TPVOC) as a screening process for VOC emissions.

Technical Approach:
A conceptual approach has been developed that uses the SCAQMD Modified USEPA Surface
Emission Isolation Flux chamber (flux chamber) assessment technology on selected feed
surfaces as indicated in Table 1. Note that the technologies proposed for this testing effort,
including the laboratory analyses and laboratories, are identical to the testing conducted for
California dairies in the Central Valley by our team, and these data (emission factors) will be
supplemental to the already existing data base regarding air emissions from dairy feed
management practices. As such, any and all data collected by this team regarding emissions
from dairy feed management practices will be pulled in and added to this data base making for a
robust data set.

There are two primary goals of the project:

1) Develop, test and use for project purposes, a practical screening technology that estimates the VOC
emissions potential of silage and total mixed ration (TRM). A screening technology is needed where by
a sample of silage can be collected in the field, preserved, and assayed in the laboratory providing an
CE Schmidt, Ph.D.
Environmental Consultant

estimate of total purgeable VOCs (TPVOCs). This is needed for this project in selecting types and disposition of silage for the assessment project, and likewise for continued research as changes to silage production and silage management in the effort of reducing emissions from silage and silage management practice. TPVOC samples will be collected during the site visit, the method fully developed, and samples will be collected along with flux measurements to develop a tool for estimating direct flux of study compounds for future assessments.

2) Conduct an assessment of project species emissions as directed by UC Davis nutrition analysis of silage. These data will serve as the baseline for project species emissions and support the dairy silage management efforts.

Field assessment will include silage emissions testing using the regulatory approved US EPA surface flux chamber and approved analytical methodologies. One goal of the program is to address issues of total hydrocarbon emissions (SCAQMD Method 25.3) or the regulatory assessment of dairy feed emissions; the other is to assess ozone precursor emissions (alcohols, etc), and greenhouse gas emissions including methane, carbon dioxide, and oxides of nitrogen. However, it will not be necessary or cost-effective to collect and analyze samples for all of these concerns at every test location. The proposal includes a core program and with an extended species component to satisfy the project needs. The emission assessment will include core program with up to 36 flux chamber measurements with QC sampling) using multiple analytical methods for species quantification including:
CE Schmidt, Ph.D.
Environmental Consultant
Almega Environmental, Huntington Beach, CA. These data, along with the collection of silage pile parametric data, will be use to establish a silage management practice that will result in lower air emissions. This practice will include all aspects of silage storage and handling including surface area of the working face, depth of daily cuts into the silage, and coverage of exposed silage. The analytical species list includes VOC assessment supporting the development of the TPVOC silage methodology, and also provides emission factor data for key greenhouse gases.

The cost estimate for the technical services described above includes a written work plan, equipment preparation and field supplies, site visit and TPVOC method development, two days of site testing per each of two dairies- four field days total, laboratory analysis, and reporting (Technical Memo and Technical Paper). The cost for the proposed program is $86,880. We will require about a two week lead time in order to organize the equipment and supplies for the testing effort. The proposal includes ‘summer season’ testing; target testing months would be July or August. Testing would require about one week of field testing.

If you have any further questions on this draft proposal, please feel free to call. Tom Card and I very much look forward to conducting this assessment.

Sincerely,

[Signature]

CE Schmidt, Ph.D.
<table>
<thead>
<tr>
<th>TEST CONDITION</th>
<th>FLUX TEST NH3, TO-14/15, 25.3</th>
<th>FLUX TEST TO-11, TO-17, N2O/NOx</th>
<th>COMMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dairy #1, Type #1 Silage</td>
<td></td>
<td></td>
<td>First Dairy, one silage type</td>
</tr>
<tr>
<td>Working Face- Fresh</td>
<td>4</td>
<td>2</td>
<td>Different operations tested by screening</td>
</tr>
<tr>
<td>Working Face- Time Dependent</td>
<td>8</td>
<td>2</td>
<td>Different operations tested by screening</td>
</tr>
<tr>
<td>Total Mixed Ration</td>
<td>4</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Replicate Sample</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Blank Sample</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Dairy #2, Type #2 Silage</td>
<td></td>
<td></td>
<td>Second Dairy, second silage</td>
</tr>
<tr>
<td>Working Face- Fresh</td>
<td>4</td>
<td>2</td>
<td>Different operations tested by screening</td>
</tr>
<tr>
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</tr>
<tr>
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<td>4</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Replicate Sample</td>
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<td></td>
</tr>
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<td>Blank Sample</td>
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<td>0</td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>36</td>
<td>14</td>
<td></td>
</tr>
</tbody>
</table>

NH3- Ammonia by colorometric tube screening  
TO-14/15- GC/FID hydrocarbon speciation plus summation for total hydrocarbons (THC) and GC/MS for hydrocarbon speciation analysis  
25.3- SCAQMD Method 25.3 for methane, ethane, carbon monoxide, carbon dioxide, and total non-methane non-ethane organic carbon  
TO-11- HPLC for aldehyde compounds  
TO-17- GC/MS for volatile fatty acids, semi-volatile organic compounds  
NOx- NIOSH Method 6600 for NO2 and NOx (NO and NO2)
Table 2. Summary of Proposed Analytical Menu.

<table>
<thead>
<tr>
<th>Analyte</th>
<th>Method</th>
<th>Sample Container</th>
<th>Cost per Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ammonia</td>
<td>ASTM D 4490</td>
<td>Colorometric tube</td>
<td>$10</td>
</tr>
<tr>
<td>Total Non-Methane Non-Ethane Organic Carbon, Methane, Ethane, CO, CO2</td>
<td>SCAQMD Method 25.3</td>
<td>Liquid Impinger, 6-Liter Canister</td>
<td>$350</td>
</tr>
<tr>
<td>VOCs, 80+ Compounds, TICs</td>
<td>USEPA Method TO-15, GC/MS</td>
<td>6-Liter Canister</td>
<td>$255</td>
</tr>
<tr>
<td>VOCs- hydrocarbons, alcohols, THC</td>
<td>USEPA Method TO-14, GC/FID</td>
<td>6-Liter Canister</td>
<td>$160</td>
</tr>
<tr>
<td>Aldehyde Compounds (acetaldehyde, formaldehyde, 10 aldehydes total)</td>
<td>USEPA Method TO-11, HPLC</td>
<td>DNPH Coated Solid Sorbent</td>
<td>$145</td>
</tr>
<tr>
<td>Volatile Fatty Acids, SVOCs</td>
<td>USEPA Method TO-17</td>
<td>Designer Solid Sorbent</td>
<td>$255</td>
</tr>
<tr>
<td>NO, NO2, N2O</td>
<td>NIOSH 6600 FTIR</td>
<td>8-Liter Tedlar Bag</td>
<td>$250</td>
</tr>
</tbody>
</table>

Note 1- cost for ASTM D4490, SCAQMD Method 25.3, USEPA Method TO-14/15 suite of analysis is $775.
Note 2- cost for USEPA Method TO-11, Method TO-17, and NIOSH 6600 suite of analysis $650.
FLUX CHAMBER TESTING

LABOR

TASK 1
1) Planning/Protocol Preparation (SOP)  
   CES 8 hrs  
   TRC 8 hrs

2) Site Visit/Screening Method Development  
   CES 16 hrs  
   TRC 16 hrs

TASK 2
1) Equipment Preparation  
   CES 4 hrs  
   TRC 2 hrs

2) Travel  
   CES 8 hrs  
   TRC 4 hrs  
   KTS 4 hrs

3) Field Testing (4 days)  
   CES 40 hrs  
   TRC 40 hrs  
   KTS 40 hrs

TASK 3
1) Preparation of Technical Memorandum  
   CES 8 hrs  
   TRC 8 hrs

2) Preparation of Technical Paper  
   CES 8 hrs  
   TRC 8 hrs

TOTAL LABOR: CES 92 hrs @ $170/hr  
   TRC 86 hrs @ $170/hr  
   KTS 44 hrs @ $90/hr  
   $15,640  
   $14,620  
   $3,960  
   $34,220

