Inland Empire Utilities Agency
A MUNICIPAL WATER DISTRICT

State Water Resources Control Board Proposition 1 Grant and SRF Loan Application

Joint IEUA-JCSD Recycled Water Intertie Project (CWSRF Project No. 8167-110)

PROJECT REPORT

The proposed project is a joint regional project between Jurupa Community Services District (JCSD) and the Inland Empire Utilities Agency (IEUA) to provide a new supplemental water supply to the Chino Groundwater Basin (Chino Basin). IEUA overlies most of the Chino Basin. Remaining areas of the basin are overlain by Western Municipal Water District (WMWD) in Riverside County and Three Valleys Municipal Water District (TVMWD) in Los Angeles County (see Figure No. 1). JCSD is a sub-agency of WMWD that provides retail water and wastewater service to western Riverside County. A portion of JCSD's wastewater is delivered to the West Riverside County Regional Wastewater Authority's (WRCRWA) treatment plant for processing and the production of recycled water. The JCSD is in the process of developing a recycled water system that will deliver irrigation water to parks and playgrounds utilizing a portion of the recycled water that they are entitled to from the WRCRWA treatment facility. To further conserve local water supplies, JCSD would like to deliver the remaining portion of its recycled water entitlement to IEUA for reuse and replenishment of the Chino Basin.

The study area is located approximately 35 miles east of Los Angeles in the general vicinity of where Los Angeles, San Bernardino, Riverside and Orange Counties meet. The Chino Basin and the water and wastewater agencies that overlie it are shown on Figure No. 1. Note that the JCSD is located in the southern portion of the Chino Basin adjacent to the City of Norco in Riverside County. The WRCRWA treatment plant is located at the extreme southern tip of JCSD.

Section A. Maps and Figures

The maps and figures contained in this report are listed below.

Section B. Study Area Characteristics

The study area is shown on Figure No. 1 and includes the IEUA and the JCSD service areas. The portion of the study area that is located within the JCSD service area ranges in elevation from 540 feet to 705 feet. The JCSD consists of alluvial plains, which slope southwesterly to the Santa Ana River with a natural slope of less than 12 percent.

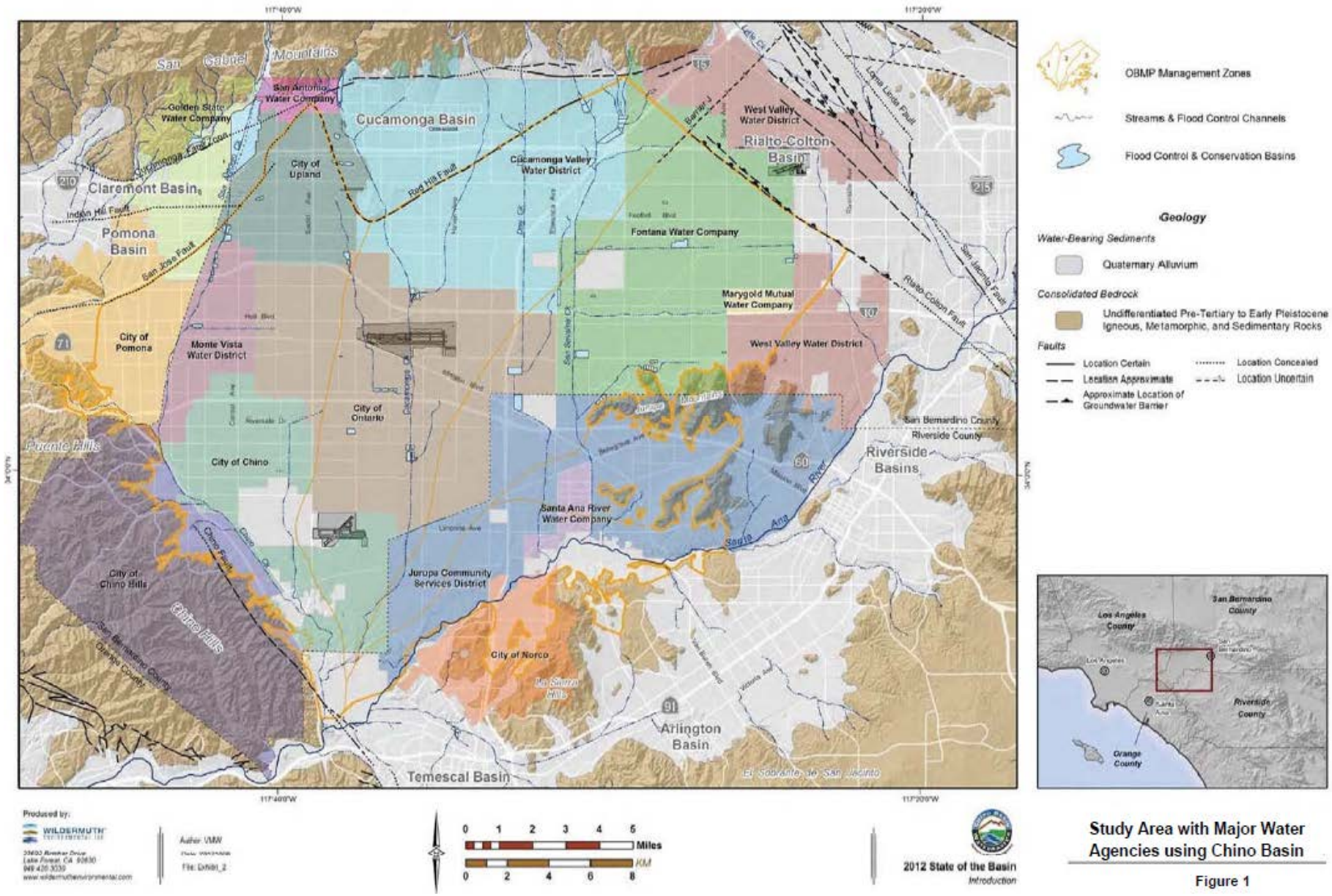
The climate of the study area is generally semi-arid and warm. Summers are dry with average temperatures as high as 92°F and maximum temperatures that sometimes exceed 100°F. Winters are somewhat cool with average temperatures as low as 40°F. Average rainfall is almost 13" per year. Standard monthly evaporation rates range from 2.5 in to 7.2 in.

Recently, the study area (along with most of California) has experienced significant increases in single family residential construction. In the JCSD service area this is particularly noticeable in the new city of Eastvale. As the local population has increased, the demand for water has also increased.

Since the IEUA operates the Chino Basin Groundwater Recharge system, their principal role in the project will be to recharge the groundwater basin with recycled water. The predominant hydrologic feature in the study area is the Chino Groundwater Basin. It is the primary local water supply in the study area with an annual safe yield of 145,000 Acre Feet. As shown on Figure No. 2, groundwater in the Chino Basin generally flows in a south-southwest direction from the primary areas of recharge in the northern parts of the basin toward the Prado Flood Control Basin in the south (Wildermuth Environmental Inc., 2007). Groundwater flow direction mimics surface drainage patterns that flow from high elevation areas in the north and east that flank the San Gabriel and Jurupa Mountains and discharge to the Santa Ana River near and within the Prado Flood Control Basin. Storm flows that are not captured enter various tributaries to the Santa Ana River and then enter the river near or upstream of Prado Dam. The main tributaries are shown on Figure No. 2 and include San Antonio/Chino Creek, Cucamonga Creek, Day Creek and San Sevaine Wash. These tributaries and upstream storage facilities are utilized for both flood control and storm water conservation purposes.

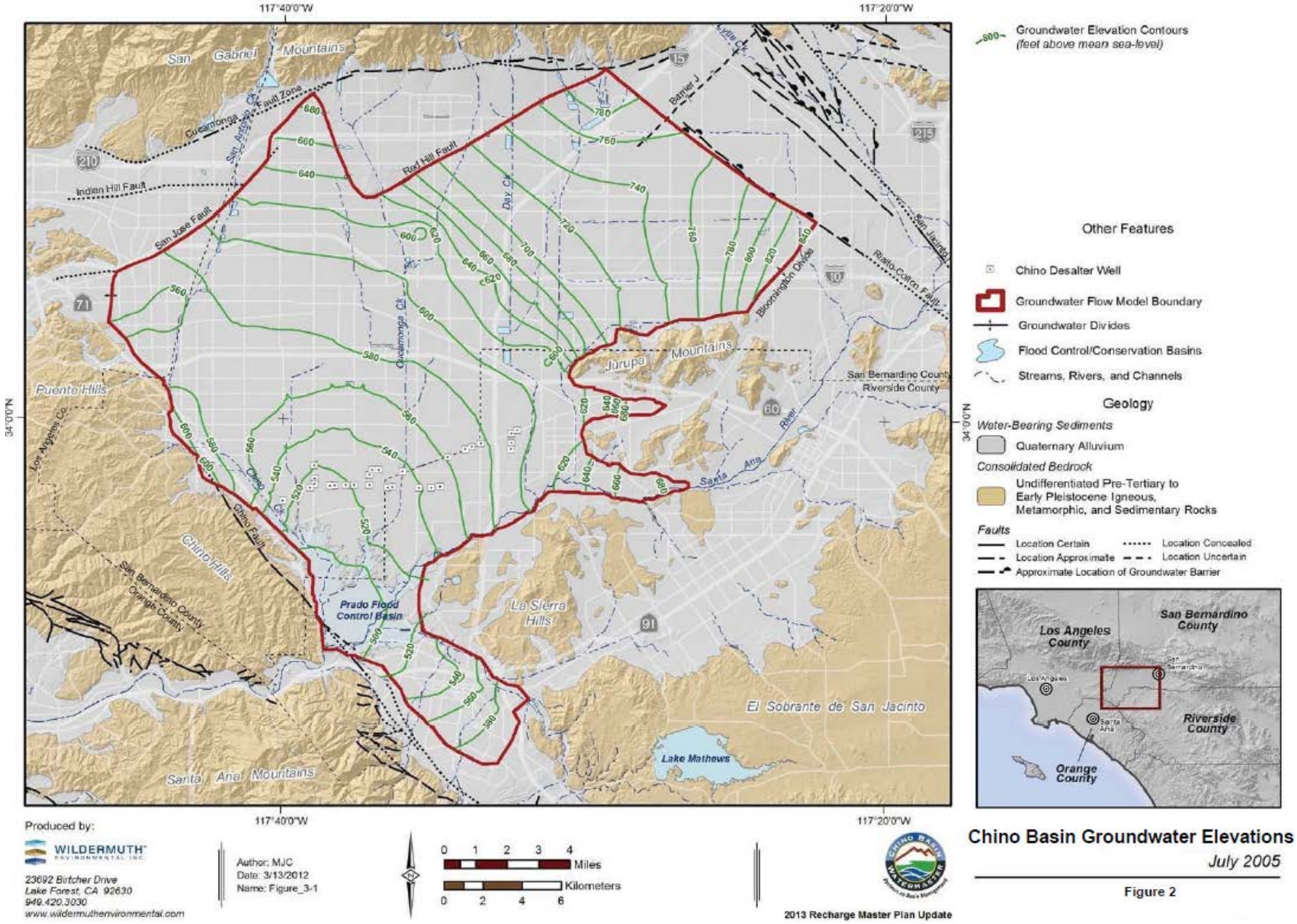
Trends seen in recent groundwater contour maps are generally consistent with past groundwater elevation contour maps. There are notable pumping depressions in the groundwater surface that interrupt the general flow patterns in the southeast directly southwest of the Jurupa Hills. The groundwater level change map in Figure No. 3 also shows a discernible depression in groundwater levels surrounding the Chino I and Chino 2 Desalter well fields that is the result of "hydraulic control".

The Chino Basin was known to be in overdraft as early as the 1950s and was adjudicated in 1978. It has been actively managed since 1978 by the Chino Basin Watermaster (CBWM) and is a statewide model for good water resources stewardship. In the late 1990s and early 2000s, an aggressive and innovative management program was implemented that was coined the Optimum Basin Management Program (OBMP). Among other things the OBMP resulted in the construction of a groundwater quality improvement system, a recycled water distribution system and an elaborate groundwater recharge system that utilizes storm water, recycled water and



Study Area with Major Water Agencies using Chino Basin

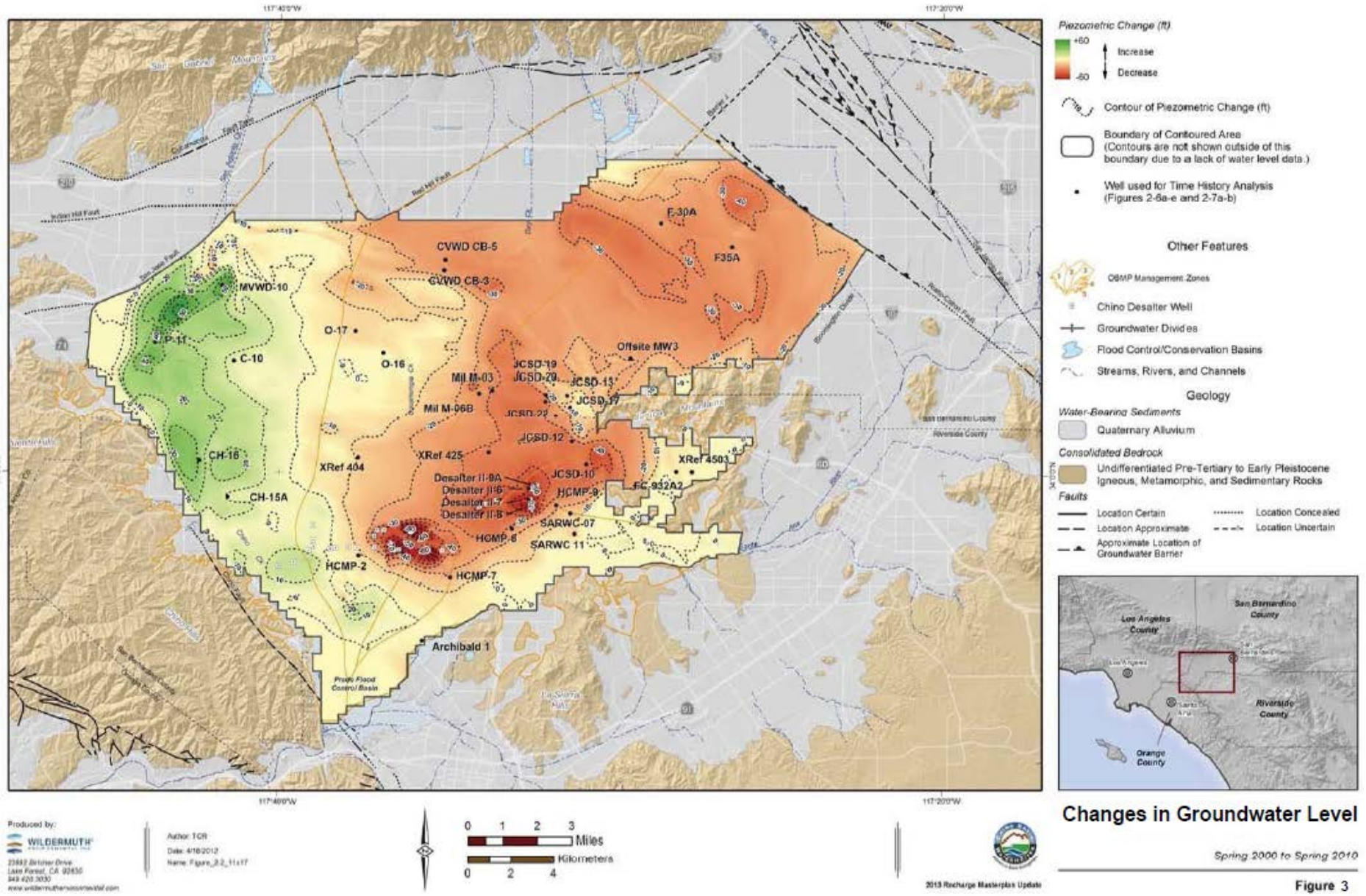
Figure 1



Chino Basin Groundwater Elevations

July 2005

Figure 2



Changes in Groundwater Level

Spring 2000 to Spring 2010

Figure 3

imported State Project Water to replenish the Basin and maintain its safe yield. Annual State of the Basin reports are prepared for the Court by the CBWM to provide up to date information on management activities and identify areas of concern.

