Basin Technical Advisory Committee

Bear Valley Mutual Water Company

City of Colton

East Valley Water District

City of Loma Linda

City of Redlands

City of Rialto

City of Riverside

San Bernardino County Flood Control District

San Bernardino Municipal Water Department

San Bernardino Valley Municipal Water District

San Bernardino Valley Water Conservation District

West Valley Water District

Western Municipal Water District

Yucaipa Valley Water District

SPECIAL NOTICE REGARDING CORONAVIRUS DISEASE 2019 (COVID-19) AND PARTICIPATION IN PUBLIC MEETINGS

On March 4, 2020, Governor Newsom declared a State of Emergency resulting from the threat of COVID-19. Governor Newsom issued Executive Order N-25-20 (3-12-20) and Executive Order N-29-20 (3-17-20) which temporarily suspend portions of the Brown Act relative to conducting public meetings. Subsequent thereto, Governor Newsom issued Executive Order N-33-20 (3-19-20) ordering all individuals to stay at home or at their place of residence. Accordingly, it has been determined that all meetings of the Basin Technical Advisory Committee will be held pursuant to the Brown Act and will be conducted via teleconference. There will be no public access to the meeting venue.

BASIN TECHNICAL ADVISORY COMMITTEE MONDAY, DECEMBER 6, 2021 – 1:30 P.M.

PUBLIC PARTICIPATION

Public participation is welcome and encouraged. You may participate in the December 6, 2021, meeting of the Basin Technical Advisory Committee online and by telephone as follows:

Dial-in Info: 877 853 5247 US Toll-free
Meeting ID: 864 6271 4600

https://sbvmwd.zoom.us/j/86462714600
Passcode: 3802020

If you are unable to participate online or by telephone, you may also submit your comments and questions in writing for the Committee's consideration by sending them to comments@sbvmwd.com with the subject line "Public Comment Item #" (insert the agenda item number relevant to your comment) or "Public Comment Non-Agenda Item". Submit your written comments by 6:00 p.m. on Sunday, December 5, 2021. All public comments will be provided to the Chairman and may be read into the record or compiled as part of the record.

IMPORTANT PRIVACY NOTE: Participation in the meeting via the Zoom app is strongly encouraged. Please keep in mind: (1) This is a public meeting; as such, the virtual meeting information is published on the World Wide Web and available to everyone; 2) Should you participate remotely via telephone, your telephone number will be your "identifier" during the meeting and available to all meeting participants. Participation in the meeting via the Zoom app is strongly encouraged; there is no way to protect your privacy if you elect to call in to the meeting. The Zoom app is free to download.

380 East Vanderbilt Way
San Bernardino, CA 92408
909.387.9200 ph
909.387.9247 fax
www.sbvmwd.com

Basin Technical Advisory Committee

Meeting No. 115

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Passcode: 3802020

REVISED

AGENDA

December 6, 2021, 1:30 p.m.

1) Call to Order/Pledge of Allegiance/Introductions

2) Approval of Minutes

   A. October 4, 2021, Meeting

3) New Business

   A. Consider the 2022 BTAC Regional Water Management Plan

   B. Consider the Proposed Estimation of Maximum Demand for the Valley District Service Area by RAND Corporation

   C. Status Update Regarding DWR Well Drilling Standards

   D. Status Update on State Water Project and Water Supply Contingency Workgroup

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4) Old Business and Updates

   A. Report from the Engineering Subcommittee

   B. Report from the Water Conservation Subcommittee

   C. Report from the Project Review Subcommittee
      - Review City of Rialto "City 3A" Groundwater Treatment System Project

5) Other Business

   A. Confirm Next Meeting Date of February 7, 2022, at 1:30 p.m.

6) Adjourn

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MINUTES
OF
THE
BASIN TECHNICAL ADVISORY COMMITTEE

MEETING NO. 114

October 4, 2021

Guests attended:

Thomas Crowley, City of Rialto
Miguel Guerrero, San Bernardino Municipal Water Department
Steve Miller, San Bernardino Municipal Water Department
Warren Huang, San Bernardino Municipal Water District
Steve Miller, San Bernardino Municipal Water District
T.Milford Harrison, San Bernardino Valley Municipal Water District
Gil Botello, San Bernardino Valley Municipal Water District
Bob Tincher, San Bernardino Valley Municipal Water District
Shavonne Turner, San Bernardino Valley Municipal Water District
Matt Howard, San Bernardino Valley Municipal Water District
Adekunle Ojo, San Bernardino Valley Municipal Water District
Jose Macedo, San Bernardino Valley Municipal Water District
Melody McDonald, San Bernardino Valley Water Conservation District
Joseph Zoba, Yucaipa Valley Water District
Madeline Blua, Yucaipa Valley Water District
Jennifer Ares, Yucaipa Valley Water District
Josh Swift, Fontana Water Company
Cris Fealy, Fontana Water Company
Brian Dickinson, City of Colton
Van Jew, West Valley Water District
James McKenzie, San Bernardino County Public Works
Don Lee, Tetra Tech
Kevin Watson, City of Redlands
Cecilia Griego, City of Redlands
John Harris, City of Redlands

Greg Herzog, Riverside Public Utilities

Leo Fernando, Riverside Public Utilities

Rocky Welborn, East Valley Water District

Jeff Noelte, East Valley Water District

Linda Jadeski, West Valley Water District

Ian Achimore, SAWPA

909- 822- 2201 (Unknown Guest), Joined after Introductions

951-244- 2955 (Unknown Guest), Joined after Introductions

Agenda Item 1. Call to Order/Pledge of Allegiance/Introductions.

The meeting of the Basin Technical Advisory Committee was called to order by Tom Crowley at 1:30 p.m. via Zoom.

Agenda Item 2. Approval of Minutes.

A. Approval of the Minutes of the August 16, 2021, meeting.

Bob Tincher moved to approve the minutes of the August 16, 2021, meeting. Jeff Noelte seconded. The motion was unanimously adopted by an non-roll call vote.

Agenda Item 3. New Business

A. Presentation of Computer Modeling Results for Proposed Water Supply Projects in the Upper Watershed

Bob Tincher, Deputy General Manager/Chief Water Resources Officer provided an overview of a recently completed modeling study, more than 3,000 pages long which cost about 2 million dollars. Mr. Tincher highlighted this as a comprehensive multiagency effort, the most comprehensive modeling that we have done as a region, mostly funded by grant funds. Mr Tincher explained the model stretches from Yucaipa to Prado and provided an overview of the various model scenarios and lessons learned.

The model was developed in MODFLOW (Modular Finite Difference Flow Model) which was developed by the United States Geological Survey and is based upon Darcy's law. This project was executed despite some consulting firms saying it could not be achieved. Mr. Tincher provided an overview of how the model works, the formulas, and calculations of how the water flows. This model provides a geological model for the entire watershed. Mr. Tincher provided model scenarios and explained the purpose of the model, showing that it is a good representation of the actual system.

Items highlighted during the lessons learned included that over 60% of the Santa Ana River Watershed recharge comes through the Valley District Service area. Mr. Tincher also highlighted that if all the proposed water supply projects were constructed in the Valley District service area, it would add about 52,000 AFY per year. The modeling concluded that these projects have no impact to flow at Prado. The modeling also concluded that the proposed stormwater capture program or investments in the State Water Project, alone, should provide enough water for sustainability into the future. Investing in both the State Water Project and stormwater capture would provide added certainty for overcoming prolonged droughts.

B. State Water Project Supply Update

Bob Tincher, Deputy General Manager/Chief Water Resources Officer presented this item. Mr. Tincher highlighted the current California drought conditions. The rainfall this year, is lower than 2014 for the state water project, as result DWR may provide an initial zero percent Table A allocation, based on current SWP storage. However, he pointed out the SWP has never had back-to-back severely dry years and reminded everyone that the allocation will be updated, throughout the rainy season.

C. Sterling Natural Resource Center (SNRC) Project Update

Jeff Noelte from East Valley Water District commenced with providing an update. With the project starting in 2018, currently 150 personnel, 51 subcontractors are working the site. Mr. Noelte provided an update to the various uses the resource center will be used for. Mr. Noelte highlighted the importance of renewable energy solution Natural Resource Center will bring to the community along with the career pathway program for the youth.

Mr. Noelte provided an overview of the aeration basins, digesters, and addressed how the screening facility would be working and highlighted the Facility operations. A construction flyover video was presented of the current state of the resource center. Mr. Noelte concluded his presentation announcing the Summer of 2022 is the anticipated timeframe of completion.

