

STATE OF CALIFORNIA
STANDARD AGREEMENT
 STD 213 (Rev 05/18)

AGREEMENT NUMBER 18-C0041
REGISTRATION NUMBER

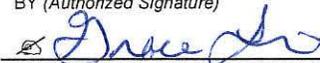
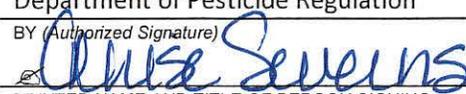
1. This Agreement is entered into between the State Agency and the Contractor named below:
- STATE AGENCY'S NAME
 Department of Pesticide regulation, hereinafter referred to as "State"
- CONTRACTOR'S NAME
 University of California, Davis, hereinafter referred to as "University"
2. The term of this Agreement is: November 1, 2018 through December 31, 2020
3. The maximum amount of this Agreement is: \$ 197,088.00
4. The Parties agree to comply with the terms and conditions of the following Exhibits, which by this reference are made a part of the Agreement.

Exhibit A – A7: A–Scope of Work; A1–Deliverables; A2–Key Personnel; A3–Authorized Representatives; A4–Use of Intellectual Property; A5–Resumes/Biosketch; A6–Current & Pending Support; A7–Third Party Confidential Information (if applicable)	11 page(s)
Exhibit B – B–Budget; B1–Budget Justification; B2– Subawardee Budgets (if applicable); B3– Invoice Elements	4 page(s)
Exhibit C* – University Terms and Conditions	UTC-518

- Check mark additional Exhibits below, and attach applicable Exhibits or provide internet link:
- Exhibit D** – Additional Requirements Associated with Funding Sources page(s)
 - Exhibit E** – Special Conditions for Security of Confidential Information page(s)
 - Exhibit F** – Access to State Facilities or Computing Resources page(s)
 - Exhibit G** – Negotiated Alternate UTC Terms 1 page(s)

Items shown with an Asterisk (*) are hereby incorporated by reference and made part of this agreement as if attached hereto.
 These documents can be viewed at <http://www.dgs.ca.gov/ols/Resources/ModelContractLanguageUniversities.aspx>.

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.)	
Regents of the University of California	
BY (Authorized Signature)	DATE SIGNED (Do not type)
	11/14/2018
PRINTED NAME AND TITLE OF PERSON SIGNING	
Grace I. Liu, J.D., Associate Director, Sponsored Programs	
ADDRESS	
1850 Research Park Drive, Ste. 300 Davis, CA. 95618-6153	
STATE OF CALIFORNIA	
AGENCY NAME	
Department of Pesticide Regulation	
BY (Authorized Signature)	DATE SIGNED (Do not type)
	12.11.18
PRINTED NAME AND TITLE OF PERSON SIGNING	
ADDRESS	
1001 I Street, Sacramento, CA 95814	

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APPROVED

DEC 27 2018

OFFICE OF LEGAL SERVICES
DEPT. OF GENERAL SERVICES



Exempt per:

Exhibit A – Scope of Work

Project Summary & Scope of Work

Contract Grant

PI Name: Thomas M. Young

Project Title: Identifying Key Sources of Pesticides in Wastewater to Support Source Reduction Efforts

Project Summary/Abstract

Improved understanding of the sources of pesticides to municipal wastewater treatment facilities is critical to implementing effective source control programs. This project will develop new strategies for mining existing data on pesticides in wastewater and expand the library of source-specific pesticide and adjuvant profiles. Overall objectives are to: (1) develop and validate new techniques to expand the range of detection and enhance the ability to identify unknown compounds in wastewater, (2) conduct statistical analysis of the target, suspect and nontarget chemical data, and (3) supplement existing data with additional, targeted source measurements (e.g., commercial laundries, indoor cannabis effluents). Collectively, attaining these objectives will provide detailed and concrete support for source reduction programs.

If Third-Party Confidential Information is to be provided by the State:

- Performance of the Scope of Work is anticipated to involve use of third-party Confidential Information and is subject to the terms of this Agreement; **OR**
- A separate CNDA between the University and third-party is required by the third-party and is incorporated in this Agreement as Exhibit A7, Third Party Confidential Information.