Groundwater quality, based on TDS, is considered good in northern parts of the Basin. TDS concentrations in the northern and middle portions of the basin, range from 250 mg/l to 500 mg/l. However, in the southern parts of the Basin TDS concentrations in excess of 1000 mg/l are common. Nitrates exceed drinking water standards in some parts of the Basin and are a constituent of concern in the study area. The location of other known contaminant plumes throughout the Basin are shown on Figure No. 4.

Two desalter projects, Chino 1 and Chino 2 were constructed as part of the OBMP to recover saline waters in the southern part of the Basin. Product water from the desalters provide supplemental water supplies to various water purveyors including JCSD. Desalter well field production serves the dual purpose of feeding Chino 1 and Chino 2 with raw water and providing "hydraulic control" to prevent saline water from entering the Santa Ana River. The desalter well fields are shown on Figure No. 2.

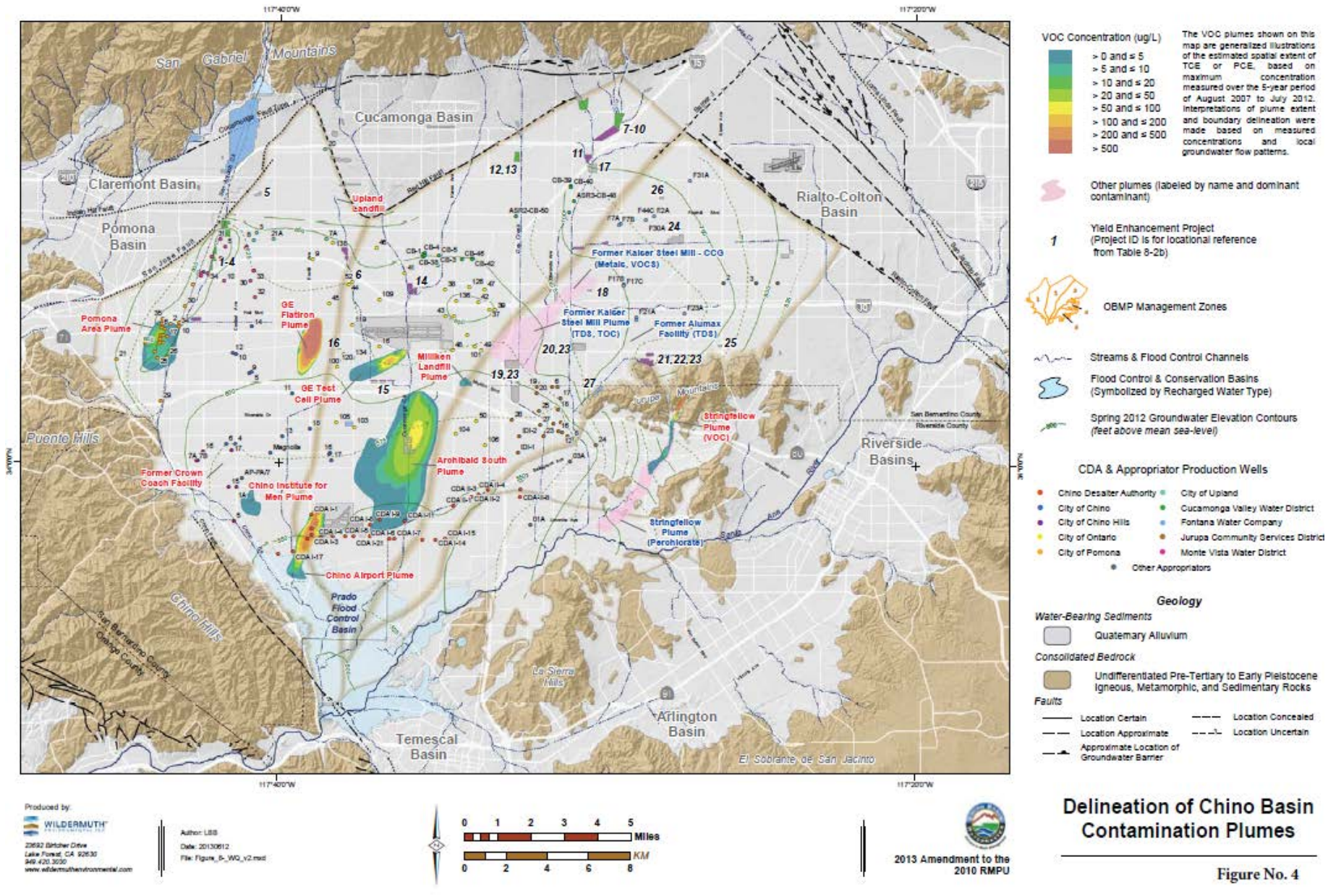
Currently, all of the effluent from the WRCRWA facility is discharged directly to the Santa Ana River immediately upstream of the Prado Dam inundation area. The beneficial uses of the Santa Ana River downstream of this location are generally for on-stream flows and aquifer recharge into the Orange County groundwater basin by the Orange County Water District. WRCRWA has a pending application with the State Water Resources Control Board for re-use of the existing and ultimate effluent flows from the WRCRWA facility for recharge or direct use by its member agencies. It is anticipated that between 70% and 80% of the ultimate flows will be available for reuse, pending final approval of the reuse application.

Section C. Water Supply Characteristics and Facilities

Wholesale water agencies in the study area include IEUA, WMWD and the Chino Desalter Authority (CDA). IEUA and WMWD are member agencies of the Metropolitan Water District of Southern California (MWD) and as such provide wholesale deliveries of imported water to their retail member agencies. IEUA also serves as the producer and wholesale distributer of recycled water to its retail members as direct deliveries or as groundwater replenishment credits through the CBWM. IEUA and WMWD are also each responsible for supplying a 17,000 AFY obligation at Prado that is required by the Orange County Judgment.

The CDA is a joint power agency that operates two desalters and provides desalter product water to its partner retail agencies. The only CDA retail agency in this proposal is the JCSD. In addition to retail water and wastewater service, the JCSD provides parks and recreation services.

Inland Empire Utilities Agency The IEUA operates the CBWM's groundwater replenishment system. Imported water deliveries, recycled water and storm water are used to recharge the Basin. The relationship of the imported water delivery system to the recharge facilities is shown on Figure No 5. Figure No. 6 shows the groundwater recharge basins that can receive recycled



VOC Concentration (ug/L)

- > 0 and ≤ 5
- > 5 and ≤ 10
- > 10 and ≤ 20
- > 20 and ≤ 50
- > 50 and ≤ 100
- > 100 and ≤ 200
- > 200 and ≤ 500
- > 500

The VOC plumes shown on this map are generalized illustrations of the estimated spatial extent of TCE or PCE, based on maximum concentration measured over the 5-year period of August 2007 to July 2012. Interpretations of plume extent and boundary delineation were made based on measured concentrations and local groundwater flow patterns.

Other plumes (labeled by name and dominant contaminant)

1 — Yield Enhancement Project (Project ID is for locational reference from Table 8-2b)

OBMP Management Zones

Streams & Flood Control Channels

Flood Control & Conservation Basins (Symbolized by Recharged Water Type)

Spring 2012 Groundwater Elevation Contours (feet above mean sea-level)

CDA & Appropriator Production Wells

- Chino Desalter Authority
- City of Chino
- City of Chino Hills
- City of Ontario
- City of Pomona
- City of Upland
- Cucamonga Valley Water District
- Fontana Water Company
- Jurupa Community Services District
- Monte Vista Water District
- Other Appropriators

Geology

Water-Bearing Sediments

Quaternary Alluvium

Consolidated Bedrock

Undifferentiated Pre-Tertiary to Early Pleistocene Igneous, Metamorphic, and Sedimentary Rocks

Faults

- Location Certain
- Location Approximate
- Approximate Location of Groundwater Barrier
- Location Concealed
- Location Uncertain

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Date: 20130612
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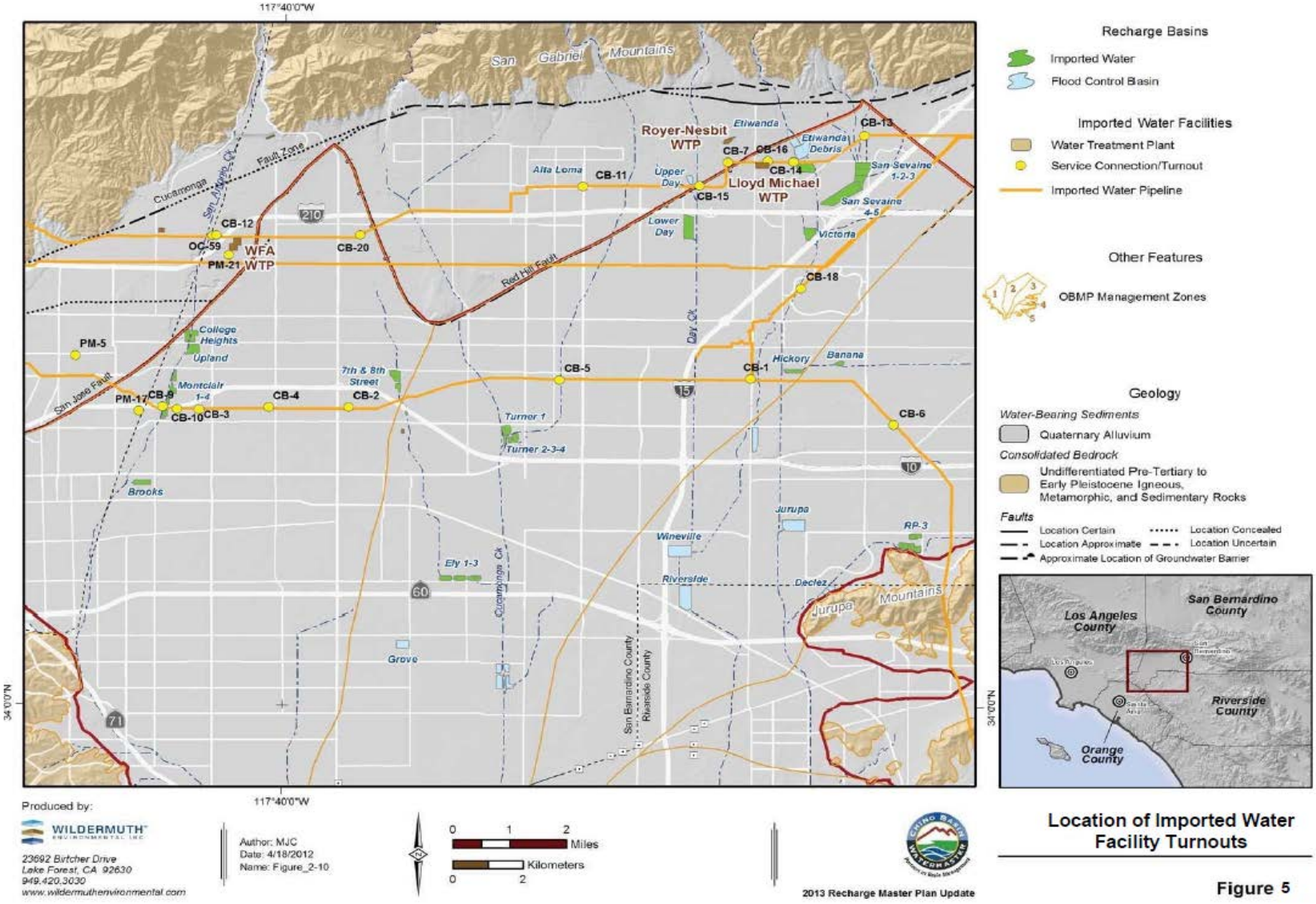
0 1 2 3 4 5 Miles
0 2 4 6 8 KM

2013 Amendment to the 2010 RMPU

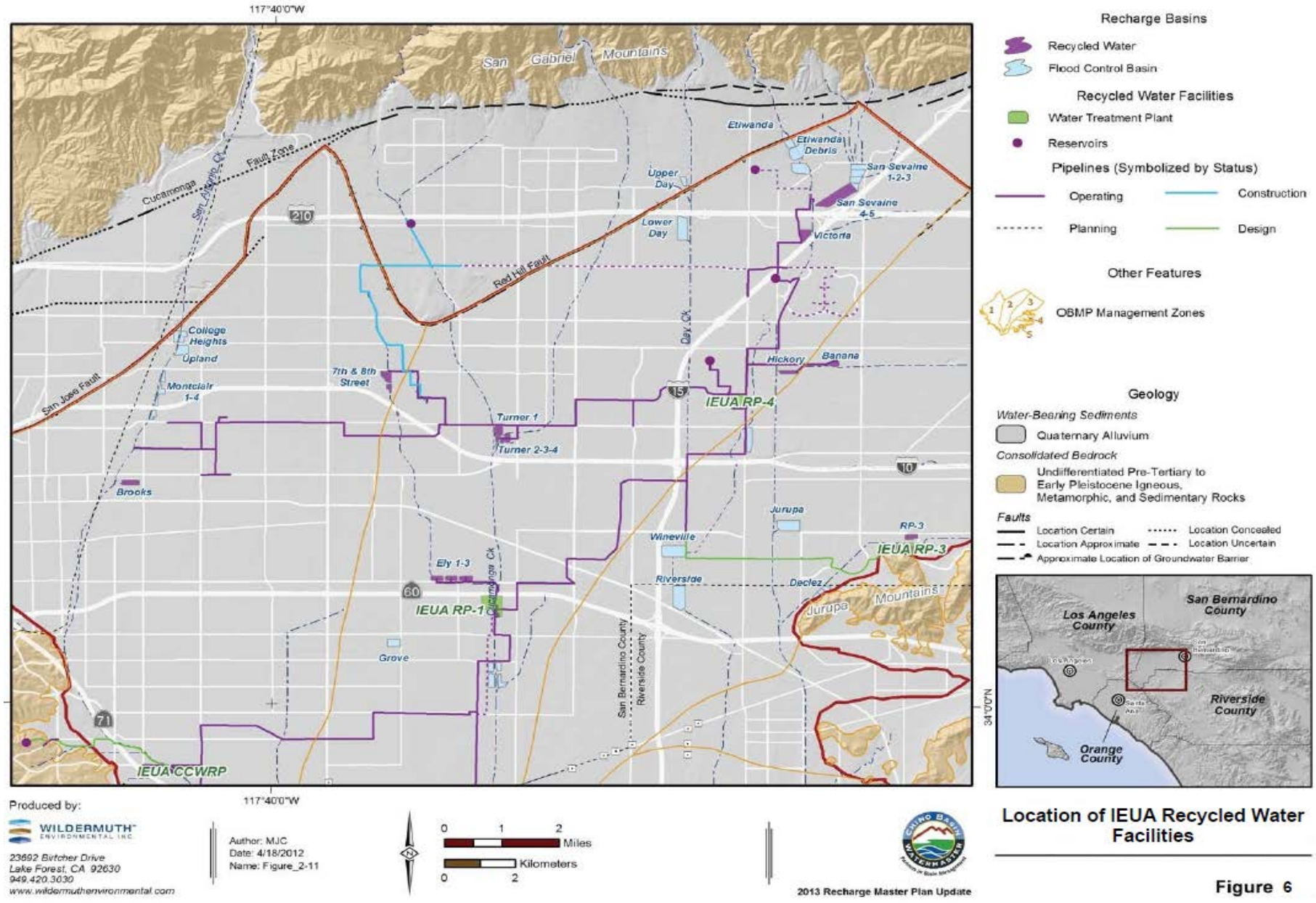
Delineation of Chino Basin Contamination Plumes

Figure No. 4



Location of Imported Water Facility Turnouts

Figure 5



Location of IEUA Recycled Water Facilities

Figure 6

water and the IEUA recycled water distribution system. Most of the storm water that is captured is recharged in the northern portion of the Basin.