EQUIPMENT
1) Flux Chamber Rental ($400 each, 4)  
   $1,600
2) Teflon Tubing (50', $2.17/foot)  
   $110
3) Shipping  
   $1,600
4) UHP Air (5, size #150, $200 each)  
   $1,000
5) Altec Flow Calibrator  
   $200
6) NH3 Colorimetric Tubes  
   $200

TOTAL EQUIPMENT COSTS:  
   $4,710
CE Schmidt, Ph.D.
Environmental Consultant

TRAVEL COSTS - Field Test
1) Ground Transportation
   - personal auto ($0.55/mi) $1,000
2) Per Diem (15 @ $120/day) $1,800
3) Van/Trailer Rental $200
4) Air Fare $1,400
5) Car Rental $600
TOTAL TRAVEL COSTS: (estimate) $5,000

LABORATORY SERVICES
1) ASTM D4490, SCAQMD Method 25.3, USEPA Method TO-14/15-36
   sample sets @ $775- $27,900

2) USEPA Method TO-11, Method TO-17, NIOSH 6600 17 sample sets @ $650-
   $11,050

3) Total Purgable VOC Screening
   $100 per sample; 40 samples $4,000

TOTAL LABORATORY COST $42,950

TOTAL COST ESTIMATE SUMMARY
   LABOR $34,220
   TRAVEL $5,000
   EQUIPMENT $4,710
   LABORATORY $42,950

TOTAL $86,880

Note- All cost estimates are based on a proposed scope-of-services. These costs are estimates and the project is a
time-and-materials contract with a not to exceed limit. This cost estimate assumes that the site arrangements
including provide for site access, identify test locations, facilitate testing, and have the test surfaces prepared for
testing as scheduled will be provided through the UC Davis team and CARES. This cost proposal does not have a
contingency for project delays.
CE Schmidt, Ph.D.
Environmental Consultant

March 15, 2013

JP Cativiela, Program Manager
CARES
915 L Street, #C-438
Sacramento, CA 95814

Proposal:
Development of Methodology to Assess Dairy Silage Management Practices to Reduce Emissions of Volatile Organic Compounds

"Addressing the Issues of Total Hydrocarbon, Ozone Precursor, and Greenhouse Gases (CH4, CO2, N2O, NO, NO2) from Dairy Silage and Management Practices Using Approved, Quantitative, Practical Assessment Technologies"

Abstract:
This proposal is in support of and in conjunction with the Technical Proposal dated February 25, 2013 that was submitted to Dairy CARES by Dr. Deanne Meyer, the lead Principle Investigator for the UC Davis team investigating the development of methodologies to assess dairy silage management practices to reduce emissions of volatile organic compounds. Specifically, this proposal describes the scope and cost information in support of Task 1- Develop total purgeable VOC (TPVOC) as a screening process for VOC emissions.

Technical Approach:
A conceptual approach has been developed that uses the SCAQMD Modified USEPA Surface Emission Isolation Flux chamber (flux chamber) assessment technology on selected feed surfaces as indicated in Table 1. Note that the technologies proposed for this testing effort, including the laboratory analyses and laboratories, are identical to the testing conducted for California dairies in the Central Valley by our team, and these data (emission factors) will be supplemental to the already existing data base regarding air emissions from dairy feed management practices. As such, any and all data collected by this team regarding emissions from dairy feed management practices will be pulled in and added to this data base making for a robust data set.

There are two primary goals of the project:

1) Develop, test and use for project purposes, a practical screening technology that estimates the VOC emissions potential of silage and total mixed ration (TRM). A screening technology is needed where by a sample of silage can be collected in the field, preserved, and assayed in the laboratory providing an
estimate of total purgable VOCs (TPVOCs). This is needed for this project in selecting types and
disposition of silage for the assessment project, and likewise for continued research as changes to silage
production and silage management in the effort of reducing emissions from silage and silage
management practice. TPVOC samples will be collected during the site visit, the method fully
developed, and samples will be collected along with flux measurements to develop a tool for estimating
direct flux of study compounds for future assessments.

2) Conduct an assessment of project species emissions as directed by UC Davis nutrition analysis of
silage. These data will serve as the baseline for project species emissions and support the diary silage
management efforts.

Field assessment will include silage emissions testing using the regulatory approved US EPA surface
flux chamber and approved analytical methodologies. One goal of the program is to address issues of
total hydrocarbon emissions (SCAQMD Method 25.3) or the regulatory assessment of dairy feed
emissions; the other is to assess ozone precursor emissions (alcohols, etc), and greenhouse gas emissions
including methane, carbon dioxide, and oxides of nitrogen. However, it will not be necessary or cost-
effective to collect and analyze samples for all of these concerns at every test location. The proposal
includes a core program and with an extended species component to satisfy the project needs. The
emission assessment will include core program with up to 36 flux chamber measurements with QC
sampling) using multiple analytical methods for species quantification including:

1. **Core Program:**
   - Total Purgable VOC screening method development and site visit (200 samples)
   - 36 Flux tests with screening for ammonia and sample collection and analysis by
     SCAQMD Method 25.3 for total VOCs and CH4/CO2, USEPA Method TO-14/-15
     (GC/FID, GC/MS) for hydrocarbon speciation including alcohols and total hydrocarbon
     summation as THC, and screening for ammonia by ASTM D4490.
   - 14 of the 36 Flux tests sampled and analyzed by USEPA Method TO-11 for
     aldehydes/ketones, TO-17 for volatile organic acids, and NIOSH Method 660 for NO2,
     NO, and NO2.

Extended speciation is also recommended adding the following:

1. **Extended Speciation:**
   - 14 of the 36 Flux tests sampled and analyzed by USEPA Method TO-11 for
     aldehydes/ketones, TO-17 for volatile organic acids, and NIOSH Method 660 for NO2,
     NO, and NO2.

The analytical menu is summarized in Table 2, along with costing information per sample type. In
addition, the emission assessment will include time-dependent decay data from freshly disturbed
working faces of silage piles and other operational tests where limited data will be collected. The offsite
analytical work will be performed using Environmental Analytical Services, San Luis Obispo, CA and
**CE Schmidt, Ph.D.**  
**Environmental Consultant**

Almega Environmental, Huntington Beach, CA. These data, along with the collection of silage pile parametric data, will be used to establish a silage management practice that will result in lower air emissions. This practice will include all aspects of silage storage and handling including surface area of the working face, depth of daily cuts into the silage, and coverage of exposed silage. The analytical species list includes VOC assessment supporting the development of the TPVOC silage methodology, and also provides emission factor data for key greenhouse gases.

The cost estimate for the technical services described above includes a written work plan, equipment preparation and field supplies, site visit and TPVOC method development, two days of site testing per each of two dairies- four field days total, laboratory analysis, and reporting (Technical Memo and Technical Paper). The cost for the proposed program is $86,880. We will require about a two week lead time in order to organize the equipment and supplies for the testing effort. The proposal includes 'summer season' testing; target testing months would be July or August. Testing would require about one week of field testing.

If you have any further questions on this draft proposal, please feel free to call. Tom Card and I very much look forward to conducting this assessment.

Sincerely,

CE Schmidt, Ph.D.
Table 1. Summary of Proposed Sampling Schedule.