Scope of Work

1. Background and Objectives

A previous project (14-C0103) measured a diverse set of target and nontarget pesticides in wastewater, ranging from insecticides to herbicides, a number of which had not been previously identified in wastewater. The project successfully enhanced understanding of pesticide use patterns that result in down-the-drain transport. However, successful source control, through prevention and mitigation, requires significantly more information. The original project developed validated analytical methods for target compounds in a wastewater matrix and quantified the concentrations of these compounds as a function of time and position (e.g., influent, trunkline, and three types of source-specific samples). Samples were subject to additional suspect and nontarget chemical screening.

The results revealed the depth and complexity of these wastewater samples when viewed through the lens of high-resolution mass spectrometry.

To maximize the policy-relevant information obtained from the significant amount of wastewater characterization data obtained in phase one, this second phase of the project will: (1) develop and validate new nontarget workflows to expand the range of detection and enhance the ability to identify unknown compounds in wastewater, (2) conduct statistical analysis of the target, suspect and nontarget chemical data, and (3) supplement the data with additional, targeted source measurements (e.g., commercial laundries, indoor cannabis effluent). Collectively, attaining these objectives will provide detailed and concrete support for source reduction programs.

2. Work to be Performed

Task 1. Expanded Nontarget Screening. The suspect screening performed in the first project phase relied primarily on mass spectral data obtained using electrospray ionization and electron ionization data screened against commercial high-resolution mass spectral databases (Agilent Inc.). These techniques successfully identified dozens of suspect compounds, with a number of these never before identified in wastewater. The target analysis of pyrethroids and other halogenated insecticides in phase 1 was performed in negative chemical ionization (NCI) mode, which offers much better sensitivity and specificity for halogenated organic compounds, a structural group that occurs in many insecticides and their transformation products present at levels of concern in treated wastewater effluent. University proposes to develop and test methods to use NCI data for nontarget screening, which to our knowledge has not been done previously. This will offer advantages of improved sensitivity and the presence of molecular ions that will support assignment of molecular formulae for compounds not in the databases.

Task 2. Statistical Analysis to Estimate Source Contributions. University will use of statistical methods of source identification, used widely in air pollution studies. Chemical mass balance modeling uses the chemical composition of individual source categories to determine relative contribution in the overall mixture. In the second approach, factor analysis, chemically distinct individual source signatures are isolated without presupposing their origins. University will use unique "chemical markers" from source profile databases developed in their lab and external sources to conduct chemical mass balance modeling of the combined target and nontarget datasets. The approach is expected to work because the relative flows of the trunkline samples are known, and several key source signatures have been determined. Factor analysis will be performed independently to identify possible unknown sources not captured otherwise.

Task 3. Additional Wastewater Analyses to Refine Source Estimates. It is expected that Tasks 1 and 2 will not provide comprehensive source information. The project includes sufficient budget to analyze 80 additional wastewater samples, to represent key sources (e.g., commercial laundry, indoor cannabis effluent) that were not included in the first phase of the project. Sources to be sampled, sample collection locations, and sample timing will be chosen in close collaboration with the designated State contract manager. No samples will be collected or analyzed under this task without specific authorization from State.

Task 4. Final Report. A final report will be prepared summarizing the findings of the project. All full scan high resolution data obtained in the study will be retained for subsequent re-processing to determine the presence of newly recognized compounds of concern.

3. State Responsibilities

- A. State will review the Annual Progress Report and Draft Final Report and provide comments within 30 days of submission.
- B. State will participate in identifying cooperating wastewater treatment plants and selecting sites suitable for the needs described in Task 3.
- C. State staff will, as needed, participate in collection of wastewater samples.
- D. State staff will, as needed, transport and deliver wastewater samples to University.

Exhibit A1 - Deliverables

SCHEDULE OF DELIVERABLES

List all items that will be delivered to the State under the proposed Scope of Work. Include all reports, including draft reports for State review, and any other Deliverables, if requested by the State and agreed to by the Parties.

If use of any Deliverable is restricted or is anticipated to contain preexisting Intellectual Property with any restricted use, it will be clearly identified in Exhibit A4, Use of Preexisting Intellectual Property.

Unless otherwise directed by the State, the University Principal Investigator shall submit all Deliverables to the State Contract Project Manager, identified in Exhibit A3, Authorized Representatives.