In 2013, CBWM and IEUA prepared an amendment to the 2010 Chino Basin Recharge Master Plan Update (RMPU). The Amendment was necessary to address specific areas of the basin that were experiencing production levels that could not be sustained. In general, the specific overdrafted areas were located in the southern and eastern portions of the Basin as shown on Figure No. 3 and production levels at JCSD's well field were determined to be unsustainable. The RMPU Amendment recommended that JCSD reduce well production to sustainable levels and that other Chino Basin producers assist where possible to offset the reduced production.

The project being proposed herein will assist in the development of another solution to the JCSD well field issue by introducing a new recycled water supply into the suite of options available to reduce well field production levels. The new recycled water supply from the WRCRWA treatment plant would be introduced into the IEUA recycled water distribution system at its 930 pressure zone for groundwater replenishment deliveries. Alternatively, the WRCRWA recycled water could be used to help meet the IEUA Orange County obligation or to meet irrigation demands in the IEUA 800 and 930 pressure zones, thereby freeing up other recycled supplies in the IEUA system for groundwater replenishment. Replenishment credits will be maintained by the CBWM and used to provide replenishment for non-safe yield deliveries of groundwater through the desalters or from other Chino Basin groundwater producers. Once the project is complete, IEUA estimates that it will be able to recharge up to 2,500 AFY of WRCRWA tertiary effluent into the Chino Basin using the CBWM/IEUA recharge system.

Chino Desalter Authority The CDA is a Joint Exercise of Powers Agency formed between Jurupa Community Services District, the Santa Ana River Water Company, the Cities of Chino, Chino Hills, Norco and Ontario, Western Municipal Water District and the Inland Empire Utilities Agency. The CDA purifies brackish groundwater extracted from the lower Chino Basin with two desalter facilities and distributes the drinking water to member agencies. The Chino 1 Desalter commenced operation in 2001 and was expanded in 2005. The Chino 2 Desalter became operational in 2006. A 2014 expansion should become operational in late 2016 with the completion of other Phase 3 expansion project components.

The CDA's two desalters are fed by 22 wells that extract brackish groundwater allowing Total Dissolved Solids (TDS) and nitrates (NO3) to be removed from the Chino Basin. The highly treated water is then distributed to CDA members through a series of pipelines, booster pump stations (2) and reservoirs (2). Both desalters utilize Reverse Osmosis (RO) and Ion Exchange (IX) treatment processes to remove TDS and nitrates from the groundwater. The treatment capacity for Chino 1 is 14 million gallons/day (MGD) and Chino 2 is 10 MGD. The Phase 3 expansion will increase the Chino 2 capacity to 20 MGD.

Each of the six retail members of the CDA has a contractual commitment to purchase water produced by the CDA. These commitments total 24,600 AFY and are expected to increase to 35,200 AFY in accordance with the Optimum Basin Management Plan as a new Phase 3 expansion comes on line. The new expansion is sponsored by the Jurupa Community Services

District, the City of Ontario and the WMWD. The WMWD was formally admitted to CDA membership by the CDA Board on April 2, 2009.

Voting rights of each agency are proportional to their commitment to purchase potable water recovered by the CDA facilities. The JCSD's contractual purchase commitment is currently 8,200 AFY. Upon completion of the Phase 3 expansion, JCSD's purchase commitment will increase to 11,733 AFY. Purchases above the contractual agreement or using the desalters to offset production at the JCSD well field would require additional groundwater replenishment credits. Additional credits could be provided by the proposed project by recharging up to 2,500 AFY of WRCRWA effluent in the Chino Basin.

Jurupa Community Services District JCSD was formed in 1956 for the purpose of providing a sewer system to the community of Jurupa. Water service with JCSD began in 1966 with the consolidation of three local agencies providing water at that time: Jurupa Heights Water Company, the La Bonita Mutual Water Company and the Monte Rue Acres Mutual Water Company. As shown on Figure No. 1, JCSD serves an area of 40 square miles in western Riverside County. JCSD relies predominantly on groundwater and desalinated brackish groundwater from the Chino Groundwater Basin to meet water demands. JCSD currently has 16 wells, 8 booster stations and 15 reservoirs in its water system. Recently, the service area has experienced significant increases in single family residential construction, particularly in the Eastvale area. The total amount of groundwater produced and imported water purchased by JCSD has increased from approximately 10,500 AF in 1995 to 23,660 AF in 2009.

To supplement its current water system, JCSD would like to develop a recycled water system to distribute irrigation water to parks, playgrounds and agricultural areas in the Eastvale area (see Figure No. 7). A source of water for the recycled water system will be recycled water produced at the WRCRWA treatment plant. The recycled water system will assist with re-establishing sustainability in the JCSD well field by providing a new water supply for irrigating the District's existing parks and playgrounds in the Eastvale area.

Section D. Wastewater Characteristics and Facilities

Wastewater for the proposed project will be supplied by the JCSD. The JCSD discharges wastewater to three different treatment plants from three independent sewer systems. First, JCSD continues to utilize their Regional Lift Station to pump wastewater to the City of Riverside Regional Water Quality Control Plant. Second, the CFD No. 1 wastewater system is mostly from industrial sources and is discharged to the Inland Empire Brine Line (IEBL) formerly known as the Santa Ana River Interceptor (SARI) System for treatment in Orange County, which has higher salt limits because it is an ocean discharge. Finally, the Eastvale area discharges to the River Road Lift Station, which pumps wastewater to the WRCRWA regional treatment plant. The WRCRWA plant produces Title 22 disinfected tertiary effluent suitable for unrestricted recreational use. JCSD is a member of the WRCRWA Joint Powers Authority (JPA) with a current 3.25 MGD capacity right, and ultimately upto 6 MGD. The location of the wastewater treatment facilities utilized by JCSD is shown on Figure No. 8.

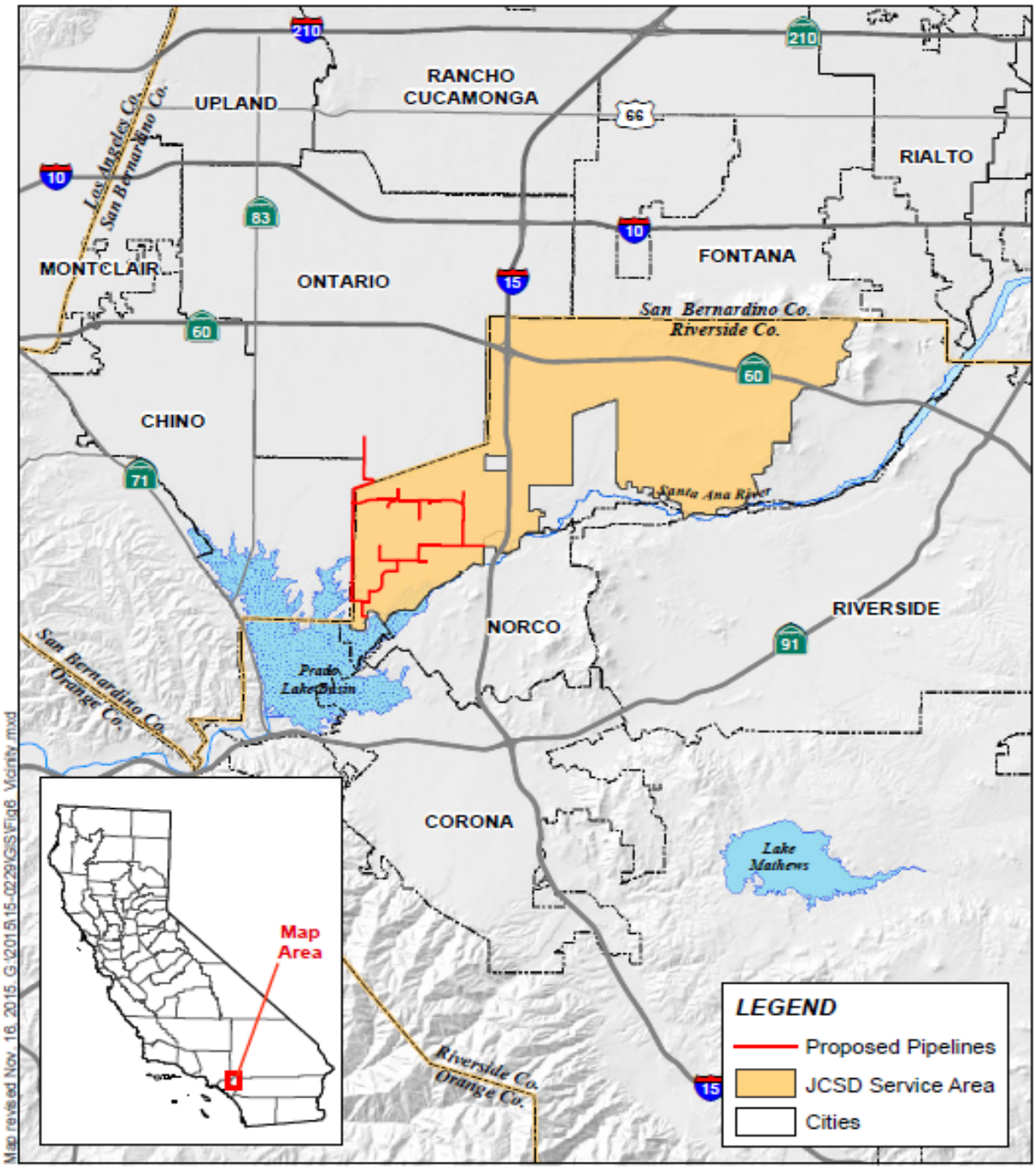


Figure 7 – J CSD Recycled Water Service Expansion

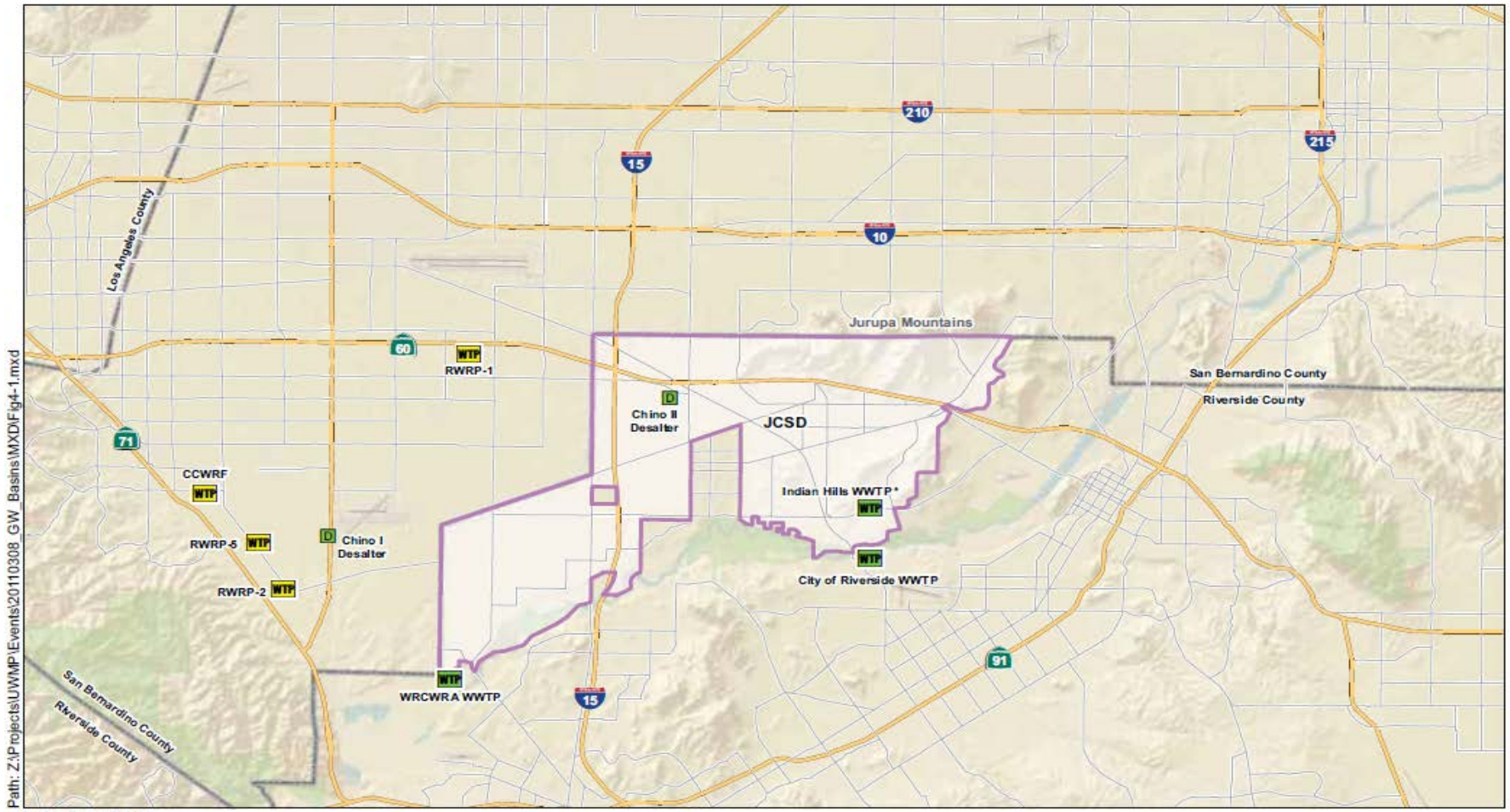


Image Source: ESRI
Note: * - Not in Operation

Legend

- D Desalter
- WTP Wastewater Treatment Plant
- WTP IEUA Wastewater Treatment Plant
- JCSD Service Area

N

0 1.5 3
Miles

Kennedy/Jenks Consultants

JCSD-2010 UWMP Update
Riverside County, California

Locations of Wastewater Treatment Facilities

K/J 1088021*00
May 2011

Figure 8

Western Riverside County Regional Wastewater Authority WRCWRA's Wastewater Treatment Plant was brought online in 1998 and was designed to treat 8 MGD of wastewater. The plant, located in the southwestern portion of JCSD (Figure No. 8), is operated by WMWD and currently treats a flow of 6 MGD. Wastewater from JCSD, the City of Norco, Home Gardens Sanitary District and WMWD's retail and wholesale customers is pumped to the treatment plant for processing. Tertiary treated effluent is discharged into the Santa Ana River, pursuant to the Regional Water Quality Control Board (RWQCB) – SAR Order No. R8-2008-005 and National Pollutant Discharge Elimination System (NPDES) permit No. CA8000316. The current permits allow up to 8 MGD of tertiary treated wastewater to be discharged to the Santa Ana River.

