

Annual Summary Report on Public Ecosystem Benefits for Calendar Year 2024

TO: Kristal Davis-Fadtke – California Department of Fish and Wildlife
CC: Amy Young, Water Storage Investment Program Manager – California Water Commission
SUBMITTED BY: Jofil Borja, Harvest Water A-PMO Manager – SacSewer
DATE: April 30, 2025
RE: WSIP Contract for Administration of Public Ecosystem Benefits (CAPB)

1. BACKGROUND AND PURPOSE

The Sacramento Area Sewer District (SacSewer), is developing the Harvest Water Program in southern Sacramento County. Harvest Water is one of the projects within the California Water Commission's (Commission) Water Storage Investment Program (WSIP). Harvest Water is a conjunctive use project that proposes to deliver recycled water from the EchoWater Resource Recovery Facility to more than 16,000 acres of agricultural and habitat lands in southern Sacramento County.

On June 1, 2023, SacSewer entered into a Contract for Administration of Public Ecosystem Benefits (CAPB) with the California Department of Fish and Wildlife (CDFW) pursuant to the WSIP regulations. On January 22, 2024, SacSewer entered into a Funding Agreement with the California Water Commission to receive grant funds pursuant to WSIP regulations.

This Annual Summary Report documents the progress and status of each public ecosystem benefit provided by Harvest Water by the end of calendar year 2024. This report includes a description of any changes to Project Implementation Actions, Benefit Implementation Actions, or Benefit Environmental Responses as identified in Table 1 (as tabulated in Table 1 in *Exhibit B: Ecosystem Adaptive Management Plan, Harvest Water Program* of the CAPB).

- Project Implementation Actions are the foundational actions the Program must execute for derivation of Public Ecosystem Benefits.
- Benefit Implementation Actions are defined as actions, identified in the CAPB, that influence the quantity and/or quality of a Benefit Environmental Response.
- Benefit Environmental Responses are the ecosystem responses derived from Project Implementation Actions and Benefit Implementation Actions.

Table 1: Project Implementation Actions, Benefit Implementation Actions, and Anticipated Benefit Environmental Response

Project Implementation Actions	Benefit Implementation Actions	Benefit Environmental Response
Recycled Water Delivery 1. Irrigation water April – October 2. Wintertime water November – March	Sandhill Crane 1. Water delivery 2. Acreage enrollment 3. Land management Cosumnes River Flow 1. Cumulative streamflow 2. Groundwater elevation Wetland/Riparian (Passive) 1. Groundwater elevations w/in 10 ft bgs Wetland (Active) 1. Acreage enrollment and protection 2. Water supply/improvement 3. Land management Riparian (Active) 1. Acreage enrollment and protection 2. Water supply/improvement 3. Land management Vernal Pool Complex 1. Acreage enrollment and protection 2. Land management	Sandhill Crane 1. Crane usage Cosumnes River Flow 1. Increased river connectivity Wetland/Riparian (Passive) 1. Functionality (modified CRAM) Wetland (Active) 1. Functionality (modified CRAM) Riparian (Active) 1. Functionality (modified CRAM) Vernal Pool Complex 1. Functionality (modified CRAM)