Deliverable	Description	Due Date
Annual Progress Report	A brief memorandum that summarizes work to date on the project, work remaining to be completed, budget status, and any obstacles encountered.	September 30, 2019
Draft Final Report	A draft of the project final report summarizing newly developed workflows, characteristics of source specific samples, and insights obtained regarding pesticide sources to wastewater utilities	October 31, 2020
Final Report	The final report will be prepared taking into consideration all comments received on the draft final report from DPR reviewers	December 31, 2020
The following Deliverables are subject to Section 19. Copyrights, paragraph B of Exhibit C		

Exhibit A2 – Key Personnel

KEY PERSONNEL

List Key Personnel as defined in the Agreement starting with the PI, by last name, first name followed by Co-PIs. Then list all other Key Personnel in alphabetical order by last name. For each individual listed include his/her name, institutional affiliation, and role on the proposed project. Use additional consecutively numbered pages as necessary.

Last Name, First Name	Institutional Affiliation	Role on Project
PI:		
<i>Young, Thomas M.</i>	<i>University of California, Davis Department of Civil & Environmental Engineering</i>	<i>Oversee all aspects of the project, review all work performed and any documents prepared.</i>
Co-PI(s) – if applicable:		
<i>Last name, First name</i>	<i>Institutional affiliation</i>	<i>Role on the project</i>
<i>Last name, First name</i>	<i>Institutional affiliation</i>	<i>Role on the project</i>
Other Key Personnel (if applicable):		
<i>Last name, First name</i>	<i>Institutional affiliation</i>	<i>Role on the project</i>
<i>Last name, First name</i>	<i>Institutional affiliation</i>	<i>Role on the project</i>

Exhibit A3 – Authorized Representatives

AUTHORIZED REPRESENTATIVES AND NOTICES

The following individuals are the authorized representatives for the State and the University under this Agreement. Any official Notices issued under the terms of this Agreement shall be addressed to the Authorized Official identified below, unless otherwise identified in the Agreement.

State Agency Contacts	University Contacts
<p>Agency Name: Department of Pesticide Regulation</p> <p>Contract Project Manager (Technical)</p> <p>Name: Jennifer Teerlink Sr. Environmental Scientist (Supervisory)</p> <p>Address: Department of Pesticide Regulation 1001 I Street, MS 3-B Sacramento, CA. 95814</p> <p>Telephone: 916-445-3195 Fax: 916-324-4088 Email: Jennifer.Teerlink@cdpr.ca.gov</p>	<p>University Name: University of California, Davis</p> <p>Principal Investigator</p> <p>Name: Thomas M. Young Professor</p> <p>Address: Department of Civil & Environmental Engineering One Shields Ave. Davis, CA 95616</p> <p>Telephone: 530-754-9399 Fax: 530-752-7872 Email: tyoung@ucdavis.edu</p> <p>Designees to certify invoices under Section 14 of Exhibit C on behalf of PI:</p> <ol style="list-style-type: none"> 1. Fatima M. Garcia, Financial Analyst, ftmgarcia@ucdavis.edu
<p>Authorized Official (contract officer)</p> <p>Name: Anise Severns Assistant Director</p> <p>Address: Department of Pesticide Regulation 1001 I Street, 4th Floor Sacramento, CA. 95814</p> <p>Send notices to (if different):</p> <p>Name: Kim Bateman Contract Analyst</p> <p>Address: Department of Pesticide Regulation 1001 I Street, MS 4-A Sacramento, CA. 95814</p>	<p>Authorized Official</p> <p>Name: Grace I. Liu, J.D. Associate Director</p> <p>Address: 1850 Research Park Drive, Suite 300 One Shields Avenue Davis, CA 95618</p> <p>Telephone: (530) 754-8266 Fax: (530) 754-8229 Email: crosario@ucdavis.edu</p> <p>Send notices to (if different):</p> <p>Name: Ahmad Hakim-Elahi, Ph.D., J.D. Executive Director, Research Administration</p>