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<tr>
<th>TEST CONDITION</th>
<th>FLUX TEST NH3, TO-14/15, 25.3</th>
<th>FLUX TEST TO-11, TO-17, ( \text{N}_2\text{O}/\text{NOx} )</th>
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</tr>
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<td>Replicate Sample</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Blank Sample</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td><strong>Dairy #2, Type #2 Silage</strong></td>
<td></td>
<td></td>
<td>Second Dairy, second silage</td>
</tr>
<tr>
<td>Working Face- Fresh</td>
<td>4</td>
<td>2</td>
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Table 2. Summary of Proposed Analytical Menu.

<table>
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<tr>
<th>Analyte</th>
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<th>Sample Container</th>
<th>Cost per Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Base Program</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ammonia</td>
<td>ASTM D 4490</td>
<td>Colorometric tube</td>
<td>$10</td>
</tr>
<tr>
<td>Total Non-Methane Non-Ethane Organic Carbon, Methane, Ethane, CO, CO2</td>
<td>SCAQMD Method 25.3</td>
<td>Liquid Impinger, 6-Liter Canister</td>
<td>$350</td>
</tr>
<tr>
<td><strong>VOCs, 80+ Compounds, TICs</strong></td>
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<td>6-Liter Canister</td>
<td>$255</td>
</tr>
<tr>
<td><strong>VOCs- hydrocarbons, alcohols, THC</strong></td>
<td>USEPA Method TO-14, GC/FID</td>
<td>6-Liter Canister</td>
<td>$160</td>
</tr>
<tr>
<td>Aldehyde Compounds (acetaldehyde, formaldehyde, 10 aldehydes total)</td>
<td>USEPA Method TO-11, HPLC</td>
<td>DNPH Coated Solid Sorbent</td>
<td>$145</td>
</tr>
<tr>
<td><strong>Volatile Fatty Acids, SVOCs</strong></td>
<td>USEPA Method TO-17</td>
<td>Designer Solid Sorbent</td>
<td>$255</td>
</tr>
<tr>
<td>NO, NO2, N2O</td>
<td>NIOSH 6600 FTIR</td>
<td>8-Liter Tedlar Bag</td>
<td>$250</td>
</tr>
</tbody>
</table>

Note 1- cost for ASTM D4490, SCAQMD Method 25.3, USEPA Method TO-14/15 suite of analysis is $775.
Note 2- cost for USEPA Method TO-11, Method TO-17, and NIOSH 6600 suite of analysis $650.
CE Schmidt, Ph.D.  
Environmental Consultant

PROJECT COST ESTIMATE

FLUX CHAMBER TESTING

LABOR

TASK 1
1) Planning/Protocol Preparation (SOP)  CES 8 hrs  TRC 8 hrs
2) Site Visit/Screening Method Development  CES 16 hrs  TRC 16 hrs

TASK 2
1) Equipment Preparation  CES 4 hrs  TRC 2 hrs
2) Travel  CES 8 hrs  TRC 4 hrs  KTS 4 hrs
3) Field Testing (4 days)  CES 40 hrs  TRC 40 hrs  KTS 40 hrs

TASK 3
1) Preparation of Technical Memorandum  CES 8 hrs  TRC 8 hrs
2) Preparation of Technical Paper  CES 8 hrs  TRC 8 hrs

TOTAL LABOR: CES 92 hrs @ $170/hr  $15,640
 TRC 86 hrs @ $170/hr  $14,620
 KTS 44 hrs @ $90/hr  $3,960

$34,220

EQUIPMENT
1) Flux Chamber Rental ($400 each, 4)  $1,600
2) Teflon Tubing (50’, $2.17/foot)  $110
3) Shipping  $1,600
4) UHP Air (5, size #150, $200 each)  $1,000
5) Altec Flow Calibrator  $200
6) NH3 Colorometric Tubes  $200

TOTAL EQUIPMENT COSTS:  $4,710
CE Schmidt, Ph.D.
Environmental Consultant

TRAVEL COSTS - Field Test
1) Ground Transportation
   - personal auto ($0.55/mi) $1,000
2) Per Diem (15 @ $120/day) $1,800
3) Van/Trailer Rental $200
4) Air Fare $1,400
5) Car Rental $600
**TOTAL TRAVEL COSTS**: (estimate) $5,000

LABORATORY SERVICES
1) ASTM D4490, SCAQMD Method 25.3,
   USEPA Method TO-14/15- 36
   sample sets @ $775- $27,900
2) USEPA Method TO-11, Method TO-17,
   NIOSH 6600 17 sample sets @ $650- $11,050
3) Total Purgable VOC Screening
   $100 per sample; 40 samples $4,000
**TOTAL LABORATORY COST** $42,950

**TOTAL COST ESTIMATE SUMMARY**
- LABOR $34,220
- TRAVEL $5,000
- EQUIPMENT $4,710
- LABORATORY $42,950
**TOTAL** $86,880

Note- All cost estimates are based on a proposed scope-of-services. These costs are estimates and the project is a
time-and-materials contract with a **not to exceed limit**. This cost estimate assumes that the site arrangements
including provide for site access, identify test locations, facilitate testing, and have the test surfaces prepared for
testing as scheduled will be provided through the UC Davis team and CARES. This cost proposal does not have a
contingency for project delays.
APPROVE AND AUTHORIZE THE CHAIR TO EXECUTE CONTRACT 14-1 CCOS WITH CHARLES E. SCHMIDT, PH.D. IN THE AMOUNT OF $86,880 FOR TESTING OF A VOC EMISSIONS SCREENING METHOD AND ASSESSMENT OF EMISSIONS FOR DAIRY SILAGE AND FEED, AND TO EXECUTE AGREEMENT 13-0220 WITH THE CALIFORNIA DEPARTMENT OF FOOD AND AGRICULTURE FOR CORRESPONDING CONTRIBUTION IN THE AMOUNT OF $6,880

Attachment B:

(Agreement 13-0220 with the California Department of Food and Agriculture)
(20 PAGES)
1. This Agreement is entered into between the State Agency and the Contractor named below:

STATE AGENCY'S NAME

DEPARTMENT OF FOOD AND AGRICULTURE

CONTRACTOR'S NAME

SAN JOAQUIN VALLEYWIDE AIR POLLUTION STUDY AGENCY

2. The term of this Agreement is: February 01, 2014 or upon final approval, whichever is later through February 28, 2015

3. The maximum amount $6,880.00

4. The parties agree to comply with the terms and conditions of the following exhibits which are by this reference made a part of the Agreement:

   Exhibit A – Scope of Work
   Attachment 1
   Attachment 2
   Exhibit B – Budget Detail and Payment Provisions
   Exhibit C* - General Terms and Conditions, GTC 610
   Exhibit D – Special Terms and Conditions
   Exhibit E – Additional Provisions

   1 Page(s)
   3 Page(s)
   7 Page(s)
   1 Page(s)
   (Online)
   1 Page(s)
   5 Page(s)

*Items shown in asterisk (*) are hereby incorporated by reference and made part of this Agreement as if attached hereto. These documents can be viewed at: www.dgs.ca.gov/standard+language

IN WITNESS WHEREOF, this Agreement has been executed by the parties hereto.

CONTRACTOR

CONTRACTOR'S NAME (If other than an individual, state whether a corporation, partnership, etc.)