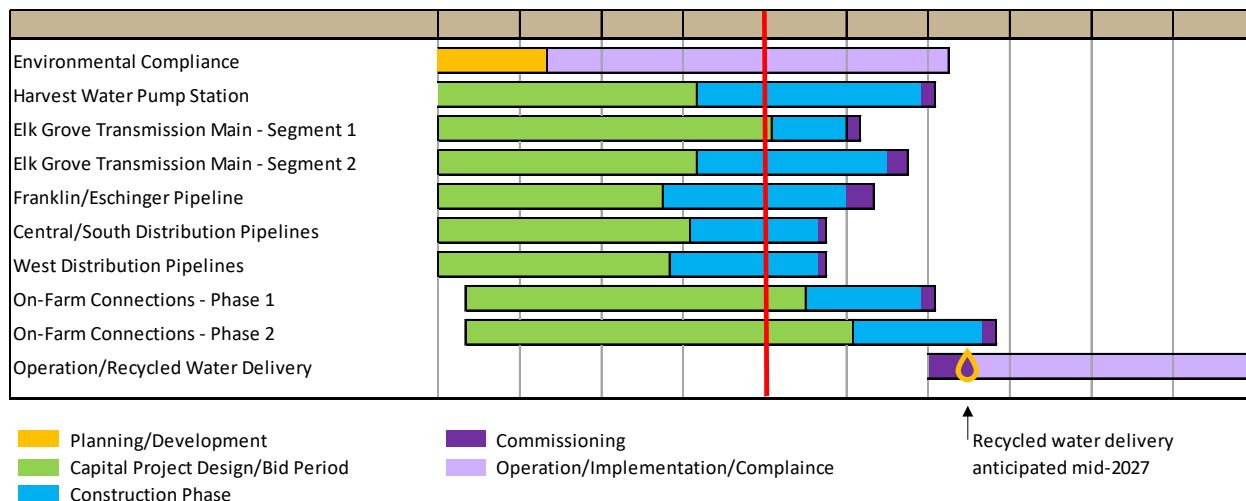
2. HARVEST WATER IMPLEMENTATION UPDATE

Over the course of calendar year 2024, the Harvest Water team continued extensive outreach with the landowners in the service area regarding ongoing project construction, final design of the on-farm connection assemblies (turnouts and meters) on the customers' properties, and updates to the template for the Service Agreement for Harvest Water Recycled Water Use. The updated template was approved by the SacSewer Board of Directors in December 2024 and was used to generate final contracts for execution with landowners in 2025.

Construction began on the pump station and continued on the transmission and distribution systems, with 12.4 miles of 41.4 total miles installed as of November 2024. An overview of the construction schedule is shown in Figure 1.

Additionally, the Program team continued outreach and recruitment of landowners for participation in the ecological program.

Figure 1: Capital Program Schedule Overview



2.1 CAPB Program Years

Many of the implementation and benefit metrics are tied to a “Program Year,” defined as “a full year of Program operations capable of delivering water.” Based on the current schedule, Harvest Water will become operational and begin full operations in mid-2027. Therefore, 2028 is anticipated to be “Program Year 1” as identified in the CAPB. Table 2 identifies the projected calendar year corresponding to the Program Year milestones identified in the CAPB.

Table 2: Projected CAPB Program Years

Program Year	Projected Calendar Year	Program Year	Projected Calendar Year
1	2028	15	2042
3	2030	20	2047
5	2032	42	2069
10	2037		

3. PROJECT IMPLEMENTATION ACTIONS

The Project Implementation Action for the Ecosystem CAPB is recycled water delivery, measured by two metrics: the percentage of contracts executed for Program water delivery (recycled water service agreements) within five years of executing the Funding Agreement (executed January 22, 2024) and the volume of Program water delivered annually, beginning in Program Year 3. Consistent with the CAPB, Exhibit B – Adaptive Management Plan Section 2.1.3, the following elements are required to be reported in the Annual Report.

3.1 Progress and Current Status

The designer continued work on the final design of the on-farm connection assemblies (OFCAs) and provided technical support for easement documentation for each OFCA location. In December 2024, the SacSewer Board of Directors approved the updated Service Agreement for Harvest Water Recycled Water Use (contract) template and

the Harvest Water Recycled Water Rate and Fee Schedule. Subsequently, the Harvest Water team immediately began outreach to execute contracts.

3.2 Metrics and Monitoring

3.2.1 Metric 1: Percentage of contract execution for Program water delivery

The implementation milestone for this metric is: *100% of water delivery contracts allowing for 32,500 acre-feet and 8,750 acre-feet for the irrigation and winter seasons, respectively, will be executed within five years of executing the Funding Agreement (executed January 22, 2024), by:*

- Year 1 [January 2025], landowner contract execution representing 20% of annual recycled water delivery will be achieved.
- Year 3 [January 2027], landowner contract execution representing 60% of annual recycled water delivery will be achieved.
- Year 5 [January 2029], landowner contract execution representing 100% of delivery of recycled water annually will be achieved.