<p>Telephone: 916-445-2512 Email: kim.bateman@cdpr.ca.gov</p>	<p>Address: Sponsored Programs 1850 Research Park Drive, Suite 300 Davis, CA 95618 Telephone: (530) 754-8323 Fax: (530) 752-0333 Email: ahakimelahi@ucdavis.edu</p>
<p>Administrative Contact</p> <p>Name: Kim Bateman Contract Analyst Address: Department of Pesticide Regulation 1001 I Street, MS 4-A Sacramento, CA. 95814 Telephone: 916-445-2512 Email: kim.bateman@cdpr.ca.gov</p>	<p>Administrative Contact</p> <p>Name: Cynthia Rosario Contracts & Grants Officer Address: 1850 Research Park Drive, Suite 300 One Shields Avenue Davis, CA 95618 Telephone: (530) 754-8266 Fax: (530) 754-8229 Email: crosario@ucdavis.edu</p>
<p>Financial Contact/Accounting</p> <p>Name: Department of Pesticide Regulation Accounts Payable Address: Department of Pesticide Regulation Accounts Payable P.O. Box 4015 Sacramento, CA 95812-4015 Telephone: (916) 445-4149 Email: Accounts_Payable@cdpr.ca.gov</p>	<p>Authorized Financial Contact/Invoicing</p> <p>Name: James Ringo Division Manager Address: Contracts & Grants Accounting 1441 Research Park Drive Davis, CA 95618 Telephone: (530) 757-8523 Fax: (530) 757-8721 Email: jaringo@ucdavis.edu</p> <p>Payment Address: Cashier's Office University of California Davis P.O. Box 989062 West Sacramento, CA. 95798-9062</p>

Exhibit A4 – Use of Intellectual Property

USE OF INTELLECTUAL PROPERTY

If either Party will be using any third-party or pre-existing intellectual property (including, but not limited to data, copyrighted works, known patents, trademarks, service marks and trade secrets) "IP" with restrictions on use, then list all such IP and the nature of the restriction below. If no third-party or pre-existing IP will be used, check "none" in this section.

A. State: Preexisting IP to be provided to the University from the State or a third party for use in the performance in the Scope of Work.

None or List:

Owner (Name of State Agency or 3 rd Party)	Description	Nature of restriction:

B. University: Restrictions in Preexisting IP included in Deliverables identified in Exhibit A1, Deliverables.

None or List:

Owner (Name of University or 3 rd Party)	Description	Nature of restriction:

C. Anticipated restrictions on use of Project Data.

If the University PI anticipates that any of the Project Data generated during the performance of the Scope of Work will have a restriction on use (such as subject identifying information in a data set) then list all such anticipated restrictions below. If there are no restrictions anticipated in the Project Data, then check "None" in this section.

None or List:

Owner (University or 3 rd Party)	Description	Nature of Restriction:

Exhibit A5 - RÉSUMÉ/BIOSKETCH

RÉSUMÉ/BIOSKETCH

Thomas M. Young

Department of Civil & Environmental Engineering
University of California
Davis, CA 95616

ph: 530-754-9399
fax: 530-752-7872
email: tyoung@ucdavis.edu

Education

University of Michigan, Ph.D., Environmental Engineering, 1996
University of California, Berkeley, M.P.P., Graduate School of Public Policy, 1987
Michigan State University, B.S. with Honors, Chemical Engineering, 1985

Professional Experience

University of California, Davis, Professor (7/06-present)
University of California, Davis, Associate Professor (7/01-6/06)
University of California, Davis, Assistant Professor (11/95-6/01)
University of Michigan, Research and Teaching Assistant (9/91-9/95)
US Environmental Protection Agency, Environmental Protection Specialist (8/87-8/90)

Peer-Reviewed Journal Publications (Selected from 82 total)

