



GRANT REQUEST FORM (GRF)

A) New Agreement # EPC-20-044

B) Division	Agreement Manager:	MS-	Phone
ERDD	Anish Gautam	51	916-776-0759

C) Recipient's Legal Name	Federal ID Number
Caliskaner Water Technologies, Inc.	85-2235177

D) Title of Project
Demonstration of Advanced Primary and Secondary Treatment Technologies for Energy and Performance Benefits to Wastewater Treatment

E) Term and Amount

Start Date	End Date	Amount
6/21/2021	3/31/2025	\$ 4,000,000

F) Business Meeting Information

ARFVTP agreements \$75K and under delegated to Executive Director

Proposed Business Meeting Date 6/9/2021 Consent Discussion

Business Meeting Presenter Michael Lozano Time Needed: 5 minutes

Please select one list serve. EPIC (Electric Program Investment Charge)

Agenda Item Subject and Description:

CALISKANER WATER TECHNOLOGIES, INC. Proposed resolution approving agreement EPC-20-044 with Caliskaner Water Technologies, Inc. for a \$4,000,000 grant to design, install, demonstrate and evaluate advanced primary and advanced secondary treatment technologies at a California wastewater treatment facility, and adopting staff's determination that this action is exempt from CEQA. This project will be the first application of these combined technologies to reduce electrical energy consumption and greenhouse gas emissions while increasing treatment performance and capacity. (EPIC funding) Contact: Michael Lozano.

G) California Environmental Quality Act (CEQA) Compliance

1. Is Agreement considered a "Project" under CEQA?

Yes (skip to question 2)

No (complete the following (PRC 21065 and 14 CCR 15378)):

Explain why Agreement is not considered a "Project":

2. If Agreement is considered a "Project" under CEQA:

a) Agreement **IS** exempt.

Statutory Exemption. List PRC and/or CCR section number:

Categorical Exemption. List CCR section number: Cal. Code Regs., tit. 14, § 15301 and 15304

Common Sense Exemption. 14 CCR 15061 (b) (3)

Explain reason why Agreement is exempt under the above section:



GRANT REQUEST FORM (GRF)

The activities funded by the agreement will not cause a direct physical change in the environment or a reasonably foreseeable indirect physical change in the environment and the project activities qualify for a Class 1 Categorical Exemption (Title 14 of the California Code of Regulations, Chapter 3, Section 15301). Class 1 exempts the operation, repair, maintenance, permitting, licensing, or minor alteration of existing public or private structures, facilities, mechanical equipment, so long as there is negligible or no expansion of an existing use. The project involves temporary pipelines to convey wastewater between existing primary and secondary treatment tanks and demonstration systems. All work will occur within existing wastewater treatment plant site boundaries. At the completion of the activities, the temporary pipelines and demonstration units will be removed. Therefore, the project falls within section 15301 and will not have a significant effect on the environment.

Cal. Code Regs., tit. 14, sect. 15304 provides that projects which consist of minor public or private alterations in the condition of land, water, and/or vegetation which do not involve removal of healthy, mature, scenic trees except for forestry and agricultural purposes are categorically exempt from the provisions of CEQA. The project involves temporary pipelines to convey wastewater between existing primary and secondary treatment tanks and demonstration systems. All work will occur within existing wastewater treatment plant site boundaries. At the completion of the activities, the temporary pipelines and demonstration units will be removed. Therefore, the project falls within section 15304 and will not have a significant effect on the environment.

b) Agreement **IS NOT** exempt. (consult with the legal office to determine next steps)

Check all that apply

- Initial Study
- Negative Declaration
- Mitigated Negative Declaration
- Environmental Impact Report
- Statement of Overriding Considerations

H) List all subcontractors (major and minor) and equipment vendors: (attach additional sheets as necessary)

Legal Company Name:	Budget
Linda County Water District	\$ 425,430
Kennedy/Jenks Consultants, Inc.	\$ 121,502
Aqua-Aerobic Systems, Inc.	\$ 255,425
WesTech, Inc.	\$ 95,000
Process Wastewater Technologies LLC	\$ 30,000
Professor George Tchobanoglous, Ph.D., P.E.	\$ 25,000
The Regents of the University of California, Irvine Campus	\$ 320,000
Suez Inc.	\$ 34,000
Huber Technology, Inc.	\$ 89,000
Microvi Biotech, Inc.	\$ 225,000



GRANT REQUEST FORM (GRF)

Legal Company Name:	Budget
Stantec Consulting Services Inc.	\$120,000
General Contractor - Civil (TBD)	\$85,000
General Contractor - Mechanical (TBD)	\$80,000
BASE Energy, Inc.	\$69,500
General Contractor - Electrical (TBD)	\$75,000
Black & Veatch Corporation	\$30,000
HDR Engineering, Inc	\$25,000
Water Research Foundation	\$39,332
Bucknell University	\$45,000

I) List all key partners: (attach additional sheets as necessary)

Legal Company Name:

J) Budget Information

Funding Source	Funding Year of Appropriation	Budget List Number	Amount
EPIC	20-21	301.001H	\$4,000,000

R&D Program Area: EERO: IAW

TOTAL: \$ 4,000,000

Explanation for "Other" selection

Reimbursement Contract #: Federal Agreement #:

K) Recipient's Contact Information

1. Recipient's Administrator/Officer

Name: Onder Caliskaner
Address: 2733 Brookshire Cir
City, State, Zip: Woodland, CA
95776-5534
Phone: 530-219-067
E-Mail: onder@cwatertech.com

2. Recipient's Project Manager

Name: Onder Caliskaner
Address: 2733 Brookshire Cir
City, State, Zip: Woodland, CA
95776-5534
Phone: 530-219-067
E-Mail: onder@cwatertech.com

L) Selection Process Used

- Competitive Solicitation Solicitation #: GFO-20-309
- First Come First Served Solicitation Solicitation #:
- Non-Competitive Bid Follow-on Funding (SB 115)



STATE OF CALIFORNIA

GRANT REQUEST FORM (GRF)

CEC-270 (Revised 12/2019)

CALIFORNIA ENERGY COMMISSION

M) The following items should be attached to this GRF

- | | | |
|---|---|--|
| 1. Exhibit A, Scope of Work | <input checked="" type="checkbox"/> | Attached |
| 2. Exhibit B, Budget Detail | <input checked="" type="checkbox"/> | Attached |
| 3. CEC 105, Questionnaire for Identifying Conflicts | <input checked="" type="checkbox"/> | Attached |
| 4. Recipient Resolution | <input checked="" type="checkbox"/> N/A | <input type="checkbox"/> Attached |
| 5. CEQA Documentation | <input type="checkbox"/> N/A | <input checked="" type="checkbox"/> Attached |

Agreement Manager

Date

Office Manager

Date

Deputy Director

Date

Exhibit A
Scope of Work
Caliskaner Water Technologies, Inc.

1 **I. TASK ACRONYM/TERM LISTS**

2

3 **A. Task List**

Task #	CPR ¹	Task Name
1		General Project Tasks
2		Design and Installation of Full- and Demonstration-Scale Advanced Primary and Secondary Treatment Systems
3		Monitoring of Baseline (Conventional) Treatment System
4	X	Operation and Monitoring of Full-Scale Advanced Primary and Advanced Secondary Treatment Systems
5	X	Operation and Monitoring of Demonstration-Scale Advanced Primary and Advanced Secondary Treatment System
6		Performance Evaluation of Advanced Treatment Systems Compared to Conventional Treatment
7		Economic Evaluation of Advanced Treatment Systems Versus Conventional Systems
8		Project Measurement and Verification
9		Evaluation of Project Benefits
10		Technology/Knowledge Transfer Activities

4

5 **B. Acronym/Term List**

Acronym/Term	Meaning
ADF	Average Daily Flow
AGS	Aerobic Granular Sludge
APT	Advanced Primary Treatment
AST	Advanced Secondary Treatment
BNR	Biological Nutrient Removal
BOD	Biological Oxygen Demand
CAM	Commission Agreement Manager
CAO	Commission Agreement Officer
CDF	Cloth Depth Filter
CEC	California Energy Commission
CMBF	Compressible Media Biofilter
COD	Chemical Oxygen Demand
CPR	Critical Project Review
CPT	Conventional Primary Treatment
CST	Conventional Secondary Treatment
EST	Enhanced Secondary Treatment
GHG	Greenhouse Gas
Linda WWTP	Linda County Water District (Linda) Wastewater Treatment Plant (WTP)
M&V	Measurement and Verification
MABR	Membrane Aerated Bioreactor
MGD	Million Gallons per Day
Microvi	MicroNiche Engineering Biological Treatment
MS	Micro-Screen

¹ Please see subtask 1.3 in Part III of the Scope of Work (General Project Tasks) for a description of Critical Project Review (CPR) Meetings.

Exhibit A
Scope of Work
Caliskaner Water Technologies, Inc.

Acronym/Term	Meaning
M&V	Measurement and Verification
O&M	Operation and Maintenance
Recipient	Caliskaner Water Technologies, Inc.
sCOD	Soluble Chemical Oxygen Demand
SRT	Solids Retention Time
TAC	Technical Advisory Committee
TKN	Total Kjeldahl Nitrogen
TSS	Total Suspended Solids
VSS	Volatile Suspended Solids

1
2 **II. PURPOSE OF AGREEMENT, PROBLEM/SOLUTION STATEMENT, AND GOALS AND**
3 **OBJECTIVES**

4
5 **A. Purpose of Agreement**

6
7 The purpose of this Agreement is to fund the design, installation, demonstration, and evaluation
8 of advanced primary treatment (APT) and advanced secondary treatment (AST) technologies,
9 which can achieve significant electrical energy savings at wastewater treatment plants (WWTPs)
10 compared to conventional primary treatment (CPT) and conventional secondary treatment (CST)
11 systems. The project will document the first application of combining full-scale APT and AST
12 technologies in a holistic, integrated system that quantifies their complementary performance.
13 Additional benefits of combined APT and AST systems include increased treatment performance
14 and increased treatment capacity and reductions in greenhouse gas (GHG) emissions, energy
15 consumption, and treatment footprint.