Table 3 presents the reporting components for the Project Implementation Action pursuant to the CAPB.

Table 3: Implementation Action Metric 1 Reporting for 2024

Reporting Component	Reporting Period Data
Percentage of Contracts Executed by December 2024. (% = AFY contracted / 41,250 AFY)	Contract execution began in January 2025

3.2.2 Metric 2: Volume of Program water delivered

The implementation milestone for this metric is: *Starting in Program Year 1 [anticipated in 2028], the Program will deliver both irrigation season (April through October) and winter season (November through March) water. The Program will ramp-up deliveries by:*

- Program Year 3 (2030): annual delivery of at least 16,250 acre-feet April through October and 4,375 acre-feet November through March.
- Program Year 5 (2032): annual water delivery of 32,500 acre-feet April through October and 8,750 acre-feet November through March.

Table 4: Implementation Action Metric 2 Reporting for 2024

Reporting Component	Reporting Period Data
Water Volume delivered Winter Season (Jan – Mar) (AF) Agricultural Irrigation Sandhill crane habitat Active wetland habitat Active riparian habitat Vernal pool complex	<i>The first full year of Program operations capable of delivering water is expected to be 2028.</i>
Water Volume delivered Winter Season (Nov-Dec) (AF) Agricultural Irrigation Sandhill crane habitat Active wetland habitat Active riparian habitat Vernal pool complex	<i>The first full year of Program operations capable of delivering water is expected to be 2028.</i>
Total Winter Season Delivery (AF)	n/a
Water Volume delivered Irrigation Season (Apr – Oct) (AF) Agricultural Irrigation Sandhill crane habitat Active wetland habitat Active riparian habitat Vernal pool complex	<i>The first full year of Program operations capable of delivering water is expected to be 2028.</i>
Total Irrigation Season Delivery (AF)	n/a
Water Year Type (per DWR Bulletin 120 ¹ ; Oct - Sept)	Above Normal

¹ California Department of Water Resources Bulletin 120 for October 2023 to September 2024 for the Sacramento River Index.

3.3 Water Year Type Impacts on Program Water Delivery

Beginning in Program Year 1, anticipated to be 2028, this report will also characterize the water year types as defined by DWR's Bulletin 120, and will describe any periods of flood or drought that may have influenced Harvest Water's ability to deliver targeted volumes. Program recycled water deliveries are subject to SacSewer's wastewater petition Order WW0092, issued by the SWRCB's Division of Water Rights, which includes two conditions that will restrict water deliveries in Dry and Critically Dry water years and Shasta Critical years (as defined by Order WW0092), during the early phases of the Program. Beginning in Program Year 1, this report will include a description of how Order WW0092 conditions affected recycled water deliveries.

4. SANDHILL CRANE HABITAT BENEFIT

4.1 Benefit Implementation Actions

4.1.1 Benefit Objective

*The Sacramento-San Joaquin Delta (Delta), including the lower Cosumnes River floodplain, is a very important region for wintering Sandhill cranes (*Antigone canadensis*). The Sandhill crane is listed as threatened under the California Endangered Species Act primarily because of limited habitat availability. The objective of the Sandhill crane habitat benefit is to increase the acreage of available habitat (roosting and foraging) for Sandhill cranes within the Delta. The Program will provide an annual average of 3,500 acres of additional Sandhill crane habitat within the Program's Water Delivery Area, with a minimum of 2,500 acres each year for the Term of the Contract. Habitat will be provided by the Program through collaborative landowner management and an annual average wintertime application of 8,750 acre-feet of recycled water.*

4.1.2 Progress and Current Status

Pursuant to the CAPB, Sandhill crane habitat lands will be enrolled into the Harvest Water Program through water delivery and land management agreements between SacSewer and designated contractors and landowners.