- Moschet, C.; Anumol, T.; Lew, B.M.; Bennett, D.H.; Young, T.M. "Household dust as a repository of chemical accumulation: New insights from a comprehensive high-resolution mass spectrometry study," *Environmental Science and Technology*, **2018**, *52*, 2878-2887..
- Rippner, D.A., Green, P.G., Young, T.M. Parikh, S.J. Dissolved organic matter reduces CuO nanoparticle toxicity to duckweed in simulated natural systems, *Environmental Pollution*, **2018**, 234:692-698.
- Homan, N., Green, P.G., Young, T.M. "Evaluating Ferrous Chloride for Removal of Chromium from Ion-Exchange Waste Brines," *Journal AWWA*, in press.
- Rochman CM, Parnis JM, Browne MA, Serrato S, Reiner EJ, Robson M, Young, T.M., Diamond, M.L., Teh, S.J. "Direct and indirect effects of different types of microplastics on freshwater prey (*Corbicula fluminea*) and their predator (*Acipenser transmontanus*)," *PLoS ONE* 12(11): 2017, e0187664. <https://doi.org/10.1371/journal.pone.0187664>.
- Moschet, C.; Lew, B.M.; Hasenbein, S.; Anumol, T.; Young, T.M. "LC- and GC-QTOF-MS as Complementary Tools for a Comprehensive Micropollutant Analysis in Aquatic Systems," *Environmental Science and Technology*, **2017**, *51*: 1553-1561.
- Bair, D.A.; Mukome, F.N.D.; Popova, I.E.; Ogunyoku, T.A.; Jefferson, A.; Wang, D.; Hafner, S.C.; Young, T.M.; Parikh, S.J. "Sorption of Pharmaceuticals, Heavy Metals, and Herbicides to Biochar in the Presence of Biosolids," *Journal of Environmental Quality*, **2016**, *45*: 1998-2006.
- Parry, E.; Young, T.M. "Comparing targeted and non-targeted high-resolution mass spectrometric approaches for assessing advanced oxidation reactor performance," *Water Research*, **2016**, *104*, 72-81.
- Parry, E.; Lesmeister, S.; The, S.; Young, T.M. "Characteristics of suspended solids affect bifenthrin toxicity to the calanoid copepods, *Eurytemora affinis* and *Pseudodiaptomus forbesi*," *Environmental Toxicology and Chemistry*, **2015**, *34*(10): 2302-2309.

- Ogunyoku, T.A. and Young, T.M. "Removal of triclocarban and triclosan during municipal biosolid production," *Water Environment Research*, **2014**, 86(3): 197-203.
- Luo, Y., Jorgenson, B.; Thuyet, D.; Young, T.M., Spurlock, F., Goh, K. "Insecticide washoff from concrete surfaces: characterization and prediction," *Environmental Science and Technology*, **2014**, 48(1): 234-243.
- Parry, E. and Young, T.M. "Distribution of pyrethroid insecticides in secondary wastewater effluent," *Environmental Toxicology and Chemistry*, **2013**, 32(12), 2686-2694.
- Jorgenson, B.C., Brown, L., Fleishman, E., Macneale, K., Schlenk, D., Scholz, N., Spromberg, J., Werner, I., Weston, D., Young, T.M., Zhang, M., Zhao, Q. "Predicted Transport of Pyrethroid Insecticides From An Urban Landscape To Surface Water," *Environmental Toxicology and Chemistry*, **2013**, 32 (11): 2469-77.
- Luo, Y., Spurlock, F., Jiang, W., Jorgenson, B.C., Young, T.M., Gan, J., Gill, S., Goh, K.S. "Pesticide washoff from concrete surfaces: literature review and a new modeling approach," *Water Research*, **2013**, 47: 3163-3172.
- Jorgenson, B.C., Wissel-Tyson, C., Young, T.M. "Factors Contributing to the Off-Target Transport of Pyrethroid Insecticides from Urban Surfaces," *Journal of Agricultural and Food Chemistry*, **2012**, 60(30): 7333-7340.
- Thuyet, D.Q., Jorgenson, B.C., Wissel-Tyson, C., Watanabe, H., Young, T.M. "Wash off of imidacloprid and fipronil from turf and concrete surfaces using simulated rainfall" *Science of the Total Environment*, **2012**, 414: 515-524.
- Giudice, B.D., Young, T.M. "Mobilization of endocrine disrupting chemicals, heavy metals, and estrogenic activity in simulated rainfall runoff from land-applied biosolids" *Environmental Toxicology and Chemistry*, **2011**, 30(10): 2220-2228.
- Fojut, T.L., Young, T.M. "Desorption of pyrethroids from suspended solids" *Environmental Toxicology and Chemistry*, **2011**, 30(8): 1760-1766.
- Fojut, T.L., Young, T.M. "Pyrethroid sorption to Sacramento River suspended solids and bed sediments" *Environmental Toxicology and Chemistry*, **2011**, 30(4): 787-792.
- Jorgenson, B.C., Young, T.M. "Formulation effects and the off-target transport of pyrethroid insecticides from urban hard surfaces" *Environmental Science & Technology*, **2010**, 44(13), 4951-7.
- Giudice, B., Young, T.M. "The Antimicrobial triclocarban stimulates embryo production in the freshwater mudsnail *Potamopyrgus Antipodarum*" *Environmental Toxicology and Chemistry*, **2010**, 29(4): 966-970.
- Hwang, H-M., Green, P.G., Young, T.M. "Historical trends of trace metals in a sediment core from a contaminated tidal salt marsh in San Francisco Bay" *Environmental Geochemistry and Health*, **2009**, 31:421-430.
- Hwang, H.M., Park, E.K., Young, T.M., Hammock, B.D. "Response to Occurrence of five classes of chemicals in indoor dust: An evaluation of the human health risk" *Science of the Total Environment*, **2009**, 407: 5197-5198.
- Hwang, H.M., Green, P.G., Young, T.M. "Tidal salt marsh sediment in California, USA: Part 3. Current and historic toxicity potential of contaminants and their bioaccumulation" *Chemosphere*, **2008**, 71: 2139-2149.
- Giudice, B.D., Massoudieh, A., Huang, X., Young, T.M. "A Stochastic Simulation Procedure for Selecting Herbicides with Minimum Environmental Impact" *Environmental Science and Technology*, **2008**, 42: 354-360.

