

# Notice and Agenda of a Meeting of the Yucaipa Sustainable Groundwater Management Agency

Board Meeting  
**Wednesday, October 26, 2022 at 10:30 a.m.**  
(909) 797-2489 | [www.yucaipasgma.org](http://www.yucaipasgma.org)

City of Yucaipa, 34272 Yucaipa Boulevard  
Yucaipa, California 92399

## Meeting Broadcast Information

Zoom Online Access - <https://dudek.zoom.us/j/7101150223>

Meeting ID: 710-115-0223

Telephone Access: (929) 205-6099

- 
- I. **Call to Order**
  - II. **Roll Call**
  - III. **Public Comments** At this time, members of the public may address the representatives of the Yucaipa Groundwater Sustainability Agency on matters within its jurisdiction.
  - IV. **Approval of Meeting Minutes**
    - A. Meeting Minutes – July 27, 2022 [[Page 4 of 14](#)]
  - V. **Discussion Items**
    - A. Update on Groundwater Conditions in Yucaipa Subbasin for the 2021-2022 Water Year
    - B. Update on New USGS Climate Stations
    - C. Discussion on FY 22-23 USGS Cooperative Study Items for Yucaipa Subbasin [[Page 9 of 14](#)]
    - D. Update on Preparation of Well Ordinance for Yucaipa GSP Plan Area
    - E. Discussion of Implementation Grant Funding Application
    - F. Discussion of Dudek Proposal to Prepare 2022 Water Year Annual Report
    - G. Discussion of potentially applying a pumping fee for private well users that produce more than 2 AFY
  - VI. **Topics for Future Meetings**
    - Development of San Gorgonio Pass Water Agency replenishment fees.
  - VII. **Comments by Board of Directors**

**VIII. Announcements - Future Meetings**

- A. Wednesday, January 25, 2023 at 10:30 am - Board Meeting
- B. Wednesday, April 26, 2023 at 10:30 am - Board Meeting
- C. Wednesday, July 26, 2023 at 10:30 am - Board Meeting
- D. Wednesday, October 25, 2023 at 10:30 am - Board Meeting
- E. Wednesday, January 24, 2024 at 10:30 am - Board Meeting

**IX. Adjournment**

## Roll Call - Board of Directors

	Present	Primary Representative	Present	Alternative Representative
<b>Purveyors</b>				
South Mesa Water Company		David Armstrong		George Jorritsma
South Mountain Water Company		George Hanson		Rolland Moore
Western Heights Water Company		Mark Iverson		Tim Green
Yucaipa Valley Water District		Joseph Zoba		Jennifer Ares
<b>Municipals</b>				
City of Redlands		John Harris		Kevin Watson
City of Yucaipa		Ray Casey		Fermin Preciado
<b>Regionals</b>				
San Bernardino Valley MWD		Bob Tincher		Matt Howard
San Gorgonio Pass Water Agency		Lance Eckhart		Emmett Campbell
* Quorum of the Board of Directors requires a total of five Purveyor, Municipal, Regional Members				
<b>Stakeholders</b>				
County of Riverside		Steve Horn		Jeff Johnson
County of San Bernardino		Bob Page		--
City of Calimesa		Bonnie Johnson		--

# MINUTES OF THE YUCAIPA SUSTAINABLE GROUNDWATER MANAGEMENT AGENCY

## Board Meeting – July 27, 2022 - 10:30 a.m.

This workshop was held at the City of Yucaipa, 34272 Yucaipa Boulevard, Yucaipa, California.

- I. Call to Order - Chairman Mark Iverson called the meeting to order at 10:30 a.m.
- II. Roll Call - The following representatives, as assigned by each Party, attended the meeting:

Purveyors	Present	Primary Representative	Present	Alternative Representative
South Mesa Water Company	✓	David Armstrong		George Jorritsma
South Mountain Water Company	✓	George Hanson		Rolland Moore
Western Heights Water Company	✓	Mark Iverson	✓	Tim Green
Yucaipa Valley Water District	✓	Joseph Zoba	✓	Jennifer Ares
<b>Municipals</b>				
City of Redlands	✓	John Harris		Kevin Watson
City of Yucaipa		Ray Casey	✓	Fermin Preciado
<b>Regionals</b>				
San Bernardino Valley MWD	✓	Bob Tincher	✓	Matt Howard
San Gorgonio Pass Water Agency	✓	Lance Eckhart	✓	Emmett Campbell
<b>Stakeholders</b>				
County of Riverside		Steve Horn		Jeff Johnson
County of San Bernardino		Bob Page		
City of Calimesa		Bonnie Johnson		

A quorum of the Board of Directors was present to start the meeting.