The WRCRWA treatment plant is located at 14634 River Road, Eastvale, California. The existing treatment process consists of the following:

- Headworks. The existing headworks consist of two automated coarse climber bar screens (0.5-inch openings) and one 18-foot diameter vortex grit basin.
- Secondary Treatment. The existing secondary treatment system consists of an oxidation ditch and two circular secondary clarifiers. The oxidation ditch has a total volume of 4.4 million gallons. It is presently retrofitted with a diffused air aeration system to improve efficiency and reduce energy consumption.
- Equalization Basin and Tertiary Filtration. Upstream of the tertiary filters is a single 165-foot diameter steel secondary flow equalization tank with a capacity of 1.44 million gallons. The equalization basin was designed to serve two purposes: 1) to equalize the flow to the filters and 2) to act as a reservoir for fire fighting needs.
- The existing eight upflow Dynasand® filters have recently been refurbished and produce a tertiary effluent with a turbidity that consistently meets Order No. R8-2008-0005. With one filter out of service. The loading rate on the filters is 4.5 gallons per minute per square foot (gpm/ft^2).
- Ultra Violet (UV) Disinfection. The plant currently uses a Trojan medium pressure UV-4000 disinfection system.
- Sludge Handling. The existing sludge handling system currently includes two 82-foot diameter aerobic digesters, which have been operated both in series and in parallel configuration, and three centrifuges that are used for both thickening and dewatering.

The plant is currently undergoing a major expansion to 14 MGD that will include process upgrades to improve reliability. The expansion is scheduled for completion in 2017. A schematic of the plant's existing process train is contained in Figure No. 9. The proposed process train is shown on Figure No. 10.

Currently, JCSD contributes an annual average flow of 3.25 MGD. JCSD's 2007 Master Sewer Plan Addendum indicates that all of the wastewater generated within the Eastvale area (southwest portion of JCSD), including the Sky County development and Jurupa Valley High School, will discharge into WRCRWA for treatment via the Eastvale Interceptor.

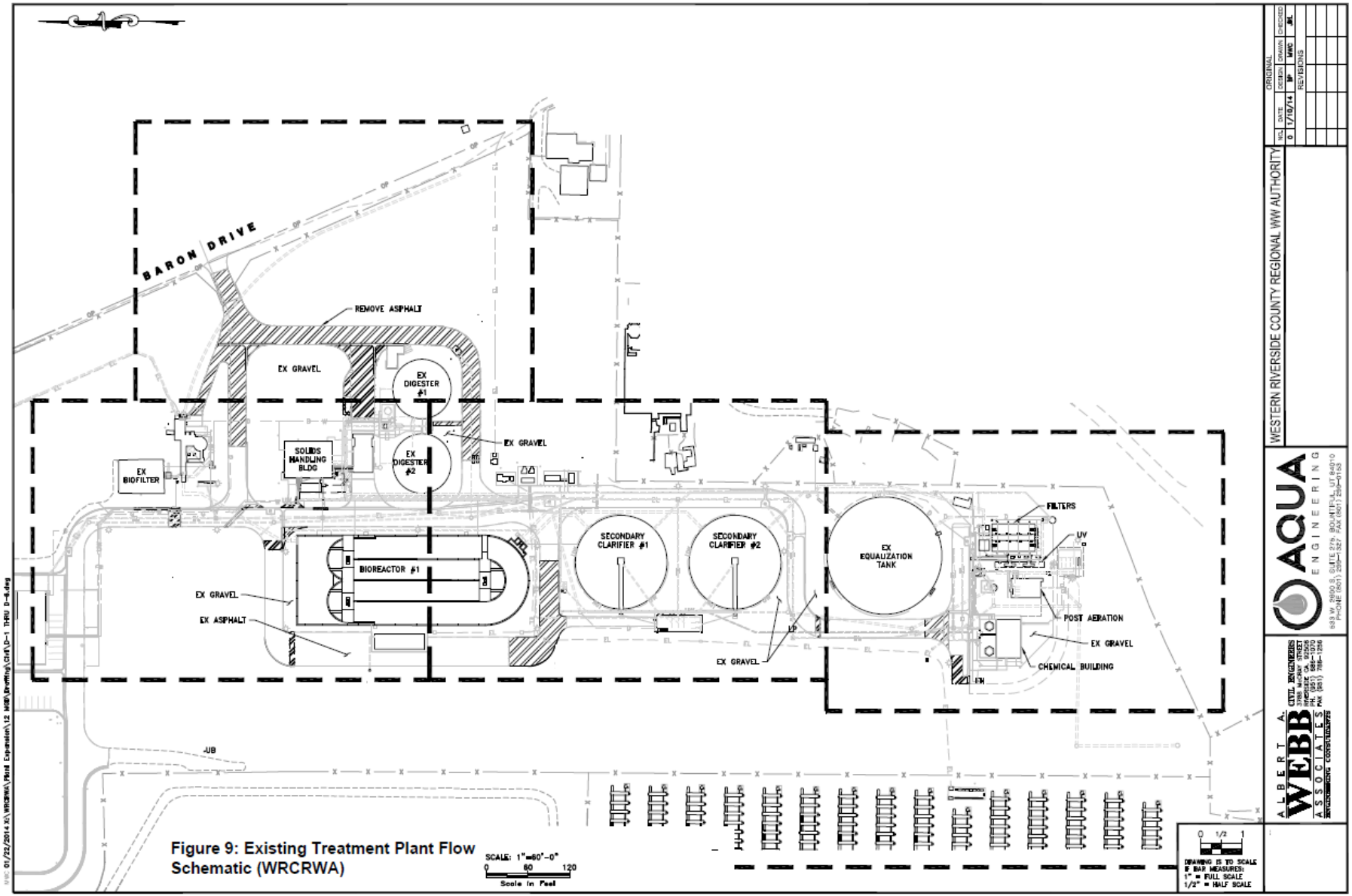


Figure 9: Existing Treatment Plant Flow Schematic (WRCRWA)

Figure 9

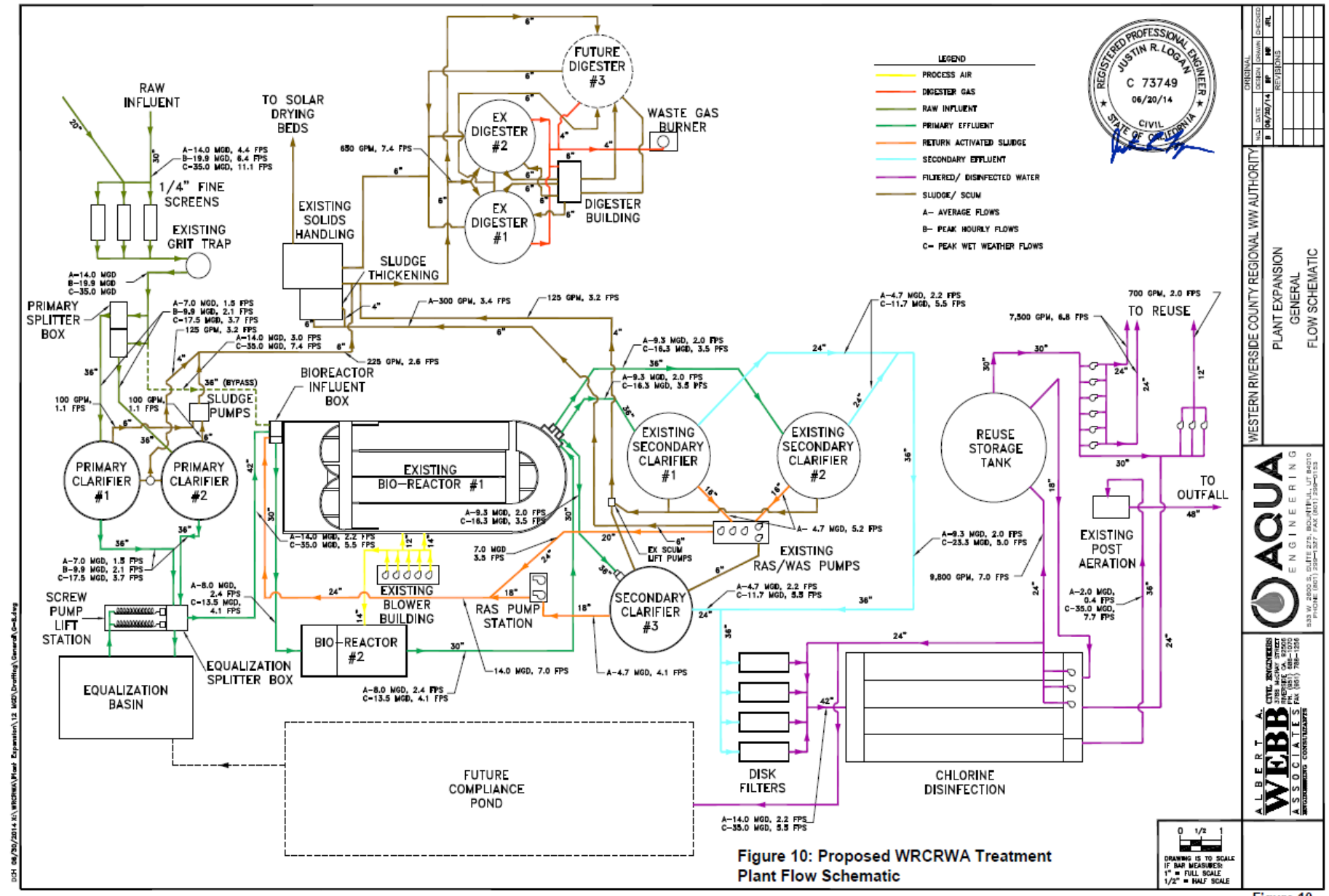


Figure 10: Proposed WRCRWA Treatment Plant Flow Schematic

Figure 10

Ultimately the estimated flow rate from the JCSD to the plant is projected to be 6.0 MGD, based on the projections in the 2007 Master Sewer Plan Addendum (Webb, 2007). JCSD has a proposed project in its 20 Year Capital Improvement Program to obtain additional treatment capacity at WRCRWA. Consistent with and subject to WRCRWA's Resolution No. 97-38, JCSD has the right to receive recycled water equal to the quantity of wastewater delivered to the plant. The allocation of current and future capacity is summarized in Table No. 1 below.

Table 1: Current & Future Capacity for WRCRWA

Member	Capacity		Estimated Available Flow			
	Existing (MGD)	Ultimate Treatment (MGD)	Existing (GPM)	Expansion (GPM)	Existing (AFY)	Expansion (AFY)
JCSD	3.25	6.00	1,610	2,973	2,600	4,800
Norco	2.20	2.70	1,090	1,338	1,760	2,160
WMWD	1.93	1.93	956	956	1,544	1,544
Home Garden	0.62	1.00	307	496	496	800
Corona	N/A	2.37	N/A	1,174	N/A	N/A
Total	**8.00**	**14.00**	**3,963**	**6,937**	**6,400**	**9,304**

Section E. Treatment Requirements for Discharge and Reuse

Although the plant does not currently provide any water for recycling purposes (Webb, 2008), the plant provides tertiary treatment to meet receiving water standards suitable for discharge to the Santa Ana River. Accordingly, the plant can meet all Title 22 requirements for unrestricted body contact recreational use.

Effluent quality targets were established to determine the size and capacity of the treatment processes for the WRCRWA facility expansion. These effluent quality targets are more conservative than those required by the NPDES permit associated with this plant and provide a factor of safety for design and operations

At present, tertiary treated effluent is discharged into the Santa Ana River, pursuant to the RWQCB – SAR Order No. R8-2008-005 and National Pollutant Discharge Elimination System (NPDES) permit No. CA8000316. The current permits allow up to 8 MGD of tertiary treated wastewater to be discharged from the plant to the Santa Ana River. Discharged water from the plant to the Santa Ana River has potential benefits of water supply, as described by the Santa Ana Region (Basin Plan) that designates beneficial uses and establishes water quality objectives for all water in the Santa Ana Region.

Section F. Recycled Water Market

Estimated sales of recycled water from the proposed project are expected to eventually total 500 AF annually for the parks as shown on Table No. 3. Any remaining recycled water available could be recharged into the Chino Basin for replenishment credits that can be used by JCSD and IEUA in the future. Replenishment credits could be banked by both agencies for future use of alternative water supplies such as the CDA desalting facilities or production from groundwater extraction facilities owned by other retail water agencies. Alternatively, IEUA could use WRCRWA effluent for direct deliveries of recycled water for irrigation or other uses including discharges to the Santa Ana River to partially meet the IEUA obligation under the Orange County Judgment.

The potential use areas for the estimated 500 AFY of irrigation demand are tabulated below in Table No. 3 along with the expected demand for each area. Parks located in Eastvale are the focus of this initial project phase since the parks are operated and maintained by JCSD. Subsequent phases could potentially provide irrigation water to school playgrounds and roadway frontage landscaping. The locations of the parks and future potential reuse sites within the Eastvale project area are shown on Figure No. 11. A connection to the IEUA Recycled Water System's 930 pressure zone (PZ) will be used to distribute WRCRWA effluent to the various recharge sites shown in Figure No. 6 or alternatively to irrigate sites in IEUA's 800 and 930 pressure zones.