Exhibit A6 – Current & Pending Support

CURRENT & PENDING SUPPORT

University will provide current & pending support information for Key Personnel identified in Exhibit A2 at time of proposal and upon request from State agency. The "Proposed Project" is this application that is submitted to the State. Add pages as needed.

PI: Thomas Young					
Status (currently active or pending approval)	Award # (if available)	Source (name of the sponsor)	Project Title	Start Date	End Date
Proposed Project	18-C0041	Department of Pesticide Regulation	Identifying Key Sources of Pesticides in Wastewater to Support Source Reduction Efforts	11/18	12/20
CURRENT	P42ES004699	NIH, NIEHS	Optimizing Bioremediation for Risk Reduction Using Integrated Bioassay, Non Target Analysis and Genomic Mining Techniques	7/17	6/22
CURRENT	-	US Environmental Protection	Identification of unique Candidate Compounds in Dust to Estimate Children's Dust Ingestion	10/16	10/18
CURRENT	-	California Department of Pesticide Regulation	Removal of Pesticides from Agricultural Runoff in Bioreactors	5/18	4/20
CURRENT	1R21ES029693	NIH, NIEHS	Wildfires & Health	3/18	2/20
CURRENT	-	California Air Resources Board	Evaluation and Identification of Constituents Found in Common Carrier Pipeline Natural Gas, Biogas, and Upgraded Biomethane in CA	11/17	10/18

Exhibit B - Budget
Budget for Project Period

Principal Investigator (Last, First):

Young, Thomas M.

Exhibit B

COMPOSITE BUDGET FOR ENTIRE PROPOSED PROJECT PERIOD					
		11/1/18	to	12/31/20	
BUDGET CATEGORY	From: To:	11/1/18 8/31/2019 Year 1	9/1/2019 8/31/2020 Year 2	9/1/2020 12/31/2020 Year 3	TOTAL
PERSONNEL: <i>Salary and fringe benefits.</i>		\$71,854	\$74,411	\$0	\$146,265
TRAVEL		\$0	\$0	\$0	\$0
MATERIALS & SUPPLIES		\$6,280	\$5,126	\$0	\$11,406
EQUIPMENT		\$0	\$0	\$0	\$0
CONSULTANT		\$0	\$0	\$0	\$0
SUBRECIPIENT		\$0	\$0	\$0	\$0
OTHER DIRECT COSTS (ODC)	<i>Subject to IDC Calc</i>				
ODC #1	Y	\$0	\$0	\$0	\$0
ODC #2	Y	\$0	\$0	\$0	\$0
ODC #3	Y	\$0	\$0	\$0	\$0
ODC #4	Y	\$0	\$0	\$0	\$0
ODC #5	Y	\$0	\$0	\$0	\$0
ODC #6	Y	\$0	\$0	\$0	\$0
TOTAL DIRECT COSTS		\$78,134	\$79,537	\$0	\$157,671
Indirect (F&A) Costs	<i>F&A Base MTDC *</i>				
<i>Rate: 25%</i>		\$78,134	\$79,537	\$0	\$157,671
		\$19,533	\$19,884	\$0	\$39,417
TOTAL COSTS PER YEAR		\$97,667	\$99,421	\$0	
TOTAL COSTS FOR PROPOSED PROJECT PERIOD					\$197,088