16
17 **B. Problem/Solution Statement**

18
19 **Problem**

20 Conventional wastewater treatment utilizes low-efficiency CPT and high-energy-consuming
21 CST, resulting in a major energy burden. CST, via the biological nutrient removal (BNR) /
22 activated sludge process, is typically the most energy intensive portion of the wastewater
23 treatment process and accounts for 40-60 percent of the total WWTP energy use. Major users
24 of energy in secondary treatment are the aeration blowers and mixers. The aeration electricity
25 demand is proportional to the organic load in the primary clarifier effluent that enters the
26 secondary treatment process. Conventional primary clarifiers typically achieve 55–60 percent
27 removal of total suspended solids (TSS) and 32–38 percent removal of biochemical oxygen
28 demand (BOD) (Tchobanoglous et. al, 2014)². The low organic removal efficiencies of CPT
29 result in low treatment capacity in downstream CST systems. Primary clarification typically
30 requires long detention times through using large concrete basins which, in urban or space-
31 restricted areas, can be problematic for expansion. Three promising APT technologies have
32 demonstrated high removal efficiencies compared to CPT: the cloth depth filter (CDF),
33 compressible membrane biofilter (CMBF), and the Micro-Screen (MS). However, limited field
34 data is available on the full benefits that can be realized when APT effluent is used for
35 downstream secondary treatment (CST or AST). To date, a full-scale combined APT and AST
36 system has not been implemented and operated at a WWTP to quantify the energy savings

² Tchobanoglous, G., Stensel, H. D., Tsuchihashi, R., & Burton, F. L. (2014). Wastewater engineering: Treatment and resource recovery (5th ed.). New York, NY: McGraw-Hill.

Exhibit A
Scope of Work
Caliskaner Water Technologies, Inc.

1 potential of advanced wastewater treatment. There is a knowledge gap on the full benefits that
2 can be realized when APT is coupled with an effective AST for residual carbon and nitrogen
3 removal.
4

5 **Solution**

6 By improving both primary and secondary treatment stages, WWTPs could operate beyond
7 energy neutrality and into net energy production. APT is a key strategic process in bringing
8 about energy reduction and resource recovery. The most efficient method to advance and
9 increase the performance of CST and/or AST is to improve primary effluent characteristics. APT
10 technologies increase carbon diversion, which increases the production of energy (in digestion)
11 and reduces secondary treatment aeration energy requirements due to reduced organic loading
12 and enhanced particle size characteristics. By reducing the organic loading through APT, the
13 existing secondary treatment capacity will be increased (i.e., future WWTP expansion may not
14 be necessary) or the size of new secondary biological treatment units will be decreased, thus
15 saving additional electrical energy and capital costs. Emerging APT technologies show high
16 potential to replace primary clarification to provide better removal of organic load (as high as 60-
17 65 percent), thus reducing electrical energy consumption at downstream CST. Primary clarifiers
18 require considerable costs and land usage (e.g., as large as 3-4 times of APT systems); thus,
19 APT provides a significant economic incentive to implement an energy saving process step.
20

21 AST technologies rely on advanced mechanisms for the reduction of soluble carbon (e.g., using
22 gas permeable membranes for oxygen transfer or biocatalysts for process intensification).
23 Benefits of the AST technologies include aeration energy savings, capital cost savings, and
24 footprint reduction, which are similar benefits of APT.
25

26 Coupling APT and AST technologies would increase the statewide WWTP energy and capital
27 savings significantly. Key benefits of APT followed by AST include exceptional treatment
28 performance (>95 percent TSS and >95 percent BOD removal), 45-65 percent decrease in
29 aeration energy consumption, and 30 percent increase in treatment capacity.
30

31 **C. Goals and Objectives of the Agreement**

32 **Agreement Goals**

33 The goals of this Agreement are to:

- 34 • Demonstrate three APT technologies (CDF, MS, and CMBF) for raw wastewater filtration and
35 compare treatment performance against CPT (primary clarification)
- 36 • Demonstrate three AST technologies (Membrane Aerated Bioreactor (MABR), MicroNiche
37 Engineering Biological Treatment (Microvi), Aerobic Granular Sludge (AGS)) and compare
38 treatment performance against CST (BNR / activated sludge process)
- 39 • Demonstrate combined APT and AST system and compare against CPT and CST to evaluate
40 the benefits of advanced wastewater treatment. Evaluate each system for the following
41 criteria: treatment performance, hydraulic performance, treatment capacity, energy
42 consumption, and operation and maintenance (O&M) costs.
- 43 • Conduct independent measurement and verification study to prove the APT and AST
44 technologies are technically viable and commercially attractive approaches for achieving
45 significant electrical energy savings at WWTPs.
46
47

Exhibit A
Scope of Work
Caliskaner Water Technologies, Inc.

1 Ratepayer Benefits:³ This Agreement will result in the ratepayer benefits of greater electrical cost
2 savings, electrical reliability, GHG reductions, and capital cost savings from increased treatment
3 capacity and reduced footprint requirements. Assuming a market penetration of 25% of APT and
4 AST systems over a horizon of 10 years, and a conservative efficiency improvement of 25%, a
5 total 1.25 TWh could be saved over 10 years (125 GWh/y). The electricity savings from the
6 implementation of APT and AST can reduce the peak electric loads for WWTPs. Locally, this
7 results in reduced congestion on utility distribution circuits and subsequent demand charges
8 incurred by these facilities as large industrial customers. Grid-wide, this reduces reliance on more
9 expensive, less efficient peaking power plants to balance the electric load, reducing the marginal
10 cost of electricity. Reductions in electric load and increases in facility energy self-sufficiency
11 increase the resilience of these facilities against disruptions from broader electric grid outages.
12

13 Technological Advancement and Breakthroughs: This Agreement will lead to technological
14 advancement and breakthroughs to overcome barriers to the achievement of the State of
15 California's statutory energy goals by improving primary treatment and secondary treatment at
16 WWTPs. Raw wastewater contains significant chemical energy [~1.8 kWh/lb chemical oxygen
17 demand (COD)], which can be recovered at WWTP to achieve energy self-sufficiency.
18 Conventional wastewater treatment utilizes low-efficiency CPT and high-energy-consuming CST,
19 resulting in a major energy burden. By improving both treatment stages, WWTPs could operate
20 beyond energy neutrality and into net energy production. APT is a key strategic process in bringing
21 about energy reduction and resource recovery; furthermore, additional benefits can be realized
22 when APT is coupled with an effective AST for residual carbon and nitrogen removal.
23

24 **Agreement Objectives**

25 The objectives of this Agreement are to:

- 26 • Evaluate and quantify treatment removal performances for APT, AST, and combined APT
27 and AST by monitoring influent and effluent water quality data (continuous in-line analyzers
28 and laboratory samples). Compare results against baseline (conventional) treatment
29 performance.
- 30 • Evaluate and quantify hydraulic performances for APT, AST, and combined APT and AST
31 by monitoring flow rates and treatment capacity.
- 32 • Evaluate the impact of increased carbon diversion from APT on digester gas production.
- 33 • Evaluate the impact of APT effluent on CST performance (increase in treatment capacity
34 and decrease in aeration requirements).
- 35 • Evaluate the impact of APT effluent on AST performance.
- 36 • Conduct a Measurement and Verification (M&V) study to compare conventional WWTP
37 energy consumption (from pumping, mixing and aerating) to APT and AST energy
38 consumption and quantify the energy savings achieved by replacing CPT (primary clarifier)
39 with APT and CST with AST. Goal of goal of 45-65 percent decrease compared to
40 conventional process.
- 41 • Conduct an economic evaluation using well established and state of the art cost estimating
42 methods with data obtained from operation and performance evaluation of the systems.
43 Operators logs, invoices for consumables and replacement parts, field programmable logic

³ California Public Resources Code, Section 25711.5(a) requires projects funded by the Electric Program Investment Charge (EPIC) to result in ratepayer benefits. The California Public Utilities Commission, which established the EPIC in 2011, defines ratepayer benefits as greater reliability, lower costs, and increased safety (See CPUC "Phase 2" Decision 12-05-037 at page 19, May 24, 2012, http://docs.cpuc.ca.gov/PublishedDocs/WORD_PDF/FINAL_DECISION/167664.PDF).

Exhibit A
Scope of Work
Caliskaner Water Technologies, Inc.

1 controller (PLC) data on each system, and performance evaluation data all will be utilized
2 to conduct a life cycle cost and savings analysis and estimate construction/capital and
3 operational costs of the advanced treatment technologies and savings and benefits.

- 4 • Conduct technology transfer activities which include workshops, utility engagement
5 program, additional WWTP engagement and deployment, webinars, end user and
6 conference presentations, and publications.

7
8 **III. GENERAL PROJECT TASKS**

9
10 **TASK 1 - General Project Tasks**

11
12 **PRODUCTS**

13 **Subtask 1.1 Products**

14 The goal of this subtask is to establish the requirements for submitting project products (e.g.,
15 reports, summaries, plans, and presentation materials). Unless otherwise specified by the
16 Commission Agreement Manager (CAM), the Recipient must deliver products as required below
17 by the dates listed in the **Project Schedule (Part V)**. All products submitted which will be viewed
18 by the public, must comply with the accessibility requirements of Section 508 of the federal
19 Rehabilitation Act of 1973, as amended (29 U.S.C. Sec. 794d), and regulations implementing that
20 act as set forth in Part 1194 of Title 36 of the Federal Code of Regulations. All technical tasks
21 should include product(s). Products that require a draft version are indicated by marking “**(draft**
22 **and final)**” after the product name in the “Products” section of the task/subtask. If “(draft and
23 final)” does not appear after the product name, only a final version of the product is required. With
24 respect to due dates within this Scope of Work, “**days**” means working days.

