WATER | ENERGY | LIFE

RIVERSIDE PUBLIC UTILITIES

Board Memorandum

BOARD OF PUBLIC UTILITIES **DATE: FEBRUARY 26, 2024**

SUBJECT: NON-POTABLE / RECYCLED WATER MASTER PLAN UPDATE

ISSUE:

To receive an update report on the City of Riverside's Non-Potable/Recycled Water Master Plan.

RECOMMENDATIONS:

That the Board of Public Utilities receive and file an update on the City of Riverside's Non-Potable/Recycled Water Master Plan.

BACKGROUND:

On June 13, 2022, the Board of Public Utilities approved a Professional Services Agreement with Carollo Engineers, Inc. in the amount of $239,212, along with an approved Work Order No. 2115050 for the 2022 Non-Potable and Recycled Water Master Plan for a total project cost of $300,000. The City Council subsequently approved the Professional Services Agreement on July 19, 2022.

The study was to look at Riverside Public Utilities' (RPU) existing recycled water system, update recycled water supply and demands, create a hydraulic model of the existing system and proposed alternatives, develop criteria for evaluating system sizing, generate alternatives for evaluation, and prepare the proposed Capital Improvement Plan (CIP) alternatives, including project costs and CIP budgeting needs.

DISCUSSION:

Currently, Carollo Engineers, Inc. (Carollo) is approximately 85% complete with their work, and the remaining work to be done relates to updating recycled water adjusted demand values, preparing and evaluating CIP alternatives, and identifying budget needs for the selected alternatives. As an update to the Board, the following topics of the Master Plan are presented below: Supply, Demand, CIP Challenges, and Benefits.

Supply

Recycled Water:

Under a 1968 agreement with Western Municipal Water District (Western) supporting the 1969 Santa Ana River Judgment, 15,250 acre-feet per year (AFY) of treated wastewater from the Riverside wastewater treatment plant must be discharged to the Santa Ana River to meet

obligations to Orange County and the State Water Resources Control Board (State). In 2008, the City of Riverside (City) obtained a Wastewater Change Petition that permitted it to remove some of its wastewater discharge, over 15,250 AF, from the Santa Ana River for non-potable supply purposes. The permit was granted. However, the minimum wastewater discharge was increased to 25,000 AFY due to environmental legal challenges from the Center for Biological Diversity and the California Department of Fish and Wildlife.

During the environmental legal settlement negotiations, development was at an all-time high within the City, and wastewater flows at the City's wastewater treatment plant were anticipated to reach 48,700 AFY by 2017. Because of the anticipated additional supply of non-potable water available at the wastewater plant, it was assumed that more than enough recycled water would be available for future use. The City and the concerned entities agreed upon providing a discharge of 25,000 AFY, with 9,750 AFY slated for habitat benefits. However, with the Great Recession, coupled with California's drought declaration and consequent permanent water conservation measures, flows at the plant have been much lower than projected, with a 2017-18 water year discharge of 28,922 AF, leaving little left for recycled water projects. The State's new proposed performance standards for *Making Conservation a California Way of Life*, which are anticipated to be effective after November 2024, may further reduce flow availability at the plant over time.

Through the Riverside Habitat Parks and Water Project (RHPWP), the City intends to petition the State to modify its 25,000 AFY wastewater flow commitment and relocate wastewater discharges upstream to restored tributaries that will benefit native fish species and expand recycled water use within the City. The San Bernardino Valley Municipal Water District (Valley District) and the City have met with the State to discuss this project. The State agrees with the project goals and objectives. In addition to generating a new recycled water supply, Valley District and RPU have been vetting an exchange program whereby wastewater being committed upstream of the wastewater treatment plant to Valley District and the Santa Ana River Habitat Conservation Plan (SARHCP) would be exchanged for a similar amount of water from another water source such as the San Bernardino groundwater basin. This would realize a significant benefit to RPU customers by providing additional water supplies in addition to its annual groundwater rights in the local basins.