SAN JOAQUIN VALLEYWIDE AIR POLLUTION STUDY AGENCY

BY (Authorized Signature)

DATE SIGNED (Do not type)

PRINTED NAME AND TITLE OF PERSON SIGNING

ADDRESS

1990 E. Gettysburg Avenue, Fresno, CA 93726

STATE OF CALIFORNIA

AGENCY NAME

DEPARTMENT OF FOOD AND AGRICULTURE

BY (Authorized Signature)

DATE SIGNED (Do not type)
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DEPARTMENT OF FOOD AND AGRICULTURE

CONTRACTOR'S NAME
SAN JOAQUIN VALLEYWIDE AIR POLLUTION STUDY AGENCY

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3. The maximum amount of this Agreement is: $6,880.00
   Six Thousand, Eight Hundred Eighty Dollars and No Cents

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Exhibit A – Scope of Work
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Attachment 2

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PRINTED NAME AND TITLE OF PERSON SIGNING

ADDRESS
1990 E. Gettysburg Avenue, Fresno, CA 93726

STATE OF CALIFORNIA

AGENCY NAME
DEPARTMENT OF FOOD AND AGRICULTURE

BY (Authorized Signature) DATE SIGNED (Do not type)

PRINTED NAME AND TITLE OF PERSON SIGNING
JENNIFER CROW, ACQUISITIONS MANAGER

ADDRESS
1220 N STREET, ROOM 115, SACRAMENTO, CA. 95814

California Department of General Services Use Only

Exempt per. DGS Ltr 28.7
EXHIBIT A

SCOPE OF WORK

1. Contractor agrees to provide the services described herein:


2. The designated program contract managers during the term of this Agreement are:

<table>
<thead>
<tr>
<th>FOR DEPT OF FOOD AND AGRICULTURE:</th>
<th>FOR CONTRACTOR:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name: Mike Francesconi</td>
<td>Name: Ramon Norman, Air Quality Engineer</td>
</tr>
<tr>
<td>Unit: Marketing Svs/Dairy Marketing Branch</td>
<td>Section: San Joaquin Valley Air Pollution Control District</td>
</tr>
<tr>
<td>Address: 1220 N Street</td>
<td>Address: 1990 E. Gettysburg Avenue</td>
</tr>
<tr>
<td>City/Zip: Sacramento, CA 95814</td>
<td>City/Zip: Fresno, CA 93726</td>
</tr>
<tr>
<td>Phone: (916) 900-5014</td>
<td>Phone: (559) 230-5909</td>
</tr>
<tr>
<td>Email: <a href="mailto:Mike.Francesconi@cdfe.ca.gov">Mike.Francesconi@cdfe.ca.gov</a></td>
<td>Email: <a href="mailto:Ramon.Norman@valleyair.org">Ramon.Norman@valleyair.org</a></td>
</tr>
</tbody>
</table>

3. Work shall be performed in accordance with the Scope of Work here attached as Exhibit A, Attachment 1
STATEMENT OF WORK

Project Leader(s):
Ramon Norman
Air Quality Engineer
San Joaquin Valley Air Pollution Control District
Phone; (559) 230-5909
Ramon.Norman@valleyair.org

Project Title

Project Start date and end date
February 1, 2014 through February 28, 2015

Executive Summary:
C DFA will provide $8,880 to the San Joaquin Valley Study Agency to co-fund a project to be led by Dr. Charles Schmidt. This project is titled Development of Methodology to Assess Dairy Silage Management Practices to Reduce Emissions of Volatile Organic Carbons – Flux Chamber Emission Measurements and is a critical companion project to the CDFA supported VOC project.

Project Background:
The Federal Clean Air Act and California law requires the San Joaquin Valley Air Pollution Control District (District) to regulate volatile organic carbon (VOC) emissions from various sources, including those from large agricultural operations. Recent research has demonstrated that dairy silage and total mixed rations (TMR) are significant sources of VOC emissions at dairy operations. District Rule 4570 (Confined Animal Facilities) requires dairies in the San Joaquin Valley to implement various mitigation measures to reduce VOC emissions from processes at dairy operations, including from the management of dairy silage and TMR. The San Joaquin Valleywide Air Pollution Study Agency (Study Agency) Agricultural Technology Committee’s Dairy Subcommittee has identified specific areas where additional research is needed to increase the understanding of emissions from dairy silage and TMR and to better evaluate the effectiveness of currently required and potential mitigation measures.

In August 2013, the California Department of Food and Agriculture (CDFA) approved a cooperative grant agreement with Dr. Deanne Meyer, Department of Animal Science, University of California, Davis and allocated funding in the amount of $219,610 for performance of a research project titled, Development of Methodology to Assess Dairy Silage Management Practices to Reduce Emissions of Volatile Organic Compounds (13-099-SA). The goal of the Meyer/UC Davis project is to develop a screening method to evaluate the effectiveness of potential VOC mitigation measures for silage and TMR based on measurement of the total purgeable VOCs of the ensiled dairy feeds.

This project indicated that the assistance of Dr. Charles Schmidt, independent consultant would be needed for the performance of flux chamber emission measurements to support the goals of the UC Davis project. Dr. Schmidt submitted a proposal to Dairy CARES titled, “Addressing the
Issues of Total Hydrocarbon, Ozone Precursor, and Greenhouse Gases (CH₄, CO₂, N₂O, NO, NO₂) from Dairy Silage and Management Practices Using Approved, Quantitative, Practical Assessment Technologies," dated March 15, 2013, for the silage emission measurements to be performed in support of and in conjunction with the UC Davis silage study. The research proposal prepared by Dr. Schmidt was then submitted to the Study Agency.

The Study Agency Board is expected to approve Dr. Schmidt's project in the amount of $86,880 on January 16, 2014. The Study Agency has authorized a sole source contract with Dr. Charles E. Schmidt, Ph.D. for testing of a screening method to estimate the VOC emissions potential of dairy silage and TMR based on analysis of the composition of the ensiled dairy feed.

**Project Goals:**
There are two primary goals of the project:

1) Develop, test and use for project purposes, a practical screening technology that estimates the VOC emissions potential of silage and TMR. A screening technology is needed where by a sample of silage can be collected in the field, preserved, and assayed in the laboratory providing an estimate of total purgeable VOCs (TPVOCs).

2) Conduct an assessment of project species emissions as directed by UC Davis nutrition analysis of silage. These data will serve as the baseline for project species emissions and support the dairy silage management efforts.

**Project Description:**
This project will support the goals of the UC Davis research by using flux chambers to quantify emissions of VOCs and other compounds from dairy silage and TMR. The VOC emissions as measured by flux chambers will be used in conjunction with the information gathered for the UC Davis silage project to evaluate and refine a screening method for estimation of VOC emissions potential.

The use of flux chambers to measure emissions from dairy silage and TMR will provide a method to directly evaluate the effect of silage composition on air emissions and will greatly enhance the usefulness of the information that will be collected for the UC Davis silage project. Many of the VOC measurements on which the District’s current dairy VOC emission factors are based were collected by Dr. Schmidt using flux chambers. The use of the same methods in the proposed project will allow for continuity with the previously completed VOC studies at California dairies, facilitate comparisons with the results of the previously-completed studies, and allow the data from this proposed study to supplement the data set from the previous California dairy emission studies.

The proposed project addresses areas of dairy silage and feed emissions that the Study Agency’s Agricultural Technology Committee’s Dairy Subcommittee has identified as a priority area in need of further research. The project will increase understanding of the relationship between the composition of ensiled dairy feed and dairy feed emissions and will collect data that will potentially lead to development of a cost-effective method to evaluate the effectiveness of measures to reduce emissions from dairy silage and TMR. The added knowledge from the proposed project will lead to more effective control strategies for reducing VOC emissions from ensiled dairy feed throughout the San Joaquin Valley.
Project Tasks, Deliverables, and Timeline:
As mentioned above Dr. Schmidt has been selected to perform this work. Attached is the proposal related to the project which displays specific tasks, deliverables, and detailed expense/budget.