25
26 **The Recipient shall:**

27 For products that require a draft version, including the Final Report Outline and Final Report

- 28 • Submit all draft products to the CAM for review and comment in accordance with the Project
29 Schedule (Part V). The CAM will provide written comments to the Recipient on the draft
30 product within 15 days of receipt, unless otherwise specified in the task/subtask for which
31 the product is required. Consider incorporating all CAM comments into the final product. If
32 the Recipient disagrees with any comment, provide a written response explaining why the
33 comment was not incorporated into the final product. Submit the revised product and
34 responses to comments within 10 days of notice by the CAM, unless the CAM specifies a
35 longer time period, or approves a request for additional time.

36
37 For products that require a final version only

- 38 • Submit the product to the CAM for acceptance. The CAM may request minor revisions or
39 explanations prior to acceptance.

40
41 For all products

- 42 • Submit all data and documents required as products in accordance with the following:

43 Instructions for Submitting Electronic Files and Developing Software:

44
45 **Electronic File Format**

- 46 • Submit all data and documents required as products under this Agreement in an electronic
47 file format that is fully editable and compatible with the California Energy Commission’s
48 (CEC) software and Microsoft (MS)-operating computing platforms, or with any other format

Exhibit A
Scope of Work
Caliskaner Water Technologies, Inc.

1 approved by the CAM. Deliver an electronic copy of the full text of any Agreement data and
2 documents in a format specified by the CAM, such as memory stick.

- 3 • The following describes the accepted formats for electronic data and documents provided
4 to the CEC as products under this Agreement, and establishes the software versions that
5 will be required to review and approve all software products: 1) Data sets will be in MS
6 Access or MS Excel file format (version 2007 or later), or any other format approved by the
7 CAM. 2) Text documents will be in MS Word file format, version 2007 or later. 3) Project
8 management documents will be in Microsoft Project file format, version 2007 or later.

9
10 **Software Application Development**

11 Use the following standard Application Architecture components in compatible versions for any
12 software application development required by this Agreement (e.g., databases, models,
13 modeling tools), unless the CAM approves other software applications such as open source
14 programs:

- 15 ▪ Microsoft ASP.NET framework (version 3.5 and up). Recommend 4.0.
- 16 ▪ Microsoft Internet Information Services (IIS), (version 6 and up)
17 Recommend 7.5.
- 18 ▪ Visual Studio.NET (version 2008 and up). Recommend 2010.
- 19 ▪ C# Programming Language with Presentation (UI), Business Object and
20 Data Layers.
- 21 ▪ SQL (Structured Query Language).
- 22 ▪ Microsoft SQL Server 2008, Stored Procedures. Recommend 2008
23 R2.
- 24 ▪ Microsoft SQL Reporting Services. Recommend 2008 R2.
- 25 ▪ XML (external interfaces).

26
27 Any exceptions to the Electronic File Format requirements above must be approved in writing by
28 the CAM. The CAM will consult with the CEC's Information Technology Services Branch to
29 determine whether the exceptions are allowable.

30
31 **MEETINGS**

32 **Subtask 1.2 Kick-off Meeting**

33 The goal of this subtask is to establish the lines of communication and procedures for
34 implementing this Agreement.

35
36 **The Recipient shall:**

- 37 • Attend a "Kick-off" meeting with the CAM, the Commission Agreement Officer (CAO), and
38 any other CEC staff relevant to the Agreement. The Recipient will bring its Project Manager
39 and any other individuals designated by the CAM to this meeting. The administrative and
40 technical aspects of the Agreement will be discussed at the meeting. Prior to the meeting,
41 the CAM will provide an agenda to all potential meeting participants. The meeting may take
42 place in person or by electronic conferencing (e.g., WebEx), with approval of the CAM.

43
44 The administrative portion of the meeting will include discussion of the following:

- 45 ○ Terms and conditions of the Agreement; Invoicing and auditing procedures;
46 *Administrative products (subtask 1.1); CPR meetings (subtask 1.3); Match fund*
47 *documentation (subtask 1.7); Permit documentation (subtask 1.8); Subcontracts*
48 *(subtask 1.9); and any other relevant topics.*

Exhibit A
Scope of Work
Caliskaner Water Technologies, Inc.

1 The technical portion of the meeting will include discussion of the following:

- 2 ○ The CAM's expectations for accomplishing tasks described in the Scope of Work;
- 3 An updated Project Schedule; Technical products (subtask 1.1); Progress reports
- 4 (subtask 1.5); Final Report (subtask 1.6); Technical Advisory Committee meetings
- 5 (subtasks 1.10 and 1.11); and Any other relevant topics.
- 6 ● Provide *Kick-off Meeting Presentation* to include but not limited to:
 - 7 ○ Project overview (i.e. project description, goals and objectives, technical tasks,
 - 8 expected benefits, etc.)
 - 9 ○ Project schedule that identifies milestones
 - 10 ○ List of potential risk factors and hurdles, and mitigation strategy
- 11 ● Provide an *Updated Project Schedule, Match Funds Status Letter, and Permit Status*
- 12 *Letter*, as needed to reflect any changes in the documents.

13 **The CAM shall:**

- 14 ● Designate the date and location of the meeting.
- 15 ● Send the Recipient a *Kick-off Meeting Agenda*.

16
17 **Recipient Products:**

- 18 ● Kick-off Meeting Presentation
- 19 ● Updated Project Schedule (*if applicable*)
- 20 ● Match Funds Status Letter (subtask 1.7) (*if applicable*)
- 21 ● Permit Status Letter (subtask 1.8) (*if applicable*)

22
23 **CAM Product:**

- 24 ● Kick-off Meeting Agenda

25
26 **Subtask 1.3 Critical Project Review (CPR) Meetings**

27 The goal of this subtask is to determine if the project should continue to receive CEC funding, and
28 if so whether any modifications must be made to the tasks, products, schedule, or budget. CPR
29 meetings provide the opportunity for frank discussions between the CEC and the Recipient. As
30 determined by the CAM, discussions may include project status, challenges, successes, advisory
31 group findings and recommendations, final report preparation, and progress on technical transfer
32 and production readiness activities (if applicable). Participants will include the CAM and the
33 Recipient and may include the CAO and any other individuals selected by the CAM to provide
34 support to the CEC.

35
36 CPR meetings generally take place at key, predetermined points in the Agreement, as determined
37 by the CAM and as shown in the Task List on page 1 of this Exhibit. However, the CAM may
38 schedule additional CPR meetings as necessary. The budget will be reallocated to cover the
39 additional costs borne by the Recipient, but the overall Agreement amount will not increase. CPR
40 meetings generally take place at the CEC, but they may take place at another location, or may be
41 conducted via electronic conferencing (e.g., WebEx) as determined by the CAM.

42
43 **The Recipient shall:**

- 44 ● Prepare and submit a *CPR Report* for each CPR meeting that: (1) discusses the progress
- 45 of the Agreement toward achieving its goals and objectives; and (2) includes
- 46 recommendations and conclusions regarding continued work on the project.
- 47 ● Attend the CPR meeting.
- 48 ● Present the CPR Report and any other required information at each CPR meeting.

Exhibit A
Scope of Work
Caliskaner Water Technologies, Inc.

1
2 **The CAM shall:**

- 3 • Determine the location, date, and time of each CPR meeting with the Recipient’s input.
4 • Send the Recipient a *CPR Agenda* with a list of expected CPR participants in advance of
5 the CPR meeting. If applicable, the agenda will include a discussion of match funding and
6 permits.
7 • Conduct and make a record of each CPR meeting. Provide the Recipient with a schedule
8 for providing a Progress Determination on continuation of the project.
9 • Determine whether to continue the project, and if so whether modifications are needed to
10 the tasks, schedule, products, or budget for the remainder of the Agreement. If the CAM
11 concludes that satisfactory progress is not being made, this conclusion will be referred to
12 the Deputy Director of the Energy Research and Development Division.
13 • Provide the Recipient with a *Progress Determination* on continuation of the project, in
14 accordance with the schedule. The Progress Determination may include a requirement that
15 the Recipient revise one or more products.
16

17 **Recipient Products:**

- 18 • CPR Report(s)
19

20 **CAM Products:**

- 21 • CPR Agenda
22 • Progress Determination
23

24 **Subtask 1.4 Final Meeting**

25 The goal of this subtask is to complete the closeout of this Agreement.
26

27 **The Recipient shall:**

- 28 • Meet with CEC staff to present project findings, conclusions, and recommendations. The
29 final meeting must be completed during the closeout of this Agreement. This meeting will
30 be attended by the Recipient and CAM, at a minimum. The meeting may occur in person
31 or by electronic conferencing (e.g., WebEx), with approval of the CAM.
32 ○ The technical portion of the meeting will involve the presentation of findings,
33 conclusions, and recommended next steps (if any) for the Agreement. The CAM will
34 determine the appropriate meeting participants.
35 ○ The administrative portion of the meeting will involve a discussion with the CAM and
36 the CAO of the following Agreement closeout items:
37 ▪ Disposition of any procured equipment.
38 ▪ The CEC’s request for specific “generated” data (not already provided in
39 Agreement products).
40 ▪ Need to document the Recipient’s disclosure of “subject inventions” developed
41 under the Agreement.
42 ▪ “Surviving” Agreement provisions such as repayment provisions and
43 confidential products.
44 ▪ Final invoicing and release of retention.
45 • Prepare a *Final Meeting Agreement Summary* that documents any agreement made
46 between the Recipient and Commission staff during the meeting.
47 • Prepare a *Schedule for Completing Agreement Closeout Activities*.
48 • Provide copies of *All Final Products* on a USB memory stick, organized by the tasks in

Exhibit A
Scope of Work
Caliskaner Water Technologies, Inc.

1 the Agreement.