In addition to the Board of Directors identified above, the following members of the public were registered as attending the meeting:

- Ayman Alzraiee, United States Geological Survey
- Madeline Blua, Yucaipa Valley Water District
- Geoff Cromwell, United States Geological Survey
- Ron Duncan, San Gorgonio Pass Water Agency
- Sam Fuller, Consultant
- Derek Hoffman, Fennemore Law
- Scott Hudson, Oak Glen Domestic
- Mike Kostelecky, Yucaipa Valley Water District
- Yasmeen Nubani, Ortega Strategies Group
- Nyles O’Harra, Yucaipa Valley Water District

- Mia Preciado, Yucaipa Valley Water District
- Debbie Shortlidge, City of Yucaipa
- Steve Stuart, Dudek
- Mike Weil, California Department of Water Resources

III. Public Comments

None

IV. Approval of Meeting Minutes

A. Meeting Minutes – April 27, 2022

David Armstrong moved to approve the board meeting minutes and George Hanson seconded the motion.

South Mesa Water Company	Yes
South Mountain Water Company	Yes
Western Heights Water Company	Yes
Yucaipa Valley Water District	Yes
City of Redlands	Yes
City of Yucaipa	Yes
San Bernardino Valley MWD	Abstain
San Gorgonio Pass Water Agency	Yes

V. Discussion Items

A. Update on Groundwater Conditions in Yucaipa Subbasin for the 2021-2022 Water Year

Steve Stuart provided detailed information about the groundwater conditions in the Yucaipa Subbasin for the current water year. For the first three quarters of the water year, the area received 7.92 inches of precipitation, short of the annual average rainfall amount of 15.62 inches of precipitation.

Specific water conditions were provided for the North Bench Management Area, Calimesa Management Area, Western Heights Management Area, and the San Timoteo Management Area. Additional data will be provided at the next meeting.

B. Consideration of Dudek proposal to develop a well ordinance for the Yucaipa GSP Plan Area [Page 7 of 13]

Steve Stuart provided an overview of the Dudek proposal to develop a groundwater well ordinance for the Yucaipa Groundwater Basin Area. The Drought Executive Order N-7-22 requires the Groundwater Sustainability Agency to provide “written verification” that proposed groundwater wells are consistent with the Groundwater Sustainability Plan.

Steve Stuart discussed the following schedule that would be used to develop a well ordinance for the Yucaipa basin:

- July 27, 2022 – GSA Board Meeting – Consideration of Dudek Proposal
- September 5, 2022 – Draft Well Ordinance to Yucaipa GSA to Review
- September 26, 2022 – Comments from GSA Member Agencies
- October 3, 2022 – Response to Comments Letter to GSA
- October 10-14, 2022 – Finalize Well Ordinance
- October 26, 2022 – GSA Board Meeting – Consideration of Adopting Well Ordinance

Lance Eckhart moved to approve a contract with Dudek for a sum not to exceed \$14,890. Joseph Zoba seconded the motion.

South Mesa Water Company	Yes
South Mountain Water Company	Yes
Western Heights Water Company	Yes
Yucaipa Valley Water District	Yes
City of Redlands	Yes
City of Yucaipa	Yes
San Bernardino Valley MWD	Yes
San Gorgonio Pass Water Agency	Yes

C. Discussion of the City of Redlands Potentially Leaving the Yucaipa Groundwater Sustainability Agency

This item was continued to a future meeting.

D. Discussion of legal representation for the Yucaipa GSA

Steve Stuart discussed the need to have access to an attorney for certain tasks that may be required of the Yucaipa Sustainable Groundwater Management Agency. Matt Howard stated that Varner & Brandt would be available to provide legal support services to the Agency.