The total project cost is $86,880, the District is providing $80,000 toward this project and CDFA will provide $6,880.00. The project, including final reports, will be completed by December 2014.

Involved Parties:
- The Study Agency - provides an independent, collaborative, peer reviewed, scientific approach that is desired to ensure stakeholder confidence in the research and outcomes.
  Dairy Cares - a non-profit organization; members include dairy producers, dairy processors, allied industry groups, and governmental agencies. Through Dairy Cares, the California dairy industry has worked closely with regulators and scientific researchers to better understand air and water quality issues and to develop science based management strategies for a better environment.
- CDFA – CDFA has a vested interest in this project given the impact to the dairy industry in California. CDFA and CARES has worked very closely over the years to identify and participate in relevant dairy related projects.
- Dr. Charles Schmidt is a California-based consultant with vast experience in the environmental and air quality arena and is specifically experienced in the type of measurements that will be required for the proposed project. Dr. Schmidt has worked as a consultant for over 30 years and has many years of experience developing project-specific technical approaches and directing applied research. While at Radian Corporation and under contract to the United States Environmental Protection Agency (US EPA), Dr. Schmidt developed the US EPA-recommended surface emission isolation flux chamber area source assessment technology and assisted in developing the Air Pathway Analysis (APA) approach recommended by the US EPA.

Budget:
CDFA shall pay The Study Agency an amount not to exceed $6,880.00. CDFA funds will be used exclusively for the project's laboratory expenses.

<table>
<thead>
<tr>
<th>Dollars by Fiscal Year</th>
<th>FY 13/14</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laboratory Expense</td>
<td>$6,880.00</td>
</tr>
</tbody>
</table>

Deliverables:
- The Study Agency will provide CDFA with quarterly status updates on work performed by Dr. Schmidt to date.
- The Study Agency will provide a draft to CDFA to review before final report is submitted by December 31, 2014.
- The Study Agency will provide a final report in hard copy and electronic version.

Invoicing Schedule:
Invoicing will be timed as closely as possible with the submittal of the three-month status report.
March 15, 2013

JP Cativiela, Program Manager
CARES
915 L Street, #C-438
Sacramento, CA 95814

Proposal:
Development of Methodology to Assess Dairy Silage Management Practices to Reduce
Emissions of Volatile Organic Compounds

"Addressing the Issues of Total Hydrocarbon, Ozone Precursor, and Greenhouse
Gases (CH4, CO2, N2O, NO, NO2) from Dairy Silage and Management Practices Using
Approved, Quantitative, Practical Assessment Technologies"

Abstract:
This proposal is in support of and in conjunction with the Technical Proposal dated February 25,
2013 that was submitted to Dairy CARES by Dr. Deanne Meyer, the lead Principle Investigator
for the UC Davis team investigating the development of methodologies to assess dairy silage
management practices to reduce emissions of volatile organic compounds. Specifically, this
proposal describes the scope and cost information in support of Task 1- Develop total purgeable
VOC (TPVOC) as a screening process for VOC emissions.

Technical Approach:
A conceptual approach has been developed that uses the SCAQMD Modified USEPA Surface
Emission Isolation Flux chamber (flux chamber) assessment technology on selected feed
surfaces as indicated in Table 1. Note that the technologies proposed for this testing effort,
including the laboratory analyses and laboratories, are identical to the testing conducted for
California dairies in the Central Valley by our team, and these data (emission factors) will be
supplemental to the already existing data base regarding air emissions from dairy feed
management practices. As such, any and all data collected by this team regarding emissions
from dairy feed management practices will be pulled in and added to this data base making for a
robust data set.

There are two primary goals of the project:

1) Develop, test and use for project purposes, a practical screening technology that estimates the VOC
emissions potential of silage and total mixed ration (TRM). A screening technology is needed where by
a sample of silage can be collected in the field, preserved, and assayed in the laboratory providing an
estimate of total purgeable VOCs (TPVOCs). This is needed for this project in selecting types and
disposition of silage for the assessment project, and likewise for continued research as changes to silage
production and silage management in the effort of reducing emissions from silage and silage
CE Schmidt, Ph.D.
Environmental Consultant

management practice. TPVOC samples will be collected during the site visit, the method fully developed, and samples will be collected along with flux measurements to develop a tool for estimating direct flux of study compounds for future assessments.

2) Conduct an assessment of project species emissions as directed by UC Davis nutrition analysis of silage. These data will serve as the baseline for project species emissions and support the dairy silage management efforts.

Field assessment will include silage emissions testing using the regulatory approved US EPA surface flux chamber and approved analytical methodologies. One goal of the program is to address issues of total hydrocarbon emissions (SCAQMD Method 25.3) or the regulatory assessment of dairy feed emissions; the other is to assess ozone precursor emissions (alcohols, etc.), and greenhouse gas emissions including methane, carbon dioxide, and oxides of nitrogen. However, it will not be necessary or cost-effective to collect and analyze samples for all of these concerns at every test location. The proposal includes a core program and with an extended species component to satisfy the project needs. The emission assessment will include core program with up to 36 flux chamber measurements with QC sampling) using multiple analytical methods for species quantification including:

1. Core Program:
   - Total Purgable VOC screening method development and site visit (200 samples)
   - 36 Flux tests with screening for ammonia and sample collection and analysis by SCAQMD Method 25.3 for total VOCs and CH4/CO2, USEPA Method TO-14/-15 (GC/FID, GC/MS) for hydrocarbon speciation including alcohols and total hydrocarbon summation as THC, and screening for ammonia by ASTM D4490.
   - 14 of the 36 Flux tests sampled and analyzed by USEPA Method TO-11 for aldehydes/ketones, TO-17 for volatile organic acids, and NIOSH Method 660 for NO2, NO, and NO2.

Extended speciation is also recommended adding the following:

1. Extended Speciation:
   - 14 of the 36 Flux tests sampled and analyzed by USEPA Method TO-11 for aldehydes/ketones, TO-17 for volatile organic acids, and NIOSH Method 660 for NO2, NO, and NO2.

The analytical menu is summarize in Table 2, along with costing information per sample type. In addition, the emission assessment will include time-dependent decay data from freshly disturbed working faces of silage piles and other operational tests where limited data will be collected. The offsite analytical work will be performed using Environmental Analytical Services, San Luis Obispo, CA and Almega Environmental, Huntington Beach, CA. These data, along with the collection of silage pile parametric data, will be use to establish a silage management practice that will result in lower air emissions. This practice will include all aspects of silage storage and handling including surface area of the working face, depth of daily cuts into the silage, and coverage of exposed silage. The analytical species list includes VOC assessment supporting the development of the TPVOC silage methodology, and also provides emission factor data for key greenhouse gases.
The cost estimate for the technical services described above includes a written work plan, equipment preparation and field supplies, site visit and TPVOC method development, two days of site testing per each of two dairies—four field days total, laboratory analysis, and reporting (Technical Memo and Technical Paper). The cost for the proposed program is $86,880. We will require about a two week lead time in order to organize the equipment and supplies for the testing effort. The proposal includes ‘summer season’ testing; target testing months would be July or August. Testing would require about one week of field testing.

If you have any further questions on this draft proposal, please feel free to call. Tom Card and I very much look forward to conducting this assessment.

Sincerely,

[Signature]

CE Schmidt, Ph.D.
**CE Schmidt, Ph.D.**  
*Environmental Consultant*

Table 1. Summary of Proposed Sampling Schedule.