2
3 **Products:**

- 4 • Final Meeting Agreement Summary (*if applicable*)
5 • Schedule for Completing Agreement Closeout Activities
6 • All Final Products
7

8 **REPORTS AND INVOICES**

9 **Subtask 1.5 Progress Reports and Invoices**

10 The goals of this subtask are to: (1) periodically verify that satisfactory and continued progress is
11 made towards achieving the project objectives of this Agreement; and (2) ensure that invoices
12 contain all required information and are submitted in the appropriate format.
13

14
15 **The Recipient shall:**

- 16 • Submit a monthly *Progress Report* to the CAM. Each progress report must: Summarize
17 progress made on all Agreement activities as specified in the scope of work for the preceding
18 month, including accomplishments, problems, milestones, products, schedule, fiscal status,
19 and an assessment of the ability to complete the Agreement within the current budget and
20 any anticipated cost overruns. See the Progress Report Format Attachment for the
21 recommended specifications.
22 • Submit a monthly or quarterly *Invoice* that follows the instructions in the “Payment of Funds”
23 section of the terms and conditions, including a financial report on Match Funds and in-state
24 expenditures.
25

26 **Products:**

- 27 • Progress Reports
28 • Invoices
29

30 **Subtask 1.6 Final Report**

31 The goal of this subtask is to prepare a comprehensive Final Report that describes the original
32 purpose, approach, results, and conclusions of the work performed under this Agreement. When
33 creating the Final Report Outline and the Final Report, the Recipient must use the CEC Style
34 Manual provided by the CAM.
35

36 **Subtask 1.6.1 Final Report Outline**

37
38 **The Recipient shall:**

- 39 • Prepare a *Final Report Outline* in accordance with the *Energy Commission Style Manual*
40 provided by the CAM.
41

42 **Recipient Products:**

- 43 • Final Report Outline (draft and final)
44

45 **CAM Product:**

- 46 • Energy Commission Style Manual
47 • Comments on Draft Final Report Outline
48 • Acceptance of Final Report Outline

Exhibit A
Scope of Work
Caliskaner Water Technologies, Inc.

1
2 **Subtask 1.6.2 Final Report**
3

4 **The Recipient shall:**

- 5 • Prepare a *Final Report* for this Agreement in accordance with the approved Final Report
6 Outline, Energy Commission Style Manual, and Final Report Template provided by the
7 CAM with the following considerations:
8 ○ Ensure that the report includes the following items, in the following order:
9 ▪ Cover page (**required**)
10 ▪ Credits page on the reverse side of cover with legal disclaimer (**required**)
11 ▪ Acknowledgements page (optional)
12 ▪ Preface (**required**)
13 ▪ Abstract, keywords, and citation page (**required**)
14 ▪ Table of Contents (**required**, followed by List of Figures and List of Tables,
15 if needed)
16 ▪ Executive summary (**required**)
17 ▪ Body of the report (**required**)
18 ▪ References (if applicable)
19 ▪ Glossary/Acronyms (If more than 10 acronyms or abbreviations are used,
20 it is required.)
21 ▪ Bibliography (if applicable)
22 ▪ Appendices (if applicable) (Create a separate volume if very large.)
23 ▪ Attachments (if applicable).
24 • Submit a draft of the Executive Summary to the TAC for review and comment.
25 • Develop and submit a Summary of TAC Comments received on the Executive Summary.
26 For each comment received, the recipient will identify in the summary the following:
27 ○ Comments the recipient proposes to incorporate.
28 ○ Comments the recipient does propose to incorporate and an explanation for why.
29 • Submit a draft of the report to the CAM for review and comment. The CAM will provide
30 written comments to the Recipient on the draft product within 15 days of receipt.
31 • Incorporate all CAM comments into the Final Report. If the Recipient disagrees with any
32 comment, provide a Written Responses to Comments explaining why the comments were
33 not incorporated into the final product.
34 • Submit the revised Final Report electronically with any Written Responses to Comments
35 within 10 days of receipt of CAM's Written Comments on the Draft Final Report, unless the
36 CAM specifies a longer time period or approves a request for additional time.

37
38 **Products:**

- 39 • Summary of TAC Comments
40 • Draft Final Report
41 • Written Responses to Comments (if applicable)
42 • Final Report
43

44 **CAM Product:**

- 45 • Written Comments on the Draft Final Report
46

47 **MATCH FUNDS, PERMITS, AND SUBCONTRACTS**

48 **Subtask 1.7 Match Funds**

Exhibit A
Scope of Work
Caliskaner Water Technologies, Inc.

1 The goal of this subtask is to ensure that the Recipient obtains any match funds planned for this
2 Agreement and applies them to the Agreement during the Agreement term. While the costs to
3 obtain and document match funds are not reimbursable under this Agreement, the Recipient may
4 spend match funds for this task. The Recipient may only spend match funds during the Agreement
5 term, either concurrently or prior to the use of CEC funds. Match funds must be identified in
6 writing, and the Recipient must obtain any associated commitments before incurring any costs for
7 which the Recipient will request reimbursement.

8
9 **The Recipient shall:**

- 10 • Prepare a *Match Funds Status Letter* that documents the match funds committed to this
11 Agreement. If no match funds were part of the proposal that led to the CEC awarding this
12 Agreement and none have been identified at the time this Agreement starts, then state this
13 in the letter.

14
15 If match funds were a part of the proposal that led to the CEC awarding this Agreement,
16 then provide in the letter:

- 17 ○ A list of the match funds that identifies:
- 18 ■ The amount of cash match funds, their source(s) (including a contact name,
19 address, and telephone number), and the task(s) to which the match funds will
20 be applied.
 - 21 ■ The amount of each in-kind contribution, a description of the contribution type
22 (e.g., property, services), the documented market or book value, the source
23 (including a contact name, address, and telephone number), and the task(s) to
24 which the match funds will be applied. If the in-kind contribution is equipment
25 or other tangible or real property, the Recipient must identify its owner and
26 provide a contact name, address, telephone number, and the address where
27 the property is located.
 - 28 ■ If different from the solicitation application, provide a letter of commitment from
29 an authorized representative of each source of match funding that the funds or
30 contributions have been secured.
- 31 • At the Kick-off meeting, discuss match funds and the impact on the project if they are
32 significantly reduced or not obtained as committed. If applicable, match funds will be
33 included as a line item in the progress reports and will be a topic at CPR meetings.
 - 34 • Provide a *Supplemental Match Funds Notification Letter* to the CAM of receipt of additional
35 match funds.
 - 36 • Provide a *Match Funds Reduction Notification Letter* to the CAM if existing match funds
37 are reduced during the course of the Agreement. Reduction of match funds may trigger a
38 CPR meeting.

39
40 **Products:**

- 41 • Match Funds Status Letter
- 42 • Supplemental Match Funds Notification Letter (*if applicable*)
- 43 • Match Funds Reduction Notification Letter (*if applicable*)

44
45 **Subtask 1.8 Permits**

46 The goal of this subtask is to obtain all permits required for work completed under this Agreement
47 in advance of the date they are needed to keep the Agreement schedule on track. Permit costs
48 and the expenses associated with obtaining permits are not reimbursable under this Agreement,
49 with the exception of costs incurred by University of California recipients. Permits must be

Exhibit A
Scope of Work
Caliskaner Water Technologies, Inc.

1 identified and obtained before the Recipient may incur any costs related to the use of the permit(s)
2 for which the Recipient will request reimbursement.

3
4 **The Recipient shall:**

- 5 • Prepare a *Permit Status Letter* that documents the permits required to conduct this
6 Agreement. If no permits are required at the start of this Agreement, then state this in the
7 letter. If permits will be required during the course of the Agreement, provide in the letter:
 - 8 ○ A list of the permits that identifies: (1) the type of permit; and (2) the name, address,
9 and telephone number of the permitting jurisdictions or lead agencies.
 - 10 ○ The schedule the Recipient will follow in applying for and obtaining the permits.
11 The list of permits and the schedule for obtaining them will be discussed at the Kick-off
12 meeting (subtask 1.2), and a timetable for submitting the updated list, schedule, and copies
13 of the permits will be developed. The impact on the project if the permits are not obtained
14 in a timely fashion or are denied will also be discussed. If applicable, permits will be
15 included as a line item in progress reports and will be a topic at CPR meetings.
- 16 • If during the course of the Agreement additional permits become necessary, then provide
17 the CAM with an *Updated List of Permits* (including the appropriate information on each
18 permit) and an *Updated Schedule for Acquiring Permits*.
- 19 • Send the CAM a *Copy of Each Approved Permit*.
- 20 • If during the course of the Agreement permits are not obtained on time or are denied, notify
21 the CAM within 5 days. Either of these events may trigger a CPR meeting.

22
23 **Products:**

- 24 • Permit Status Letter
- 25 • Updated List of Permits (*if applicable*)
- 26 • Updated Schedule for Acquiring Permits (*if applicable*)
- 27 • Copy of Each Approved Permit (*if applicable*)

28 **Subtask 1.9 Subcontracts**

29 The goals of this subtask are to: (1) procure subcontracts required to carry out the tasks under
30 this Agreement; and (2) ensure that the subcontracts are consistent with the terms and conditions
31 of this Agreement.

32
33 **The Recipient shall:**

- 34 • Manage and coordinate subcontractor activities in accordance with the requirements of this
35 Agreement.
- 36 • Incorporate this Agreement by reference into each subcontract.
- 37 • Include any required Energy Commission flow-down provisions in each subcontract, in
38 addition to a statement that the terms of this Agreement will prevail if they conflict with the
39 subcontract terms.
- 40 • If required by the CAM, submit a draft of each *Subcontract* required to conduct the work
41 under this Agreement.
- 42 • Submit a final copy of each executed subcontract.
- 43 • Notify and receive written approval from the CAM prior to adding any new subcontractors
44 (see the discussion of subcontractor additions in the terms and conditions).

45
46 **Products:**

- 47 • Subcontracts (*draft if required by the CAM*)

Exhibit A
Scope of Work
Caliskaner Water Technologies, Inc.