Mark Iverson moved to appoint Varner & Brandt as general counsel of the Yucaipa Sustainable Groundwater Management Agency. Lance Eckhart seconded the motion.

South Mesa Water Company	Yes
South Mountain Water Company	Yes
Western Heights Water Company	Yes
Yucaipa Valley Water District	Yes
City of Redlands	Yes
City of Yucaipa	Yes
San Bernardino Valley MWD	Yes
San Gorgonio Pass Water Agency	Yes

- E. Discussion of potentially applying a pumping fee for private well users that produce more than 2 AFY

Steve Stuart provided a brief overview of a policy that would provide additional accountability for private well owners in the North Bench and Calimesa Management Areas. Following a general discussion, Steve Stuart stated that he received sufficient direction to collect additional information and report back at the next board meeting.

- F. Discussion of SGMA Prop 1 funding opportunities

Matt Howard provided information about the Round 2 Sustainable Groundwater Management Implementation Grants available from the Department of Water Resources. This \$202.5 million grant opportunity allows for one application per basin. This item will be added to the next meeting agenda for further discussion and possible action.

- G. Discussion of USGS Proposed tasks in Yucaipa Subbasin from July 1, 2022 to June 30, 2023

Bob Tincher discussed the proposed USGS project list for FY 2022-23. A program letter will be sent to the group from SBVMWD for review and discussion at the next board meeting.

- H. USGS presentation of Yucaipa Integrated Hydrologic Model sensitivity analysis

Ayman Alzraiee and Geoff Cromwell from the United States Geological Survey provided information about the USGS model for the Yucaipa Basin. This detailed presentation also included a discussion about stream gauge stations, the fate and age of recharge water, and the viability of using the existing climate model.

- VI. Topics for Future Meetings - Suggested meeting dates are provided below and will be adjusted based on the progress of each topic.

- Development of San Gorgonio Pass Water Agency replenishment fees.
- Discussion regarding the implementation of a future pump tax
- Overview of the USGS studies in the area
- SGMA Round 2 Implementation Grant

- VII. Comments by the Board of Directors

None

VIII. Announcements

The next scheduled meeting of the Yucaipa Sustainable Groundwater Management Agency will be on Wednesday, October 26, 2022, at 10:30 am.

Future board meetings are scheduled on the following dates:

- Wednesday, January 25, 2023 at 10:30 am - Board Meeting
- Wednesday, April 26, 2023 at 10:30 am - Board Meeting
- Wednesday, July 26, 2023 at 10:30 am - Board Meeting
- Wednesday, October 25, 2023 at 10:30 am - Board Meeting
- Wednesday, January 24, 2024 at 10:30 am - Board Meeting

IX. Adjournment - The meeting was adjourned at 12:05 pm.



# MEMORANDUM

**DATE:** October 26, 2022

**TO:** Yucaipa Sustainable Groundwater Management Agency

**FROM:** San Bernardino Valley Municipal Water District

**SUBJECT:** Yucaipa Subbasin Subtasks in the Fiscal Year 2022-2023 USGS Cooperative Study Program

## Recommendation

Valley District is recommending that the Yucaipa SGMA review and approve Subtasks 2b, 2d, and 2e in the attached United States Geological Survey Program Letter with or without changes.

## Background

The subtasks 2b, 2d, and 2e in the cooperative study agreement between Valley District and USGS are subject to the review of Yucaipa SGMA to ensure that the water resource investigations in the Yucaipa Subbasin are meeting the needs of the basin stakeholders.

<b>Subtask and Description</b>	<b>Potential Value according to USGS</b>	<b>Valley District Cost</b>
<b>2b:</b> Analyze groundwater age, stable isotopes, and nitrate concentrations in the Yucaipa and San Bernardino Basins	Results will improve understanding of groundwater flow and improve simulations of groundwater models	\$27,360
<b>2d:</b> Water quality sampling at 4 USGS monitoring well sites, totaling 18 individual wells	Wells last sampled between 2014 and 2016; data will help evaluate long-term changes in groundwater quality	\$83,879
<b>2e:</b> Provide technical outreach to Yucaipa SGMA, water agencies, and the public	Allows USGS staff to be engaged in meetings, giving presentations, provide technical guidance and support	\$12,469
<b>TOTAL</b>		<b>\$123,708</b>

## Fiscal Impact

None at this time. Valley District typically covers these scientific studies, however, Yucaipa SGMA cost sharing on some of these tasks may be required in the future.

