



## 2020 URBAN WATER MANAGEMENT PLAN WORKSHOP

Board of Public Utilities

May 24, 2021

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## BACKGROUND

1. An Urban Water Management Plan (UWMP) is required of every urban water supplier as defined in the California Water Code Section 10610 et seq. and is updated every five years for calendar years ending in "0" or "5".
2. On March 8, 2021, the Board of Public Utilities approved a Supplemental Agreement for the preparation of the 2020 Riverside Public Utilities Urban Water Management Plan with Water Systems Consulting, Inc.
3. The 2020 UWMP update must be adopted and submitted to the California Department of Water Resources (DWR) by July 1, 2021.

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## 2020 UWMP CHAPTERS



1. UWMP Introduction and Lay Description
2. Plan Preparation
3. System Description
4. Customer Water Use
5. Conservation Target Compliance
6. Water Supply Characterization
7. Water Supply Reliability
8. Water Shortage Contingency Planning
9. Demand Management Measures
10. Plan Adoption/Submittal/Implementation

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## 2020 UWMP – NEW CRITERIA

2015 UWMP	2020 UWMP
Not Required - Executive Summary (Ch. 1)	Introduction and Lay Description (Ch. 1)
Three Consecutive Dry-Year Water Reliability Assessment (Ch. 8)	Five Consecutive Dry-Year Water Reliability Assessment (Ch. 7)
Not Required	Drought Risk Assessment (Ch. 4)
Not Required	Seismic Risk (Ch. 8)
Not Required	Energy Use Information (Ch. 6)
Water Loss Reporting for One Year (Ch. 5)	Water Loss Reporting for Five Years (Ch. 4)
WSCP was Four (4) stages (Ch. 9)	WSCP with Six (6) stages (Ch. 8)
Not Required	Groundwater Supplies Coordination (Ch. 6)

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## CHAPTER 1 - INTRO AND LAY DESCRIPTION

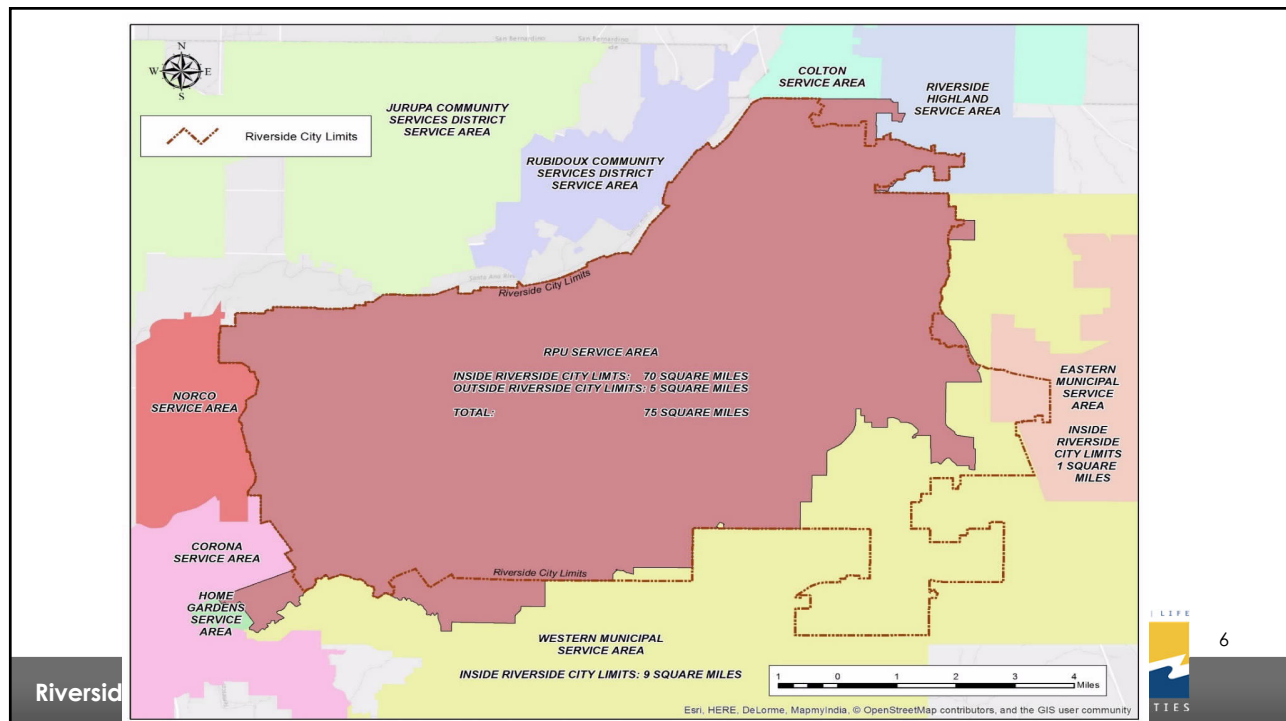
### Key Information about the RPU Water System:

- Service area is approximately 75 square miles
- 2020 Service connections are about 66,120
- 2020 Service Population is about 310,554
- 2020 Water Demand was 81,197 AF
- 2020 Available Supply was 85,774 AF
- 53 Active Wells (46 potable and 7 non-potable)
- 20 Inactive Wells (Used for Monitoring owned by RPU)
- 13 Monitoring Wells (Not owned by RPU)