During the reporting period, the Harvest Water team developed and finalized the templates for the recycled water delivery agreements. The Harvest Water team continued outreach to landowners within the service area to build upon existing interest in crane management and to better align planned crane management with current agricultural practices. Additionally, agreements were drafted, and outreach was conducted to perform crane management field trials using groundwater ahead of Program Year 1. The trials are meant to 1) further outreach to landowners by providing real-life examples of what *EcoPlan* crane management will look like, and 2) provide opportunities for Harvest Water staff to test and fine-tune crane management practices. Pre-project baseline conditions of Sandhill crane habitat acreage will be conducted in 2024-2027, prior to Program Year 1.

Table 5 presents the reporting components for the Sandhill crane benefit implementation actions pursuant to the CAPB, Exhibit B – Adaptive Management Plan Section 3.1.4.

Table 5: Sandhill Crane Habitat Benefit Implementation Actions Reporting for 2024

Reporting Component	Reporting Period Data
Number of Acres Enrolled and Maintained	
Roosting Habitat	0
Forage Habitat	0
Water Volume delivered for Maintenance (AF)	
Roosting Habitat	<i>The first full year of Program operations capable of delivering water is expected to be 2028.</i>
Forage Habitat	
Roosting Habitat Summary	<i>See Section 4.1.3 below</i>
Forage Habitat Summary	<i>See Section 4.1.4 below</i>

4.1.3 Roosting Habitat Summary

Beginning in Program Year 1, anticipated in 2028, the annual report will include a summary of the field types used, roost site size, location, timing, and duration of field flooding for the year.

4.1.4 Forage Habitat Summary

Beginning in Program Year 1, anticipated in 2028, the annual report will include a summary of the types of agricultural fields enrolled and associated management practices used and water delivery timing.

4.2 Benefit Environmental Response

4.2.1 Goal

The goal of the Sandhill crane benefit is to provide additional foraging and roosting Sandhill crane habitat, anticipated to support an average of 700 additional cranes through the practices of winter field flooding and agricultural/crop management. It is recognized that wintering crane numbers within the Program Water Delivery Area will be influenced by factors beyond the control of the Program including stressors on breeding grounds, population response to climate change, pathogenic disease impacts, and surrounding land uses.

4.2.2 Progress and Current Status

There were no changes to environmental responses during the reporting period. Table 6 presents the reporting components for the Sandhill crane benefit environmental response pursuant to the CAPB.

Table 6: Sandhill Crane Habitat Benefit Environmental Response Reporting for 2024

Reporting Component	Reporting Period Data
Number of Sandhill crane using roosting habitat	n/a
Number of Sandhill crane using forage habitat	n/a

5. COSUMNES RIVER BENEFIT

5.1 Benefit Implementation Actions

5.1.1 Benefit Objective

The Program will improve groundwater levels adjacent to the Cosumnes River through the in-lieu recharge of groundwater levels from the delivery of recycled water, which in turn will improve Cosumnes River streamflow rates and volumes. This additional flow is anticipated to provide an improvement in the annual average days with flows above 20 cubic feet per second [cfs] at Twin Cities Road (connectivity flow days). The improved connectivity flow days will be beneficial for anadromous Chinook salmon and provide improved habitat for native resident fish and other aquatic organisms. Flows (and volumes) will be improved by an annual average of approximately 13,000 Acre Feet (AF) above modeled future baseline conditions at Twin Cities Road.

5.1.2 Progress and Current Status

Based on the current schedule, Harvest Water will become operational in mid-2027 and perform a full year of operations (Program Year 1) in 2028. Table 7 presents the reporting components for the Cosumnes River public ecosystem benefit pursuant to the CAPB, Exhibit B – Adaptive Management Plan Section 3.2.4.

Harvest Water will demonstrate improvement to groundwater elevations near the Cosumnes River through groundwater elevation monitoring. Monitoring well MW-7 will serve as the representative monitoring well unless the Parties mutually agree to use additional or different suitable well(s).