Currently, approximately 3,000-5,000 AFY of recycled water is available, with up to a projected 13,320 AFY in 2045, which includes the additional amount of recycled water received back from modifying the City's wastewater discharge permit. The projected amount of 13,320 AFY of recycled water available to the City may be reduced due to impacts from California's urban water use efficiency and conservation standards, which are scheduled to be voted on by the State this summer and would go into effect later this year. The proposed regulations require additional reductions in residential indoor water use from 55 gallons per capita per day (gpcd) as of 2020 to 47 gpcd by 2025 and 42 gpcd by 2030. This will result in a reduction of available recycled water unless the growth of new development within the City expands within that same time frame. RPU staff is analyzing the current level of indoor residential conservation, which will provide a better understanding of the impacts of conservation on future recycled water availability.

Through the RHPWP, a portion of the recycled water being discharged to the Santa Ana River will be available to augment the City's current recycled water system. RPU will accomplish this by modifying the City's 2008 wastewater discharge obligation and utilizing the excess flows for current and future recycled water use. A change to the wastewater discharge permit will yield approximately 13,320 AFY of recycled water in 2045, of which approximately 8,800 AFY will be utilized for RHPWP West and East Branch tributary sites, leaving 4,500 AFY of recycled water

available for Riverside's use.

Non-potable Groundwater:
In 2023, approximately 8,221 AFY of non-potable groundwater was produced. Of this amount, 672 AFY was produced from the Riverside Basin and delivered to Western through the Riverside Canal, and the remaining 7,549 AFY produced from the San Bernardino Basin and Riverside groundwater basins was utilized for agricultural water deliveries to Gage Canal Company customers. An estimated amount of up to 8,500 AFY of non-potable water supply is projected for 2045.

Overall, non-potable water production has declined over the past years, mainly as a result of the termination of the Gage Exchange Agreement. This agreement delivered additional non-potable groundwater to Gage Canal customers above their entitlement through the Riverside Canal in exchange for receiving less water deliveries from the San Bernardino Basin much of which requires additional treatment costs. Riverside uses the Riverside Canal to transport water owned by Elsinore Valley Municipal Water District (EVMWD) and sold to Western. Aside from wheeling EVMWD's non-potable water rights, conveying additional water through the Gage Exchange Agreement, and selling non-potable water to WMWD, there are no other current customer demands directly off the Riverside Canal. However, due to the cancellation of the Gage Exchange, water previously delivered to the Gage Canal may be available for high-demand users along the Riverside Canal. Areas identified for consideration include using existing infrastructure in Central Avenue near the 91 Freeway to serve the Olivewood Cemetery, Poly High School, Alcott Elementary, and others. Customers in this area use over 100 AFY, and projects could be considered to convert their irrigation uses from potable to non-potable sources. Further west across the City, the Riverside Canal runs adjacent to larger irrigation customers, including Notre Dame High School, Shamel Park, and others, which are potential sites for potential conversion to non-potable irrigation water.

Additional investment in non-potable irrigation wells, construction of non-potable water storage, onsite irrigation conversions, and design of pressure stations will need to be evaluated on a project-by-project basis. Aging equipment and wells and the need for redundancy on the non-potable water supply side make reliability a factor to consider as projects are forecasted. Additionally, water quality may be another issue, as RPU's non-potable water wells are currently not subject to the same water quality testing requirements as potable water wells. Future regulations on existing and emerging contaminants of concern (i.e., perchlorate, PFAS, etc.) may require water treatment which is not required today.

<u>Demand</u>
Potential recycled water customers within the proximity of the proposed recycled water pipelines include commercial, industrial, and institutional customers identified from past recycled water studies, in addition to a few new potential customers identified from other City Departments.
Demands were estimated from past usages taken from utility billings, and customers were then grouped into phases based on the recycled water projects that would serve them. Phase 1 projects have an implementation timeframe of 0 to 5 years; Phase 2 projects were to be constructed within the next 5 to 15 years; and Phase 3 projects were more than 15 years out. A listing of the identified demand sites, along with estimated demands and phasing, are presented in the table below.