TECHNICAL ADVISORY COMMITTEE

Subtask 1.10 Technical Advisory Committee (TAC)

The goal of this subtask is to create an advisory committee for this Agreement. The TAC should be composed of diverse professionals. The composition will vary depending on interest, availability, and need. TAC members will serve at the CAM's discretion. The purpose of the TAC is to:

- Provide guidance in project direction. The guidance may include scope and methodologies, timing, and coordination with other projects. The guidance may be based on:
 - Technical area expertise;
 - Knowledge of market applications; or
 - Linkages between the agreement work and other past, present, or future projects (both public and private sectors) that TAC members are aware of in a particular area.
-
- Review products and provide recommendations for needed product adjustments, refinements, or enhancements.
- Evaluate the tangible benefits of the project to the state of California, and provide recommendations as needed to enhance the benefits.
- Provide recommendations regarding information dissemination, market pathways, or commercialization strategies relevant to the project products.
- Help set the project team's goals and contribute to the development and evaluation of its statement of proposed objectives as the project evolves.
- Provide a credible and objective sounding board on the wide range of technical and financial barriers and opportunities.
- Help identify key areas where the project has a competitive advantage, value proposition, or strength upon which to build.
- Advocate, to the extent the TAC members feel is appropriate, on behalf of the project in its effort to build partnerships, governmental support and relationships with a national spectrum of influential leaders.
- Ask probing questions that insure a long-term perspective on decision-making and progress toward the project's strategic goals.

The TAC may be composed of qualified professionals spanning the following types of disciplines:

- Researchers knowledgeable about the project subject matter;
- Members of trades that will apply the results of the project (e.g., designers, engineers, architects, contractors, and trade representatives);
- Public interest market transformation implementers;
- Product developers relevant to the project;
- U.S. Department of Energy research managers, or experts from other federal or state agencies relevant to the project;
- Public interest environmental groups;
- Utility representatives;
- Air district staff; and
- Members of relevant technical society committees.

The Recipient shall:

- Prepare a *List of Potential TAC Members* that includes the names, companies, physical and electronic addresses, and phone numbers of potential members. The list will be

Exhibit A
Scope of Work
Caliskaner Water Technologies, Inc.

1 discussed at the Kick-off meeting, and a schedule for recruiting members and holding the
2 first TAC meeting will be developed.

- 3 • Recruit TAC members. Ensure that each individual understands member obligations and
4 the TAC meeting schedule developed in subtask 1.11.
- 5 • Prepare a *List of TAC Members* once all TAC members have committed to serving on the
6 TAC.
- 7 • Submit *Documentation of TAC Member Commitment* (such as Letters of Acceptance) from
8 each TAC member.

9
10 **Products:**

- 11 • List of Potential TAC Members
- 12 • List of TAC Members
- 13 • Documentation of TAC Member Commitment

14
15 **Subtask 1.11 TAC Meetings**

16 The goal of this subtask is for the TAC to provide strategic guidance for the project by participating
17 in regular meetings, which may be held via teleconference.

18
19 **The Recipient shall:**

- 20 • Discuss the TAC meeting schedule with the CAM at the Kick-off meeting. Determine the
21 number and location of meetings (in-person and via teleconference) in consultation with
22 the CAM.
- 23 • Prepare a *TAC Meeting Schedule* that will be presented to the TAC members during
24 recruiting. Revise the schedule after the first TAC meeting to incorporate meeting
25 comments.
- 26 • Prepare a *TAC Meeting Agenda* and *TAC Meeting Back-up Materials* for each TAC
27 meeting.
- 28 • Organize and lead TAC meetings in accordance with the TAC Meeting Schedule.
29 Changes to the schedule must be pre-approved in writing by the CAM.
- 30 • Prepare *TAC Meeting Summaries* that include any recommended resolutions of major
31 TAC issues.

32
33 **The TAC shall:**

- 34 • Help set the project team's goals and contribute to the development and evaluation of its
35 statement of proposed objectives as the project evolves.
- 36 • Provide a credible and objective sounding board on the wide range of technical and
37 financial barriers and opportunities.
- 38 • Help identify key areas where the project has a competitive advantage, value proposition,
39 or strength upon which to build.
- 40 • Advocate on behalf of the project in its effort to build partnerships, governmental support
41 and relationships with a national spectrum of influential leaders.
- 42 • Ask probing questions that insure a long-term perspective on decision-making and
43 progress toward the project's strategic goals.
- 44 • Review and provide comments to proposed project performance metrics.
- 45 • Review and provide comments to proposed project Draft Technology Transfer Plan.

46
47 **Products:**

- 48 • TAC Meeting Schedule (draft and final)

Exhibit A
Scope of Work
Caliskaner Water Technologies, Inc.

- 1 • TAC Meeting Agendas (draft and final)
- 2 • TAC Meeting Back-up Materials
- 3 • TAC Meeting Summaries

4
5 **Subtask 1.12 Project Performance Metrics**

6 The goal of this subtask is to identify key performance targets for the project. The performance
7 targets should be a combination of scientific, engineering, techno-economic, and/or programmatic
8 metrics that provide the most significant indicator of the research or technology's potential
9 success.

10
11 **The Recipient shall:**

- 12 • Complete and submit the draft *Project Performance Metrics Questionnaire* to the CAM
13 prior to the Kick-off Meeting.
- 14 • Present the draft *Project Performance Metrics Questionnaire* at the first TAC meeting to
15 solicit input and comments from the TAC members.
- 16 • Develop and submit a *TAC Performance Metrics Summary* that summarizes comments
17 received from the TAC members on the proposed project performance metrics. The *TAC*
18 *Performance Metrics Summary* will identify:
 - 19 ○ TAC comments the recipient proposes to incorporate into the final *Project*
20 *Performance Metrics Questionnaire*.
 - 21 ○ TAC comments the recipient does not propose to incorporate with and explanation
22 why.
- 23 • Submit a final *Project Performance Metrics Questionnaire* with incorporated TAC
24 feedback.
- 25 • Develop and submit a *Project Performance Metrics Results* document describing the
26 extent to which the recipient met each of the performance metrics in the final *Project*
27 *Performance Metrics Questionnaire*.
- 28 • Discuss the final *Project Performance Metrics Questionnaire* and *Project Performance*
29 *Metrics Results* at the Final Meeting.

30
31 **Products:**

- 32 • Project Performance Metrics Questionnaire (draft and final)
- 33 • TAC Performance Metrics Summary
- 34 • Project Performance Metrics Results

35
36
37 **IV. TECHNICAL TASKS**

38
39 **TASK 2 - Design and Installation of Full- and Demonstration-Scale Advanced Primary and**
40 **Secondary Treatment Systems**

41 The goal of this task is to maximize the utilization of existing CEC funded equipment and
42 infrastructure at Linda WWTP and design and install additional full- and demonstration-scale
43 APT and AST technologies.

44
45 **The Recipient shall:**

- 46 • Reach an agreement with the authorized representative(s) of the selected deployment site
47 regarding the project timeline, space reserved for the project, equipment installation, permit

Exhibit A
Scope of Work
Caliskaner Water Technologies, Inc.

1 and insurance, indemnity, and the Recipient's use of support staff and installation and
2 removal of equipment.

- 3 • Work with the CAM to select new deployments site(s) if the selected deployment site
4 becomes unavailable during the project term or to add additional deployment sites,
- 5 • Execute a *Contract with Deployment Site* that confirms the agreement reached above and
6 provide a copy to the CAM.
- 7 • Design and install provisions to the existing equipment (i.e., existing full-scale CDF-APT
8 system and full-scale APT sludge handling system) to support the operation of full and
9 demonstration-scale technologies.
- 10 • Design and install one additional full-scale APT system (MS) at an ADF capacity of 1 MGD
11 and one full-scale AST system (MABR) at an ADF capacity of 0.5 MGD.
- 12 • Design and install one additional demonstration-scale APT system using CMBF at an ADF
13 capacity of 0.2 MGD and two additional demonstration-scale AST systems (AGS and
14 Microvi) at ADF capacities that range from 0.015 to 0.035 MGD.
- 15 • Prepare and submit *Demonstration Plans, Schedule, and Specifications Report for CDF,*
16 *MS, CMBF, MABR, AGS, and Microvi Systems*, which shall include but not be limited to:
 - 17 ○ Site-specific piping, mechanical, structural, and electrical requirements
 - 18 ○ Identifying all required site-specific modifications necessary for demonstration of
19 the APT systems (CDF, MS, and CMBF) and AST systems (MABR, AGS, and
20 Microvi) and all associated support hardware(s) and software(s)
 - 21 ○ Flow splits between conventional primary treatment system and APT system.
 - 22 ○ Flow splits between CST system, AST, and enhanced secondary treatment (EST)
23 system (CST supplied with APT effluent).
- 24 • Prepare and provide *Letter of Acceptance* signed by the authorized representative of the
25 selected deployment site that includes but is not limited to: 1) written documentation that
26 installation of the demonstration systems are complete; and 2) verification that
27 demonstration systems are ready for start-up, operation, monitoring, and verification.
28

29 **Products**

- 30 • Copy of Contract with Deployment Site
- 31 • Demonstration Plans, Schedule, and Specifications Report for CDF, MS, CMBF, MABR,
32 AGS, and Microvi Systems
- 33 • Letter of Acceptance
34

35 **TASK 3 - Monitoring of Baseline (Conventional) Treatment System**

36 The goals of this task are to 1) operate the APT systems with raw wastewater influent, 2)
37 operate the AST systems with conventional primary treatment effluent, and 3) operate the
38 conventional primary and secondary treatment systems in parallel with the combined APT and
39 AST system. The conventional treatment system (primary clarifier followed by conventional
40 activated sludge) establishes baseline performance for the full- and demonstration-scale
41 systems, which is used to compare with and quantify the improved treatment and hydraulic
42 performance of APT and AST.
43

44 **The Recipient shall:**

- 45 • Evaluate APT performance by operating the CDF, MS, and CMBF at ADF rates of 1.5, 1,
46 and 0.2 MGD, respectively, of screened raw wastewater and comparing APT effluent to
47 primary clarifier effluent. The primary clarifier will be operated in parallel with the APT
48 systems. The purpose of this task is to demonstrate improved treatment removal efficiency,
49 energy efficiency, and hydraulic performance (including treatment footprint reduction) that

Exhibit A
Scope of Work
Caliskaner Water Technologies, Inc.