## Attachment

Yucaipa Subbasin Excerpts from the FY 2022-23 USGS Cooperative Study Program Letter

(SBSH, SBEP, SBMP, SBCC, SBRV, and SBCM; <https://ca.water.usgs.gov/sanbern>) will be rehabilitated in the 2022–23 program year. Prior to rehabilitation, SBVMWD will be provided an assessment of the 6 well sites and the needed repairs, some of which could be performed under a future contract.

**Deliverables:** Written assessment and description of rehabilitation done at the following 6 well sites: SBSH, SBEP, SBMP, SBCC, SBRV, and SBCM.

### ***1b. Evaluate rehabilitation of USGS monitoring-well sites***

After rehabilitation of a USGS multiple-depth, monitoring-well site, subsequent water-level and water-quality data will be evaluated and compared to prior data to ensure that (1) the site was rehabilitated sufficiently, and (2) any offset in the data was not induced by the rehabilitation. The following 6 well sites in the Bunker Hill Basin will be evaluated: SBSH, SBEP, SBMP, SBCC, SBRV, and SBCM.

**Deliverables:** Written evaluation of the following 6 well sites: SBSH, SBEP, SBMP, SBCC, SBRV, and SBCM.

## **2. Hydrogeology of the Yucaipa Basin**

In the 2022–23 program year, work in the Yucaipa Basin will include finalizing and archiving work completed during the 2021–22 program year, publishing scientific reports, and collecting new climate and water chemistry data. Five reports have been published to better understand the hydrogeology of the Yucaipa Basin, including surface-water and groundwater quality (Mendez and others, 2001); geologic structure (Mendez and others, 2016); geologic, hydrologic, and water-quality data from USGS multiple-depth, monitoring-well sites (Mendez and others, 2018); a three-dimensional hydrogeologic framework model (Cromwell and Matti, 2022); and hydrologic characterization and simulation of the Yucaipa Integrated Hydrologic Model (YIHM; Cromwell and Alzraiee, 2022). During the 2022–23 program year, work in the Yucaipa Basin will continue to build upon the published reports. This work includes four subtasks, as described below.

### ***2a. Evaluate integrated hydrologic model scenarios, uncertainty analysis, and managed aquifer recharge***

The original work for this subtask was to characterize the hydrogeology and to develop an integrated hydrologic model of the Yucaipa Basin (the YIHM). Two reports were published in January 2022. The first report describes the hydrogeologic framework and characterizes the hydrologic setting of the Yucaipa Basin; the second report describes the YIHM.

Subsequent work for this subtask was divided into two parts. Part 1 included evaluation of the limitations of the YIHM with respect to input data and calibrated model parameters and recommendations for additional data collection. Also included were evaluation and documentation of groundwater management scenarios in the Yucaipa Basin using the YIHM. Part 2 included evaluation of the fate and extent of imported water that was used as managed aquifer recharge. This subsequent work was developed and proposed by the USGS in consultation with SBVMWD staff.

Last year, work for part 1 included: an analysis of locations where new stream gages could be placed or reactivated to improve estimates of surface-water flow and water availability in the YIHM; a statistical analysis of the sensitivity of the YIHM to changes in selected parameters, which provide a greater understanding of how changes to input parameters will affect model results; use of the YIHM to track the source of groundwater flowing to the Yucaipa Regional Park, and flowing from the Wilson Creek and the Oak Glen Creek spreading basins, which can be used to evaluate the sources and paths of groundwater flow through different parts of the groundwater system; and an evaluation of the effects of future climate scenarios on evapotranspiration, groundwater recharge, and storage in the Yucaipa Basin using the YIHM, which will support optimal water management by providing estimates of future

**Ms. Heather Dyer, CEO/General Manager, San Bernardino Valley Municipal Water District**

groundwater recharge and storage. A presentation summarizing the work in part 1 was provided to SBVMWD on June 6, 2022.