* MTDC = Modified Total Direct Cost

JUSTIFICATION. See Exhibit B1 - Follow the budget justification instructions.

Funds Reversion Dates: Unless otherwise specified, fund reversion dates are three years from fiscal year end of year funded

Project Period Budget Flexibility (lesser of % or Amount)

Prior approval required for budget changes between approved budget categories above the thresholds identified.	%	10.00%
	Amount	\$10,000

Exhibit B1

Budget Justification

The Budget Justification will include the following items in this format.

Personnel

Name. Starting with the Principal Investigator list the names of all known personnel who will be involved on the project for each year of the proposed project period. Include all collaborating investigators, individuals in training, technical and support staff or include as "to be determined" (TBD).

Role on Project. For all personnel by name, position, function, and a percentage level of effort (as appropriate), including "to-be-determined" positions.

PERSONNEL	Year 1			Year 2		
	Annual Salary	% of Effort	Total	Annual Salary	% of Effort	Total
Thomas Young (Professor and PI)	\$240,667	4%	\$9,627	\$247,887	1.7%	\$4,162
Chris Alaimo (SRA 3)	\$56,769	20%	\$11,439	\$58,473	13%	\$7,855
Junior Specialist TBD	\$40,685	12%	\$4,882	\$41,906	12%	4,889
Postdoc TBD	\$74,160	50%	\$37,080	\$76,385	50%	\$38,192
Total Personnel			\$58,401			\$60,232
Grand Total \$118,633						

Fringe Benefits.

In accordance with University policy, explain the costs included in the budgeted fringe benefit percentages used, which could include tuition/fee remission for qualifying personnel to the extent that such costs are provided for by University policy, to estimate the fringe benefit expenses on Exhibit B.

Fringe Benefits	Year 1		Year 2	
	%	Total	%	Total
Thomas Young (Professor and PI)	17.3	\$1,665	17.8	\$1,839
Chris Alaimo (SRA 3)	51	\$3,474	52.5	\$3,582
Junior Specialist TBD	38.9	\$1,899	40.1	\$1,960
Postdoc TBD	17.3	\$6,415	17.8	\$6,798
Total Fringe		\$13,453		\$14,179
Grand Total \$27,632				

Travel

Itemize all travel requests separately by trip and justify in Exhibit B1, in accordance with University travel guidelines. Provide the purpose, destination, travelers (name or position/role), and duration of each trip. Include detail on airfare, lodging and mileage expenses, if applicable. Should the application include a request for travel outside of the state of California, justify the need for those out-of-state trips separately and completely.

N/A

Materials and Supplies

Itemize materials supplies in separate categories. Include a complete justification of the project's need for these items. Theft sensitive equipment (under \$5,000) must be justified and tracked separately in accordance with State Contracting Manual Section 7.29.

Materials and Supplies: a total of \$11,406 is requested to cover costs of high purity organic solvents and gases used in liquid and gas chromatography, respectively, analytical standards, autosampler vials and caps, solid phase extraction cartridges, and other analytical consumables including filters, guard columns, and liquid nitrogen.

Equipment

List each item of equipment (greater than or equal to \$5,000 with a useful life of more than one year) with amount requested separately and justify each.

N/A

Consultant Costs

Consultants are individuals/organizations who provide expert advisory or other services for brief or limited periods and do not provide a percentage of effort to the project or program. Consultants are not involved in the scientific or technical direction of the project as a whole. Provide the names and organizational affiliations of all consultants. Describe the services to be performed, and include the number of days of anticipated consultation, the expected rate of compensation, travel, per diem, and other related costs.