Agenda Item 4. Old Business

A. Report from the Engineering Subcommittee

Chair Crowley and Matt Howard provided updates to the Watermaster Water Information System Enterprise (WISE) database program, updates on the waterman hydroelectric. Next meeting is scheduled for December 6th at 1000.

B. Report from the Water Conservation Subcommittee

The chair was not available, Ms. Jennifer Ares announced the current conservation meeting was postponed to October 25th. Ms. Ares provided a brief

overview of the August 30th meeting. Items covered during that meeting included a Gas company presentation, property tax reduction that Valley District Board of Directors approved on August 3rd, the Inland Empire Clean water partnership, and the water shortage contingency plan.

C. Report from the Project Review Subcommittee

Greg Herzog provided an updated project score revised scoring of various projects included in the 2020 IRUWMP and will continue to receive updates and hope for a final product to be completed by the next BTAC meeting.

Agenda Item 5. Other Business

A. Next Meeting Date is scheduled for December 6, 2021, at 1:30 p.m.

Agenda Item 7. Adjourn.

There being no further business, Chairman Crowley adjourned the meeting at 3:12 p.m.

Respectfully submitted,

Jose Macedo
Clerk of the Board

Upper Santa Ana River Watershed
2020 Integrated Regional Urban Water Management Plan

Call for Projects – Project Submittal Form

Please email all forms and supporting documents to Dawn Flores (dflores@woodardcurran.com) and Laine Carlson (lcarlson@wsc-inc.com)

Please check one. This form is to:

☐ Update an existing project in the 2015 IRWMP/current project list

If updating an existing project, only the information that has changed needs to be provided; other sections can be left blank

☒ Submit a new project to be included in the 2020 IRUWMP

Note: new projects can be submitted at any time and will be added to the list once approved.

1. Contact Information

General Information	
Project Name	Well "City 3A" Groundwater Treatment System Project
Lead Agency or Organization	City of Rialto
Organization Address	150 S. Palm Avenue, Rialto, California, 92376
Project Partners (if applicable)	Not Applicable
Contact Information	
Primary Contact Name	Thomas J. Crowley
Organization	City of Rialto
Title	Utilities Manager
Phone Number	(909) 820-8056
Email	tjcrowley@rialtoca.gov

2. Project Description

Project Information	
Readiness for implementation (conceptual or developed)	Conceptual
Type (planning or implementation)	Implementation
Location (address, coordinates and/or other location description to describe the project area)	Latitude: 34.12473 degrees N Longitude: -117.34661 degrees W

Project Description

Provide a 1-2 paragraph project description. Include a discussion of any facilities that will be constructed or programs to be implemented, and how these will provide water resource-related benefits to the Region.

The proposed Project includes construction of an ion-exchange groundwater treatment plant at an existing well site to deliver a significant, new, local supply of potable water. The City's municipal water system obtains supplies from four adjudicated groundwater basins, surface water from canyon surface flows, emergency stand-by agreements, and recycled water. The Project will treat 3,200 acre feet per year (AFY) of groundwater from the Lytle Creek Basin, (a subbasin of the San Bernardino Basin), which is within the City's available groundwater rights. Testing in 2015 indicated that the groundwater is currently unusable as it has poor water quality and must be treated upon extraction for pollutants such as arsenic. The proposed

Project will equip the well and treat the groundwater to a usable drinking water quality at the new treatment plant.

The Project is significant because the City relies on imported water from the State Water Project (SWP), which draws water from the San Francisco-San Joaquin Bay-Delta (Bay-Delta), to replenish the groundwater basins that supply the City's potable water. The local potable water produced by the Project from an underutilized groundwater basin will provide almost 36% of the City's current potable water demand (8,929 AFY in 2020). By generating 3,200 AFY of potable water, the Project will immediately reduce demands and directly offset imported water supplies from the Bay-Delta, a particularly critical measure for increasing local, regional, and statewide water reliability during the current severe drought conditions in San Bernardino County and throughout California. This Project will increase local drinking water supply availability and provide resiliency to community water supplies threatened by climate change and drought.

Relationship to other Projects in the Region

Can the project be integrated with other regional projects?