1 APT technologies can achieve compared to conventional primary treatment.

- 2 • Establish baseline AST performance by operating the MABR, Microvi, and AGS systems
3 at ADF rates of 0.5, 0.035, and 0.015 MGD, respectively, with primary clarifier effluent for
4 three months prior to operating with APT effluent. The purpose is to demonstrate the
5 benefits of operating AST systems with APT effluent compared to operating downstream
6 of conventional primary treatment. The AGS demonstration system's unique two-column
7 configuration allows baseline treatment with primary clarifier effluent to occur
8 simultaneously with APT effluent. For the MABR and Microvi systems, baseline testing with
9 primary clarifier effluent will occur prior to operating with APT effluent.
- 10 • Establish baseline combined APT and AST performance by operating the combined APT
11 and AST system in parallel with the conventional treatment system (primary clarifier
12 followed by conventional activated sludge). The purpose of this task is to demonstrate and
13 quantify that a combined APT and AST system improves treatment and hydraulic
14 performance, decreases energy consumption, and increases treatment capacity.
- 15 • Prepare and provide a *Conventional System Test Plans* for each baseline testing
16 configuration.
- 17 • Implement the above *Conventional System Test Plans* for a minimum of 3 month and also
18 include the following:
 - 19 ○ Conduct inline continuous field measurements related to wastewater treatment
20 performance.
 - 21 ○ Conduct sampling for offsite laboratory analyses. Wastewater quality tests will be
22 conducted to (1) evaluate treatment performance for specific constituents, (2)
23 correlate and confirm electricity savings with the industry operating parameters
24 such as biochemical and chemical oxygen demand, and (3) ensure that the overall
25 wastewater treatment processes are not negatively impacted by APT
26 demonstrations and necessary measurements/actions are taken on time if
27 necessary.
- 28 • Write and submit *Baseline System Test Results* of 3 months of steady-state operations
29 results per the *Conventional System Test Plan* for each baseline testing configurations.

30
31 **Products**

- 32 • Conventional System Test Plans
- 33 • Baseline System Test Results

34
35 **TASK 4 - Operation and Monitoring of Full-Scale Advanced Primary and Advanced**
36 **Secondary Treatment Systems**

37 The goals of this task are to start-up and operate the full-scale APT and AST systems by
38 conveying: (1) raw wastewater flow (after screens) to the two full-scale APT systems, (2) APT
39 effluent to the EST Basin, (3) APT effluent to the full-scale AST, and (4) APT backwash reject
40 water to the thickener and then to the anaerobic digester. Three full-scale advanced technologies
41 will be evaluated throughout the study: two APT technologies (CDF and MS) and one AST
42 technology (MABR). In the full-scale configuration, a demonstration-scale APT technology
43 (CMBF) will also be operated in parallel with the full-scale APT technologies. The purpose of the
44 full-scale systems is to directly quantify treatment and hydraulic performance for each technology
45 and to quantify the decrease in secondary treatment aeration energy demand and treatment
46 capacity increase.

47
48 **The Recipient shall:**

- 49 • Operate two full-scale APT systems (CDF and MS) in parallel at a minimum flow rate of

Exhibit A
Scope of Work
Caliskaner Water Technologies, Inc.

1 0.85 MGD to each APT system. The combined APT effluent will be conveyed to the EST
2 and the full-scale AST MABR system.

- 3 • Operate the full-scale AST (MABR) downstream of APT at a flow rate of 0.5 MGD for 8
4 months.
- 5 • Operate the full-scale EST basin downstream of APT at a flow rate of 1.2 to 1.4 MGD for
6 24 months. The remaining plant influent flow (approximately 0.8 MGD) will be processed
7 through the CST system and will be monitored as part of Task 3. In the full-scale
8 configuration, the EST basin combined with the full-scale AST system will process more
9 flow than the CST basin due to enhanced removal of BOD and ammonia by the APT
10 systems. This configuration is expected to directly demonstrate a minimum of 25 to 30
11 percent increase in treatment capacity.
- 12 • Prepare and provide a *Full-Scale System Test Plans* for each full-scale APT and AST
13 technology at the demonstration site. The Full-Scale System Test Plans will include but is
14 not limited to the following: 1) description of testing systems, 2) test plan objectives, 3) roles
15 and responsibilities for involved parties, 4) testing schedule for 24 hour composite samples,
16 5) sampling types, frequency, and schedule for 24 hour composite samples, 6) operation
17 and download data from inline continuous monitoring equipment, and 7) quarterly updates
18 to the test plan to reflect necessary changes observed from operation of the demonstration
19 systems.
- 20 • Start-up and test the full-scale system for a period of one month to identify and implement
21 early operational and maintenance improvements, if necessary.
- 22 • Ensure that operation of the full-scale systems includes operation, maintenance,
23 troubleshooting, performance improvement and optimization.
- 24 • Conduct inline continuous field measurements related to wastewater treatment
25 performance and electrical power consumption such as filtration and backwash flow rates
26 and durations, turbidity and/or TSS, pressure development (through the filter medium).
- 27 • Conduct wastewater quality sampling for offsite laboratory analyses.
- 28 • Prepare *Full-Scale System Operational Progress Reports* for each full-scale APT and AST
29 technologies. The reports will include but is not limited to the following:
 - 30 ○ Test Plan Update
 - 31 ○ Summary of Operational and Maintenance activities, operation, and photographs
32 of system
 - 33 ○ Preliminary inline field measurements
 - 34 ○ Results of offsite laboratory analyses
- 35 • Participate in CPR per Subtask 1.3 and prepare *CPR Report #1*.

36
37 **Products**

- 38 • Full-Scale System Test Plans
- 39 • Full-Scale System Operational Progress Reports
- 40 • CPR Report #1

41
42
43 **TASK 5 - Operation and Monitoring of Demonstration-Scale Advanced Primary and**
44 **Advanced Secondary Treatment System**

45 The goals of this task are to start-up and operate the demonstration-scale APT and AST systems
46 by conveying: (1) raw wastewater flow (after screens) to one demonstration-scale APT system,
47 (2) APT effluent to two demonstration-scale ASTs, and (3) APT backwash reject water to the
48 thickener and then to the anaerobic digester. The demonstration-scale treatment systems are

Exhibit A
Scope of Work
Caliskaner Water Technologies, Inc.

1 intended to be easily integrated with the full-scale system infrastructure. The purpose of the
2 demonstration-scale systems is to directly quantify treatment and hydraulic performance for each
3 technology, which are representative of full-scale performances to high accuracy. The
4 demonstration-scale performance results will be modelled to quantify the expected full-scale
5 decrease in secondary treatment aeration energy demand and treatment capacity increase. The
6 demonstration-scale technologies will represent a small fraction of the total flow of the
7 demonstration site (less than 10%) and will require less monitoring than the full-scale
8 technologies.

9
10 **The Recipient shall:**

- 11 • Operate one demonstration-scale APT system (CMBF) at an ADF rate of 0.2 MGD in
12 parallel with the two full-scale APT systems, which will operate at an ADF rate of 0.85 MGD
13 each. The combined APT effluent will be conveyed to the EST activated sludge basin and
14 the full-scale AST MABR system. The CMBF will be operated in parallel with the CDF and
15 primary clarifier for 36 months.
- 16 • Operate two demonstration-scale ASTs (AGS and Microvi) downstream of APT. The AST
17 Microvi system will be operated at an ADF rate capacity of 0.03-0.035 MGD. The AST AGS
18 system will be operated at an ADF flow rate capacity of 0.01-0.015 MGD.
- 19 • Prepare and provide a *Demonstration-Scale System Test Plans* for each demonstration-
20 scale APT and AST technology at Linda WWTP.
- 21 • Conduct inline continuous field measurements related to wastewater treatment
22 performance and electrical power consumption.
- 23 • Conduct wastewater quality sampling for offsite laboratory analyses.
- 24 • Prepare *Demonstration-Scale System Operational Reports* for each demonstration-scale
25 APT and AST technology at the conclusion of each demonstration. The report will include
26 but is not limited to the following:
 - 27 ○ Test Plan Update
 - 28 ○ Summary of Operational and Maintenance activities, operation, and photographs
29 of system
 - 30 ○ Preliminary inline field measurements
 - 31 ○ Results of offsite laboratory analyses
- 32 • Participate in CPR per Subtask 1.3 and prepare *CPR Report #2*.

33
34 **Products**

- 35 • Demonstration-Scale System Test Plans
- 36 • Demonstration-Scale System Operational Progress Reports
- 37 • CPR Report #2

38
39
40 **TASK 6 - Performance Evaluation of Advanced Treatment Systems Compared to**
41 **Conventional Treatment**

42 The goal of this task is to conduct a detailed performance analysis based on the results
43 obtained from the operation of the full- and demonstration-scale APT and AST systems.

44
45 **The Recipient shall:**

- 46 • Compile all of the conventional, APT, and AST performance data including inline field
47 measurements and offsite laboratory sampling results.
- 48 • Prepare *Treatment and Hydraulic Performance Analysis Progress Reports* for each APT

Exhibit A
Scope of Work
Caliskaner Water Technologies, Inc.

1 and AST system. Treatment, energy, and hydraulic performance data will be reviewed
2 and evaluated for the baseline, full-scale and demonstration-scale systems. The analysis
3 will provide removal efficiency data for the conventional and advanced treatment
4 systems. Correlation ratios between turbidity and TSS, and BOD, chemical oxygen
5 demand (COD), soluble chemical oxygen demand (sCOD), TKN, and ammonia will be
6 quantified. The water quality through the treatment processes will be tracked for
7 constituents impacting the performance with respect to effluent permit levels. These
8 include BOD, COD, sCOD, TSS, VSS, ammonia, nitrate, and TKN. The treatment
9 performance analysis will provide removal efficiency data for the advanced and
10 conventional treatment systems. The treatment performance results will also provide
11 information for impacts on treatment capacity and energy efficiency. The hydraulic
12 performance analysis will determine the treatment footprint reduction potential for each
13 advanced treatment system, compared to conventional treatment.