Supplementing IEUA's recycled water supply with a WRCWRA intertie will boost IEUA's ability to meet recycled water recharge demands by reducing the diversion of IEUA supplies away from recharge sites. The groundwater recharge program receives its recycled water from IEUA's water recycling plants RP1 and RP4 located in the higher-elevation northern-portion of IEUA's service area. The lower-elevation southern-portion of IEUA distribution system is fed largely by the regional water recycling plants RP5 and CCWRF, but southern supplies are supplemented when needed by interconnection with the northern distribution system. The entire distribution system is automated to meet direct use demands before recharge demands. Thus, automation will halt recharge deliveries when it senses supplies are falling and are stressed by direct use demands. When direct use demands for recycled water in IEUA's southern service area exceed supplies from RP5 and CCWRF, recycled water from RP1 and RP4 are automatically routed to the south at the expense of recharge deliveries in the north. Diversion of water from north to south is most common in the summer months to meet agricultural demands for recycled water. An intertie with WRCWRA would increase recycled water supplies available for meeting demands in the southern service area, which in effect will

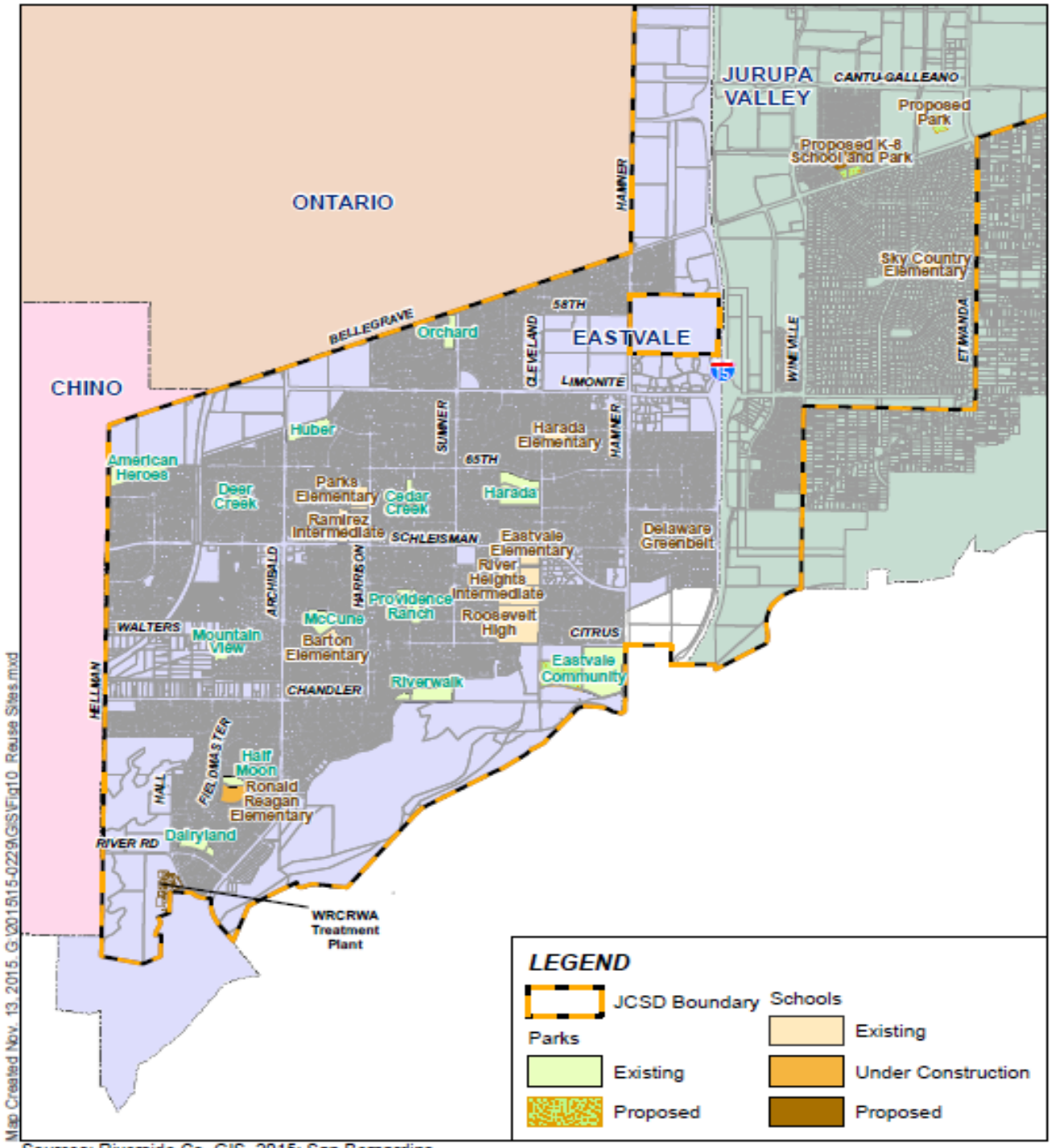


Figure 11- Proposed Eastvale Parks Reuse Sites

WRCWRA Treatment Plant Effluent Water Use Feasibility Study

ALBERT A. WEBB ASSOCIATES

significantly maintain supplies in the northern service area, and keep the northern supplies flowing for recycled water groundwater recharge.

Table 3: Proposed Eastvale Recycled Water Distribution Estimate of Demand

	Area	Annual Demand	Design Flow Rate
Parks	**Irrigated Area (AC)**	**AFY**	**(gpm)**
Dairyland	7.38	25	185
Oosten (Halfmoon)	12.60	44	315
Riverwalk	16.33	57	409
Mountain View	6.29	22	157
Eastvale Community	34.83	118	871
Deer Creek	7.44	26	186
American Heroes	16.58	58	415
Cedar Creek	7.63	27	191
Harada	24.88	87	622
Huber	10.56	36	264
Total	**144.52**	**500**	**3,615**

Section G. Project Alternative Analysis

One of the primary objectives of the proposed project is the development of a new water supply for JCSD. The new water supply will be provided by recycled water produced at the WRCRWA treatment plant located at the southern tip of the City of Eastvale which is also the southern tip of JCSD (Figure No. 8). The recycled water that will be utilized for the project will be from the recycled water that will be made available through the expansion capacity, based on the growth that is projected to happen over the next five years. The projected growth within the next five years is approximately 2.75 MGD (3,080 AFY). The JCSD well field that extracts groundwater from the Chino Basin is currently operating in a localized overdraft condition that is not sustainable. Accordingly, JCSD is proactively expanding its water supply portfolio and developing projects that will strengthen this aspect of its water system. The projects described herein are designed to reduce Chino Basin groundwater use at the JCSD well field by using Title 22 recycled water for irrigating parks, playgrounds and other landscaped areas. Eventually, recycled water use is expected to offset groundwater production by 500 AFY and potentially by up to 870 AFY as additional recycled water users become available.

In addition, the JCSD is working with IEUA and the CBWM to develop a recycled water groundwater replenishment strategy that will allow them to take additional Chino Basin groundwater deliveries from locations other than their well field, such as the CDA desalters. The replenishment program will be implemented by providing a connection to the IEUA recycled water system so that WRCRWA effluent can be used for groundwater recharge in the Chino

Basin. Since most recharge occurs in the northern parts of the Chino Basin (see Figure Nos. 5 and 6) and to avoid high pumping costs, the WRCRWA effluent will not necessarily be used in spreading basins, but rather it will be used to meet direct demands in the southern portions of the Chino Basin (IEUA's 800 and 930 pressure zones) so that more IEUA effluent can remain at higher elevations for groundwater recharge. The current estimated project benefit for added groundwater recharge is approximately 2,500 AFY. The facilities needed to implement this program include:

- A connection and pump station at the WRCRWA treatment plant,
- A recycled water distribution system within Eastvale, and
- A connection to the IEUA recycled water distribution system.

The five options and various sub-options that were evaluated to arrive at a recommended project are discussed below. The complete feasibility study is attached as Appendix A.

Alternate Recycled Water Systems Five base alternates were established that would accomplish the objectives discussed above. Early on in the project development/feasibility phase, it was not clear if IEUA would have a role in the program. However, IEUA's role quickly became evident as the project development/feasibility phase continued. Some of the earlier options that did not include IEUA are included herein for historic perspective regarding the project's evolution. Similarly, the fifth alternate (Original System 4) listed below is also provided to clarify the project's evolution. The sixth option listed below (Revised System 4) is the final recommended project and it is the project used for the comparison of alternatives.

The base alternate systems are:

1. System 1: Minimize pipeline length,
2. System 2: Maximize demand areas,
3. System 3A: Connect to IEUA's recycled water system at the 800 PZ, minimum demand
4. System 3B: Connect to IEUA's recycled water system at the 800 PZ), maximum demand
5. Original System 4: Connect to IEUA's recycled water system at the 930 PZ, and
6. Alternate System 4: Medium demands and connect to IEUA's recycled water system at the 930 PZ

System 1: Minimize pipeline length (Figure 12) - System 1 proposed minimum length of the recycled water pipeline. The pipelines reach the existing schools and are extended to JCSD parks near the school sites. System 1 delivers recycled water to six parks near five school areas located in the middle of Eastvale. Any reverse frontage landscaping areas along the proposed pipeline will be covered; however, no pipeline is extended to cover reverse frontage area only. Some parks located far from the schools are also excluded. A total 644 AFY of annual irrigation demand is estimated. Approximately, 44,000 linear feet of pipelines from 4-in to 18-in diameter are proposed with 4,025 gallons per minute booster station and a 315,000 gallon of storage tank. This would be a local recycled water project, with no interconnections, and not augment groundwater supplies.

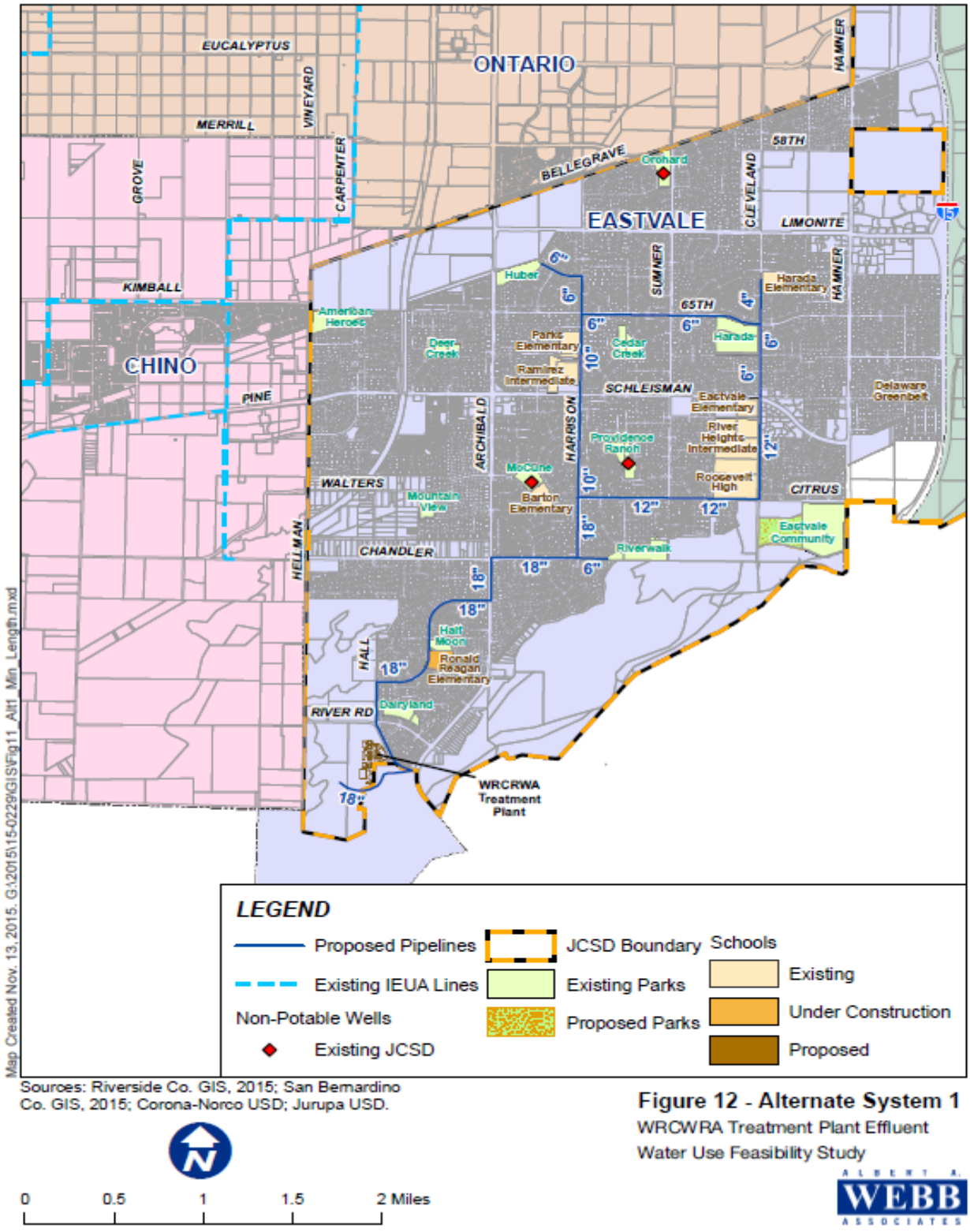


Figure 12 - Alternate System 1
WRCWRA Treatment Plant Effluent
Water Use Feasibility Study

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System 2: Maximize demand areas (Figure 13) - System 2 proposed to serve maximum demand of the recycled water in the JCSD portion of the study area. All the parks located at east of channel are included. Another school, Barton Elementary School, is added to the service area. Most of reverse frontage landscaping areas are added as well along main streets. Due to additional demand, larger transmission pipelines are proposed with a System 1. Approximately 130,500 L.F. of pipelines from 4-in to 24-in diameter are proposed with a 7,200 gpm booster station and a 2.61 MG storage tank. The estimated demand is 1,153 AFY. This would be also be a local recycled water project, with no interconnections, and not augment groundwater supplies.

System 3A: Connect to IEUA's 800 PZ reclaimed water system with minimum pipeline length (**Figure 14**) - System 1 and 2 do not provide a connection point to IEUA's system. This system proposed to provide an interconnection between the JCSD recycled water system and the IEUA recycled water system in the 800 pressure zone (PZ). The closest IEUA pipeline is located in Pine Avenue approximately 2,300 ft from JCSD west service boundary. System 3A is very similar to System 1 other than the 18-inch diameter transmission pipeline along Schleisman Road to the west service boundary. Approximately, 53,500 L.F. of pipelines from 4-in to 18-in diameter are proposed with a 4,135 gpm booster station and a 0.39 MG storage tank. JCSD irrigation demands based on this alignment would be approximately 644 AFY.

The interconnection was beneficial to the IEUA recycled water system in the near term to have supplemental supply in the 800 PZ. However, in the long term (2025), IEUA, with its projected growth had sufficient supplies in its southern area to meet the demands in the 800 PZ. As a result, if this option was chosen, for years beyond 2025, IEUA would have to construct added facilities to boost the recycled water into the higher pressure zones to use it for groundwater recharge. Due to the short term noted benefit of 10 years, interconnection in the 800 pressure zone was not preferred.

System 3B: (Figure 15) - Connect to IEUA's 800 PZ recycled water system with Maximum demand area: System 3B is derived from System 2 with the 18-inch diameter transmission pipeline along Schleisman Road for IEUA. Approximately, 133,500 L.F. of pipelines from 4-in to 24-in diameter are proposed with a 7,200 gpm booster station and a 2.61 MG storage tank. The estimated demand is 1,153 AF/year. For reasons as stated in System 3A, the benefit of the interconnection to the IEUA system was not as beneficial in the long term, and therefore, not preferred.

Original System 4: (Figure 16) - Connect to IEUA's 930 PZ recycled water system: After the 2011 study with the System 3A and System 3B, JCSD and IEUA had a series of meetings on water reuse from WRCRWA and concluded that connection to IEUA's 930 PZ is more efficient than 800 PZ since there is not much demand in 800 PZ in the outer planning years, beyond 2025.

The system proposed with this alternative included a large pump station (in the range of 750 horsepower) that was located within the WRCWRA treatment plant to boost the recycled water

into the IEUA system. From the booster station within the treatment plant, a 24-inch recycled water pipeline was to be constructed along Hellman Avenue heading North towards the City of Chino, then head easterly onto Bellgrave Avenue, and then head north on Carpenter Avenue to provide a connection to the IEUA recycled water system at Carpenter and Eucalyptus Avenue; the recycled water pipeline then headed further north on Carpenter Avenue to Schaeffer Avenue, to be connected to two reservoirs that will provide storage and service to the customers within the JCSD service area.