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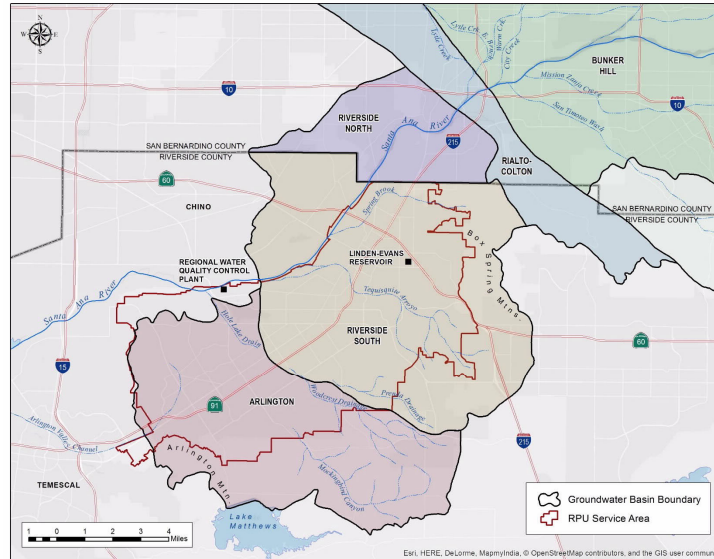


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## CHAPTER 1 - INTRO AND LAY DESCRIPTION



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## CHAPTER 2 – PLAN PREPARATION

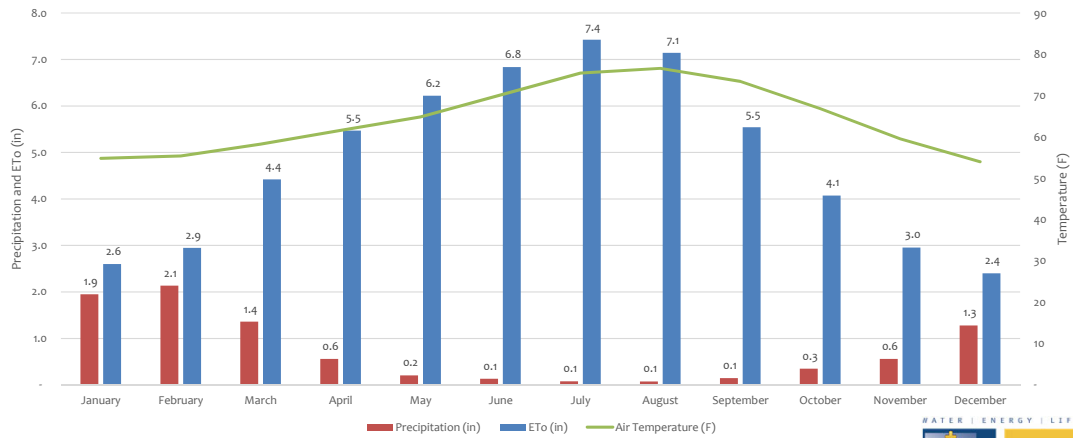
1. RPU serves more than 3,000 AFY to its retail customers and is therefore required to prepare an update to its UWMP every five years.
2. RPU serves more than 3,000 AFY to wholesale customers for potable municipal purposes and is therefore required to prepare additional sections within the UWMP. (New for RPU)
3. RPU has prepared the UWMP in accordance with the UWMP Act, sections 10610 through 10656 of the California Water Code.
4. RPU coordinated with its wholesale water supplier, Western Municipal Water District (WMWD), in the preparation of the demand and supply estimates presented in the report.
5. In addition to WMWD, RPU requested input, data, and comments from 26 neighboring agencies while preparing this plan.



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## CHAPTER 3 – SYSTEM DESCRIPTION



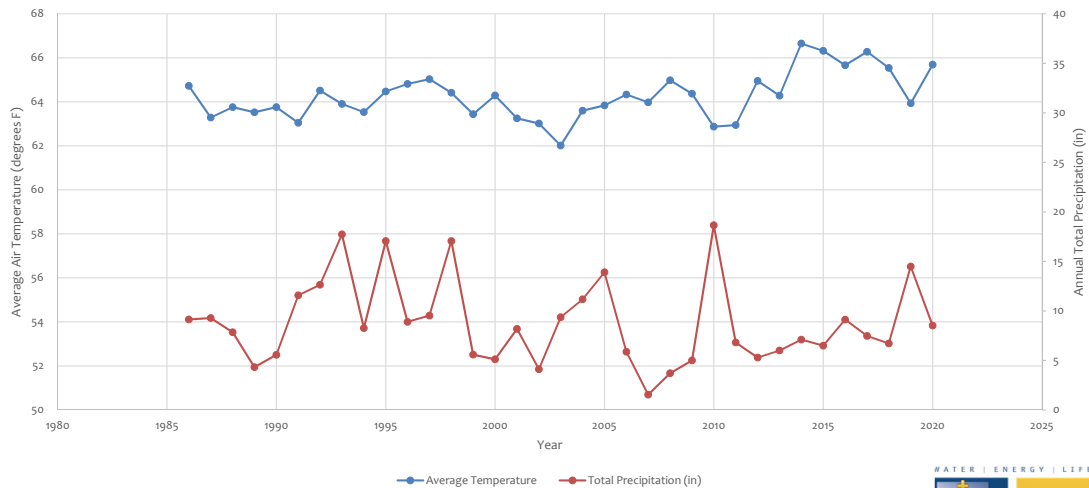
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## CHAPTER 3 – SYSTEM DESCRIPTION