- 14 • Prepare *Energy Analysis Reports* for each APT and AST system. Power and energy data
15 will be collected, reviewed and evaluated for the baseline, full-scale and demonstration-
16 scale systems. Power demand and energy consumption for the existing conventional
17 treatment system will be collected and evaluated. For each advanced primary and
18 secondary technology, the power demand and duty cycles will be quantified, and the
19 energy consumption will be integrated. For each advanced secondary technology, off-gas
20 measurements will be performed, compatibly with the technology, to calculate real-time
21 air supply power demand (largest fraction of secondary treatment energy). The contract
22 for power supply with the power utility will be analyzed and the tariff structure analyzed.
23 The energy cost will be calculated using the demonstration site's actual tariff structure.
24 Other tariff structures (such as large industrial >500kW, medium industrial 100-500kW,
25 and TOU rates) will be considered to quantify the cost under different scenarios
26 corresponding to other plant sizes and areas of California, to promote technology transfer
27 and broaden the applicability of the project results.
- 28 • Prepare *Process Computer Model Reports* for each APT and AST system. Establish,
29 calibrate, and use a computer process model using the treatment performance results for
30 the three (3) APT and three (3) AST technologies to simulate performance and benefits
31 for full flow rates of demonstration site and potential expansion (i.e., plant capacity of 5.5
32 MGD and ultimate expansion of 15 MGD). Simulations will be conducted for the following
33 scenarios to compare performance of conventional treatment system versus the following
34 advanced treatment systems: CDF followed by AGS; CDF followed by MABR; CMBF
35 followed by MABR; CDF followed by Microvi. Simulations will be conducted to compare
36 performance of AST systems when operated after conventional primary treatment versus
37 after advanced primary treatment systems. The configurations include CDF followed by
38 AGS versus Primary Clarifier followed by AGS; CDF followed by MABR versus Primary
39 Clarifier followed by MABR; CDF followed by Microvi versus Primary Clarifier followed by
40 Microvi. The modeling objectives are to (1) assess treatment performances, (2) estimate
41 secondary treatment aeration and energy efficiency, (3) estimate anaerobic digester gas
42 energy production increase, (4) estimate increase in treatment capacity, and (5) estimate
43 the overall energy efficiency, and (6) assess impact on GHG emissions.
- 44 • Prepare *General California WWTP Process Computer Model Report*. Establish, calibrate,
45 and use the computer process model for four other main WWTP types in California with
46 the following characteristics: 1) WWTP with a flow capacity of 15 MGD which is designed
47 to achieve BOD removal and nitrification, 2) WWTP with a flow capacity of 15 MGD which
48 is designed to achieve BOD removal only, 3) WWTP with a flow capacity of 100 MGD
49 which is designed to achieve BOD removal and nitrification, 4) WWTP with a flow

Exhibit A
Scope of Work
Caliskaner Water Technologies, Inc.

1 capacity of 100 MGD which is designed to achieve BOD removal only.

- 2 • Prepare a *Digester Gas Production Report* that evaluates the impact on digester gas
3 production for life cycle cost analyses through specialized studies. Under this Task, first,
4 a respirometry test will be performed to evaluate microbial activity/viability under the
5 changed carbon characteristics resulting from advanced primary/secondary processes,
6 and will be compared with that of conventional treatment process. Next, the sludge
7 samples from the advanced primary/secondary process (i.e. new feed sludge to
8 digesters) will be analyzed for various parameters (e.g. COD, C:H:N content, total &
9 volatile solids, alkalinity, biomethane potential) in order to predict biogas production
10 potential using an anaerobic digester model. Subsequently, the biogas production
11 potential of the advanced primary/secondary process sludge will be predicted using an
12 anaerobic digester model. Further, the sludge from the advanced primary/secondary
13 process will be prepared and dewatered (500 ml to 2 Liters) to estimate dewatering
14 efficiency and energy requirements.

15
16 **Products:**

- 17 • Treatment and Hydraulic Performance Analysis Progress Reports
18 • Energy Analysis Reports
19 • Process Computer Model Reports
20 • General California WWTP Process Computer Model Report
21 • Digester Gas Production Report

22
23
24 **TASK 7 - Economic Evaluation of Advanced Treatment Systems Versus Conventional**
25 **Systems**

26 The goal of this task is to estimate construction/capital and operational costs of the advanced
27 treatment technologies based on results obtained from the project and the Advancement of Cost
28 Engineering (AACE) guidelines.

29
30 **The Recipient shall:**

- 31 • Determine the capital costs for each APT and AST technology. The cost estimating
32 framework will utilize a five level Class System (5, 4, 3, 2, and 1) which corresponds to
33 estimate types prepared at various stages of project development. Class 5 cost estimates
34 are developed at project conception when little project information or scope has been
35 developed. Class 2 estimates are based on detailed unit costs and take off estimates with
36 complete or near complete scope definition. Class 2 and Class 1 estimates are
37 conducted at 60 percent to 100 percent design stages of actual construction projects.
38 During this project, Class 3 and Class 4 cost estimates will also be developed. Identify
39 and fine tune the design and operational criteria to develop accurate cost estimates.
- 40 • Develop Class 5 level cost estimates (for the APT and AST systems in the project) at
41 early stages of the project, which will also help to identify and consider cost-impact
42 factors and systems in the operation/demonstration protocol.
- 43 • Develop Class 3 and Class 4 estimates for Linda WWTP and project partner utilities,
44 once the design and operational criteria are established at the end of the demonstration
45 phases.
- 46 ○ Class 3 level cost estimate (with -20 to +30 percent level of accuracy) is
47 conducted for 30 to 60 percent level design projects and includes information on:
48 semi-detailed unit costs with assembly level line items, final equipment list, site
49 layout, building facility plans, major sections, concrete quantities, final process

Exhibit A
Scope of Work
Caliskaner Water Technologies, Inc.

- 1 and instrumentation diagrams, electrical single lines. Class 3 level estimates will
2 be developed for both for advanced and conventional treatment systems.
- 3 ○ Class 4 level cost estimate (with -30 to +50 percent level accuracy) would be
4 suitable for our project partner sites (e.g., Los Angeles CSD and San Francisco
5 PUC) based on pilot testing results obtained with APT technologies and
6 additional information.
- 7 ● Write and submit to the CAM *Capital Cost Estimations for Conventional Primary Report*
8 *and Secondary Treatment Systems* and *Capital Cost Estimations for APT and AST*
9 *Systems Report* to summarize the above findings.
- 10 ● Evaluate energy and demand savings by utilizing a third-party energy audit firm, to
11 conduct a M&V study of at least 8 months, *following* the M&V Plan developed in Task 8.
12 The purpose is to quantify the energy savings associated with APT and AST by
13 comparing the energy consumption for existing plant's baseline (and baseline from Task
14 3) and for the replacement of primary clarification with APT and secondary treatment with
15 AST. The M&V process will be utilized to confirm electrical energy and demand savings
16 associated with raw wastewater filtration for carbon diversion.
- 17 ● Compare the overall wastewater treatment performance to conventional process. Write
18 and submit *Energy Savings Reports* to summarize the M&V findings for each APT, AST
19 and APT+AST combinations with minimum of eight months of system test time over
20 baseline results.
- 21 ● Evaluate the operational and cost savings of APT versus primary clarifiers. Operational
22 costs will be closely monitored for the conventional treatment system and the full- and
23 demonstration-scale APT systems during each demonstration phase. The following will
24 be utilized to evaluate and quantify operational costs: 1) Daily logs to track operator time
25 for routine operations and maintenance activities as well as specialized maintenance
26 tasks such as clean in place of CDF filters. 2) Troubleshooting logs that record
27 breakdowns and/or out of spec operation and associated costs to bring the system back
28 online. 3) Invoices for consumables such as chemicals. 4) Invoices for replacement parts.
29 5) Labor and material costs will be recorded for each APT technology during the
30 demonstration period. If costs are not significant, the project team will coordinate with the
31 manufacturers to estimate remaining lifetime and associated costs.
- 32 ● Evaluate the operational cost savings of AST versus CST methods during each
33 demonstration phase.
- 34 ○ Write and submit *Operational and Capital Cost Savings Reports for APT*
35 *Technologies Compared to Conventional Primary Clarifiers* to summarize the
36 findings from this task.
- 37 ○ Write and submit *Operational and Capital Cost Savings Reports for AST*
38 *Technologies Compared to CST* to summarize the findings the findings from this
39 task.
- 40 ● Evaluate the impact on facility treatment capacity to determine the capital cost impacts.
41 The key objectives of this study are: (1) APT will directly demonstrate a capacity increase
42 by 25 percent under actual operating conditions (i.e., running 1.7 MGD through a system
43 rated for 1.35 MGD for conventional systems), and (2) combined APT and AST will
44 directly demonstrate a capacity increase by 40 percent under actual operating conditions
45 (i.e., running 1.9 MGD through a system rated for 1.35 MGD for conventional systems).
- 46 ○ Write and submit *Operational and Cost Savings Reports for APT+AST*
47 *Technologies Compared to Conventional Primary + Secondary Treatment* based
48 on the findings from this task.

Exhibit A
Scope of Work
Caliskaner Water Technologies, Inc.

- Conduct life cycle cost analysis using the energy savings and other benefits, and capital, operational, and maintenance costs for conventional and advanced treatment systems over a 30-year period at net discount rate of 3 percent. Aeration energy savings and biogas energy production will be accounted in these net present value (NPV) analyses. Estimate rate of return for each AST and APT technologies. Indicate how the economic analysis would be affected by different electric rate schedules as indicated in Task 6.
 - Write and submit *Life Cycle Cost Analysis* to summarize the findings from this task.

Products:

- Capital Cost Estimations for Conventional Primary and Secondary Treatment Systems Report
- Capital Cost Estimations for APT and AST Systems Report
- Energy Savings Reports
- Operational and Capital Cost Savings Reports for APT Technologies Compared to Conventional Primary Clarifiers
- Operational and Capital Cost Savings Reports for AST Technologies Compared to CST
- Operational and Cost Savings Reports for APT+AST Technologies Compared to Conventional Primary + Secondary Treatment
- Life Cycle Cost Analysis

TASK 8 Project Measurement and Verification

The goal of this task is to conduct independent third-party measurement and verification (M&V) to measure and quantify project benefits.

