Agenda Item No. 4.A. Handout
REVISED SCOPE OF WORK
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Agreement No. 20-MU-35-0001

ATTACHMENT 1

SCOPE OF WORK

Santa Ana River Watershed-Wide Water Budget Decision Support Tool

I. Purpose:

The Pilot will create water budgets based on efficiency at the customer and retail water agency scale through the collection of aerial imagery, weather and other data. The Pilot will be implemented by analyzing high resolution aerial imagery with the aid of imagery processing software to create area measurements of vegetation that is deemed to be irrigated (or has the potential to be irrigated) by the software. The vegetation area measurements will then be clipped by parcel boundaries, also known as Meter Service Areas (MSAs), in order to isolate the vegetation by customers of water agencies. Each MSA will have a water budget by calculating the water demands of the vegetated areas within the MSA. By making the MSA budgets available to retail water agencies through an online decision support tool, agency staff will be able to compare the Pilot's MSA budgets and their customer's usage. This comparison will help them identify which customers are inefficient and target conservation programs. The desired outcome is a savings in water use across the watershed. If approximately 10 agencies use the tool, it is estimated that 4,775 acre-feet a year (AFY) of water supply can be saved. The tool is also helpful for regulatory compliance as it will support resource-strapped retail water agencies meet water usage targets that the State has set for 2021 per the adoption of Senate Bill (SB) 606 and Assembly Bill (AB) 1668.

II. Geographic Area:

The Santa Ana River Watershed (referred to as the "Santa Ana Basin" by the Bureau of Reclamation) is in southern California southeast of the City of Los Angeles. The Pilot's boundaries include the urban areas of the Santa Ana River Watershed, south Orange County (which covers part of the San Juan Watershed), and possibly portions of the Upper Santa Margarita Watershed. The total size of the Pilot area is 2,679 square miles.

III. Tasks and Milestones:

The Pilot is comprised of three major tasks: 1) Imagery; 2) Analysis; and 3) the Decision Support Tool.

Task 1 Imagery: Acquire high resolution RGBN (red, green, blue, near infrared) imagery for the entire urbanized Santa Ana River Watershed, South Orange County and potentially areas of the Upper Santa Margarita Watershed.

1a. Procurement of Imagery: SAWPA, working with Reclamation, will oversee a procurement process to acquire a consultant that can collect aerial photographs (also known as imagery tiles) across the area of interest and generate an image mosaic of the study area.

1b. Creation of Tiled Imagery: The consultant selected through the procurement process, under management of SAWPA, will acquire imager for the area of interest in a timely manner and provide SAWPA with orthorectified image swaths for each collected flight line, as well as an orthorectified image mosaic of the entire study area, and deliver it in formats such as .img or GeoTiff.

1c. Quality Control Phase 1: Reclamation and SAWPA will implement a quality control methodology for ensuring that the final image mosaics are radiometrically calibrated and relatively seamless. The percentage of the imagery to be analyzed and the method of analysis will be developed by Reclamation.

Task 2 Analysis: Analyze the imagery to identify and measure irrigated landscape and irrigable land with sufficient detail to provide customer parcel level outdoor water budgets to water retail agencies to support the achievement of

water efficiency regulations prescribed by the State. Add indoor budgets for residential parcels to calculate total indoor and outdoor water efficiency budgets.

2a. Analysis of Imagery and Calculation of Budgets: Reclamation, using image processing software such as ERDAS/Imagine, will interpret pixels of the orthorectified flight-line imagery into various categories of outdoor landscape by relating pixels to image statistics specific to each land cover class. After the imagery from different flight days are processed, the analyzed imagery will be spot checked by Reclamation and SAWPA technicians visually in order to ensure the unique conditions of the different flight days are not being misclassified by the software. After the imagery is processed and verified, the classified pixels will be used to calculate the measurements of the landscape areas within the MSAs. To account for indoor water use, the SAWPA and Reclamation will add factors for the number of persons likely living in the residential Meter Service Areas (MSAs).

2b. Quality Control Phase 2: SAWPA and Reclamation will implement a quality control methodology for ensuring the pixels are interpreted within a specified amount of certainty. This methodology may include visual photo interpretation by staff which will act as a check on the software's results.

2c. Technical Sufficiency Review Summary: SAWPA and Reclamation will summarize their quality control process and findings from the two phases described in Tasks 1 and 2.

Task 3 Decision Support Tool: Develop a decision support tool to enable retail water agencies to analyze their customers water usage data in comparison to the MSA water budgets.

3a. Tool Development and Maintenance: SAWPA will utilize a web-based tool that displays several data layers such as the MSA and retail water agency boundaries, the watershed imagery, and MSA water budget calculations.

3b. Outreach to Agencies: Reclamation and SAWPA will approach retail water agencies in order to market the tool. The agencies who choose to partner with Reclamation and SAWPA will have access to the tool, use it to estimate if they are within budget and be able to identify inefficient customers

3c. Reporting Using Agency Feedback: Reclamation, with SAWPA's assistance, will work with the retail water agencies who have partnered with Reclamation and SAWPA to report their savings after they have employed the tool. Agencies will be able to choose to share water savings data with SAWPA or estimate their water savings based on conditions such as weather and hydrozone data.