This Project will enhance the available water supply delivered through the Baseline Feeder which is shared by West Valley Water District, Riverside Highland Water Company, and the City of Rialto.

Has there been any coordination with other entities within or outside of the Region?

Per an agreement with the County of San Bernardino for cleaning up contaminants in the Rialto Basin, the County provided the initial funding to build this additional well from other sources outside of the Rialto Basin. This well "City 3A" site was selected due to available water rights in the Lytle Creek Basin for the City of Rialto.

3. Project Benefits

Check the benefits the project will provide. All projects must provide one or more benefits. Project components that will ensure these benefits should be included in the Project Description.

Improve Water Supply Reliability	
☐	Reduce demand for water
☒	Increase utilization of local supplies
☐	Increase storage of water in groundwater basins during wet years
☒	Improve system resiliency and the ability to respond to emergency supply interruptions
☒	Ensure equitable access to clean drinking water
Balance Flood Management and Increase Stormwater Recharge	
☐	Utilize flood control retention/detention basins for recharge
☐	Reduce the risk of flooding while providing multiple benefits, where possible
☐	Improve flood control or reduce the risk of flooding in disadvantaged communities
☐	Improve surface water quality and increase recharge by capturing stormwater in urban areas
Improve Water Quality	
☐	Reduce or eliminate violations of drinking water quality standards
☒	Improve surface and groundwater quality by treating water supply
☐	Manage total dissolved solids and nitrogen in groundwater
☒	Ensure equivalent water quality services for disadvantaged communities
Improve Habitat and Open Space	
☐	Improve habitat and open space
☐	Increase recreation and public access in and around local waterways
Address Climate Change through Adaptation and Mitigation	

- ☒ Adapt to the impacts of climate change on water resources
- ☒ Reduce or offset energy consumption or GHG emissions associated with water and wastewater systems

Additional Benefits

Check which Disadvantaged Communities (DAC), Native American Tribal Communities and Environmental Justice concerns are features of the project:

☒ Benefits to DACs. Explain:

Underrepresented Communities exist within a significant portion of the City's service area and have been impacted by drought conditions. Disadvantaged Communities (DACs), Environmentally Disadvantaged Communities (EnvDACs), and tribal communities are potentially impacted by drought conditions because water reliability and affordability are at risk due to limited water supplies. DACs within the City's service area are identified in the City's 2020 Urban Water Management Plan (UWMP) through the identification of single-family and multi-family residential housing for lower-income households to assist the City in providing water service to lower-income households. According to the updated housing element in the Rialto General Plan, it is estimated that about 41% of all Rialto households qualify as lower income.

EnvDACs also exist within the City's service area. The average Pollution Burden and Population Characteristics scores, as defined by CalEPA and their Office of Environmental Health Hazard Assessment, are multiplied together to produce an overall CalEnviroScreen score. The City of Rialto shows an overall CalEnviroScreen 4.0 Percentile of 84 and a Pollution Burden Percentile of 59. The results for each indicator range from 0-100 (100 being the highest percentile of impacts) and represent the percentile ranking of census tract 6071003804 (the Project location) relative to other census tracts.

☒ Benefits to Native American Tribal communities. Explain:

The Project will directly benefit tribes in the Santa Ana River watershed. The Summary Report for the Santa Ana Watershed Basin Study (U.S. Department of the Interior Bureau of Reclamation, September 2013), was developed by the U.S. Bureau of Reclamation along with Santa Ana Watershed Project Authority (SAWPA), and members of the One Water, One Watershed (OWOW) Committee. Chapter 6 of the Summary Report discussed tribal communities that exist in the watershed. Reducing demand on imported potable supplies ensures local groundwater supply reliability for tribal communities in the Santa Ana River watershed. On a statewide level, the Project may also help Reclamation meet trust responsibilities in the SWP area since the Project will be reducing demand on this source. Any increase in water supply sustainability and greater availability in overall water supply resulting from water use efficiency efforts would help Reclamation in meeting the federal Indian trust responsibility, a legally enforceable fiduciary obligation on the part of the United States to protect tribal treaty rights, lands, assets, and resources, of the Tribes.