Table 7: Cosumnes River Benefit Implementation Actions Reporting for 2024

Reporting Component	Reporting Period Data
Spring groundwater elevation at MW-7	n/a
Fall groundwater elevations at MW-7 (October)	n/a

5.2 Benefit Environmental Response

5.2.1 Goal

During the fall-run Chinook salmon migration period (October to December), fish passage through the lower Cosumnes River is limited by reduced instream flow causing decreased stream connectivity. A minimum instream flow of approximately 20 cfs (0.57 m³/s) would increase stream connectivity helping to aid in and expand Chinook salmon migration. The in-lieu recharge of groundwater levels due to the delivery of recycled water will improve Cosumnes River flows, providing an average annual improvement of 31 days with flows \geq 20 cfs, and 11 days with connectivity flow \geq 20 cfs between October and December compared to future baseline conditions, as modeled, and measured at Twin Cities Road.

5.2.2 Progress and Current Status

Consistent with Section 4.2.4 of Exhibit B (Ecosystem Adaptive Management Plan) of the CAPB, there are no required reporting components for this Benefit Environmental Response. Modeled cumulative additional days of 20+ cfs October to December at Twin Cities Road will be evaluated beginning in Program Year 15, anticipated in 2042.

6. PASSIVE WETLAND AND RIPARIAN HABITAT BENEFIT

6.1 Benefit Implementation Action

6.1.1 Benefit Objective

The Program's in-lieu groundwater recharge has the potential to increase both the quantity and quality of groundwater dependent ecosystems (GDE) including wetlands and riparian habitat throughout the Program's Groundwater Benefit Area. Plant species native to these GDEs are dependent on the presence of shallow groundwater to support mature vegetation and seedling establishment. The Program will enhance a total of 2,633 acres of passive wetlands and riparian habitat, supported by increased groundwater levels within at least 10 feet below ground surface (bgs) on managed and unmanaged lands within the Program Area.

6.1.2 Progress and Current Status

See Section 3 Project Implementation Actions for progress regarding the recycled water delivery that will result in the passive wetland and riparian habitat benefit. In 2024, the Harvest Water team monitored water levels in seven monitoring wells across the service area, developed a groundwater monitoring plan, and identified proposed sites for installing new monitoring wells for tracking Harvest Water groundwater benefits.

Table 8 presents the reporting components for the passive wetland and riparian habitat public ecosystem benefit pursuant to the CAPB, Exhibit B – Adaptive Management Plan Section 3.3.4.

Table 8: Passive Wetland and Riparian Habitat Benefit Implementation Action Reporting for 2024

Reporting Component	Reporting Period Data
Acres of wetland and riparian habitat receiving groundwater improvements benefits to within 10 ft bgs	n/a

Beginning in Program Year 5, anticipated in 2032, the annual report will include a summary of the locations of wetland and riparian habitats receiving groundwater elevation improvement benefits to within 10 ft bgs. Associated data collected to determine the acreage will be provided.

6.2 Benefit Environmental Response

6.2.1 Goal

The goal of the passive wetland and riparian benefit is to uplift and improve the functionality of these habitats through elevated groundwater levels. Functionality of these habitats is anticipated to be improved by 10% as measured by modified California Rapid Assessment Method (CRAM).

6.2.2 Progress and Current Status

There were no changes to environmental responses during the reporting period. Pre-project baseline modified CRAM scores will be established for representative monitoring sites prior to Harvest Water operations. Harvest Water will report the classification of enrolled habitat acres, for which a representative monitoring site is demonstrative, along with the results of the measured modified CRAM scores for the representative sites. Starting Program Year 15, anticipated in 2042, modified CRAM scores will be obtained annually during the growing season, with an option to reduce monitoring frequency in the future.