JCSD adopted the final initial study/mitigated negative declaration (IS/MND) in September 2015 per California Environmental Quality Act (CEQA) and CEQA Plus guidelines. The IS/MND proposed a recycled water distribution system including a booster pump station, storage facility site alternatives (Survey Area 1 and Survey Area 2) in the City of Ontario, and comprehensive transmission and distribution pipelines for the study area and connection to IEUA's recycled water 930 PZ. The system proposed to include two recycled water reservoirs sized to be 2.5 MG. The reservoirs were intended to provide storage and pressure for the irrigation customers in the JCSD service area. At either of these sites, up to three acres of prime farmland were to be converted to non-agricultural use. Discussions from cities and water agencies did not identify any available that can be converted; if this option were to be pursued, land acquisition would have been a major challenge.

The estimated demand for this project was 500 AFY of irrigation customers 2,500 for groundwater recharge to be used in the IEUA system.

Alternate System 4 (Figure 17) - Connect to IEUA's 930 PZ recycled water system: This is a modification the Original System 4, with two primary modifications; the project would not require construction of the two reservoirs and the construction of the water pipeline along Carpenter Street, from Eucalyptus Avenue to Schaefer Avenue.

The project includes the construction of two pump stations to boost water from the WRCWRA treatment plant into the IEUA system, which were smaller than the large single pump station in the Original System 4. The first pump station is proposed to be located within the WRCWRA treatment plant to boost the recycled water into the IEUA system. The second pump station will be located in in an established park, the American Heroes Park, located in the City of Eastvale to boost the recycled water into the IEUA system. The final pump station sizes will be determined after further hydraulic analyses.

From the booster station within the WRCWRA treatment plant, there are three phases of pipeline construction. Phase I is the construction of a 24-inch recycled water pipeline along Hellman Avenue heading North towards the City of Chino and providing a connection to the IEUA recycled water system in the 800 PZ at Pine Avenue. Phase II is the construction of a 24-inch pipeline from Pine Avenue and Hellman Avenue heading easterly onto Bellgrave Avenue and building the JCSD recycled water distribution system consisting primarily of 12 and 18 inch pipelines. Phase III is the construction of 24-inch pipeline from Hellman Avenue heading north on Carpenter Avenue to provide a connection to the IEUA recycled water system at Carpenter

and Eucalyptus Avenue; This Revised Project is the proposed project for the grant application, Alternate System 4. By interconnecting the system at the optimal pressure zone, the JCSD recycled water system takes advantage of the looped IEUA recycled water system and pressures, and a separate
storage reservoir for its system was eliminated. By also providing two smaller pump stations, the constructability of the project also improved from the Original System 4.

Alternate System No. 4 was developed later in the process as detailed discussions between the various entities continued. Alternate System No. 4 combines a backbone distribution system within Eastvale that will be expandable in the future as the recycled water supply grows and a connection to IEUA's recycled water 930 PZ that is more suitable to optimizing the use of WRCRWA effluent in the IEUA service area. This system provides the greatest flexibility for both agencies as the program continues to grow.

The project includes the construction of approximately 31,600 L.F. of 24-inch recycled water pipeline interconnecting JCSD and IEUA, two 750 HP pump stations, and 47,800 L.F. of 12- and 18-inch recycled water distribution system within the JCSD service area. The project benefit is estimated to be 500 AFY of irrigation customers and 2,500 AFY of groundwater recharge by the IEUA system within the Chino Basin, for the benefit of both agencies. The rest of report includes the Revised System 4 for further analysis.

Figure Nos. 12 through 17 illustrate each of the five alternate systems analyzed. Due to reduced irrigation demands and increased cost as the system extends east of Interstate 15, it was decided to limit the analyses to the Eastvale area only for direct deliveries.

After the IS/MND, JCSD and IEUA issued Addendum No.1 to the IS/MND, which is consistent with the facilities described in Alternate System 4.

Demands Figure No. 18 summarizes potential irrigation demands within the Eastvale area. These potential demands are the same as those contained in the 2008 JCSD Non-Potable Water Master Plan Report (Webb, 2008). Using assumptions previously outlined, the irrigation demands for the alternate systems are shown below in Table No. 4.

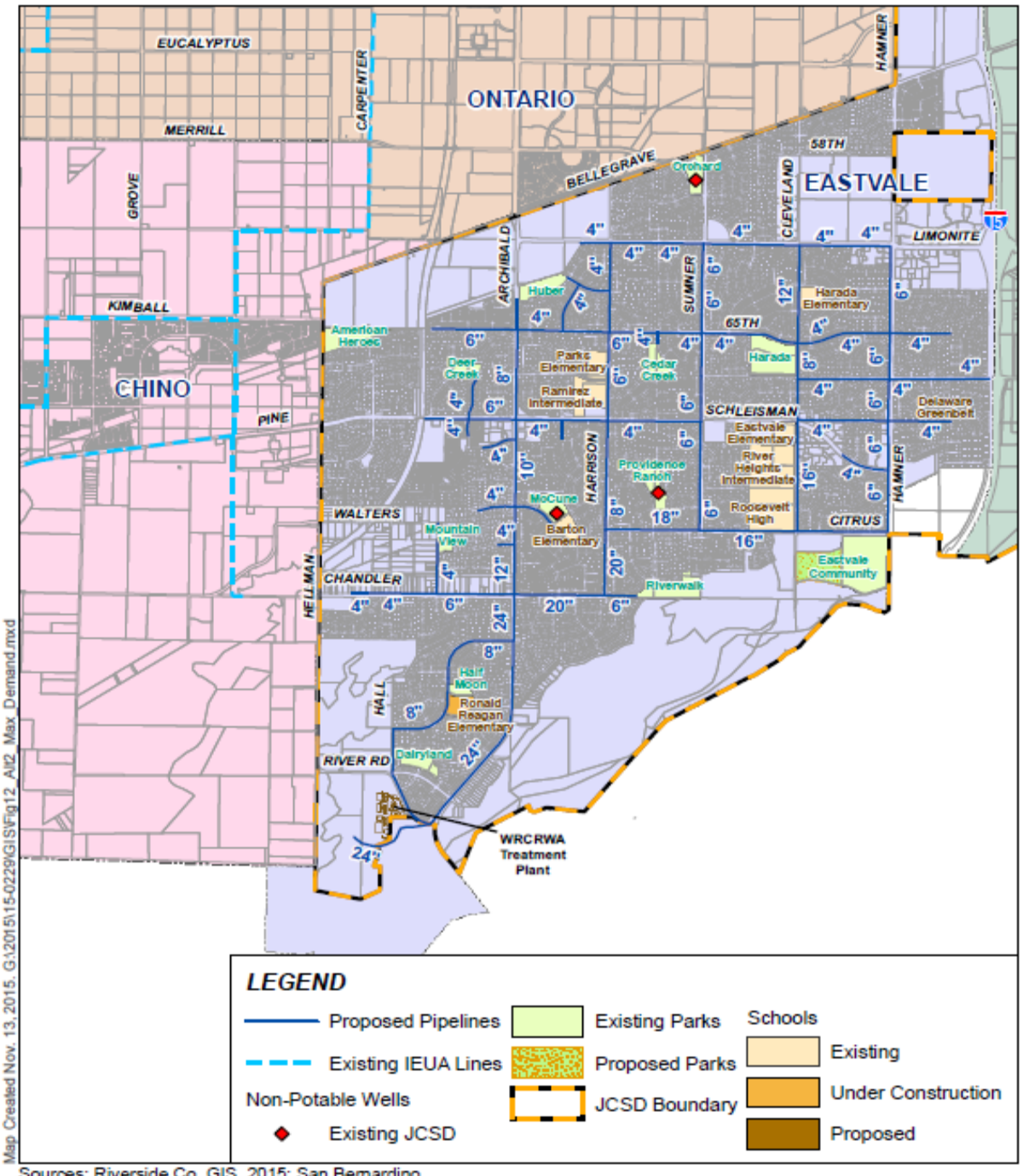

Figure 13 - Alternate System 2
WRCWRA Treatment Plant Effluent
Water Use Feasibility Study

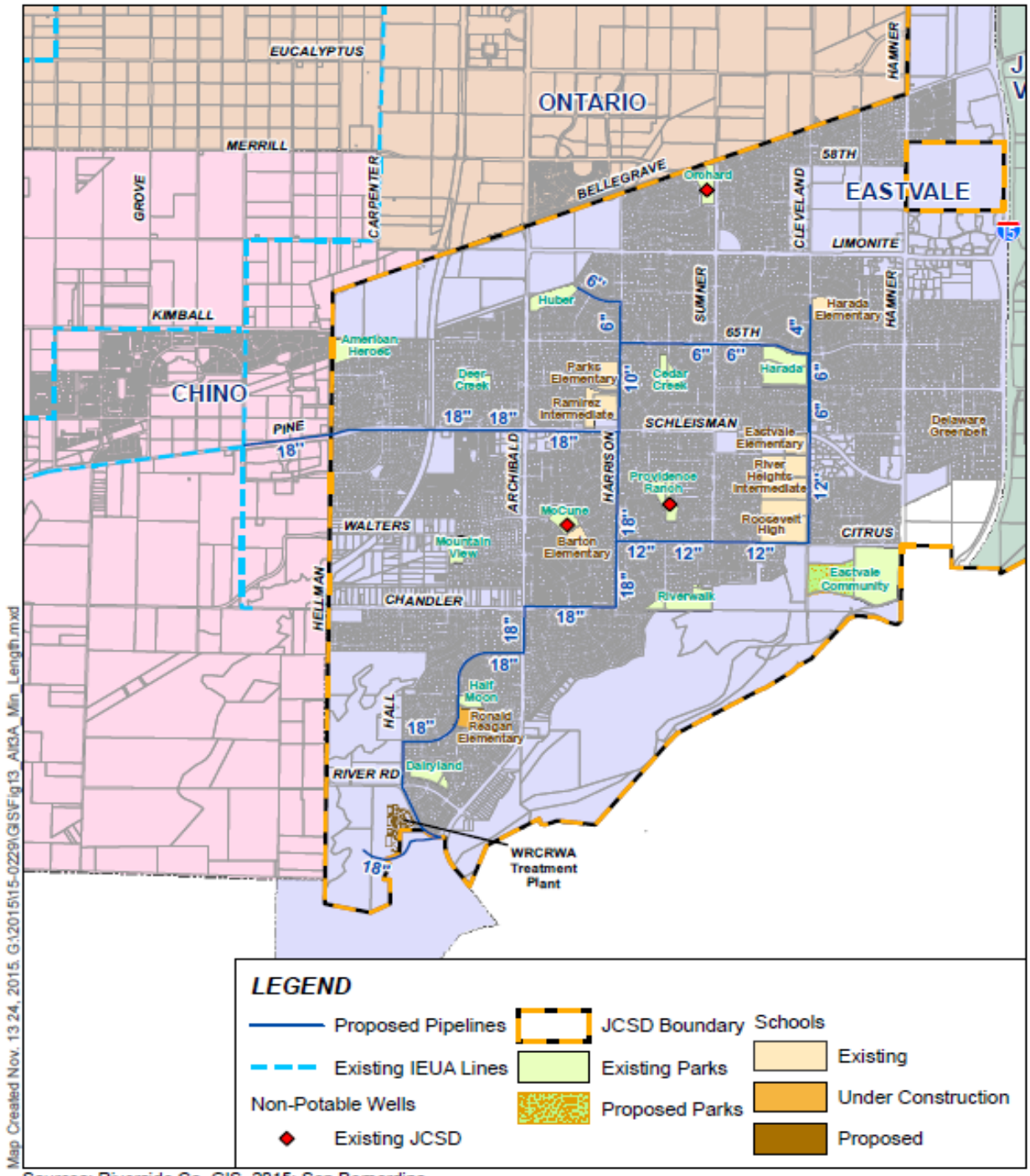

Figure 14 - Alternate System 3A
WRCWRA Treatment Plant Effluent
Water Use Feasibility Study

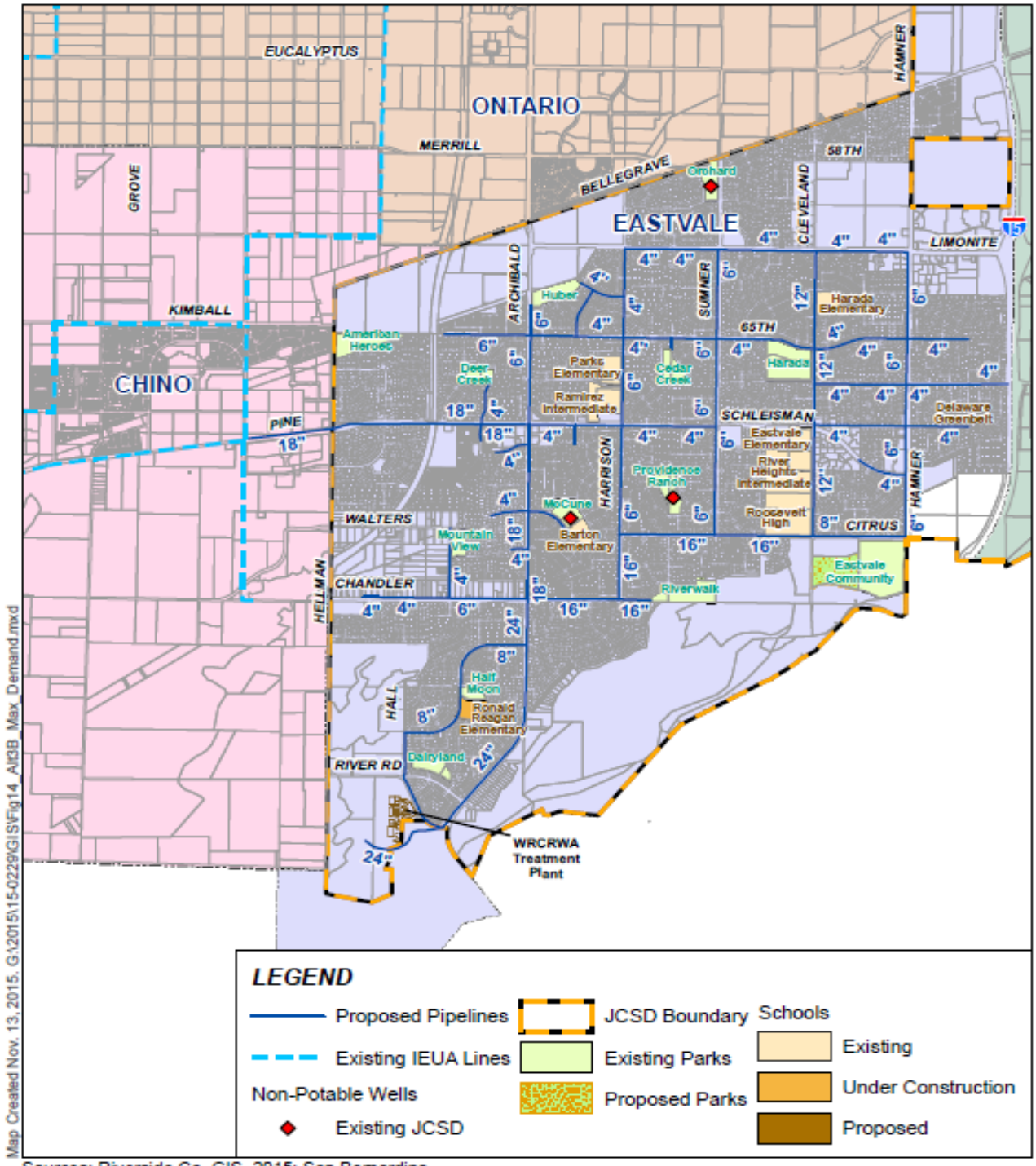

Figure 15 - Alternate System 3B
WRCWRA Treatment Plant Effluent
Water Use Feasibility Study