<table>
<thead>
<tr>
<th>TEST CONDITION</th>
<th>FLUX TEST NH3, TO-14/15, 25.3</th>
<th>FLUX TEST TO-11, TO-17, N2O/NOx</th>
<th>COMMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dairy #1, Type #1 Silage</td>
<td></td>
<td></td>
<td>First Dairy, one silage type</td>
</tr>
<tr>
<td>Working Face- Fresh</td>
<td>4</td>
<td>2</td>
<td>Different operations tested by screening</td>
</tr>
<tr>
<td>Working Face- Time Dependent</td>
<td>8</td>
<td>2</td>
<td>Different operations tested by screening</td>
</tr>
<tr>
<td>Total Mixed Ration</td>
<td>4</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Replicate Sample</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Blank Sample</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Dairy #2, Type #2 Silage</td>
<td></td>
<td></td>
<td>Second Dairy, second silage</td>
</tr>
<tr>
<td>Working Face- Fresh</td>
<td>4</td>
<td>2</td>
<td>Different operations tested by screening</td>
</tr>
<tr>
<td>Working Face- Time Dependent</td>
<td>8</td>
<td>2</td>
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<td></td>
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<tr>
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</tr>
<tr>
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<td>1</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>36</td>
<td>14</td>
<td></td>
</tr>
</tbody>
</table>

NH3- Ammonia by colorometric tube screening  
TO-14/15- GC/FID hydrocarbon speciation plus summation for total hydrocarbons (THC) and GC/MS for hydrocarbon speciation analysis  
25.3- SCAQMD Method 25.3 for methane, ethane, carbon monoxide, carbon dioxide, and total non-methane non-ethane organic carbon  
TO-11- HPLC for aldehyde compounds  
TO-17- GC/MS for volatile fatty acids, semi-volatile organic compounds  
NOx- NIOSH Method 6600 for NO2 and NOx (NO and NO2)

Table 2. Summary of Proposed Analytical Menu.
<table>
<thead>
<tr>
<th>Analyte</th>
<th>Method</th>
<th>Sample Container</th>
<th>Cost per Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base Program</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ammonia</td>
<td>ASTM D 4490</td>
<td>Colorimetric tube</td>
<td>$10</td>
</tr>
<tr>
<td>Total Non-Methane Non-Ethane Organic Carbon, Methane, Ethane, CO, CO2</td>
<td>SCAQMD Method 25.3</td>
<td>Liquid Impinger, 6-Liter Canister</td>
<td>$350</td>
</tr>
<tr>
<td>VOCs, 80+ Compounds, TICs</td>
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PROJECT COST ESTIMATE

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LABOR

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TASK 3
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TOTAL LABOR: CES 92 hrs @ $170/hr $15,640
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$34,220

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5) Altec Flow Calibrator $200
6) NH3 Colorometric Tubes $200
TOTAL EQUIPMENT COSTS: $4,710

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1) Ground Transportation
CE Schmidt, Ph.D.  
Environmental Consultant

- personal auto ($0.55/mi) $1,000
2) Per Diem (15 @ $120/day) $1,800
3) Van/Trailer Rental $200
4) Air Fare $1,400
5) Car Rental $600

**TOTAL TRAVEL COSTS**: (estimate) $5,000

**LABORATORY SERVICES**

1) ASTM D4490, SCAQMD Method 25.3, USEPA Method TO-14/15-36 sample sets @ $775- $27,900

2) USEPA Method TO-11, Method TO-17, NIOSH 6600 17 sample sets @ $650- $11,050

3) Total Purgable VOC Screening $100 per sample; 40 samples $4,000

**TOTAL LABORATORY COST** $42,950

**TOTAL COST ESTIMATE SUMMARY**

<table>
<thead>
<tr>
<th>Description</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>LABOR</td>
<td>$34,220</td>
</tr>
<tr>
<td>TRAVEL</td>
<td>$5,000</td>
</tr>
<tr>
<td>EQUIPMENT</td>
<td>$4,710</td>
</tr>
<tr>
<td>LABORATORY</td>
<td>$42,950</td>
</tr>
</tbody>
</table>

**TOTAL** $86,880

Note: All cost estimates are based on a proposed scope-of-services. These costs are estimates and the project is a time-and-materials contract with a **not to exceed limit**. This cost estimate assumes that the site arrangements including provide for site access, identify test locations, facilitate testing, and have the test surfaces prepared for testing as scheduled will be provided through the UC Davis team and CARES. This cost proposal does not have a contingency for project delays.
EXHIBIT B
BUDGET AND PAYMENT PROVISIONS

1. Invoicing and Payment

   A. For services satisfactorily rendered, and upon receipt and approval of the invoices, the State agrees to compensate the Contractor, Grant, Sub-Grant or Agreement recipient for actual expenditures incurred in accordance with this Agreement and stated herein, which is attached hereto and made a part of this Agreement or Grant.

   Original invoices shall include the agreement/contract number, dates of service, type of work performed, and when applicable, a breakdown of the costs of parts and materials, labor charges, and any other relevant information required to ensure proper invoices are submitted for payment. Invoices shall be itemized to follow the allowed expenses outlined in the agreement/contract budget and Scope of Work documents.

   B. Unless mutually agreed, monthly invoices must be submitted within 60 days from the end of each month in which services were rendered. Invoices must include the Agreement number and submitted in triplicate to the Program Contract Manager listed in this contract.

   C. Any travel and subsistence payments authorized under this agreement shall be paid as needed to execute the work. The maximum travel rates allowable are those established in Title Division 1, Chapter 3, Subchapter 1, Article 2 of the California Code of Regulations 599.619.

2. Budget Contingency Clause

   A. It is mutually agreed that if the Budget Act of the current year and/or any subsequent years covered under this Agreement does not appropriate sufficient funds for the program, this Agreement shall be of no further force and effect. In this event, the State shall have no liability to pay any funds whatsoever to Contractor or to furnish any other considerations under this Agreement and Contractor shall not be obligated to perform any provisions of this Agreement.

   B. If funding for any fiscal year is reduced or deleted by the Budget Act for purposes of this program, the State shall have the option to either cancel this Agreement with no liability occurring to the State, or offer an agreement amendment to Contractor to reflect the reduced amount.

3. Payment

   A. Costs for this Agreement shall be computed in accordance with State Administrative Manual Sections 8752 and 8752.1.

   B. Nothing herein contained shall preclude advance payments pursuant to Article 1, Chapter 3, Part 1, Division 3, Title 2 of the Government Code of the State of California.
EXHIBIT D

SPECIAL TERMS AND CONDITIONS

1. **Excise Tax**

   The State of California is exempt from federal excise taxes and no payment will be made for any taxes levied on employees' wages. The State will pay for any applicable State of California or local sales or use taxes on the services rendered or equipment or parts supplied pursuant to this Agreement. California may pay any applicable sales and use tax imposed by another state.

2. **Settlement of Disputes**

   In the event of a dispute, Contractor shall file a "Notice of Dispute" with the CDFA within ten (10) days of discovery of the problem. Such Notice of Dispute shall contain the Agreement number. Within ten (10) days of receipt of such Notice of Dispute, the Agency Secretary, or Designee, shall meet with the Contractor and the CDFA project manager for the purpose of resolving the dispute. The decision of the Agency Secretary or Designee shall be final. In the event of a dispute, the language contained within this Agreement shall prevail over any other language including that of the bid proposal.

3. **Evaluation of Contractor- Consultant Contracts Only**

   Per the Department of General Services (DGS), all contracts for consultant services of $5,000 or more must be evaluated. The Contract/Contractor Evaluation, Form Std. 4, must be prepared by the program within 60 days of the completion of the contract. These evaluations shall remain on file by the Department (in a separate location from the contract file) for a period of 36 months.