Time Series of Historical Climate Data



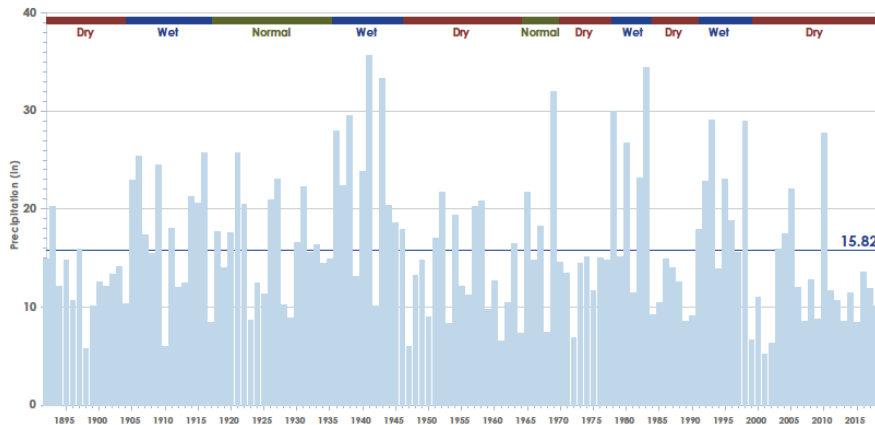
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## RAIN GAUGES IN SB COUNTY

Historical Annual Precipitation (*San Bernardino County Hospital Gage*)



Climate change has the potential to impact water supplies and demands for RPU.

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## CHAPTER 3 – SYSTEM DESCRIPTION

### Service Area Population Current and Projected Population

Population served	2020	2025	2030	2035	2040	2045
RPU service area	310,554	321,896	333,652	345,838	358,468	371,560

Based on Southern California Association of Governments (SCAG)  
Traffic Analysis Zone (TAZ) data developed as part of SoCal Connect 2020

Over next 25-years:

Annual estimated population increase – about 2,400/yr., or 750 EDUs, or 0.7%

Total estimated population increase – about 61,000, or 19,000 EDUs, or 19%

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## CHAPTER 3 – SYSTEM DESCRIPTION

1. RPU continues to meet the water demands of its retail customers and legal obligations
2. RPU sells surplus potable water to WMWD and Norco, and it sells surplus non-potable water to WMWD via the Riverside Canal by agreement
3. Surplus water sales to neighboring water agencies helps provide a local cost-effective supply while monetizing passive assets

## CHAPTER 4 – CUSTOMER WATER USE

ACTUAL DEMANDS	2016	2017	2018	2019	2020
Single Family	27,412	28,940	29,902	31,386	34,250
Multi-Family	4,913	5,187	5,360	5,644	6,159
Commercial / Institutional	17,948	18,976	18,958	12,440	12,067
Landscape	1,768	1,847	2,089	3,681	4,166
Agricultural Irrigation	1,624	1,622	1,545	1,351	1,394
Other	298	402	1,653	426	289
Wholesale (WMWD)	2,997	3,967	3,305	2,184	3,163
Wholesale (Norco)	0	0	0	0	477
Potable Losses	5,750	7,181	5,955	5,184	7,382
<b>Total Potable Demand</b>	<b>62,710</b>	<b>68,122</b>	<b>68,767</b>	<b>62,296</b>	<b>69,347</b>
GCC (Upper)	6,679	5,369	4,752	4,509	6,782
GCC (Lower)	3,899	7,373	5,858	7,373	3,176
Overlying Uses	760	1,322	945	955	867
Wholesale (WMWD)	1,904	684	1,227	415	428
Irrigation Water Losses	1,202	821	594	331	597
<b>Total Non-Potable Demand</b>	<b>14,444</b>	<b>15,569</b>	<b>13,376</b>	<b>13,583</b>	<b>11,850</b>
<b>Total Water Demand</b>	<b>77,154</b>	<b>83,691</b>	<b>82,143</b>	<b>75,879</b>	<b>81,197</b>

## CHAPTER 4 – CUSTOMER WATER USE

	2016	2017	2018	2019	2020
Potable and Raw Water	77,154	83,691	82,143	75,879	81,197
Recycled Water Demand	177	187	187	143	141
Total Water Use:	77,331	83,878	82,330	76,022	81,338

## CHAPTER 4 – CUSTOMER WATER USE

Report Period Start Date		Volume of Water Loss (AF)
MM	YYYY	
07	2014-15	2,755
01	2016	4,090
01	2017	8,063
01	2018	6,591
01	2019	5,597



## CHAPTER 5 – CONSERVATION TARGET COMPLIANCE

Baselines and Targets Summary

Baseline Period	Start	End	Average Baseline GPCD*	Confirmed 2020 Target *
10-15 Year	1999	2008	266	213
5 Year	2004	2008	269	

\*All values are in Gallons per Capita per Day (GPCD)