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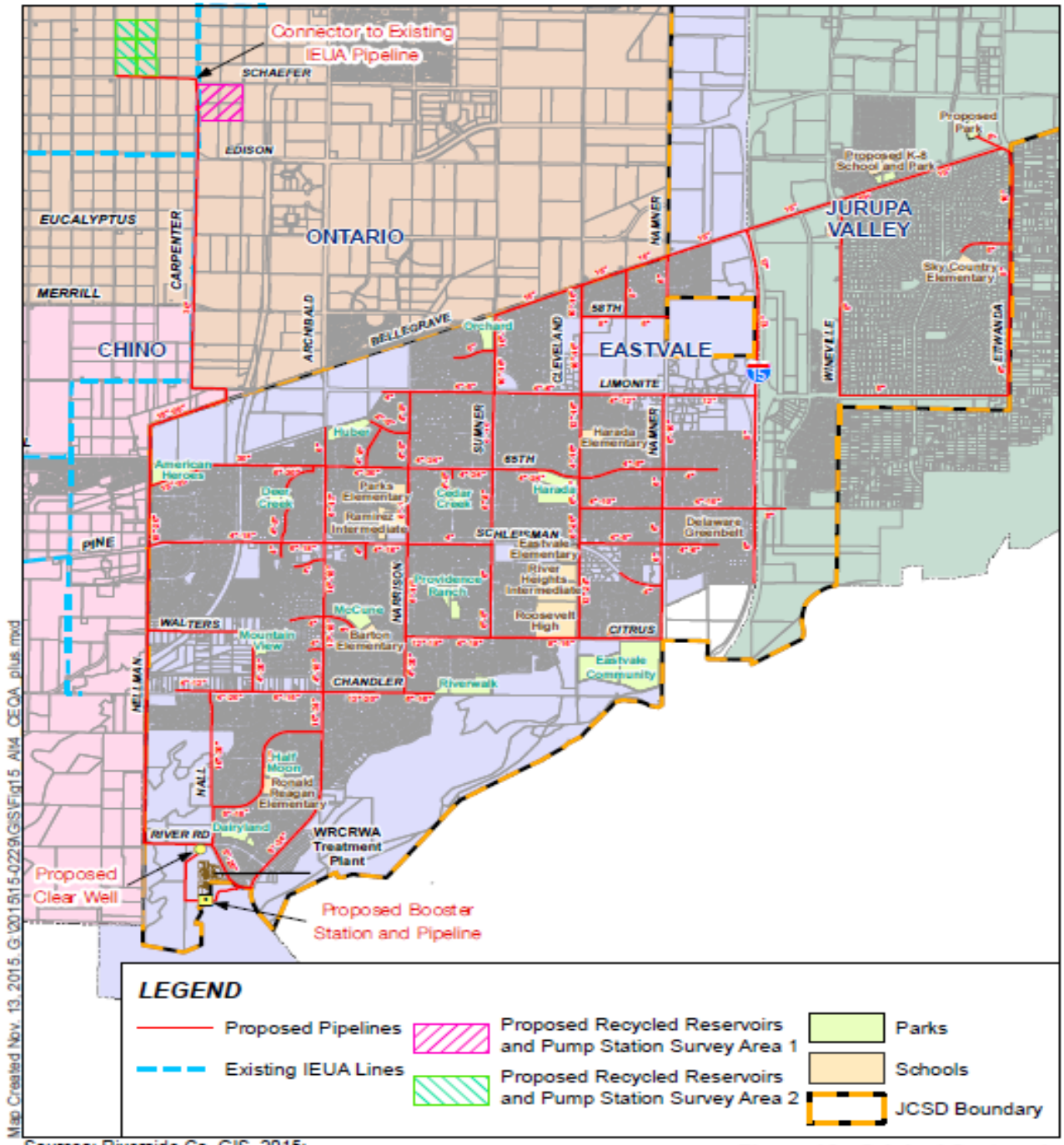

Figure 16 - Original System 4

WRCWRA Treatment Plant Effluent Water Use Feasibility Study

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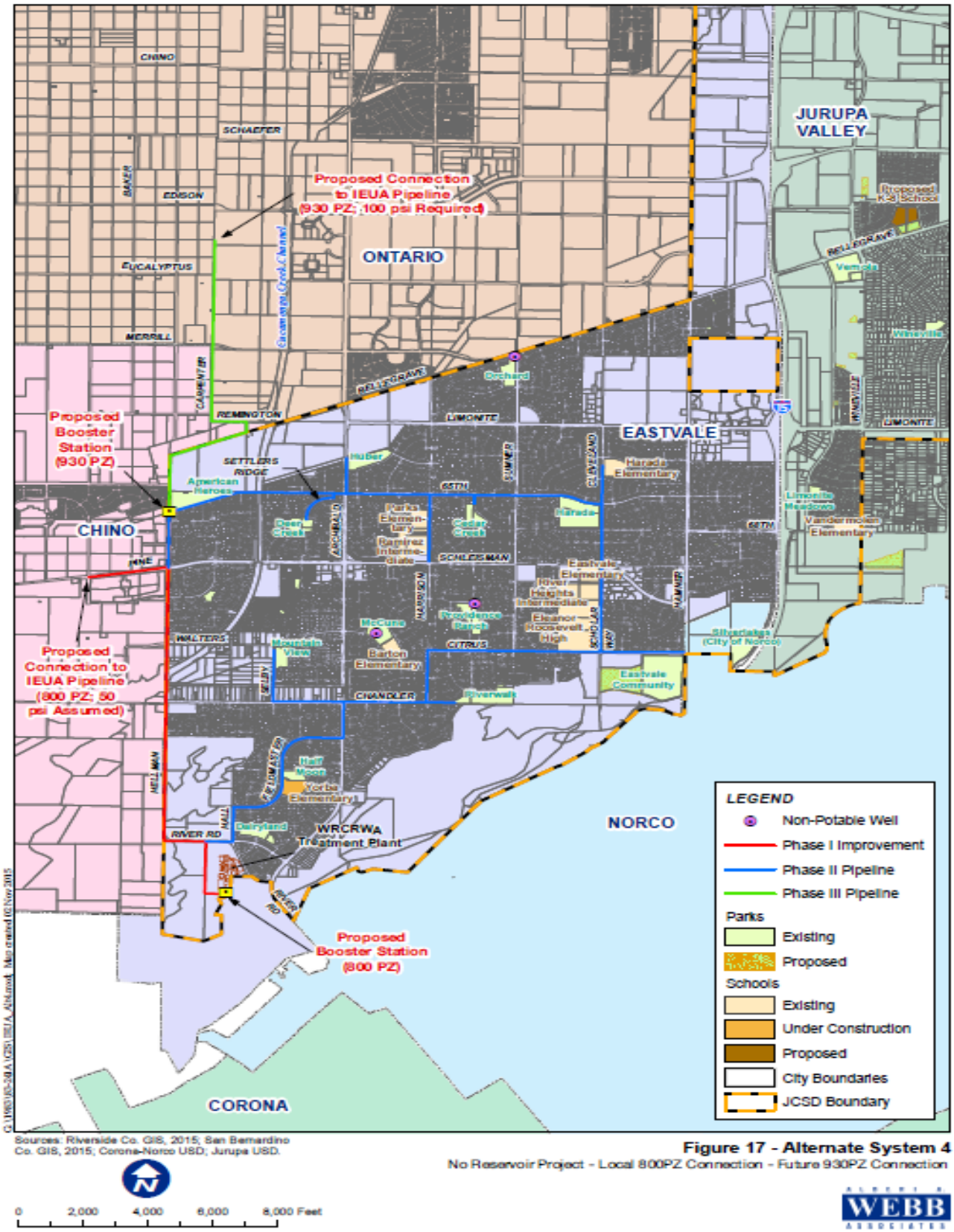
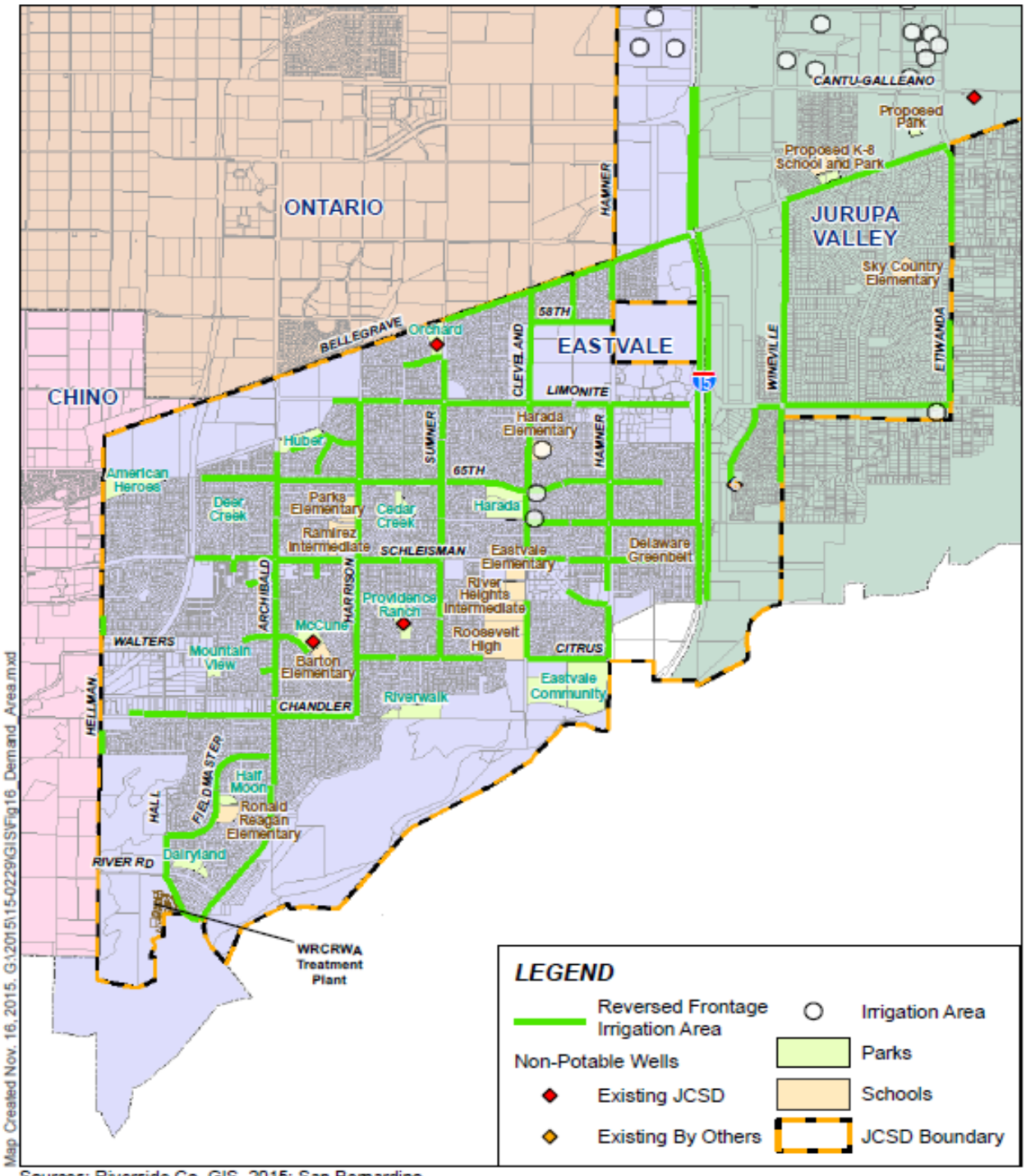


Figure 17 - Alternate System 4
No Reservoir Project - Local 800PZ Connection - Future 930PZ Connection



Sources: Riverside Co. GIS, 2015; San Bernardino Co. GIS, 2015; Corona-Norco USD; Jurupa USD.

Figure 18 - Demand Area

WRCWRA Treatment Plant Effluent Water Use Feasibility Study

ALBERT A. WEBB ASSOCIATES

Table No. 4
Recycled Water Distribution System Alternatives & Associated Water Demand

Alternative	Annual Irrigation Demand (AFY)	Design Flow Rate (gpm)
System 1 - Minimum Pipe Length	644	4,025
System 2 – Maximum Demand Areas	1,153	7,200
System 3A – Minimum Pipe Length and Connect to IEUA 800 PZ	661	4,135
System 3B – Maximum Demand Areas and Connect to IEUA 800 PZ	1,153	7,200
Original System 4 – Medium Demand Areas and Connect to IEUA 930 PZ	500	5,000
Alternate System 4 - Medium Demand Areas and Connect to IEUA 930 PZ	500	5,000

Demands for System 3A increased over that of the demands for System 1 due to the inclusion of additional demand areas as the pipeline was extended to connect to IEUA. There was no change in demand from System 2 to System 3B. Attachment 1 of the Feasibility Study (2011) in Appendix A contains a breakdown of demands for the first four alternate systems and Table No. 3 contains the demands for System 4. The 2011 Feasibility Study assumed that the best connection point to the IEUA system was IEUA's 800 PZ in Schleisman Road (System 3A and 3B). However later coordination with IEUA revealed that there is not enough direct use in 800 PZ to make a connection to the 800 PZ viable in the long term, and only works through 2025. Alternate System 4, therefore, proposes to deliver the water to 930 PZ.

Storage and Pumping Facilities A preliminary hydraulic analysis was completed to size pipelines shown on Figure Nos. 12 through 17. Results of the preliminary hydraulic analysis were used to establish pumping requirements for the five alternate systems. Pumping requirements for Alternatives 3A and 3B were determined using information contained in the 2008 Report and it initially appeared that the same pumping facilities needed to deliver flows and pressures to the irrigation system in the Eastvale area would be capable of meeting requirements to deliver water into the IEUA system. However, these assumed conditions were based on the assumption that delivery to IEUA would take place at IEUA's 800 PZ. Further coordination with IEUA established that the optimum connection location and operating parameters for the IEUA system required that the connection take place at IEUA's 930 PZ. For purposes of this review, the similar pumping requirements meet the needs for Alternate Systems 1 and 3A as well as for Systems 2 and 3B. System 4 was developed primarily to address the intertie needs of IEUA. Approximate storage and pumping requirements for the alternate systems are shown in Table No. 5. No storage volume is required for System 4, since System 4 can utilize the existing storage volume in the IEUA system.

Table No. 5
Estimated Pumping and Storage Requirements for the Five Alternative Systems

Alternative	Pump Flow Rate (gpm)	Pump HP	Storage Volume Gallons
System 1 - Minimum Pipe Length	4,025	500	315,000
System 2 – Maximum Demand Areas	7,200	900	2,610,000
System 3A – Minimum Pipe Length & Connect to IEUA 800 PZ	4,135	500	390,000
System 3B – Maximum Demand Areas & Connect to IEUA 800 PZ	7,200	900	2,610,000
Alternate System 4- Medium Demand Areas and Connect to IEUA 930 PZ	5,000	1,500	0

Attachment 2 of the Feasibility Study contains calculations to approximate storage volume and potential deliveries to the IEUA system. Further refinements and more detailed operational calculations will be required to determine optimal storage as well as operating parameters for the irrigation system. These refinements will take place in the preliminary design phase of the recommended project.

