FINAL

Regional Recycled Water Concept Study Report

Prepared for:

San Bernardino Valley Municipal Water District

Prepared Under the Responsible Charge of:

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WSC
WATER SYSTEMS CONSULTING, INC.

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EXECUTIVE SUMMARY

The San Bernardino Valley Municipal Water District (Valley District), in cooperation with water and wastewater agencies in the region, is seeking to develop additional recycled water supplies to enhance water supply reliability in the San Bernardino Valley. Valley District engaged Water Systems Consulting, Inc. (WSC) to develop a Regional Recycled Water Concept Study (Study) that identifies and evaluates potential projects that will provide a new supply of recycled water for the Valley District service area. The purpose of this Study is to promote efficient development of recycled water projects in the region and to create a new forum for ongoing cooperative management of recycled water for regional benefit.

PROJECT TEAM

The preparation of this Study was made possible by the participation and support provided by the Project Team, which includes the City of Colton (Colton), City of Redlands (Redlands), City of Rialto (Rialto), City of Riverside Public Utilities (RPU), City of San Bernardino Municipal Water Department (SBMWD), East Valley Water District (EVWD), San Bernardino County Special Districts Department (SBCSDD), San Bernardino Valley Municipal Water District, West Valley Water District (WVWD), Western Municipal Water District (Western), and Yucaipa Valley Water District (YVWD). The Study was jointly funded by Valley District, EVWD, SBMWD and YVWD.

PROCESS

The process for developing the Study relied heavily on stakeholder involvement and included a structured method to identify, evaluate and screen projects using a Triple Bottom Line (TBL) approach that encompasses economic, social, and environmental criteria to compare the costs and benefits of each project, and develop a quantified TBL score. The projects were then ranked based on TBL score, which allows the projects to be prioritized to meet a desired recycled water supply yield.

Throughout the development of this Study, the Project Team participated in four regional workshops focused on identifying goals and objectives, identifying conceptual projects, project screening, and project portfolio selection. Additionally, WSC and Valley District held eleven (11) meetings with individual agencies to discuss and refine conceptual recycled water projects and gather data needed to support the project evaluation.

STUDY AREA

The Study Area for the Study, shown in Figure 2-2, focused primarily on the Valley District service area, but was expanded to include RPU within the Western service area due to the identification of a recycled water project that provides benefits to agencies within both the Valley District and Western service areas. Valley District, Western and RPU work together to manage local groundwater as a shared water resource under the terms of the Western Judgement.

Water demands within Valley District's service area totaled approximately 135,000 acre feet (AF) in 2015 and are projected to increase to more than 200,000 acre-feet per year (AFY) by 2040 (1).

REGIONAL RECYCLED WATER RESOURCES

Water supplies in the Study Area include local surface water, groundwater, imported water, recharged storm water, and recycled water. Most of the region's treated wastewater is currently discharged to the Santa Ana River (SAR) or its tributaries, with only 10% retained in the Study Area.

For the purposes of this Study, the Project Team established a near-term target of 11,000 to 13,000 AFY of new recycled water supply for the region. This target is contingent upon the implementation of several habitat improvement projects that are currently being pursued by the Upper Santa Ana River Habitat Conservation Plan (HCP) partners. By 2040, approximately 40,000 AFY of recycled water could be available as a recycled water supply. Additional discussion is included in Section 3.2.3.

RECYCLED WATER OPPORTUNITIES

The types of recycled water use considered in this Study include Non-Potable Reuse (NPR), Indirect Potable Reuse (IPR), and Direct Potable Reuse (DPR). Figure ES-1 provides an overview of the required treatment levels, beneficial uses and regulatory status for each recycled water use type.