RPU Achieved Targeted Reduction in 2020 Compliance Daily Per-Capita Water Use (GPCD)

Actual 2020 GPCD*	2020 GPCD	2020 Confirmed Target GPCD	Supplier Achieved Targeted Reduction in 2020
	2020 Total Adjustments	Adjusted 2020 GPCD*	
189	0	189	213
			Yes

\*All values are in Gallons per Capita per Day (GPCD)

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## CHAPTER 4 – CUSTOMER WATER USE

Projected DEMANDS	Projected Water Use (AFY)				
	2025	2030	2035	2040	2045
Single Family	35,069	36,349	37,677	39,053	40,479
Multi-Family	6,306	6,537	6,775	7,023	7,279
Commercial / Institutional	12,355	12,807	13,274	13,759	14,262
Landscape	4,266	4,421	4,583	4,750	4,924
Agricultural Irrigation	1,427	1,479	1,533	1,589	1,648
Other	296	307	318	330	342
Wholesale (WMWD)	2,000	2,000	2,000	2,000	2,000
Wholesale (Norco)	1,000	1,000	1,000	1,000	1,000
Potable Losses	5,193	5,383	5,579	5,783	5,994
<b>Total Potable Demand</b>	<b>67,912</b>	<b>70,283</b>	<b>72,739</b>	<b>75,287</b>	<b>77,928</b>
GCC (Upper)	6,500	6,500	6,500	6,500	6,500
GCC (Lower)	7,000	7,000	7,000	7,000	7,000
Overlying Uses	1,000	1,000	1,000	1,000	1,000
Wholesale (WMWD)	2,000	2,000	2,000	2,000	2,000
Irrigation Water Losses	600	600	600	600	600
<b>Total Non-Potable Demand</b>	<b>17,100</b>	<b>17,100</b>	<b>17,100</b>	<b>17,100</b>	<b>17,100</b>
<b>Total Water Demand</b>	<b>85,012</b>	<b>87,383</b>	<b>89,839</b>	<b>92,387</b>	<b>95,028</b>

## CHAPTER 4 – CUSTOMER WATER USE

	2020	2025	2030	2035	2040	2045
Potable and Raw Water	81,197	85,012	87,383	89,840	92,387	95,027
Recycled Water Demand	213	5,700	13,420	13,420	13,420	13,420
<b>Total Water Use:</b>	<b>81,410</b>	<b>90,712</b>	<b>100,803</b>	<b>103,260</b>	<b>105,807</b>	<b>108,447</b>

## CHAPTER 4 – CUSTOMER WATER USE

Over next 25-years

1. Annual water demand is estimated to increase:
  - 550 acre-ft/yr., or 0.7%
2. Total water demand is estimated to increase:
  - 13,800 acre-ft, or 17%

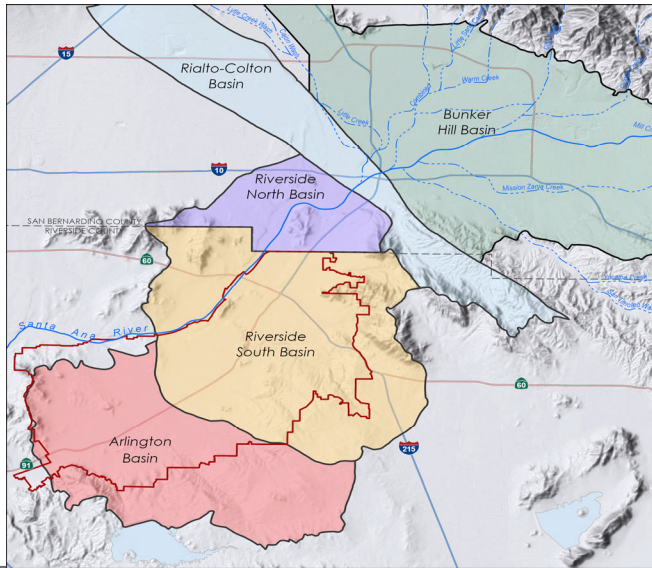
## CHAPTER 4 - PROJECTED WHOLESALE

Use Type	Additional Description	Projected Water Use				
		2025	2030	2035	2040	2045
WMWD	Drinking Water	2,000	2,000	2,000	2,000	2,000
City of Norco	Drinking Water	1,000	1,000	1,000	1,000	1,000
WMWD	Raw Water	2,000	2,000	2,000	2,000	2,000
Raw Water Losses	Raw Water	600	600	600	600	600
-	<b>Total:</b>	<b>5,600</b>	<b>5,600</b>	<b>5,600</b>	<b>5,600</b>	<b>5,600</b>

## CHAPTER 6 - WATER SUPPLY CHARACTERIZATION

1. RPU's primary source of water supply is local groundwater
2. RPU distributes recycled water for non-potable uses
3. RPU has an agreement with WMWD to access (purchase) imported water when needed

## CHAPTER 6 - RPU EXPORT RIGHTS



### Extraction/Export Rights

#### Bunker Hill

- 55,263 AFY Export

#### Colton

- 2,728 AFY Export

#### Riverside North

- 10,902 AFY Export

#### Riverside South

- 16,880 AFY Extraction

**85,774 AFY Total**

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## CHAPTER 6 – GROUNDWATER PRODUCTION