☒ Addresses Environmental Justice[1] concerns. Explain:

From a social equality and environmental justice perspective, providing affordable water is important to members of underrepresented communities. During droughts, irrigation water is the first to be reduced, creating more dust and allergens, as well as adding to heat islands, thereby negatively impacting public health. The Project provides more potable water to meet public health needs. The City is reliant on imported water to replenish and maintain regional groundwater basins utilized for potable supply and would have limited water supplies if its imported water supply was further reduced or interrupted.

[1] Environmental Justice is defined by State Law as: "the fair treatment and meaningful involvement of all people regardless of race, color, sex national origin, or income with respect to the development, implementation and enforcement of environmental laws, regulations, and policies."

4. Project Schedule

Provide the current status of the project (e.g., initial study, planning, design, environmental review, in construction) and include a timeline for the project.

The Project's current status may be considered planning. A timeline for the Project is presented below.

	Schedule Category	Start Date	End Date
(a)	Project Administration	1/1/2022	12/31/2023
(b)	Land Purchase/Easement	Not Applicable	Not Applicable
(c)	Planning/Design/Engineering/Environmental Documentation	1/1/2022	12/31/2022
(d)	Construction/Implementation	1/1/2023	9/30/2023

5. Project Costs and Funding

Project Costs

Provide the total estimated project cost.

The estimated Project costs are provided in the table below. These costs are based on preliminary design of the Project and the City's experience with similar projects.

	Budget Category	Total Costs
(a)	Project Administration	$20,000
(b)	Land Purchase/Easement	$0
(c)	Planning/Design/Engineering/Environmental Documentation	$186,000
(d)	Construction/Implementation	$3,720,000
	Total Costs	**$3,926,000**

Funding

List potential sources of funding for the project and percent of project that has been funded or financed, if available.

The City is pursuing grant funding for the Project from the California Department of Water Resources Urban and Multibenefit Drought Relief Grant Program. The City will provide its total Project cost share with funds obtained from the Capital Improvement Program.

Basis for Project Cost

Describe the basis for the project cost, such as a feasibility study, partial design, etc. If a cost estimate has been prepared, please list that document here.

The basis for the project cost is preliminary study information and District experience with similar projects.

6. Supporting Information

Technical Feasibility

Provide the name of supporting documents that indicate/justify project feasibility.

Preliminary study documents for the Project include a Technical Memorandum with the subject "Summary of Packer Testing & Time-Series Groundwater Sampling for City Well No. 3A, City of Rialto (City) and Veolia Water (Veolia), dated March 30, 2015.

Economic Feasibility

Has a cost-effectiveness or benefit-cost analysis been performed for the Project? Provide a copy of (or link to) the economic analysis, if available.

The Project is considered cost effective because it uses a local source of water that is currently underutilized due to pollution considerations to produce potable water. A benefit-cost analysis has not been performed for the Project.

7. Other Considerations

Has the lead agency or organization adopted the latest Upper Santa Ana River Watershed 2015 Integrated Urban Water Management Plan and/or will the lead agency or organization adopt the 2020 Integrated Regional Urban Water Management Plan?

Yes. The City of Rialto is a member agency of the Upper Santa Ana River Watershed 2020 Integrated Urban Water Management Plan.

RAND Proposal to Enhance Plausible Demand for the San Bernardino Valley Municipal Water District Service Area

Overview

As a part of its regular planning, the San Bernardino Valley Municipal Valley Water District (Valley District) assesses their likely available supply under a set of future conditions and compares these values to the anticipated demands by the various retail water suppliers. These plans are developed on a five-year cycle and evaluate the next 25 years. Supply development or demand conservation plans are then included to ensure that supply is available to meet demands, above a certain amount of redundancy, or Reliability Factor, into the future.

To augment prior planning efforts, such as the 2015 Regional Urban Water Management Plan (RUWMP), the RAND Corporation analyzed the plausible range of future demand, as well as the plausible range of future supplies under a broad set of conditions. These analyses have informed planning efforts through the selection of a new, variable Reliability Factor capable of accounting for future uncertainty in both supply and demand, as well as by providing specific key benchmarks for adjusting the Reliability Factor.

However, these studies examined the "plausible" range of future demand based on published accounts of technology adoption, local projections of population growth and feasible climate changes for the planning cycle of the RUWMP which projected out to 2040 but did not estimate the maximum, plausible demand based upon planned build-out of the Valley District service area or include plausible reductions in demand based upon anticipated trends in California. Valley District desires to enhance the range of plausible, total demand based upon city, county or other master land use plans. The concept of "build-out demand" therefore estimates a theoretical, plausible upper limit on how much water supply the Valley District would need into the future. This analysis will also evaluate the 2020 IRUWMP methodology for estimating demand in the context of recent studies on water demand projection best practices.