In the 2022–23 program year, results from part 1 will be archived so that SBVMWD and their consultants can use the information; location of new stream gages and results from the particle-tracking analysis will be provided to SBVMWD as a USGS-approved powerpoint presentation; results from the parameter sensitivity analysis will be added to the publicly available YIHM model archive; and climate scenarios will be documented in a scientific journal article. Additional funds are requested for the 2022–23 program year to archive the materials described above and publish the scientific journal article.

Last year, work for part 2 included an analysis of water-chemistry data to evaluate the presence of imported water from northern California in selected wells in the Yucaipa Basin over time. The results from this work can be used to evaluate how quickly, and at what depths, the imported water has traveled through the groundwater system. A preliminary report has been prepared and is in initial review.

In the 2022–23 program year, the report from part 2 will be revised following colleague review and cooperative review from SBVMWD, and will be published as a USGS report. Additional funds are requested to finalize and publish this report.

**Deliverables:** (1) A USGS-approved presentation that includes the optimal locations of new stream gages, results from the particle-tracking analysis, and the effect of future climate scenarios on groundwater availability in the Yucaipa Valley. (2) Updates to the YIHM model archive with the YIHM parameter sensitivity results. (3) A scientific journal article describing effects of future climate scenarios in the YIHM on groundwater recharge. (4) A report describing the presence and rate of flow of imported water in the groundwater system. (5) Written summary of work performed each quarter to support this subtask.

***2b. Analyze groundwater age, stable isotopes, and nitrate concentrations in the Yucaipa and San Bernardino Basins – tentative upon approval***

The purpose of this subtask is to better understand the groundwater chemistry and the hydrogeology of the Yucaipa and San Bernardino Basins, including flow between the basins, by investigating groundwater chemical signatures from selected wells. For the 2022–23 program year, this subtask contains elements of groundwater chemical analyses that previously were part of different subtasks, which were developed by the USGS in consultation with SBVMWD. The scope of this subtask was modified to combine the evaluation of nitrate concentrations in the Yucaipa Basin (previously subtask 2c) and the evaluation of stable isotopes and groundwater age in the Yucaipa and Bunker Hill Basins (previously subtask 2d). The modified scope provides a more comprehensive analysis of groundwater flow in the groundwater system over different timescales and allows for the findings to be published in a single report.

The work in this subtask will help to better understand the sources of groundwater recharge in the Yucaipa and Bunker Hill Basins, to provide better estimates of groundwater flow paths and travel time of groundwater recharge in different parts of the basins, and to better understand historical changes in groundwater chemistry with respect to nitrate contamination. This investigation includes a correlation of groundwater age and stable-isotope chemistry to refine sources of groundwater recharge, a comparison of groundwater chemistry between the two basins relative to geography and hydrogeology, and an analysis of the fate and transport of nitrate in the groundwater system. The results from this subtask will improve the conceptual and quantitative understanding of groundwater flow in the Yucaipa and Bunker Hill Basins and can be used to improve numerical simulations of groundwater flow in the YIHM and in the Upper Santa Ana River Integrated Model (USARIM).

**Ms. Heather Dyer, CEO/General Manager, San Bernardino Valley Municipal Water District**

A draft of the scientific journal article will be provided to SBVMWD for review by January 31, 2023; final publication of this journal article is expected to occur during the 2022–23 program year. Additional funds are requested to accommodate the change in scope and to complete the journal article.

**Deliverables:** Written summary of work performed each quarter to support this subtask. Draft and published journal article.

***2c. Install and monitor climate stations***

The purpose of this subtask is to install and monitor two climate stations in the Yucaipa Basin. The climate stations will monitor temperature and precipitation at selected intervals. The data collected from these stations can be used to make water-management decisions and can be used to refine climate input data for the YIHM. The locations of these two climate stations were selected during program year 2021–22 in cooperation with SBVMWD and were chosen to provide a range of climatic information within the Yucaipa Basin. One station was installed during program year 2021–2022 near the central part of the Yucaipa Basin near South Mesa Water Company well number 9. The second station, located in the northern part of the Yucaipa Basin near the San Bernardino Mountains, was not installed during program year 2021–22 due to unanticipated logistical and permitting issues with the City of Yucaipa, which owns the land on which the second site is to be installed. The logistical and permitting issues yet to be resolved include construction of a cement retaining wall around the climate station. The second station is planned to be installed during program year 2022–23.