7. ACTIVE WETLAND BENEFIT

7.1 Benefit Implementation Action

7.1.1 Description of Benefit

The Program will create, restore, or enhance a total of 1,300 acres of active wetland habitat within the Program Area through increased groundwater levels of 10 ft bgs or higher (shallower) or through delivery of recycled water for the Term of the Contract management via landowner agreement, and protection via long-term agreements that are agreed upon by the Department and SacSewer, easement, or fee title. All active wetland acres enrolled in the Program will have associated parcel-specific management plans that include details of improvements needed to implement management objectives. These management plans will be either internal or external agreements or contracts, prescribing agreed upon terms for the management of acres enrolled under the active wetland benefit. Management strategies will include delivery of recycled water for acres outside of the Program's Groundwater Benefit Area and land management activities such as invasive weed control, plantings, and/or protection from herbivory.

7.1.2 Progress and Current Status

Harvest Water has conducted extensive outreach to private landowners, Stone Lakes National Wildlife Refuge (SLNWR), and Cosumnes River Preserve (CRP) and has identified multiple opportunities for active wetland habitat enhancement. Harvest Water established regular meetings with members of the Bureau of Land Management, The

Nature Conservancy, Sacramento County, and other partners to coordinate *EcoPlan* implementation opportunities at CRP. Harvest Water has also obtained a Special Use Permit to perform habitat enhancements at SLNWR.

Table 9 presents the reporting components for the active wetland public ecosystem benefit pursuant to the CAPB, Exhibit B – Adaptive Management Plan Section 3.4.4.

Table 9: Active Wetland Benefit Implementation Action Reporting for 2024

Reporting Component	Reporting Period Data
Enrolled acres receiving program water delivery	n/a
Enrolled acres benefitting from groundwater elevation improvements	n/a

Summary of Active Land Management Activities:

As acreage becomes enrolled and management actions are implemented, a summary of active land management activities (i.e., acres receiving native plantings, invasive weed management, and or browsing control actions) will also be provided with results of Harvest Water's land management plan implementation annual review. Executed land management agreements will also be provided.

7.2 Benefit Environmental Response

7.2.1 Goal

The goal of the active wetland benefit is to uplift and improve the functionality of wetland habitats created, enhanced, or restored by the Program through water supply, and land management activities such as invasive weed management, native species plantings, and browse control. The Program's aims to improve modified CRAM scores or equivalent ecological index if mutually agreed upon by the Program and the Department, by 10% on lands protected and managed by entities other than the Program (e.g., Cosumnes River Preserve and Stone Lakes NWR) and 50% on lands not previously managed as a percentage of pre-project baseline modified CRAM scores.

7.2.2 Progress and Current Status

There were no changes to environmental responses during the reporting period. As habitat acres are enrolled, Harvest Water will include the classification of each enrolled habitat acre, for which a representative monitoring site is demonstrative, along with the results of the measured modified CRAM scores, in the respective annual report.

8. ACTIVE RIPARIAN BENEFIT

8.1 Benefit Implementation Action

8.1.1 Description of Benefit

The Program will create, enhance, or restore a total of 500 acres of riparian habitat that are supported by increased groundwater elevations to 10 feet bgs or higher (shallower) and/or by direct water delivery, as needed, to vegetation for the Term of the Contract or until groundwater is within 10 ft bgs and supportive of native vegetation. In addition, these acres will receive active land management strategies, and will be protected through a conservation easement or equivalent that is approved by the Department. All active riparian acres enrolled in the Program will have associated parcel-specific management plans, that include details of improvements needed to

implement management objectives. These management plans will be either internal or external agreements or contracts that prescribe agreed upon terms for the management of acres enrolled under the active riparian benefit. Management strategies may include delivery of recycled water and land management activities including weed control, plantings, and protection from herbivory.

8.1.2 Progress and Current Status

The Harvest Water team has conducted extensive outreach to private landowners, Stone Lakes National Wildlife Refuge (SLNWR), and Cosumnes River Preserve (CRP) and has identified multiple opportunities for active riparian habitat enhancement. Harvest Water established regular meetings with members of the Bureau of Land Management, The Nature Conservancy, Sacramento County, and other partners to coordinate *EcoPlan* implementation opportunities at CRP. Harvest Water has also obtained a Special Use Permit to perform habitat enhancements at SLNWR.