N/A

Subawardee (Consortium/Subrecipient) Costs

Each participating consortium organization must submit a separate detailed budget for every year in the project period in Exhibit B2 Subcontracts. Include a complete justification for the need for any subawardee listed in the application.

N/A

Other Direct Costs

Itemize any other expenses by category and cost. Specifically justify costs that may typically be treated as indirect costs. For example, if insurance, telecommunication, or IT costs are charged as a direct expense, explain reason and methodology.

N/A

Rent

If the Scope of Work will be performed in an off-campus facility rented from a third party for a specific project or projects, then rent may be charged as a direct expense to the award.

N/A

Indirect (F&A) Costs

Indirect costs are calculated in accordance with the budgeted indirect cost rate in Exhibit B.

Indirect Costs: \$39,417. UCD's current indirect cost rate established for State of California Funding is 25% percent for on-campus research applied to the Modified Total Direct Cost (MTDC). Tuition is excluded from the computation of indirect costs.

Exhibit B3 – Invoice Elements

Invoice and Detailed Transaction Ledger Elements

In accordance with Section 14 of Exhibit C – Payment and Invoicing, the invoice, summary report and/or transaction/payroll ledger shall be certified by the University's Financial Contact and the PI (or their respective designees).

Summary Invoice – includes either on the invoice or in a separate summary document – by approved budget category (Exhibit B) – expenditures for the invoice period, approved budget, cumulative expenditures and budget balance available¹

- Personnel
- Equipment
- Travel
- Subawardee – Consultants
- Subawardee – Subcontract/Subrecipients
- Materials & Supplies
- Other Direct Costs
 - TOTAL DIRECT COSTS (if available from system)
- Indirect Costs
 - TOTAL

Detailed transaction ledger and/or payroll ledger for the invoice period ²

- Univ Fund OR Agency Award # (to connect to invoice summary)
- Invoice/Report Period (matching invoice summary)
- GL Account/Object Code
- Doc Type (or subledger reference)
- Transaction Reference#
- Transaction Description, Vendor and/or Employee Name
- Transaction Posting Date
- Time Worked
- Transaction Amount

¹ If this information is not on the invoice or summary attachment, it may be included in a detailed transaction ledger.

² For salaries and wages, these elements are anticipated to be included in the detailed transaction ledger. If all elements are not contained in the transaction ledger, then a separate payroll ledger may be provided with the required elements.

Exhibit G – Negotiated Alternate UTC Terms (if applicable)

An alternate provision in Exhibit G must clearly identify whether it is replacing, deleting or modifying a provision of Exhibit C. The Order of Precedence incorporated in Exhibit C clearly identifies that the provisions on Exhibit G take precedence over those in Exhibit C.

While every effort has been made to keep the UTC as universal in its application as possible, there may be unique projects where a given term in the UTC may be inappropriate or inadequate. California Education Code §67327(b) allows for those terms to be changed, but only through the mutual agreement and negotiation of the State agency and the University campus. If a given term in the UTC is to be changed, the change should not be noted in Exhibit C, but rather noted separately in Exhibit G.

1. Harassment Free Workplace

The Department of Pesticide Regulation (DPR) is committed to providing a safe, secure environment, free from sexual misconduct. It is policy of the Department that employees have the right to work in an environment that is free from all forms of discrimination, including sexual harassment. This policy specifically speaks to freedom from a sexually harassing act that results in the creation of an intimidating, hostile or offensive work environment or that otherwise interferes with an individual's employment or work performance. As a Contractor with DPR, you and your staff are expected to comply with a standard of conduct that is respectful and courteous to DPR employees and all other persons contacted during the performance of this Agreement. Sexual harassment is unacceptable, will not be tolerated; and may be cause for prohibiting some or all of the Contractor's staff from performing work under this Agreement.

2. Rights in Data

The Parties agree that all data, plans, drawings, specifications, reports, computer programs, operating manuals, notes, and other written or graphic work submitted under Exhibit A in the performance of this Contract shall be in the public domain.

3. Indirect Costs

Overhead/Indirect Costs may not exceed 25% of the Modified Total Direct Cost.