In the 2022–23 program year, the second climate station will be installed, both stations will be monitored, and the data will be archived according to USGS Fundamental Science Practices. Funding is requested to complete installation of the second climate station, including construction of the retaining wall, and to monitor data collection at both stations. In this agreement, funds for monitoring both stations are requested only for July 1 through September 30, 2022. Beginning October 1, 2022, the USGS Redlands Field Office will be responsible for monitoring the two stations and will be funded through a separate agreement between SBVMWD and the USGS Redlands Field Office.

**Deliverables:** Two operating climate stations and established monitoring program. Written summary of work performed each quarter to support this subtask.

***2d. Sample for water quality at USGS monitoring-well sites – tentative upon approval***

The purpose of this subtask is to collect new groundwater-quality data from the 4 USGS multiple-depth, monitoring-well sites in the Yucaipa Basin (YVWC, YVDA, YVEP, and YV6E). The 4 sites have a combined total of 18 individual wells, each perforated at a different depth. Wells at the four sites were last sampled between 2014 and 2016, except for the three most shallow wells at site YV6E which were sampled in 2019. New groundwater-quality data are necessary to evaluate present conditions of the groundwater system in order to evaluate the effects of anthropogenic changes on the groundwater system, such as an increase or decrease in pumping and changes to the rate and location of managed aquifer recharge, with specific relevance to the Wilson Creek and the Oak Glen Creek spreading basins; and to better constrain estimates of groundwater flow paths through the aquifer and the length of travel time within, and between, groundwater subareas within the Yucaipa Basin. The collection of new groundwater quality data also will contribute to a long-term record of chemical data in the Yucaipa Basin that are necessary to evaluate long-term changes in groundwater quality in the basin.

In the 2022–23 program year, groundwater samples will be collected from wells at each of the 4 USGS multiple-depth, monitoring-well sites in the Yucaipa Basin. Laboratory analyses will be performed to measure major and minor ions, trace elements, nutrients, stable isotopes of oxygen and hydrogen, tritium, and carbon-14. The analytical results will be archived in the USGS National Water

**Ms. Heather Dyer, CEO/General Manager, San Bernardino Valley Municipal Water District**

Information Systems (NWIS) database, which is a publicly available, permanent archive; and a summary of the results will be presented to SBVMWD at the end of the program year.

**Deliverables:** Analytical results for all samples will be archived in the NWIS database. A presentation will be given to SBVMWD by June 30, 2023 summarizing the analytical results. Written summary of work performed each quarter to support this subtask.

***2e. Provide technical outreach – tentative upon approval***

If requested by SBVMWD, the USGS will provide technical outreach to the Yucaipa groundwater sustainability agency, the several water agencies, and the general public in the Yucaipa Basin. The USGS will provide the necessary technical guidance and support to help ensure success as these parties continue to work together and develop hydrogeologic understanding and water management plans. This technical outreach may include attendance at meetings, giving presentations, individual briefings of agencies, completing publication of information products, maintenance and updating the project web page, technical review of proposed plans, and technical support for the USGS integrated hydrologic model YIHM.

**Deliverable:** Written summary of technical outreach provided each quarter to support this subtask.

**3. Rialto–Colton Basin**

In the 2022–23 program year, work in the Rialto-Colton Basin will include an inventory of 18 USGS multiple-depth, monitoring-well sites. These sites provide valuable data that are used to better understand and to manage the Rialto-Colton Basin, including changes in water levels and water quality; calculations of changes in basin storage; estimates of runoff and recharge; and interaction of surface water and groundwater. These data also are used to calibrate the various groundwater-flow and solute-transport models and are used in multiple studies and by multiple water agencies. Specific subtasks include:

***3a. Inventory USGS monitoring-well sites***

Inventory of the 18 USGS multiple-depth, monitoring-well sites in the Rialto-Colton Basin will include written descriptions and photographs of each site documenting the physical condition of the site infrastructure. Documentation of the physical condition of each site will be used to evaluate whether any of the sites should be rehabilitated in future program years. The 18 sites inventoried in the 2022–23 program year are El Verde Reservoir, Linden Ponds, Apple St, Cedar Ave, Vineyard Ave, Fontana Landfill, Airport, Easton Reservoir, RCNE, RCSW, Rialto Ave, Cesar Chavez Park, Fogg 1, Fogg 2, CRCR, Lilac Park, RHSW, and RCZ6. SBVMWD will be provided written descriptions, photographs, and an assessment of the 18 sites and any needed repairs or rehabilitation, which could be performed under a future contract.