Table 10 presents the reporting components for the active riparian public ecosystem benefit pursuant to the CAPB, Exhibit B – Adaptive Management Plan Section 3.5.4.

Table 10: Active Riparian Benefit Implementation Action Reporting for 2024

Reporting Component	Reporting Period Data
Enrolled acres receiving program water delivery	0
Enrolled acres benefitting from groundwater elevation improvements	0

Summary of Active Land Management Activities:

As acreage becomes officially enrolled and management is implemented, a summary of active land management activities (i.e., acres receiving native plantings, invasive weed management, and or browsing control actions) will also be provided with results of Harvest Water's land management plan implementation annual review. Executed land management agreements will also be provided.

8.2 Benefit Environmental Response

8.2.1 Goal

The Program aims to create, restore, or enhance riparian habitat through elevated groundwater levels and/or direct application of recycled water to vegetation, and land management strategies such as invasive weed management, native species plantings, and browsing protection. It is anticipated that active riparian habitat acres will achieve a minimum modified CRAM score of 70.

8.2.2 Progress and Current Status

There were no changes to environmental responses during the reporting period. As habitat acres are enrolled, Harvest Water will include the classification of each enrolled habitat category, for which a representative monitoring site is demonstrative, along with the results of the measured modified CRAM scores for the representative sites, in the respective annual report.

9. VERNAL POOL COMPLEX BENEFIT

9.1 Benefit Implementation Action

9.1.1 Description of Benefit

California's vernal pool complexes are considered an endangered ecosystem as a result of land conversion and development. The objective of the vernal pool complex benefit is to permanently protect and enhance 353 acres of vernal pool complex habitat and maintain habitat functionality through targeted land management activities. Specifically, the Program intends to influence vernal pool complex habitat through the management of annual grasses using grazing strategies.

9.1.2 Progress and Current Status

The Harvest Water team has conducted extensive outreach to all major vernal complex landowners within the service area. Multiple meetings have been conducted concerning the protection of those vernal complex acres.

Table 11 presents the reporting components for the vernal pool complex public ecosystem benefit pursuant to the CAPB, Exhibit B – Adaptive Management Plan Section 3.6.4.

Table 11: Vernal Pool Complex Benefit Implementation Action Reporting for 2024

Reporting Component	Reporting Period Data
Metric 1: Enrolled Acres Permanently Protected	0

Executed land management agreements will be provided in annual reports as acres become protected. Letters of intent have been received for almost 100% of the benefit acreage, and negotiations are ongoing to achieve protection. Future reports will also include a description of any success and/or difficulties encountered while implementing cattle grazing land management plans.

9.2 Benefit Environmental Response

9.2.1 Goal

The Program will maintain or enhance the condition of the vernal pool complex habitat as assessed by modified CRAM, through permanent protection of existing habitats and grazing management strategies. This will be achieved by implementation of conservation easement or obtaining fee title and cooperative grazing plans for three properties (353 acres) within in the Program Area to protect vernal pool complex habitat from future conversion to agricultural or urban uses.

9.2.2 Progress and Current Status

There were no changes to environmental responses during the reporting period. Benefit environmental responses for most benefits will first be evaluated beginning in Program Year 11 (anticipated in 2038), with the exception of the vernal complex benefit, which will first be evaluated beginning in 2029.

Harvest Water will report wetted acreage and modified CRAM scores for acres enrolled and supported by Program activities.

10. CHALLENGES AND/OR SUCCESSES

The program team continues to make significant progress in capital project delivery and customer recruitment for successful project start-up, with the first full year of Program operations anticipated in 2028.

11. CONCLUSION

For questions or comments please contact Jofil Borja at borjaj@sacsewer.com or 916-876-6054. The next annual report will cover calendar year 2025 and will be submitted by April 30, 2026.