The Recipient shall:

- Consult with the CAM to identify and confirm the specific project benefits to be measured. At a minimum this will include pre and post-project energy use (kilowatt hours, kilowatts, therms), and calculations of energy cost savings and greenhouse gas emissions. When directed by the CAM, this can include pre and post measurements of water use (million gallons) and other project benefits, and calculations of the resulting cost savings and greenhouse gas emission reductions.
- Enter into agreement with M&V vendor per Task 1.9
- Coordinate site visits with the M&V firm at the demonstration site(s) identified.
- Develop M&V Plan for **pre-install** measurement of: Electrical energy consumed by primary and secondary treatment system through plant supervisory control and data acquisition (SCADA) or data logging
- Perform pre-install measurements based on the M&V Plan for pre-install
- Develop M&V Plan for **post-install** measurement of: Electrical energy consumed by secondary treatment system through plant SCADA or data logging. Energy consumed by APT systems (e.g., backwash blowers and pumps involved with filtration system). Energy consumed by AST systems (e.g., pumps involved with the system)
- Perform post-install measurements based on M&V Plan for post-install
- The M&V Plans will include the following: 1) Water quality measurements of primary influent, primary effluent, secondary effluent and off-gas measurements on the secondary process. These measurements will be complemented with energy readouts from plant equipment, for verification, 2) For primary treatment processes, the quantification of power

Exhibit A
Scope of Work
Caliskaner Water Technologies, Inc.

1 demand from the unit drive motors will be made by calculating the duty cycle times the
2 motor power demand. Portable power meters will be used to calibrate/verify these
3 calculations, 3) For aeration power demand in secondary treatment processes, direct
4 power measurement of the aeration blowers and the air flow rates will be taken, 4) Off-
5 gas from the conventional and advanced aeration basins will also be measured to quantify
6 real-time secondary energy demands.

- 7 • Prepare *M&V Findings Reports* for each demonstration site(s) that includes M&V Plan,
8 pre and post install measurements, analysis, and results performed in this task as agreed
9 with the CAM and whether the goals and objectives from Section II.C and the project
10 performance metrics from Subtask 1.12 were met.

11
12 **Products:**

- 13 • M&V Findings Report (draft and final)

14
15
16 **TASK 9 Evaluation of Project Benefits**

17 The goal of this task is to report the benefits resulting from this project.

18
19 **The Recipient shall:**

- 20 • Complete three Project Benefits Questionnaires that correspond to three main intervals in
21 the Agreement: (1) *Kick-off Meeting Benefits Questionnaire*; (2) *Mid-term Benefits*
22 *Questionnaire*; and (3) *Final Meeting Benefits Questionnaire*.
- 23 • Provide all key assumptions used to estimate projected benefits, including targeted market
24 sector (e.g., population and geographic location), projected market penetration, baseline
25 and projected energy use and cost, operating conditions, and emission reduction
26 calculations. Examples of information that may be requested in the questionnaires include:
 - 27 ○ For Product Development Projects and Project Demonstrations:
 - 28 ▪ Published documents, including date, title, and periodical name.
 - 29 ▪ Estimated or actual energy and cost savings, and estimated statewide energy
30 savings once market potential has been realized. Identify all assumptions used in
31 the estimates.
 - 32 ▪ Greenhouse gas and criteria emissions reductions.
 - 33 ▪ Other non-energy benefits such as reliability, public safety, lower operational cost,
34 environmental improvement, indoor environmental quality, and societal benefits.
 - 35 ▪ Data on potential job creation, market potential, economic development, and
36 increased state revenue as a result of the project.
 - 37 ▪ A discussion of project product downloads from websites, and publications in
38 technical journals.
 - 39 ▪ A comparison of project expectations and performance. Discuss whether the goals
40 and objectives of the Agreement have been met and what improvements are
41 needed, if any.

42 Additional Information for Product Demonstrations: 1) Outcome of demonstrations and
43 status of technology. 2) Number of similar installations. 3) Jobs created/retained as a result
44 of the Agreement.

- 45 ▪ For Information/Tools and Other Research Studies: Outcome of project.
- 46 ▪ Published documents, including date, title, and periodical name.
- 47 ▪ A discussion of policy development. State if the project has been cited in
48 government policy publications or technical journals, or has been used to
49 inform regulatory bodies.

Exhibit A
Scope of Work
Caliskaner Water Technologies, Inc.

- 1 ▪ The number of website downloads.
- 2 ▪ An estimate of how the project information has affected energy use and
- 3 cost, or have resulted in other non-energy benefits.
- 4 ▪ An estimate of energy and non-energy benefits.
- 5 ▪ Data on potential job creation, market potential, economic development,
- 6 and increased state revenue as a result of project.
- 7 ▪ A discussion of project product downloads from websites, and publications
- 8 in technical journals.
- 9 ▪ A comparison of project expectations and performance. Discuss whether
- 10 the goals and objectives of the Agreement have been met and what
- 11 improvements are needed, if any.

12 Respond to CAM questions regarding responses to the questionnaires.

- 13 • The CEC may send the Recipient similar questionnaires after the Agreement term ends.
- 14 Responses to these questionnaires will be voluntary.

15
16 **Products:**

- 17 • Kick-off Meeting Benefits Questionnaire
- 18 • Mid-term Benefits Questionnaire
- 19 • Final Meeting Benefits Questionnaire

20
21
22 **TASK 10 Technology/Knowledge Transfer Activities**

23 The goal of this task is to conduct activities that will accelerate the commercial adoption of the

24 technology being supported under this agreement. Eligible activities include, but are not limited

25 to, the following:

- 26 • Scale-up analysis including manufacturing analysis, independent design verification,
- 27 and process improvement efforts.
- 28 • Technology verification testing, or application to a test bed program located in
- 29 California.
- 30 • Legal services or licensing to secure necessary intellectual property to further
- 31 develop the technology.
- 32 • Market research, business plan development, and cost-performance modeling.
- 33 • Entry into an incubator or accelerator program located in California.

34
35 **The Recipient Shall:**

- 36 • Develop and submit a *Technology Transfer Plan (Draft/Final)* that identifies the proposed
- 37 activities the recipient will conduct to accelerate the successful commercial adoption of
- 38 the technology. Proposed activities for the *Technology Transfer Plan* include: Develop
- 39 and execute a utility engagement program that will include meetings with CA utility
- 40 partners every three months to explore their needs in detail and keep them updated on
- 41 the project progress and results. Specific feasibility studies and/or pilot APT+AST projects
- 42 will be conducted for five of these CA utilities. The principal goal is to provide site-specific
- 43 focused information to these WWTPs. The Recipient will:
 - 44 ○ Provide at least six demonstration tours at Linda.
 - 45 ○ Provide a minimum of four technical workshops (in person or virtual).
 - 46 ○ Provide a minimum of two webcasts (e.g., through WRF, WEF or its regional
 - 47 chapters).
 - 48 ○ Present at a minimum of ten local, regional, and national conferences and

Exhibit A
Scope of Work
Caliskaner Water Technologies, Inc.

- 1 exhibition floor activities
- 2 ○ Author a minimum of five technical publications in magazine articles, conference
- 3 proceedings, peer reviewed papers, inclusion in industry design textbooks.
- 4 • Present the *Draft Technology Transfer Plan* to the TAC for feedback and comments.
- 5 • Develop and submit a *Summary of TAC Comments* that summarizes comments received
- 6 from the TAC members on the *Draft Technology Transfer Plan*. This document will
- 7 identify: 1) TAC comments the recipient proposes to incorporate into the *Final*
- 8 *Technology Transfer Plan*, and 2) TAC comments the recipient does not propose to
- 9 incorporate with and explanation why.
- 10 • Submit the *Final Technology Transfer Plan* to the CAM for approval.
- 11 • Implement activities identified in *Final Technology Transfer Plan*.
- 12 • Develop and submit a *Technology Transfer Summary Report (Draft/Final)* that includes
- 13 high level summaries of the activities, results, and lessons learned of tasks performed
- 14 relating to implementing the *Final Technology Transfer Plan*. This report should not
- 15 include any proprietary information.
- 16 ○ When directed by the CAM, develop presentation materials for an CEC-
- 17 sponsored conference/workshop(s) on the project.
- 18 ○ When directed by the CAM, participate in annual EPIC symposium(s) sponsored
- 19 by the CEC.
- 20 • Provide at least (6) six *High Quality Digital Photographs* (minimum resolution of
- 21 1300x500 pixels in landscape ratio) of pre and post technology installation at the project
- 22 sites or related project photographs.

Products:

- 24 • Technology Transfer Plan (Draft/Final)
- 25 • Summary of TAC Comments
- 26 • Technology Transfer Summary Report (Draft/Final)
- 27 • High Quality Digital Photographs

V. PROJECT SCHEDULE

31 Please see the attached Excel spreadsheet.

STATE OF CALIFORNIA

STATE ENERGY RESOURCES
CONSERVATION AND DEVELOPMENT COMMISSION

RESOLUTION - RE: CALISKANER WATER TECHNOLOGIES, INC.

RESOLVED, that the State Energy Resources Conservation and Development Commission (CEC) adopts the staff CEQA findings contained in the Agreement or Amendment Request Form (as applicable); and

RESOLVED, that the CEC approves Agreement EPC-20-044 with Caliskaner Water Technologies, Inc. for a \$4,000,000 grant to design, install, demonstrate and evaluate advanced primary and advanced secondary treatment technologies at a California wastewater treatment facility. This project will be the first application of these combined technologies to reduce electrical energy consumption and greenhouse gas emissions while increasing treatment performance and capacity; and

FURTHER BE IT RESOLVED, that the Executive Director or his/her designee shall execute the same on behalf of the CEC.

CERTIFICATION

The undersigned Secretariat to the CEC does hereby certify that the foregoing is a full, true, and correct copy of a Resolution duly and regularly adopted at a meeting of the CEC held on June 9, 2021.

AYE:

NAY:

ABSENT:

ABSTAIN:

Patricia Carlos
Secretariat