RPU Non-Potable/Recycled Water Retail Customer Demand Summary		
Customer Name	**Proposed Phase**	**Average Annual Demand (AFY)**
Roadside/Medians (6666 Van Buren)	Phase 1	42
Roadsides/Medians (7616 Jurupa)	Phase 1	14
Chemawa Middle School	Phase 1	16
Don Derr Park	Phase 1	14
Don Lorenzi Park	Phase 1	23
Flexsteel Industries	Phase 1	4
Hole Lake Park	Phase 1	107
Hunt Park	Phase 1	20
Jackson Elementary School	Phase 1	16
Jurupa Ave Trailhead	Phase 1	14
Metal Container Corporation	Phase 1	13
Parkview Community Hospital	Phase 1	6
Rancho La Sierra Park	Phase 1	38
Riverside Christian School	Phase 1	18
Rutland Park	Phase 1	32
Alcott Elementary School (Non-Potable Water)	Phase 1	8
Olivewood Cemetery (Non-Potable Water)	Phase 1	52
Polytechnic High School (Non-Potable Water)	Phase 1	77
Central Middle School	Phase 2	33
Evans Park	Phase 2	34
Evergreen Cemetery	Phase 2	41
Martha McLean Anza Narrows Park	Phase 2	87
Ryan Bonaminio Park	Phase 2	122
Victoria Club	Phase 2	0
Arlanza Elementary School	Phase 3	4
Bryant Park	Phase 3	54
Fairmount Golf Course	Phase 3	203
Fairmount Park	Phase 3	204
Foothill Elementary School	Phase 3	7
Lake Evans	Phase 3	3,106
Norte Vista High School	Phase 3	87
Rancho La Sierra Development	Phase 3	80
Riverside Community College	Phase 3	27
UTC Aerospace Systems	Phase 3	4
Wells Middle School	Phase 3	42
White Park	Phase 3	18
Fremont Elementary School	Phase 3	1
AYSO / AB Brown Sports Complex	Phase 3	192
Reid Park	Phase 3	105

Riverside Golf Club	Phase 3	105
Northside Regional Ag Innovation Center	Phase 3	4

Phase 1 projects include potential recycled water customers along the constructed Jackson St. Recycled Water Pipeline, Phase I alignment, customers identified as part of the RHPWP, West Branch Project, and three habitat sites: Hidden Valley Creek, Hidden Valley Wetlands, and Hole Lake. For this phase, 4,865 AFY of recycled water demand was identified, with 4,488 AFY for habitat use and 377 AFY for RPU retail use. Customers along the constructed Central Avenue recycled water pipeline, who could be served utilizing non-potable water from the Riverside Canal include Olivewood Cemetery, Alcott Elementary School, Riverside Polytechnic High School and adjacent irrigation accounts; non-potable demand is estimated at 137 AFY.

Phase 2 projects include the RHPWP, East Branch habitat sites (Anza Creek, Old Ranch Road, Tequesquite Arroyo) and the associated recycled water customers along the pipeline alignment. A total of 4,661 AFY of recycled water use was identified, with 4,344 AFY for habitat use and 317 AFY for RPU retail use.

Phase 3 projects include the complete build-out of the recycled system extending westerly through the Rancho La Sierra development to Crestlawn Memorial Cemetery and the extension of the RHPWP recycled water line northerly past Fairmount Park, Lake Evans, and up to the Ab Brown Sports Fields. Programming of these projects into the CIP will be based on sufficient supplies of recycled water and the capital budget available to expand the recycled water system. The study identified Phase 3 estimated demand of 4,243 AFY for RPU retail use. A summary of the recycled and non-potable water demand by phases and use is presented below.