Best practices in estimating future water demand suggest consideration of relevant local and regional planning documents, such as general plans or master plans that may be created by various governmental units or agencies.[1] This is beneficial for a two primary reasons. The first is that reliance on current residential housing density, rather than planned housing density, can often lead to an overestimation of per capita water use. In much of Southern California, a trend towards higher-density housing may mean more residents, but it also suggests smaller homes that may have less demand for outdoor irrigation. A deeper examination of general plans can help inform both per capita water use rates in addition to the number of residents at build-out. The importance of this assessment is underscored by recent work by the Pacific Institute that found that future demand can be inflated due to overestimates of per capita demand.[2] The second benefit of evaluating land use plans is that it allows the estimation of a plausible maximum demand for an area. While current planning documents may forecast out a couple of decades, the region may not reach its full development potential within this timeframe, thereby providing a false sense of security about its ability to meet the long term demands of its residents.

Approach

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[1] Heberger, M., Donnelly, K., and H. Cooley (2016). "A Community Guide for Evaluation Future Urban Water Demand". https://pacinst.org/wp-content/uploads/2016/08/A-Community-Guide-for-Evaluating-Future-Urban-Water-Demand-1-1.pdf

[2] Abraham, S., Diringer, S., and H. Cooley (2020). "An Assessment of Urban Water Demand Forecasts in California". https://pacinst.org/wp-content/uploads/2020/08/Pacific-Institute-Assessment-Urban-Water-Demand-Forecasts-in-CA-Aug-2020.pdf

RAND proposes to enhance its prior work for the Valley District by calculating the build-out, or maximum, demand for the Valley District service area and incorporating it into prior RAND work, namely the model used to calculate the Reliability Factor. The RAND model enables Valley District to modify key metrics and re-calculate the Reliability Factor. This model will be updated to include the key metrics affecting demand at build-out so that the model can be run, over time, to accommodate changes. To carry out this work, RAND proposes the following set of tasks:

1. BTAC Presentation and Kick-Off

RAND presented the results of the prior work and introduced the concept of enhancing the work to cover build-out demand to the Basin Technical Advisory Committee (BTAC) at their December 2021 meeting. The BTAC was supportive of this effort and pledged their support for providing RAND with relevant datasets, key individuals and important planning documents to review.

As a second part of this task, RAND will plan, in partnership with Valley District staff, a kick-off meeting with retail agencies and local planning officials to be held at the Valley District office. In addition to serving as a mechanism for the Valley District to engage with local planners on water issues, this kick-off meeting will introduce the study, discuss study data collection needs, and hear from planners and agencies in attendance on their impressions on the population growth and development limits of the region.

2. Data Collection, Verification and Validation; Planning Document Review

During the kick-off meeting with local agencies and planners, RAND, in partnership with or via Valley District staff, will issue a data request to retail agencies and/or city planning departments for geospatial and other datasets that complement or underlie master, general or similar plans. These data will allow RAND to validate master plan numbers and quantify the build-out demand across the service area by integrating datasets across cities, agencies and planning districts. Depending on the nature of the data available, RAND may generate a master GIS repository that will be shared with Valley District staff.

Because this project will rely on a range of datasets provided by different entities within the Valley District service area and will span a duration longer than typical planning studies, RAND will carry out both *data verification* and *data validation* processes. The *data verification* process will include a number of checks within the plans or related data files provided to RAND: i) the data provided in individual files are consistent in units, format, etc.; ii) the data is free of erroneous values (e.g., unreasonably high or low values that signal a potential error); iii) the data are well-described and clear (e.g., data labels are consistent and understandable). If errors are found within provided data files during the data verification process that RAND is unable to fix, RAND will follow up with the data provider to clarify values, units or fix other inconsistencies. The *data validation* process will include additional checks to ensure values are reasonable, including: i) total acreage planned for a specific use does not surpass the limits or area of the planning or other authority; ii) the data provided matches the most current plan for build-out that was approved by the land use authority. RAND will also follow up with the data provider for additional information if any issues with data reasonableness are found during the *data validation* process. If either process reveals unreliable data, RAND will work with Valley District staff on the best path to addressing the issue (e.g., replacing the data with a sensitivity analysis, relying on accepted planning standards, etc.)