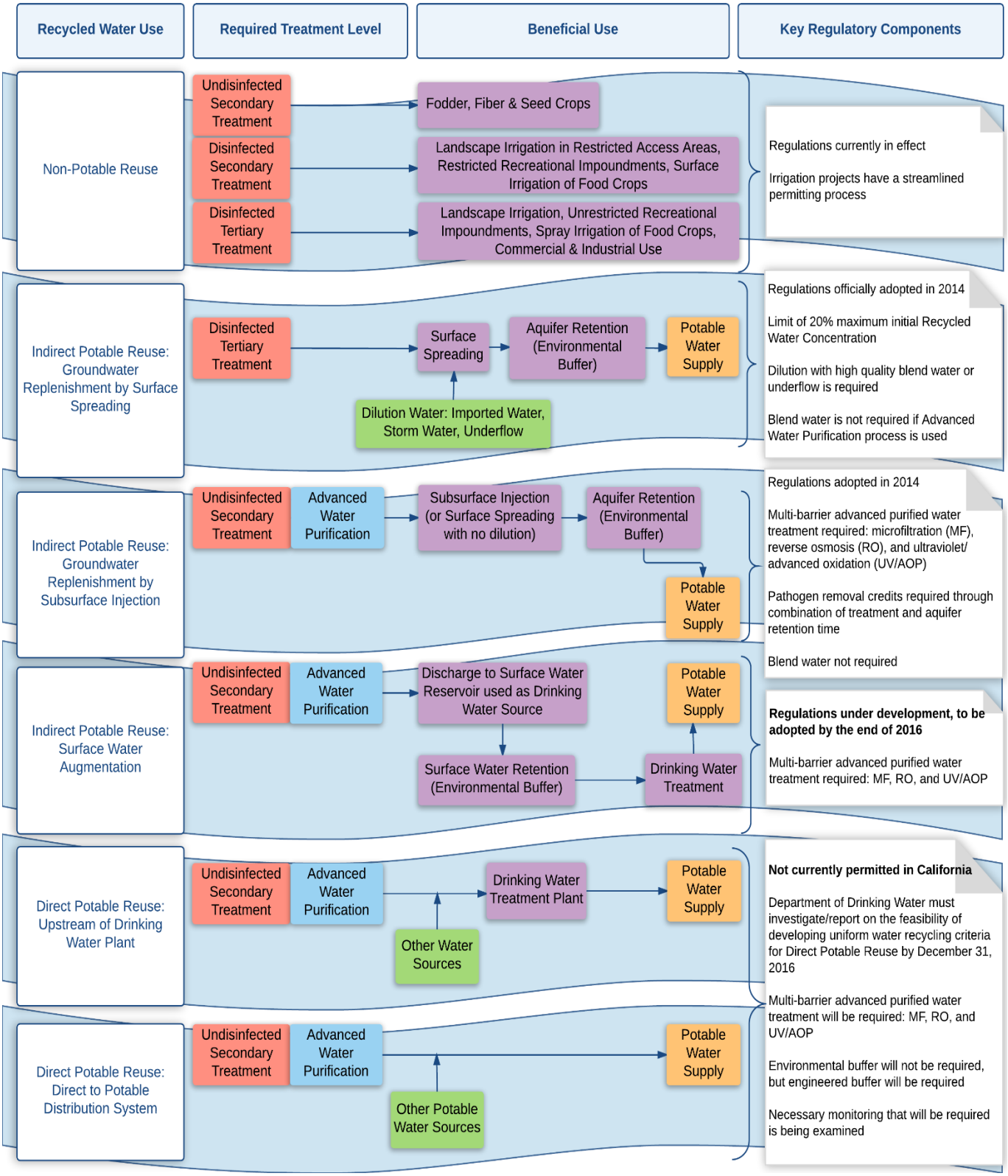

Figure ES-1. Recycled Water Use Type Overview

CONCEPTUAL PROJECTS IDENTIFIED

A total of eleven (11) conceptual projects were identified for evaluation in this Study.

Table ES-1. Conceptual Projects Summary

Project ID	Project Name	Project Description
1	San Bernardino North Subregional WRP	Conceptual project that includes a new satellite Water Recycling Plant (WRP) in the northern portion of the City and groundwater recharge at the East Twin Creek Spreading Grounds.
2a	EVWD Sterling Natural Resource Center	Proposed project for groundwater recharge at multiple locations within the Bunker Hill Groundwater Basin using recycled water from a new tertiary wastewater treatment plant operated by EVWD.
2b	EVWD Sterling Natural Resource Center - Expanded	Conceptual project that would expand project 2a by treating additional flows from the City of San Bernardino collection system.
3a	SBMWD CWF - Recharge & Local Reuse	Proposed project based on the Clean Water Factory (CWF) project that includes upgrading the existing SBMWD Water Reclamation Plant (SBWRP) to include tertiary and potentially advanced treatment for non-potable reuse near the SBWRP and groundwater recharge at the East Twin Creek Spreading Grounds.
3b	SBMWD CWF - Phase 1	Conceptual project similar to 3a, with non-potable reuse near the SBWRP and groundwater recharge at Plunge Basins and/or Redlands Ponds.
4	RPU Habitat Discharge	Conceptual project to convey existing treated effluent from the Riverside Regional Water Quality Control Plant (RWQCP) to 4 discharge points to tributaries of the SAR to support Santa Ana Sucker habitat and to potential RPU recycled water customers.
5	LCN WRP - Fully Utilized	Conceptual project to utilize excess capacity in the SBCSDD Lytle Creek North Water Recycling Plant (LCNWRP) by conveying City of San Bernardino flows to the LCNWRP for treatment to be used for groundwater recharge at onsite recharge ponds and served to SBCSDD's existing recycled water customers.
6	Yucaipa - Wilson Basin Recharge	Proposed project that would consist of conveying recycled water produced at YVWD's Henry N. Wochholz Regional Water Recycling Facility (WRWRF) to the Wilson Basins for groundwater recharge.
7a	South Rialto Reuse	Conceptual project that would convey existing tertiary treated recycled water from the Rialto Wastewater Treatment Plant (WWTP) to potential irrigation users in the southern portion of Rialto and portions of Bloomington and Colton.
7b	Cactus Basin Recharge WRP	Conceptual project that would consist of a new tertiary Water Recycling Plant (WRP) that would produce recycled water in the north portion of Rialto for groundwater recharge at Cactus Basins and irrigation of existing and proposed parks near the WRP.
7c	Rialto Habitat Discharge and Reuse	Conceptual project that would use existing treated effluent from the Rialto WWTP to provide habitat benefits in the Rialto Channel and serve recycled water to additional irrigation users in the City of Rialto.