**Deliverables:** Written assessment and description of any suggested repair or rehabilitation for the 18 USGS monitoring-well sites: El Verde Reservoir, Linden Ponds, Apple St, Cedar Ave, Vineyard Ave, Fontana Landfill, Airport, Easton Reservoir, RCNE, RCSW, Rialto Ave, Cesar Chavez Park, Fogg 1, Fogg 2, CRCR, Lilac Park, RHSW, and RCZ6.

**4. Santa Ana River**

In the 2022–23 program year, no work will be performed on this task. Previous work on this task was related to sediment transport along the Santa Ana River. All previous work has been completed.

**Deliverables:** None.

**5. Santa Ana Native Fish Study**

In the 2022–23 program year, work on the Santa Ana native fish study will include continued estimation of population and habitat features for native fish species in the study area. This effort will include sampling

**Ms. Heather Dyer, CEO/General Manager, San Bernardino Valley Municipal Water District**

The proposed program for the August 1, 2022 – June 30, 2023 agreement period, including the six major tasks and associated subtasks and costs, are as follows:

Basin and Task	Funding		
	SBVMWD	USGS	Total
<b>1. Bunker Hill and Lytle Creek Basins</b>			
a. Rehabilitate USGS monitoring-well sites	\$23,950	\$4,533	\$28,483
b. Evaluate rehabilitation of USGS monitoring-well sites	\$18,896	\$4,724	\$23,620
<i>Subtotal</i>	<b>\$42,846</b>	<b>\$9,257</b>	<b>\$52,103</b>
<b>2. Yucaipa Basin</b>			
a. Evaluate integrated hydrologic model scenarios, uncertainty analysis, and managed aquifer recharge	\$30,019	\$7,505	\$37,524
b. Analyze groundwater age, stable isotopes, and nitrate concentrations in the Yucaipa and San Bernardino Basins – tentative upon approval	\$27,360	\$6,840	\$34,200
c. Install and monitor climate stations	\$39,447	\$3,646	\$43,093
d. Sample for water-quality at USGS monitoring-well sites – tentative upon approval	\$83,879	\$13,019	\$96,898
e. Provide technical outreach – tentative upon approval	\$12,469	\$3,118	\$15,587
<i>Subtotal</i>	<b>\$193,174</b>	<b>\$34,128</b>	<b>\$227,302</b>
<b>3. Rialto–Colton Basin</b>			
a. Inventory USGS monitoring-well sites	\$14,079	\$3,156	\$17,235
<i>Subtotal</i>	<b>\$14,079</b>	<b>\$3,156</b>	<b>\$17,235</b>
<b>4. Santa Ana River</b>			
All work has been completed	—	—	—
<i>Subtotal</i>	—	—	—
<b>5. Santa Ana Native Fish Study</b>			
a. Develop a population estimate for native and non-native fish species	\$166,570	\$37,474	\$204,044
b. Continue Development of a Population Viability Analysis for native fishes in the Santa Ana River			
<i>Subtotal</i>	<b>\$166,570</b>	<b>\$37,474</b>	<b>\$204,044</b>
<b>6. Upper Santa Ana River Integrated Model</b>			
a. Review the expanded Upper Santa Ana River Integrated Model, designed to track movement of dissolved solids and nitrate	\$34,213	\$8,552	\$42,765
b. Report on geology of Upper Santa River groundwater basin	\$0	\$0	\$0
<i>Subtotal</i>	<b>\$34,213</b>	<b>\$8,552</b>	<b>\$42,765</b>
<b>TOTAL (Tasks 1-6)</b>	<b>\$450,882</b>	<b>\$92,567</b>	<b>\$543,449</b>
<b>TOTAL (Tasks 1-6) without tentative upon approval (2b,2d&amp;2e) tasks</b>	<b>\$327,174</b>	<b>\$69,590</b>	<b>\$396,764</b>