4. **Agency Liability**

   The Contractor warrants by execution of this Agreement, that no person or selling agency has been employed or retained to solicit or secure this Agreement upon agreement or understanding for a commission, percentage, brokerage, or contingent fee, excepting bona fide employees or bona fide established commercial or selling agencies maintained by the Contractor for the purpose of securing business. For breach or violation of this warranty, the State shall, in addition to other remedies provided by law, have the right to annul this Agreement without liability, paying only for the value of the work actually performed, or otherwise recover the full amount of such commission, percentage, brokerage, or contingent fee.

5. **Potential Subcontractors**

   If Contractor subcontracts out a portion of the work required by this Agreement, nothing contained in this Agreement or otherwise, shall create any contractual relation between the State and any subcontractors, and no subcontract shall relieve the Contractor of his responsibilities and obligations hereunder. The Contractor agrees to be as fully responsible to the State for the acts and omissions of its subcontractors and of persons either directly or indirectly employed by any of them as it is for the acts and omissions of persons directly employed by the Contractor. The Contractor's obligation to pay its subcontractors is an independent obligation from the State's obligation to make payments to the Contractor. As a result, the State shall have no obligation to pay or to enforce the payment of any moneys to any subcontractor.

6. **Right To Terminate**

   The State reserves the right to terminate this agreement subject to 30 days written notice to the Contractor. Contractor may submit a written request to terminate this agreement only if the State should substantially fail to perform its responsibilities as provided herein. However, the agreement can be immediately terminated for cause.
EXHIBIT E

ADDITIONAL PROVISIONS

CONTRACTOR AND SUBCONTRACTOR COMPLIANCE REQUIREMENTS
The Contractor shall ensure its officers, agents and employees will fully cooperate with any/all investigations conducted by the Department of Food and Agriculture's Equal Employment Opportunity and Human Resources Offices and will require the same of any subcontractors or consultants used pursuant to this agreement.

INSURANCE REQUIREMENTS
Contractor shall comply with all requirements outlined in the (1) General Provisions section and (2) Contract Insurance Requirements outlined in this section. No payments will be made under this contract until contractor fully complies with all requirements.

1. General Provisions Applying to All Policies
   a. Coverage Term – Coverage needs to be in force for the complete term of the contract. If insurance expires during the term of the contract, a new certificate must be received by the State at least ten (10) days prior to the expiration of this insurance. Any new insurance must comply with the original contract terms.
   b. Policy Cancellation or Termination & Notice of Non-Renewal – Insurance policies shall contain a provision stating coverage will not be cancelled without 30 days prior written notice to the State. New certificates of insurance are subject to the approval of the Department of General Services and the Contractor agrees no work or services will be performed prior to obtaining such approval. In the event Contractor fails to keep in effect at all times the specified insurance coverage, the State may, in addition to any other remedies it may have, terminate this Contract upon the occurrence of such event, subject to the provisions of this Contract.
   c. Premiums, Assessments and Deductibles – Contractor is responsible for any premiums, policy assessments, deductibles or self-insured retentions contained within their insurance program.
   d. Primary Clause – Any required insurance contained in this contract shall be primary, and not excess or contributory, to any other insurance carried by the State.
   e. Insurance Carrier Required Rating – All insurance companies must carry an AM Best rating of at least “A-” with a financial category rating of no lower than VI. If the Contractor is self insured for a portion or all of its insurance, documentation of self-insurance must be submitted and approved by the Department of General Services, Office of Risk and Insurance Management.
   f. Endorsements – Any required endorsements requested by the State must be physically attached to all requested certificates of insurance and not substituted by referring to such coverage on the certificate of insurance.
   g. Inadequate Insurance – Inadequate or lack of insurance does not negate the contractor’s obligations under the contract.
   h. Use of Subcontractors – In the case of Contractor's utilization of subcontractors to complete the contracted scope of work, contractor shall include all subcontractors as insured's under Contractor's insurance or supply evidence of subcontractor’s insurance to the State equal to policies, coverages, and limits required of Contractor.
2. **Contract Insurance Requirements**

**Prime Contractor Insurance Requirements**
Contractor shall display evidence of the following on an Acord certificate of insurance evidencing the following coverages:

*Commercial General Liability* – Contractor shall maintain general liability on an occurrence form with limits not less than $1,000,000 per occurrence for bodily injury and property damage liability combined with a $2,000,000 annual policy aggregate. A “per project aggregate” endorsement is required. The policy shall include coverage for liabilities arising out of premises, operations, independent contractors, products, completed operations, personal and advertising injury, and liability assumed under an insured contract. This insurance shall apply separately to each insured against whom claim is made or suit is brought subject to the Contractor’s limit of liability.

The policy must be endorsed to name **The State of California, its officers, agents, employees and servants as additional insureds, but only with respect to work performed under the contract.**

*Automobile Liability* – Contractor shall maintain automobile liability insurance for limits not less than $1,000,000 combined single limit. Such insurance shall cover liability arising out of a motor vehicle including owned, hired and non-owned motor vehicles. Should the scope of the Contract involve transportation of hazardous materials, evidence of an MCS-90 endorsement is required.

*Workers’ Compensation Insurance* – The Contractor shall have and maintain, for the term of this Agreement, workers’ compensation insurance and shall furnish to the State a certificate of insurance evidencing workers compensation insurance and employer’s liability presently in effect with limits not less than $1,000,000 by an insurance carrier licensed to underwrite workers’ compensation insurance in California. Such certificate shall include the name of the carrier, policy inception and expiration dates. If the Contractor is self-insured for workers compensation, a certificate must be presented evidencing Contractor is a qualified self insurer in the State of California. By signing this Agreement, the Contractor hereby warrants that it carries Workers’ Compensation Insurance on all of its employees who will be engaged in the performance of this Agreement. If staff provided by the Contractor is defined as independent contractors, this clause does not apply.

**Sub-Contractor Insurance Requirements**
Sub-Contractor shall display evidence of the following on an Acord certificate of insurance evidencing the following coverages:

*Commercial General Liability* – Sub-Contractor shall maintain general liability on an occurrence form with limits not less than $1,000,000 per occurrence for bodily injury and property damage liability combined with a $2,000,000 annual policy aggregate. A “per project aggregate” endorsement is required. The policy shall include coverage for liabilities arising out of premises, operations, independent contractors, products, completed operations, personal and advertising injury, and liability assumed under an insured contract. This insurance shall apply separately to each insured against whom claim is made or suit is brought subject to the Sub-Contractor’s limit of liability.

The policy must be endorsed to name **The State of California, its officers, agents, employees and servants as additional insureds, but only with respect to work performed under the contract.**

*Automobile Liability* – Sub-Contractor shall maintain automobile liability insurance for limits not less than $1,000,000 combined single limit. Such insurance shall cover liability arising out of a motor vehicle including owned, hired and non-owned motor vehicles. Should the scope of the Contract involve transportation of hazardous materials, evidence of an MCS-90 endorsement is required.

*Workers’ Compensation Insurance* – The Sub-Contractor shall have and maintain, for the term of this Agreement, workers’ compensation insurance and shall furnish to the State a certificate of insurance evidencing workers compensation insurance and employer’s liability presently in effect with limits not
less than $1,000,000 by an insurance carrier licensed to underwrite workers’ compensation insurance in California. Such certificate shall include the name of the carrier, policy inception and expiration dates. If the Sub-Contractor is self-insured for workers compensation, a certificate must be presented evidencing Sub-Contractor is a qualified self insurer in the State of California. By signing this Agreement, the Sub-Contractor hereby warrants that it carries Workers’ Compensation Insurance on all of its employees who will be engaged in the performance of this Agreement. If staff provided by the Sub-Contractor is defined as independent contractors, this clause does not apply.