IV. Responsibilities of the Parties:

Reclamation's responsibilities will include:

1) Participate in the ongoing drafting, review, revision and facilitating of the execution of this project agreement.

2) Contribute funding in accordance with the terms of the project agreement and complete the work required to successfully to complete the project.

3) Assist in the appropriate procurement approach and identify qualified technical consultants or consultant teams in support of the Pilot project. Reclamation will coordinate with the Non-Federal Partners to select and contract with a qualified consultant or consultant team.

4) Ensure compliance with the terms of this Pilot project agreement, including requirements as dictated by Federal law, Reclamation Directives and Standards, Departmental and agency protocol and practice, and accepted good business practices.

5) Participate in the selection process, including the review of Non-Federal Partner's consultant proposals using evaluation criteria that are mutually developed and agreed upon by Reclamation and the Non-Federal Partner. These evaluation criteria will consider the quality of the work products that can be provided in accomplishing the project objectives and obtaining the most useful work products, final report and water savings quantification methodologies and implementation thereof.

6) Designate and make those technical staff available to perform the work described in the tasks identified above. Such availability is agreed upon in advance as part of the agreed work schedule included in the various task descriptions identified above and in the detailed project schedule identified below.

    a. This work will necessarily involve coordinating and working with the other non-Federal technical staff, Reclamation technical staff, staff of the selected consultant.

    b. Assist with documentation of tasks performed including writing, review, and revision of draft work products such as case studies, final reports, workshop proceedings, including, but not limited to, text and narrative, review and correction, if necessary, of computation and quantification calculations, presentation, informational, or survey documents.

The responsibilities of the Non-Federal Partner (i.e., Santa Ana Watershed Project Authority) will include:

1) Participate in drafting, reviewing, revising and facilitating the execution of this project agreement.

2) Contribute funding, both direct contribution and in-kind services, in accordance with the terms of the project agreement; and hire an appropriate consultant to complete the work required in accordance with the Santa Ana Watershed Project Authority's contract to help successfully complete the Pilot project.

3) Manage the selection process, including the review of consultant proposals using ranking criteria that are mutually developed and agreed upon by Reclamation and the Santa Ana Watershed Project Authority. These ranking criteria will consider the quality of the work products that can be provided in accomplishing the project objectives and obtaining the most useful work products, task memorandums and other work products; collectively, the Pilot project's outcomes and results.

4) Designate and make those technical staff personnel available to perform the work described in the tasks identified above. Such availability is agreed upon in advance as part of the approved work schedule included in the various task descriptions identified above and in the detailed project schedule identified below.

    a. This work will necessarily involve coordinating and working with the other non-Federal technical staff, Reclamation technical staff, staff of the selected consultant.

    b. Assist with documentation of tasks performed, writing, review and revision of draft work products, case studies, final reports, workshop proceedings, including, but not limited to, text and narrative, review and correction, if necessary, of computation and quantification calculations, presentation, informational, or survey documents.

5) Maintain records as to time expended and the unit costs incurred in performing work associated with this project.

    a. No more than 30 working days after the end of each quarter (e.g., March 31, June 30, September 30, Dec 31), the Santa Ana Watershed Project Authority and Reclamation will, on behalf of all their involved personnel, submit written documentation of the amount of in-kind

services made through work performed in accomplishing the tasks necessary to complete this project.

V. Budget and Schedule:

The following tables presents each task and sub-tasks and identifies the estimated costs to conduct this Pilot Study between Reclamation and the Non-Federal Partner; and to complete it.

Budget:

Task	Task Description	Cost	SAWPA Share	Reclamation Share
1	Imagery	$ 560,000	63%	37%
1a	Procurement of Imagery	$ 40,000	50%	50%
1b	Flight and Creation of Tiled Imagery	$ 470,000	100%	0%
1c	Quality Control Phase 1	$ 50,000	40%	60%
2	Analysis	$ 565,000	38%	62%
2a	Analysis of Imagery & Calculation of Budgets	$ 500,000	15%	85%
2b	Quality Control Phase 2	$ 50,000	50%	50%
2c	Technical Sufficiency Review Summary	$ 15,000	50%	50%
3	Decision Support Tool	$ 340,000	63%	37%
3a	Tool Development and Maintenance	$ 200,000	90%	10%
3b	Outreach to Agencies	$ 100,000	50%	50%
3c	Reporting Using Agency Feedback	$ 40,000	50%	50%
Total		**$ 1,465,000**	**55%**	**45%**
	SAWPA Share	$ 867,500		
	Reclamation Share	$ 597,500		

Projected Schedule

Task & Schedule		
Task Description	**Estimated Start Date**	**Estimated Finish Date**
Task 1 Imagery	February 2020	July 2021
Task 2 Analysis	January 2021	July 2022
Task 3 Decision Support Tool	July 2021	January 2023