In parallel to data collection, verification and validation, RAND will also systematically review the most recent city to regional plans that describe planned development. In addition to

using these plans to validate and provide transparency into the data described above, during this review, we will incorporate plausible anticipated changes to building codes, indoor and outdoor water demand limits and any other water efficiency measures that would impact future per capita water use. We will also make note of any planned developments (such as data centers) that could introduce a new or specific customer water demand not currently included in the customer types for a specific retail agency or jurisdiction. These variables will enable ongoing, future adjustment of per capita or per customer water use rates over time. If sufficient information is not available from existing per capita or per customer water use rates, RAND will utilize existing peer-reviewed or other authoritative sources that document per capita water use rates from similar demand types.

3. Develop Demand Methodology; Generate Initial Estimate of Plausible Maximum Demand

Before enhancing the demand model to calculate build-out demand, RAND will review: i) the demand calculation methodology from the 2020 Upper Santa Ana River Integrated Regional Urban Water Management Plan (IRUWMP); ii) the Pacific Institute's *An Assessment of Urban Water Demand Forecasts in California* that was published in August 2020 (after prior RAND work with the Valley District on demand was completed); iii) other relevant similar reports on best practices for urban water demand forecasting that have become available in recent years. Using these three sets of resources, RAND will either utilize the IRUWMP methodology directly or make recommendations regarding any enhancements to this methodology. Before changes to the IRUWMP demand methodology are made, RAND will work with Valley District staff to ensure any changes are useful and implementable by Valley District staff moving forward.

Once a methodology for calculating build-out demand is determined, RAND will calculate the build-out demand based on the information collected during the previous task. Given the inherent uncertainty in future development patterns, building codes and requirements, RAND will generate three estimates: i) one based upon current building codes and water use efficiency requirements; ii) a second based upon plausible, future building codes and water use efficiency requirements, including any emerging, but not yet implemented policies, such as California Senate Bill 8 and California Senate Bill 9, which promote growth of the housing sector and allow homeowners to add new housing on their property. This will be carried out through the addition of scenarios that change some of the assumptions of the density of residential housing in the Valley District's service area.

RAND will also perform a sensitivity test of the demand methodology, in which some of the planning assumptions will vary based on plausible build-out or per capita water use rates, to understand how sensitive build-out demand is to a given metric.

4. Local Engagement with Planning Departments

In addition to the independent analysis of available data and planning documents, RAND will also engage directly with local planning departments to validate buildout calculations or update assumptions that may have changed since planning documents were published. To do so, RAND will develop a semi-structured interview protocol, a common tool used in policy analysis research, that will guide discussions with local planners and ensure consistent feedback is collected across individual discussions. Valley District staff will have the opportunity to review and provide feedback on the protocol. RAND will also work with Valley District staff to refine the list of interviews. Initial selections will be based on relative size of the agency they represent, their engagement in the kick-off meeting, the age of planning documents and the amount of data/information available to quantify build-out demand for their planning area. Once interviews are complete, RAND will analyze findings and update demand numbers, as needed.

As a conclusion to this task, RAND, in partnership with Valley District staff, will host a short workshop with local planning departments to present initial findings on build-out demand and discuss their implications on regional water management. This workshop represents a key opportunity for the Valley District to continue engaging with planning districts on water-smart planning.

5. Generate Short Report

The motivations for this project, methods and findings will be summarized in a short RAND Report. Per RAND institutional guidelines, this report will be peer-reviewed and published on the RAND website. All data used to calculate build-out demand in Task 2 will be provided to the Valley District staff in either GIS or tabular form, depending on data availability.

6. Update RAND Model

RAND will add the calculation of build-out demand to its existing model used to calculate the Reliability Factor and to identify any future gaps between supply and demand.

Timeline

RAND proposes to work with Valley District staff, including a monthly check in call over the duration of the project, as well as engage with staff for ongoing input and feedback on findings and deliverables. RAND will brief the Board at the close of the project. Given the amount of stakeholder input needed, the timeline for this project is approximately 12 months.

Cost

The total estimated cost for this work is $100,000.