RPU's historical production by basin

Basin Name	2016	2017	2018	2019	2020
Bunker Hill	55,765	58,297	58,100	50,961	57,946
Riverside North	9,547	8,918	8,930	8,327	8,876
Riverside South	15,677	17,082	18,041	18,564	19,287
Rialto-Colton	1,138	921	1,546	459	2
<b>Total Groundwater Production:</b>	<b>82,127</b>	<b>85,218</b>	<b>86,617</b>	<b>78,311</b>	<b>86,111</b>
Bunker Hill - WMWD Wheeling	5,508	4,208	4,208	4,435	4,435
<b>RPU's Total Groundwater Production (including Wholesale deliveries):</b>	<b>76,619</b>	<b>81,010</b>	<b>82,409</b>	<b>73,876</b>	<b>81,676</b>



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## CHAPTER 6 – PLANNED SOURCES OF WATER

1. RPU intends to fully utilize its water rights from the Bunker Hill Basin plus expanded export rights through conjunctive use projects
2. RPU plans to increase the use of recycled water
3. The balance of RPU's water supply will come from the Rialto-Colton Basin, Riverside North, and Riverside South
4. RPU's conjunctive use projects in the Riverside Basin will augment the yield of the basin and allow RPU to increase production over historical levels
5. Recharge and production associated with RPU's conjunctive use projects will be coordinated with Valley District and WMWD to prevent adverse effects on groundwater levels and quality

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## CHAPTER 6 – ANTICIPATED FUTURE WATER SUPPLY PROJECTS AND PROGRAMS

Name of Future Projects or Programs	Joint Project with Other Suppliers	Agency Name	Planned Implementation Year	Planned for Use in Year Type	Expected Increase in Water Supply to Supplier
Recycled water HCP	TRUE	Valley District	2025	Average Year	11,000
Seven Oaks Dam Phase II Conservation Project (Enhanced)	TRUE	Valley District, WMWD	2030	Average Year	1,000
Riverside North Aquifer Storage and Recovery	TRUE	Valley District, WMWD	2030	Average Year	2,000
Jackson Street and Arlington Avenue Pipelines phase 1 and 2	TRUE	WMWD	2030	Average Year	2,420
Bunker Hill Basin Active Recharge Project	TRUE	Valley District, WMWD	2035	Average Year	1,500
Box Spring Local Stream Recharge and Direct Use	TRUE	RCFC&WCD	2035	Average Year	2,800
Stormwater Recharge at Columbia, Marlborough, and Kansas Detention Basins	TRUE	RCFC&WCD	2040	Average Year	1,500

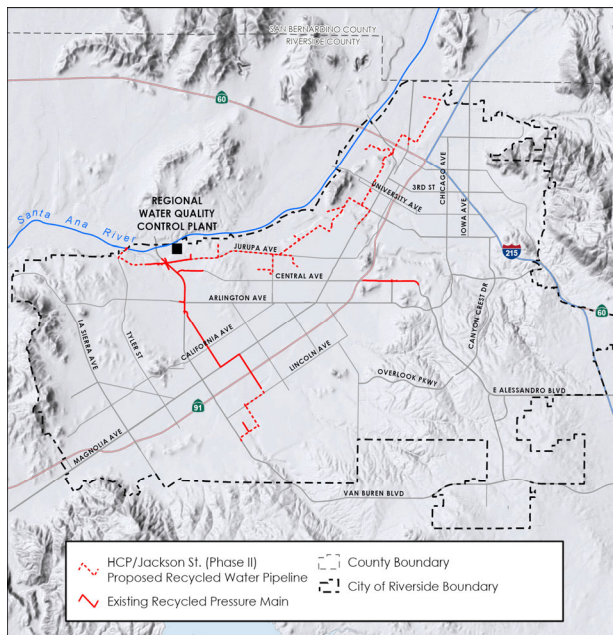
## CHAPTER 6 - PROJECTED WATER SUPPLIES

		2025	2030	2035	2040	2045
Water Supply	Additional Detail on Water Supply	Reasonably Available Volume	Reasonably Available Volume	Reasonably Available Volume	Reasonably Available Volume	Reasonably Available Volume
Groundwater	Bunker Hill	55,263	55,263	55,263	55,263	55,263
Groundwater	Seven Oaks Enhanced Phase II	1,000	1,000	1,000	1,000	1,000
Groundwater	BH Active Recharge 2025	750	1,000	1,500	1,500	1,500
Groundwater	Riverside North	10,902	10,902	10,902	10,902	10,902
Groundwater	RNASR	-	2,000	2,000	2,000	2,000
Groundwater	Riverside South	16,880	16,880	16,880	16,880	16,880
Groundwater	Box Springs	-	-	2,800	2,800	2,800
Groundwater	Columbia, Etc. Stormwater	-	-	-	1,500	1,500
Groundwater	Rialto-Colton	2,728	2,728	2,728	2,728	2,728
Recycled water	RWQCP	5,700	13,420	13,420	13,420	13,420
Purchased or Imported Water	From WMWD	21,700	21,700	21,700	21,700	21,700
-	<b>Total:</b>	<b>114,923</b>	<b>124,893</b>	<b>128,193</b>	<b>129,693</b>	<b>129,693</b>