LIABILITY AND DAMAGES
The Contractor shall be liable for any damages by the Contractor or his employees to portions of buildings, premises, equipment, furniture, material, or other CDFA property. Damage resulting from the services provided will be repaired or items will be replaced by the Contractor to the satisfaction of the CDFA at no expense to the CDFA. Any items lost or stolen while in the Contractor’s custody will be replaced by the Contractor at no expense to the CDFA.

LICENSE AND PERMIT REQUIREMENTS
The Contractor shall be an individual or firm properly licensed to do business in California in accordance with the laws of the State of California, and shall obtain at his/her expense all license(s) and permit(s) required by law for accomplishing any work required in connection with this agreement.

If you are a Contractor located within the State of California, a business license from the city/county in which you are headquartered is necessary; however, if you are a corporation, a copy of your incorporation documents/letter from the Secretary of State’s Office can be submitted. If you are a Contractor outside the State of California, you will need to submit to the CDFA a copy of your business license or incorporation papers for your respective state showing that your company is in good standing in that state.

In the event any license(s) and/or permit(s) expire at any time during the term of this Agreement, Contractor agrees to provide agency a copy of the renewed license(s) and/or permit(s) within 30 days following the expiration date. In the event the Contractor fails to keep in effect at all times all required license(s) and permit(s), the State may, in addition to any other remedies it may have, terminate this agreement upon occurrence of such event.

Licensed contractors must observe professional standards for quality of work or the California Contractors State License Board will invoke disciplinary action.

Should the State of California determine that the work or materials provided vary materially from the specifications, or, that defective work when completed was not performed in a workmanlike manner, then the Contractor warrants that he/she shall perform all necessary repairs, replacement and corrections needed to restore the property according to the Agreement plans and specifications, all at no further or additional cost to the State of California.

RIGHT TO BAR
The CDFA reserves the right to bar any Contractor’s employee from the worksite.

MULTIPLE CONTRACTORS
The CDFA may undertake or award other contractors for additional work, and the Contractor shall fully cooperate with other contractors and State employees.

STAFF EXPENSES
The Contractor represents that it has or shall secure at its own expense, all staff required to perform the services described in this Agreement. Such personnel shall not be employees of or have any contractual relationship with any government entity.

QUALIFICATIONS
The prospective contractor must have the experience, qualifications and resources to perform the work required by this Agreement.
SECURITY
Contractor employees are not authorized to open, use, access, look, read, remove, or copy any documents or records. Contractor shall not use, access or disturb cabinets, files, desks, computers, photo-copiers, folders, papers, books, telephones, calculators, kitchen appliances or CDFA employee's personal property. Contractor employees are not authorized to use any State equipment for personal gain. Failure to adhere to this security policy may result in immediate termination of the contract.

Contractor will not let visitors come into the building (including CDFA employees) after the CDFA Project Manager has locked the doors. Building admittance is restricted to employees of the Contractor who have been assigned to this location and previously introduced to the CDFA Project Manager. Individuals who have not been assigned to perform services at this location (i.e., children, family members or friends of the Contractor or Contractor's employees) are strictly forbidden from entering the building and secured areas (including secured vehicle compounds) when cleaning the building. Failure to adhere to this requirement will result in immediate termination.

SECURITY BREACH
Any security breach by the Contractor or the contractor’s employees such as leaving the facility without fully securing all entrances or exits and arming the alarm system (if one exists), or allowing unauthorized access to the premises may result in immediate termination of the contract. The Contractor will be notified by telephone by the CDFA Project Manager, immediately followed by written notification. Building keys in the contractor’s possession at the termination of the contract shall be returned to the CDFA Project Manager within twenty-four (24) hours from the termination of this contract. Contractor agrees that the costs for unreturned keys and consequential costs shall be deducted from any sums owed the Contractor against this or any other active contract with the CDFA. For example, a Contractor’s failure to return keys will result in an assessment of costs for the re-keying of the office and the cost of reissuing keys.

CONFIDENTIALITY AND PUBLIC RECORDS
Contractor and the CDFA understand that each party may come into possession of information and/or data which may be deemed confidential or proprietary by the person or organization furnishing the information or data. Such information or data may be subject to disclosure under the California Public Records Act, commencing with Government Code, Section 6250, or the Public Contract Code. The CDFA agrees not to disclose such information or data furnished by contractor and to maintain such information or data as confidential when so designated by contractor in writing at the time it is furnished to the CDFA, only to the extent that such information or data is exempt from disclosure under the California Public Records Act and the Public Contract Code.

SUBCONTRACTORS
Contractor shall obtain prior approval from CDFA before hiring subcontractors, consultants or both. The total amount of all subcontracts shall not exceed $50,000 or 25% of the total amount of the contract, whichever is less, unless the Contractor can provide certified documents that award was made through a competitive bidding process requiring at least three bids from responsible bidders.

All subcontractors identified shall be experts in their respective disciplines and capable of performing the tasks for which they were hired. Subcontractors shall have extensive experience in their area of expertise, with particular emphasis on prior experience on similar programs or projects that clearly illustrate their expertise in areas essential to the CDFA.

The Contractor must use the Small and/or DVBE business subcontractor(s) identified in the Small Business/DVBE Participation Summary submitted with the bid unless the Contractor requests substitution in writing to the CDFA prior to the subcontractor performing any work and the CDFA approves such substitution.
POTENTIAL SUBCONTRACTORS
Nothing contained in this Agreement or otherwise, shall create any contractual relation between the State and any subcontractors, and no subcontract shall relieve the Contractor of his responsibilities and obligations hereunder. The Contractor agrees to be as fully responsible to the State for the acts and omissions of its subcontractors and of persons either directly or indirectly employed by any of them as it is for the acts and omissions of persons directly employed by the Contractor. The Contractor’s obligation to pay its subcontractors is an independent obligation from the State’s obligation to make payments to the Contractor. As a result, the State shall have no obligation to pay or to enforce the payment of any moneys to any subcontractor.

FORCED, CONVICT, AND INDENTURED LABOR
No foreign-made equipment, materials, or supplies furnished to the State pursuant to this contract may be produced in whole or in part by forced labor, convict labor, or indentured labor.

PRIORITY HIRING CONSIDERATIONS
The Contractor is hereby advised that it will be obligated to give priority consideration in filling vacancies in positions funded by the resulting Agreement to qualified recipients of and under Welfare and Institutions Code Section 11200. This requirement shall not interfere with or require a violation of a collective bargaining agreement, a federal affirmative action obligation for hiring disabled veterans of the Vietnam era or nondiscrimination compliance laws of California and does not require the employment of unqualified recipients of aid.

FORCE MAJEURE
Except for defaults of any subcontractors, neither party shall be responsible for any delay in or failure of performance from acts beyond the control of the offending party. Such acts shall include, but shall not be limited to, acts of God, fire, flood, earthquake, other natural disaster, nuclear accident, strike, lockout, riot, freight embargo, public regulated utility, or governmental statutes or regulations superimposed after the fact. If a delay or failure in performance by the Contractor arises out of a default of its subcontractor, and if such default of its subcontractor, causes beyond the control of both the Contractor and subcontractor, and without the fault or negligence of either of them, the Contractor shall not be liable for damages of such delay or failure, unless the supplies or services to be furnished by the subcontractor were obtainable from other sources in sufficient time to permit the Contractor to meet the required performance schedule.

UNFAIR PRACTICES ACT
Contractor hereby certifies that he/she will comply with the requirements of Section 17200 of the Business and Professions Code.