Phase	Estimated Demands (in AFY)			
	Total RW Demand	Habitat Use	RPU Retail Use	Total Non-Potable Demand
1	**4,865**	4,488	377	**137**
2	**4,661**	4,344	317	
3	**4,243**		4,243	
Totals:	**13,769**	8,832	4,937	**137**
		64%	36%	

CIP

Currently, Carollo has identified a total non-potable/recycled water CIP amount of approximately $185M for the full implementation of the non-potable recycled water program, which is comprised of three phases. Carollo will adjust the CIP projections as they evaluate the various project alternatives. Once the preferred CIP alternative has been identified, Carollo will refine the project cost estimates. The CIP funding requirements will ultimately feed into a cost-of-service study to evaluate RPU's recycled water rate; this work item is not included in Carollo's scope of work and will be done under a separate competitively bid contract.

Challenges

During the study, several challenges for consideration have been identified in RPU's implementation of recycled and non-potable water. RPU will, at some point, need to adjust the amount of projected recycled water due to impacts from the State's water use efficiency standards for residential indoor water use. Another supply challenge will be the need for RPU to secure approval of a wastewater change petition from the State as part of the RHPWP to free up an additional 10,000 AFY of recycled water for habitat and recycled water customer use. A third

challenge for recycled water use is the lack of a significant cost differential between the potable and recycled water rates, which currently does not make it financially attractive for existing customers to switch to recycled water for their landscape irrigation needs.

For the opportunities to utilize non-potable water by existing potable water customers for irrigation purposes, significant challenges include developing reliable backup delivery systems in cases of equipment or infrastructure failures, determining proper cost of service allocations, factoring impacts of potential water quality requirements, and expansion of the system.

Staff will be working to develop cost-effective solutions for both recycled and non-potable water systems identified.

Benefits

Benefits identified in implementing recycled water resources include augmenting RPU's future supply of recycled water through the wastewater change petition, which is anticipated to free up 10,000 AFY of recycled water. In addition, through the construction of the RHPWP East Branch, there is the potential to exchange potable water resources with Valley District in kind for the upstream discharges of recycled water. Partnering with Valley District along with the River Alliance will allow for cost-sharing in the expansion of RPU's existing recycled water infrastructure and also allow RPU, through its participation in the SARHCP, to secure needed environmental credits that will enable RPU to maintain existing facilities and construct future water supply projects along the Santa Ana River.

Lastly, implementing recycled and non-potable water for the irrigation needs of commercial, industrial, and institutional facilities helps offset the demand placed on our potable water supplies and preserve valuable drinking water resources.

The final Master Plan is anticipated to be completed in Spring 2024.

STRATEGIC PLAN ALIGNMENT:

The Non-Potable/Recycled Water Master Plan contributes to Strategic Priority No. 4 – Environmental Stewardship and Goal 4.2 - Sustainably manage local water resources to maximize reliability and advance water reuse to ensure safe, reliable, and affordable water to our community.

This item aligns with EACH of the five Cross-Cutting Threads as follows:

1. **Community Trust** – The development of a Master Plan documents the basis on which the City's non-potable and recycled water resources are to be implemented to meet the City's needs. This report and discussion support building community trust by informing the public on the progress of the master planning effort and allows for public comment to be received.

2. **Equity** – Planning for the use of recycled water will ultimately help keep parks, schools, and nature-based assets greener for the City's residents to use and enjoy during times of drought and mandatory water conservation restrictions.

3. **Fiscal Responsibility** – Determining the proper balance of recycled water infrastructure will help ensure that the benefits of implementing recycled water use can be realized by both RPU and the customer in a financially responsible manner. The master plan will maximize the value of the City's currently under-utilized water assets.

4. **Innovation** – Planning for the implementation of recycled water is part of the 'One Water One Riverside' concept of an integrated approach to community-based water management. Utilizing an under-utilized resource helps to free up potable water resources for the City's future needs.

5. **Sustainability & Resiliency –** The master plan will assist with the implementing capital improvements that will provide a reliable and sustainable water supply for the City and to enhance the use of local water resources.

FISCAL IMPACT:

There is no fiscal impact associated with this report.

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Attachment: Presentation