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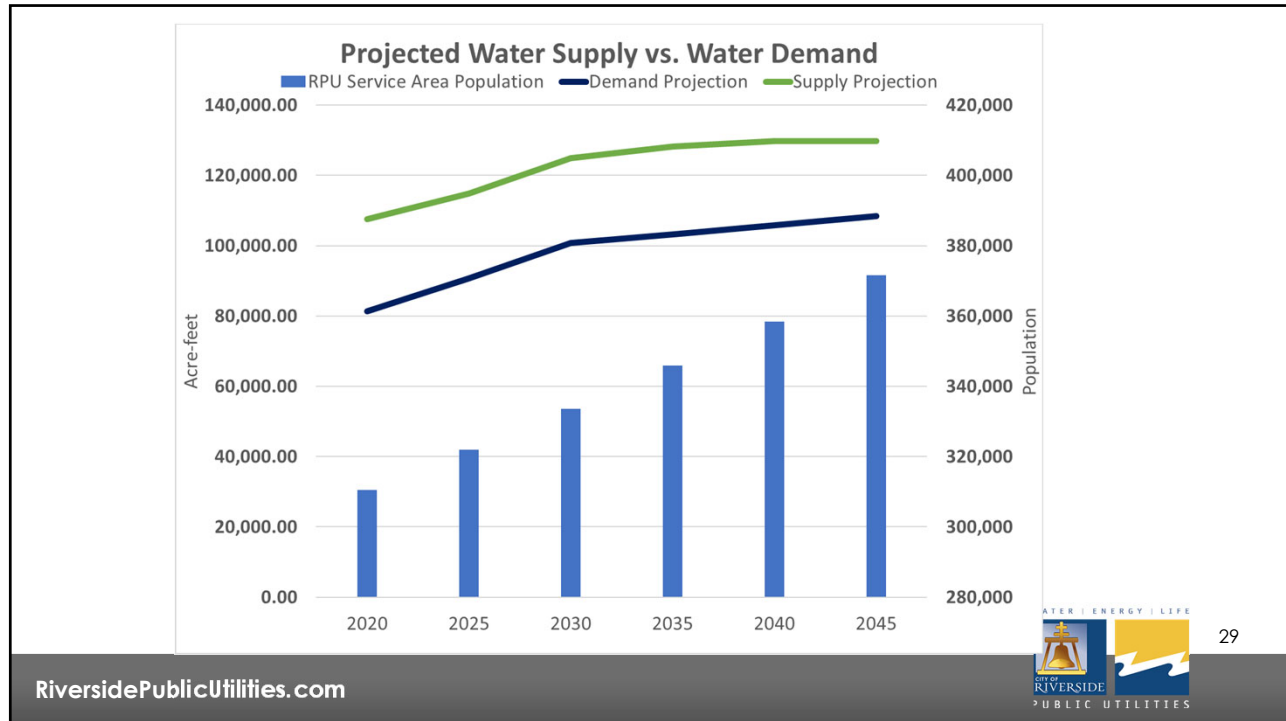
### PLANNED WATER SUPPLY PROJECTS: RECYCLED WATER

Name of Action	Description	Expected Increase of Recycled Water Use
Expand Recycled Water Infrastructure	Riverside Habitat, Parks, and Water Project	11,000
Expand Recycled Water Infrastructure	Jackson Street Phase 1	820
Expand Recycled Water Infrastructure	Arlington Avenue	1,600
		<b>13,420</b>

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## CHAPTER 6 – ENERGY CONSUMPTION

RPU maintains records of energy use at its facilities

Energy Consumption for Fiscal Year 2019/2020

Water Management Activity	Energy Consumption (kWh)
Extract/Divert	9,122,543
Convey	10,493,004
Treatment	5,776,680
Distribution System	17,621,699
Nontreated	2,205,915
<b>Total</b>	<b>45,219,841</b>

## CHAPTER 7 - WATER SUPPLY RELIABILITY AND DROUGHT RISK ASSESSMENT

1. Historically, RPU's source waters have proven reliable, even during the multi-year droughts from 1984-1990, 1999-2002, 2006-2009, and 2012-2016.
2. To date, RPU has not experienced any major deficiencies in water supply.
3. RPU has assumed that 100 percent of its ground water and recycled water supplies would remain available during a single dry year and multiple dry years.
4. The availability of imported water has been adjusted based on the reliability assessment by MWD and WMWD.

## CHAPTER 7 - WATER SUPPLY RELIABILITY AND DROUGHT RISK ASSESSMENT

### Normal Year Supply and Demand Comparison

	2025	2030	2035	2040	2045
<b>Supply Totals</b>	114,923	124,893	128,193	129,693	129,693
<b>Demand Totals</b>	90,712	100,803	103,260	105,807	108,447
<b>Difference:</b>	<b>24,211</b>	<b>24,090</b>	<b>24,933</b>	<b>23,886</b>	<b>21,246</b>

### Normal Year Supply and Demand Comparison for Wholesale

	2025	2030	2035	2040	2045
Supply Totals	5,600	5,600	5,600	5,600	5,600
Demand Totals	5,600	5,600	5,600	5,600	5,600
<b>Difference:</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>



## CHAPTER 8 - WATER SHORTAGE CONTINGENCY PLAN

1. Each urban water supplier must develop and adopt a Water Shortage Contingency Plan (WSCP) as part of its UWMP.
  - 2020 WSCP is a stand-alone document.
2. A WSCP is a strategic plan to prepare and respond to water shortages that could be caused by things like dry years, natural forces, or system interruptions.