Facility Cost A quantity and cost estimate was prepared for each alternate system. Unit costs are updated from those contained within the 2008 Report. Assumptions related to project overhead and contingency costs from the 2008 Report were used in this analysis. Table No. 6 contains the total project cost for the alternate systems.

Table No. 6
Alternative System Project Costs

Alternative	Project Cost
System 1 - Minimum Pipe Length	$19,820,000
System 2 – Maximum Demand Areas	$42,690,000
System 3A – Minimum Pipe Length and Connect to IEUA 800 PZ	$24,040,000
System 3B – Maximum Demand Areas and Connect to IEUA 800 PZ	$43,820,000
System 4- Medium Demand Areas and Connect to IEUA 930 PZ	$52,460,000

Attachment 3 of the Feasibility Study (Appendix A) contains quantity and cost breakdowns for each alternate system with the original unit costs followed by revised unit costs

Present Worth Analysis Now that detailed discussions with IEUA are underway relative to system operation, capacity and the role of IEUA to use or transport additional recycled water, additional refinements have been made to the original alternative Systems. The maximum volume of treated effluent equivalent to the JCSD purchased capacity of 6 MGD plant capacity (4,800 AFY, assuming 71.43% of 6 MGD for available use) minus annual irrigation demand within the Eastvale area. Assumptions for Systems 3A and 3B include a minimal amount of

water deliveries to IEUA (100 AFY), while System 4 can deliver the remaining water (4,000 AFY) to IEUA after JCSD direct use. Further subsequent review of IEUA operations, storage volume and other issues in more detail has resulted in the development of alternative System 4. System 4 takes into consideration IEUA recycled water source locations and elevations, high recycled water demand locations and elevations and the location and elevation of groundwater recharge sites, to optimize energy needs within the IEUA recycled water system. Results of the present worth analysis with the revised project cost are presented below in Table No. 7. The original details are contained in Attachment 4 of the Feasibility Study followed by the revised analysis.

Results At a concept level it was mutually agreed that developing a system to meet irrigation demands in JCSD and conveyance of recycled water to IEUA's system was feasible and worthy of additional review. Since this initial feasibility determination in 2011, numerous meetings have taken place between JCSD and IEUA and several additional studies have been completed to arrive at the Recommended Project described below.

Table No. 7
Present Worth Analysis of Alternatives and Sub-Alternatives with Revised Project Cost

Alternatives	Project Cost	Annual O&M Cost ($/YR)	Annual Irrigation Demand (AFY)	Potential Deliveries to IEUA (AFY)	Present Worth Cost ($/AF)
System 1 - Minimum Pipe Length	$19,820,000	$77,280	644	0	$2,528
System 2 – Maximum Demand Areas	$42,690,000	$138,360	1,153	0	$3,016
System 3A – Maximum Deliveries to IEUA	$24,040,000	$91,440	662	100	$2,588
System 3B – Maximum Deliveries to IEUA	$43,820,000	$150,360	1,153	100	$2,856
System 4- Medium Demand Areas and Connect to IEUA 930 PZ	$52,460,000	$576,000	500	4,300	$975

Section H. Recommended Project

As discussed above, the recommended project is the project identified as System 4 except that the initial project yield would be reduced from 4,800 AFY to 3,000 AFY. The reduction is necessary based on a reasonable forecast of available recycled water in the initial years of project operation.

As shown below in Table No. 8, a reasonable expectation of net available flow at project start-up in the next three to five years is 2.75 MGD (expansion capacity of 6 MGD less current flow of 3.25 MGD), equivalent to 3,080 AFY (3.25 MGD). There are provisions in WRCRWA's Resolution No.97-38 for temporary use of excess effluent flow if available after deducting other member's entitlements. Ultimately, it is expected that a total flow of 4,800 AFY would be available to JCSD from WRCRWA after deducting mandatory river discharges and plant loss. The availability of excess effluent has not been investigated at this time.

Table No. 8

WRCRWA Ownership and Estimated Recycled Water Availability

	Capacity		Estimated Available Flow			
Member	Existing (MGD)	Ultimate Treatment (MGD)	Existing (GPM)	Expansion (GPM)	Existing (AFY)	Expansion (AFY)
JCSD	3.25	6.00	1,610	2,973	2,600	4,800
Norco	2.20	2.70	1,090	1,338	1,760	2,160
WMWD	1.93	1.93	956	956	1,544	1,544
HGSD	0.62	1.00	307	496	496	800
Corona	N/A	2.37	N/A	1,174	N/A*	N/A*
SAWPA						
Total	8.00	14.00	3,963	6,937	6,400	9,304

Design Flow	14	MGD	71.43%	Availability
Available Flow after River Discharge & Plant Losses	10	MGD	*: Corona to utilize their entitlement internally	

The preliminary market analysis targeting 500 AFY for irrigation in Eastvale is shown in Table No. 1 and consists primarily of parks. JCSD operates and maintains Eastvale's parks, and therefore there is a commitment from JCSD to have these facilities converted to use recycled water.

The Recommended Project and the location of the reuse sites are shown on Figure No. 16. Reuse facilities would be constructed in two phases. The first phase consists of pumps and transmission piping to move recycled water from the WRCRWA plant to the IEUA recycled water system's 930 PZ at the intersection of Eucalyptus and Carpenter in the City of Ontario. The JCSD distribution system would be constructed in Phase II for landscape irrigation in Eastvale.

Preliminary Design Criteria and Estimated Costs Proposed project facilities are listed in Table Nos. 9 and 10. As shown, the project involves the construction of two Booster Pump Stations and over 29,000 L.F. of 24-inch diameter transmission pipelines. In addition, the

Eastvale recycled water system will include 38,000 lineal feet of 18 inch diameter distribution lines with almost 10,000 L.F. of 12-inch diameter laterals. The total estimated project costs for the system (Table No. 11) will total $52.4 million at a construction mid-point of July, 2018.

Table No. 9
Pumping Facility Design Criteria and Estimated Cost

Pump	Flow Rate (gpm)	HP	Construction Cost	Project Cost[1]
Phase I				
WRCRWA 800 zone Booster Pump Station	5,000	750	$6,130,000	$8,580,000
IEUA 930 zone Booster Pump Station	5,000	750	$6,150,000	$8,610,000
Phase II				
Individual on-site Irrigation Boosters (approx. 18 ea.)	Varies	Varies	$450,000	Varies

Table No. 10
Pipeline Design Criteria and Estimated Cost

Pipeline	Dia., (in)	Length, (ft)	Construction Cost	Project Cost [1]
Phase I				
Transmission Pipeline from WRCRWA plant to Pine Ave. POC to 800 PZ	24	16,500	$5,940,000	$8,320,000
Transmission Pipeline from American Heroes Park to POC to 930 PZ at Eucalyptus and Carpenter	24	12,900	$4,630,000	$6,490,000
Phase II				
Transmission Pipeline from Hellman Ave./Pine Ave. Intersection to SW Corner American Heroes Park	24	2,200	$790,000	$1,110,000
Looped Distribution Pipeline System	18	38,000	$10,180,000	$14,250,000
Dead End Pipelines Off Distribution System	12	9,800	$3,190,000	$4,470,000

Table No. 11
Total Estimated Cost

Project Element	Construction Cost	Project Cost [1]
Phase I, Transmission Lines and Booster Stations	$22,850,000	$32,000,000
Phase II, Looped RW Distribution System	$14,610,000	$20,460,000
Totals	**$37,460,000**	**$52,460,000**

[1]Project cost is 1.4 times construction cost. Project cost includes: construction costs, construction contingencies, design Engineering including plans and specifications; design and construction surveying and mapping; geotechnical evaluation and report; engineering contract administration; field inspection and environmental documentation. Costs are based on Engineering News Record (ENR) Construction Cost Index Los Angeles, (ENR = 12,115 - July, 2018). Financing, interest during construction, legal, and R-O-W costs are not included.

Project Schedule The project schedule is shown in Table No.12 and estimates project completion to occur in early 2019.

Table No. 12
Project Schedule

Item No.	Activity	Estimated Start Date	Estimated Completion Date
1	Conduct Feasibility Analysis	01/2010	01/2011
2	Develop Project Scope of Work	N/A	11/22/2015
3	Negotiate JCSD/IEUA Agreement	01/2015	01/2016
4	Project Report	10/15/2015	02/28/2016
5	CEQA/NEPA Environmental	N/A	11/22/2015
6	Secure ROW	09/2015	08/2016
7	SRF Loan Application	10/01/2015	12/02/2015
8	Preliminary SRF Loan Commitment	N/A	05/2016
9	Water Rights Petition and Discharge Permit Modifications	06/2015	01/31/2016
10	RW Market Assurances and Commitment Letters	12/2011	06/30/2016
11	Complete WRCRWA Treatment Plant Expansion	N/A	2017
12	Complete CDA Phase III Expansion	N/A	01/31/2016
13	Preliminary Design Report	01/15/2016	08/15/2016
14	Prepare Plans and Specifications	07/15/2016	07/15/2017
15	Construction Bid Period	08/15/2017	11/15/2017
16	Construction	01/15/2018	01/15/2019
17	Start-up	12/01/2019	03/31/2019

Section I. Construction Financing Plan and Revenue Program

The Joint IEUA-JCSD Regional Water Recycling Program currently has a total project budget of $15,000,000 in IEUA's Ten-Year Capital Improvement Plan (TYCIP). IEUA's total project share will be $13,000,000. Upon approval by SWRCB, the TYCIP and annual appropriations will be revised to align with the new SRF loan, grant and total project budget.

1. **Sources and timing of funds for design and construction**
   The Joint IEUA–JCSD Regional Water Recycling Program estimated total project cost is $52,460,000. Of the total project costs, IEUA's total project share will be $13,000,000. The IEUA portion of the project costs will primarily be funded by water connection fee revenues. JCSD will assist with the cost of the project in the amount of $39,000,000.

2. **Pricing policy for recycled water**
   Recycled water volumetric rates support the operations and maintenance costs of the Agency's water recycling facilities, non-reimbursable operating costs for groundwater

recharge basins including the Agency's pro-rata share for basins recharged with recycled water, and debt service costs related to the financing of existing facilities and infrastructure. Water connection fees support future expansion and enhancement of the Agency's regional water system which is comprised of potable water, recycled water, and groundwater recharge facilities. Water connection fees have been initially set per meter equivalent units (MEU) with an effective date of January 1, 2016.

3. Costs that can be allocated to water pollution control – N/A

4. Annual projection of:

a. Water prices for each user or category of users

Volumetric Recycled Water Rates per AF		
Fiscal Year	Recycled Water Direct Delivery Rate	Recycled Water Groundwater Recharge Rate
2011	$75	$95
2012	115	145
2013	155	195
2014	215	255
2015	290	335
2016	350	410
2017	410	470
2018	470	530
2019	480	540
2020	490	550

Water Connection Fee per MEU		
Fiscal Year	Rate Effective Date	Water Connection Fee
2015	N/A	N/A
2016	1/1/2016	$693
2017	1/1/2017	1,455

2018	7/1/2017	1,527
2019	7/1/2018	1,604
2020	7/1/2019	1,684

b. Recycled water used by each user

Potential users are defined as customers that use potable water for non-consumption uses such as agricultural irrigation, basin recharge, landscape irrigation, and industrial processes. Also, another potential user is new developments where infrastructure could be constructed for recycled water uses. The locations of potential customers will determine recycled water pipeline project alignments. The proposed pipelines will be connected to IEUA's existing recycled water network in the various pressure zones within the service area. The target users are parks and schools with large landscape irrigation areas in addition to recharge basins.

For the Recharge Basins the potential usage is the following:

Customer	Type of Usage	Demand (AFY)	Connection Schedule
Recharge Basins	Recharge	2,500	December 2017

Proposed Eastvale Recycled Water Distribution Estimate of Demand

	Area	Annual Demand	Design Flow Rate
Parks	**Irrigated Area (AC)**	**AFY**	**(gpm)**
Dairyland	7.38	25	185
Oosten (Halfmoon)	12.60	44	315
Riverwalk	16.33	57	409
Mountain View	6.29	22	157
Eastvale Community	34.83	118	871
Deer Creek	7.44	26	186
American Heroes	16.58	58	415
Cedar Creek	7.63	27	191
Harada	24.88	87	622
Huber	10.56	36	264
Total	**144.52**	**500**	**3,615**

c. Annual costs (required revenue) of the recycling project
Estimated project cost timeline:

Fiscal Year	Annual Project Costs	Cumulative Project Costs
2016	$1M	$1M
2017	$6M	$7M
2018	$38M	$45M
2019	$7M	$52M

d. Allocation of costs to users
Operation and maintenance costs of the recycled water system are currently recovered through each acre-foot of recycled water sold/billed.

e. Unit costs to serve each user or category of users

f. Unit price of recycled water for each user or category of users

Volumetric Recycled Water Rates per AF		
Fiscal Year	Recycled Water Direct Delivery Rate	Recycled Water Groundwater Recharge Rate
2011	$75	$95
2012	115	145
2013	155	195
2014	215	255
2015	290	335
2016	350	410
2017	410	470
2018	470	530
2019	480	540

2020	490	550

Water Connection Fee per MEU		
Fiscal Year	Rate Effective Date	Water Connection Fee
2015	N/A	N/A
2016	1/1/2016	$693
2017	1/1/2017	1,455
2018	7/1/2017	1,527
2019	7/1/2018	1,604
2020	7/1/2019	1,684

g. Sensitivity analysis assuming portion of potential users fail to use recycled water

The table below includes the reduction in revenues for each fiscal year after completion of the project, under the assumption that 1,000 AF of the estimated benefits of the project do not materialized.

Lost revenue per 1,000 AF not recovered		
Fiscal Year	Recycled Water Direct Delivery Rate	Recycled Water Groundwater Recharge Rate
2019	$480,000	$540,000
2020	$490,000	$550,000

5. Sunk costs and indebtedness

The indebtedness of the Recycled water program as of June 30, 2015 is included in the table below:

Type of debt	Amount ($ Million)
Bond indebtedness	$30.2

SRF Loans	$84.2

The Jurupa Community Service District will assist in the cost of this project in the amount of $39,000,000.

REFERENCES:

1. 2013 Amendment to the 2010 Recharge Master Plan Update (Wildermuth Environmental Inc., 2013)
2. 2010 Chino Desalter Authority UWMP (CDA & IEUA, 2011)
3. 2010 JCSD UWMP (Kennedy/Jenks, 2011)
4. WMWD Recycled Water Master Plan Program EIR
5. Final Initial Study (CEQA and CEQA-Plus) for **Jurupa Community Services District Recycled Water Service Expansion**; District Project No. C133656 (Webb, 2015)
6. WRCWRA Treatment Plant Effluent Water Use Feasibility Study –**Economic Feasibility Review (Phase 1)**, (Webb, 2011)
7. 2008 JCSD Non-Potable Water Master Plan Report (Webb,2008)
8. WRCWRA Supply to IEUA Hydraulic Model Analysis, Tech Memo (Stantec, 2015)
9. Recycled Water Intertie Study, Final Report (RMC/Robinson, 2015)
10. 2010 IEUA UWMP (IEUA, 2011)
11. Final Program Environmental Impact Report Recycled Water Program for Western Riverside County Regional Wastewater Authority (K.S. Dunbar, 2012)