TRIPLE BOTTOM LINE EVALUATION

To aid in screening and prioritizing conceptual recycled water projects in the region, the Project Team employed a TBL evaluation to capture the range of economic, social, and environmental factors influencing decisions for recycled water projects in the region. WSC adapted a tool developed for the WateReuse Research Foundation into a customized and adaptive scoring and ranking toolset that was used for this Study. This Regional Recycled Water Decision Tool (Decision Tool) is used to assign relative scores and rankings to each project to identify a set of projects that would achieve the desired near term recycled water supply yield. The Project Team can continue to use this Decision Tool to update the evaluation results and continue to support long term recycled water supply planning as projects evolve and conditions change.

PROJECT PORTFOLIO

Using the Decision Tool, projects were prioritized by TBL score to evaluate the cumulative water supply available from implementing multiple projects. Projects 2a, 7c, 3a and 5 are the highest ranked projects that together meet the desired near term yield of 11,000 to 13,000 AFY. Additionally, Projects 4 and 7c are highly ranked projects that may support the habitat mitigation activities required to move forward with other recycled water supply projects and should remain in consideration for near term implementation.

Table ES-2. Project Portfolio

Project	Project Title	Project Near Term Yield (AFY)	Project Yield that Contributes to Near Term Water Supply (AFY)	Unit Cost ($/AF)[2]
4	RPU SAR Discharge	5100[1]	-	$ 300
2a	EVWD Sterling Natural Resource Center	6700	6700	$ 440
7c	Rialto Habitat Discharge and Reuse	870[1]	70	$ 420
3a	SBMWD Clean Water Factory: Recharge and Local Reuse	5900	5900	$ 970
5	LCNWRP: Fully Utilized	1000	1000	$ 670
	Total Project Portfolio Near Term Yield		**13,670**	

Notes:
1. Projects 4 and 7c include yield that is discharged to tributaries of the SAR to support habitat and does not directly provide water supply yield. See project summaries in Appendix H for additional information.
2. Costs do not include advanced treatment, if required.

IMPLEMENTATION CONSIDERATIONS

Regional recycled water projects could be funded through a combination of grants, low interest loans, customer rates, cost-sharing contributions from project partners, and potentially fees collected through the formation of a Groundwater Sustainability Agency formed under the Sustainable Groundwater Management Act (SGMA).

Valley District has expressed an interest in playing a role to encourage and support the development of regional recycled water resources. This role could take many forms, including a Local Resources Program (similar to Metropolitan Water District), a recycled water purchase contract, capital contribution, joint project, or California State Water Project (SWP) exchanges. Section 8.2.1 presents the features and considerations for each of these participation methods.

CONCLUSIONS AND RECOMMENDATIONS

The set of considerations surrounding recycled water development in the Study Area is very dynamic. Project concepts will continue to evolve, the understanding of habitat needs in the region will be clarified and new recycled water and water use efficiency regulations will emerge. Going forward, it is important that the agencies continue this collaborative process to incorporate new concepts as they arise and reevaluate priorities as needed to ensure the region is on the right path toward efficient development of recycled water resources.

Recommendations for the continued pursuit of recycled water supplies are summarized below.

1. Continue to refine and apply the customized and adaptive decision tool to enable the Project Team to modify and update the results and continue to support long term recycled water supply planning.
2. Continue to engage in dialogue with the Regional Water Quality Control Board (RWQCB) and State Water Resources Control Board (SWRCB) Division of Drinking Water (DDW) staff and collaborate to identify potential paths within the current and emerging regulatory framework to optimize design, costs and benefits of the projects. This may include technical studies by project proponents to help optimize treatment design by quantifying underflow and other dilution sources, as well as evaluating the ability to use assimilative capacity in the groundwater basin(s) or to amend the Basin Plan to include “maximum benefit” water quality objectives.
3. Monitor the evolution of recycled water regulations, particularly the emergence of DPR as a viable long term strategy to increase recycled water supply within the Study Area.
4. Continue regional discussions about how the Groundwater Sustainability Agency (GSA) can leverage its role to provide funding and support for recycled water projects, including consideration for allocation of costs and benefits of the projects.
5. Sustain and enhance existing public outreach efforts to engage the community and other stakeholders to gain support for the projects and identify opportunities to increase community benefits. The WateReuse Association provides valuable tools to support agencies in their public outreach efforts to promote recycled water use to benefit the environment and improve the resiliency of local water supplies.
6. For each project or for the Study Area as a whole, finalize a participation strategy for Valley District to contribute to projects that provide a regional water supply benefit, including framework for financial contribution(s).