## CHAPTER 8 - WATER SHORTAGE CONTINGENCY PLAN

12 elements required in a 2020 UWMP WSCP:

1. Water Supply Reliability Analysis
2. Annual Water Supply and Demand Assessment Procedures
3. Six Standard Water Shortage Stages or Cross-reference existing stages\*
4. Shortage Response Actions\*
5. Communication Protocols
6. Compliance and Enforcement\*

\*Described in the City's Water Conservation Ordinance.

## CHAPTER 8 - WATER SHORTAGE CONTINGENCY PLAN

12 elements required in a 2020 UWMP WSCP (Continued):

- 7. Legal Authorities\*
- 8. Financial Consequences of WSCP
- 9. Monitoring and Reporting
- 10. WSCP Refinement Procedures
- 11. Special Water Feature Distinction\*
- 12. Plan Adoption, Submittal, and Availability

\*Described in the City's Water Conservation Ordinance.

## CHAPTER 8 - 2020 WSCP – NEW REQUIREMENTS

SB 606 (2018) - New prescriptive elements must be included:

- 1. Water supply reliability analysis
- 2. Six standard water shortage levels or cross-reference to existing stages
- 3. Locally appropriate "shortage response actions" for each shortage level
- 4. Procedures for conducting an annual water supply and demand assessment
- 5. Communication protocols
- 6. Re-evaluation and improvement procedures
- 7. Definitions for water features
- 8. Seismic risk assessment and monitoring plan

## CHAPTER 8 – SHORTAGE LEVELS

Shortage Levels	Supply Condition	Supply Reduction	State's Standard Level	Shortage Level
1	Normal Water Supply	0%	1	≤10%
2	Minimum Water Shortage	15%	2	10-20%
3	Moderate Water Shortage	15-20%		
4	Severe Water Shortage	20-50%	3	20-30%
			4	30-40%
			5	40-50%
5	Water Shortage Emergency	>50%	6	>50%



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## CHAPTER 9 – DEMAND MANAGEMENT MEASURES

Residential and commercial water use efficiency programs:

1. Smart Irrigation Program
2. Residential and CII Water Surveys
3. Income-qualified Residential Plumbing Retrofits
4. SoCalWater\$mart Rebate Program includes:
  - High-Efficiency Clothes Washer
  - Turf Replacement
  - High-Efficiency Toilet
  - Weather-Based Irrigation Controller
  - And other fixture and outdoor water saving devices



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## DEMAND MANAGEMENT MEASURES - IMPLEMENTATION

Since the 2015 UWMP update, RPU's DMM implementation has resulted in an estimated savings of 733 AF.

CCF Savings	AF
319,245	733

RPU's current per-capita consumption is below its 2020 compliance target.

2020 GPCD* Target	Actual 2020 GPCD*
213	189
*Gallons per Capita per Day	

## DISCUSSION

Upcoming schedule of events:

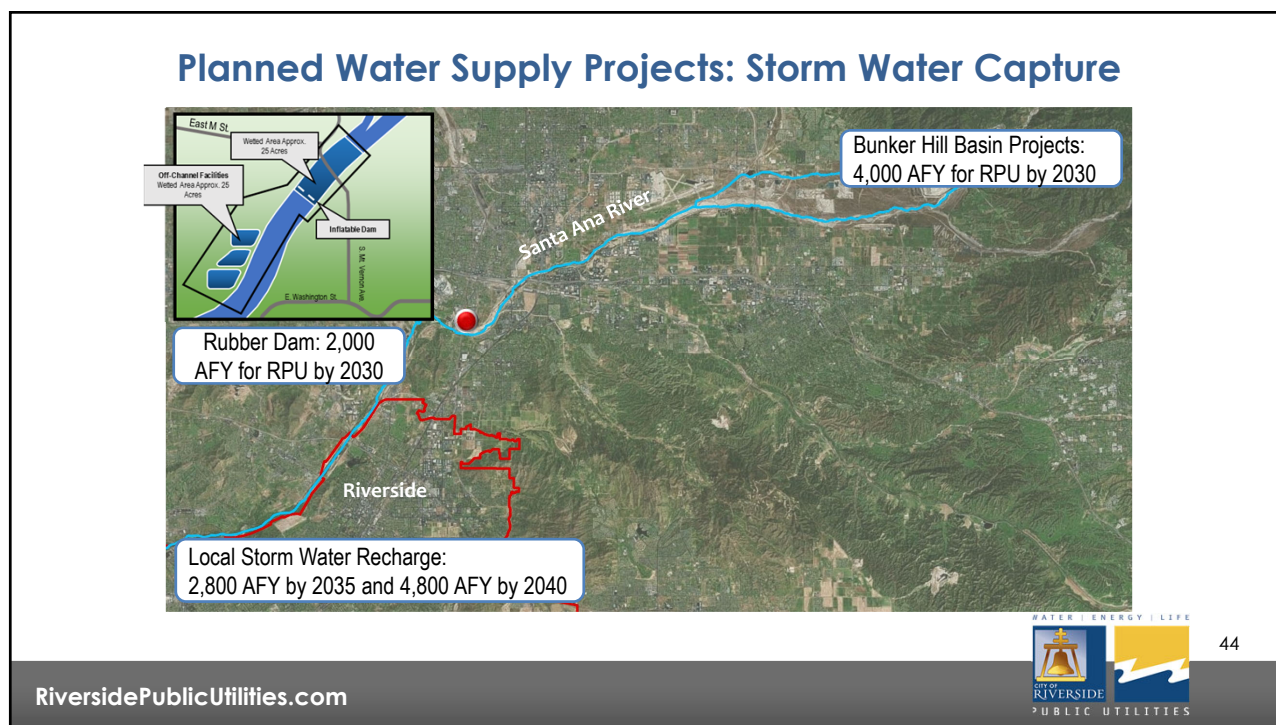
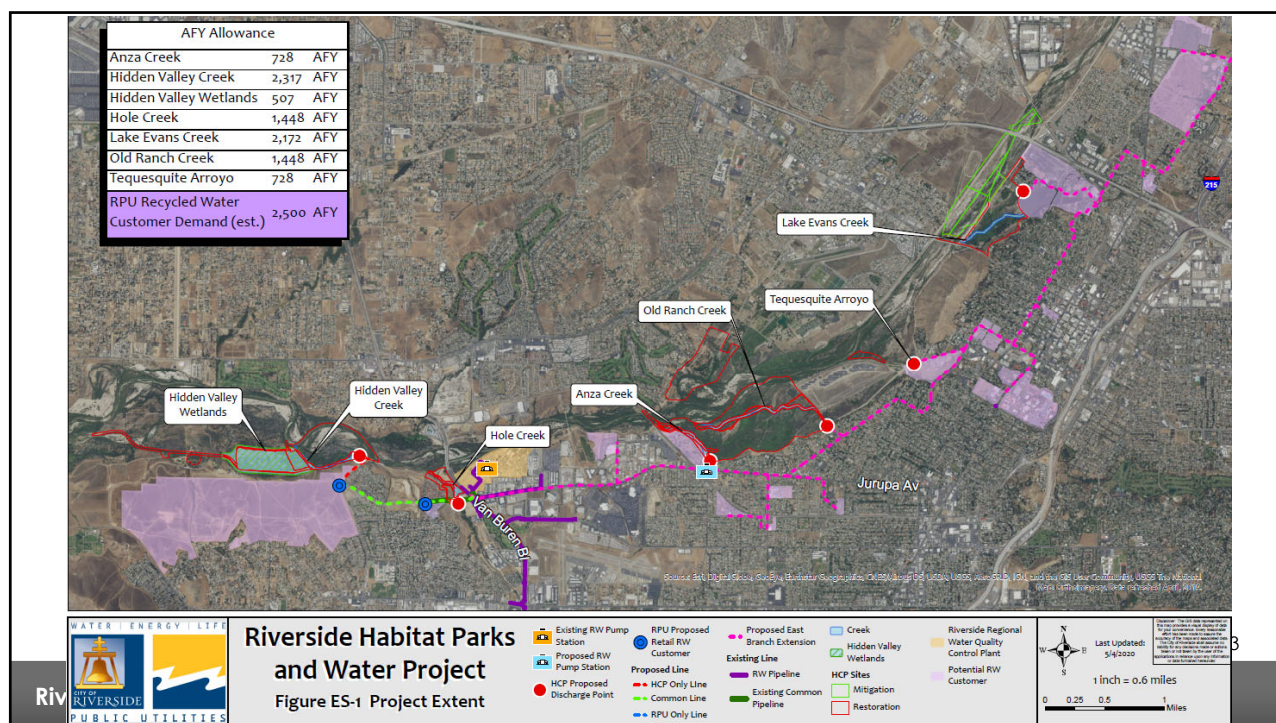
1. RPU published the newspaper notice of preparation twice. The first time on May 17 and the second on May 24
2. RPU published the 2020 UWMP draft on the RPU website on May 17
3. RPU will hold a public hearing at the Board of Public Utilities meeting on June 14 with Council adoption on June 22
4. Submit the report to the State prior to July 1
5. This project is expected to be completed within time and on schedule

## RECOMMENDATION

That the Riverside Public Utilities Board receive this update on the 2020 Urban Water Management Plan.

## CHAPTER 6 - WATER SUPPLY CHARACTERIZATION

Total Number of Current Gage Shares	14,055
City owned Gage Shares	8,569 (61%)
Gage Shares	5,486 (49%)
AFY/Share	2.14758 AFY/Share
Gage Acre-Feet	11,782 AFY



## RW RELEASED IN 2020

### Wastewater Treatment and Discharge within Service Area in 2020

Wastewater Treatment	Discharge Location	Discharge Location	Wastewater Discharge	Method of Disposal	Plant Treats Wastewater Generated Outside the Service Area	Wastewater Treatment Level	2020 Volumes		
Plant Name	Location Name	Location	Discharge	Disposal			Wastewater Treated	Discharged Treated Wastewater	Recycled Within Service Area
or IdentifierDescription ID Number									
Riverside Water Quality Control Plant		Santa Ana River		River or Creek	Yes	Tertiary	28,435	27,981	213

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