Clean Water Factory Project
DRAFT
Environmental Impact Report

State Clearinghouse No. 2014111012

Lead Agency:
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April 2016

Michael Baker
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List of Acronyms

The following acronyms and abbreviations are used in this EIR

°F degrees	Fahrenheit
AB	Assembly Bill
AB	Assembly Bill
ADT	Average Daily Traffic
ALUC	airport land use commissions
ANSI	American National Standards Institute
AOP	advanced oxidation process
APCD	air pollution control districts
APS	Alternative Planning Strategy
AQMD	air quality management districts
AQMP	Air Quality Management Plan
ARB	California Air Resources Board
AWWA	American Water Works Association
BAU	Business as Usual
bgs	below ground surface
BLM	U.S. Bureau of Land Management
BMP	best management practice
BNSF	Burlington Northern Santa Fe
BNSF	Burlington Northern Santa Fe
CAA	Federal Clean Air Act
CAAA	Federal Clean Air Act Amendments of 1990
CAAQS	California Ambient Air Quality Standards
CAFE	Corporate Average Fuel Economy
Cal EPA	California Environmental Protection Agency
CAL FIRE	California Department of Forestry and Fire Protection
Cal OSHA	California Occupational Safety and Health Administration
CalEEMod	California Emissions Estimator Model
Caltrans	California Department of Transportation
CARB	California Air Resources Board
CAT	Climate Action Team
CBC	California Building Code
CCAA	California Clean Air Act
CCAT	Climate Action Team
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CDPH	California Department of Public Health
CEC	California Energy Commission
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFCs	Chlorofluorocarbons
CFR	Code of Federal Regulations
cfs	cubic feet per second
CH_4	methane

CHRIS	California Historical Resources Information System
CLUP	Comprehensive Land Use Plan
CLUP	Comprehensive Land Use Plan
CMP	Congestion Management Program
CNDDB	California Natural Diversity Database
CNEL	community noise equivalent level
CNEL	Community Noise Equivalent Level
CNPS	California Native Plant Society
CO	carbon monoxide
CO_2	carbon dioxide
CO_2eq	Carbon Dioxide Equivalent
County	San Bernardino County
CWA	Clean Water Act
CWC	California Water Code
CWF	Clean Water Factory ("Project")
dB	decibels
dB	Decibel
dBA	A-weighted decibels
dBA	A-weighted decibel scale
DO	dissolved oxygen
DTSC	California Department of Toxic Substances Control
DWR	California Department of Water Resources
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EOC	County Emergency Operations Center
EPA	U.S. Environmental Protection Agency
EPCRA	Emergency Planning and Community Right-to-Know Act of 1986
ESA	Federal Endangered Species Act
FCAA	Federal Clean Air Act
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FR	Federal Register
ft	feet
FTA	Federal Transit Administration
FWCA	Fish and Wildlife Coordination Act
GCJC	Green Collar Jobs Council
GHG	atmospheric greenhouse gases
GIS	geographic information systems
gpm	gallons per minute
GPS	global positioning system
GWP	Global Warming Potential
H_2O	Water Vapor
HAPs	hazardous air pollutants
HCFCs	Hydrochlorofluorocarbons
HFCs	hydrofluorocarbons
HUD	U.S. Department of Housing and Urban Development
HVAC	Heating, ventilating, air conditioning
ICGMP	Institutional Controls Groundwater Management Program

IEUA	Inland Empire Utilities Agency
IPCC	Intergovernmental Panel on Climate Change
ITAs	Indian Trust Asset
LBV	least Bell's vireo
L_{dn}	day-night noise level
Ldn	Day/Night Average
L_{eq}	equivalent noise level
Leq	Equivalent Sound Level
LF	linear feet
L_{max}	maximum noise level (the maximum instantaneous noise level during a specific period)
Lmax	Maximum Sound Level
L_{min}	minimum noise level (the minimum instantaneous noise level during a specific period)
Lmin	Minimum Sound Level
Ln	Exceedance Level
LOS	level of service
LST	Localized Significance Threshold
LUST	leaky underground storage tank
M	magnitudes
MAQMD	Mojave Air Quality Management District
MBR	membrane bioreactor
MBTA	Migratory Bird Treaty Act
MCL	maximum contaminant level
MF	micro-filtration
mg/L	milligrams per liter
mgd	million gallons per day
mL	milliliter
MLD	Most Likely Descendant
MMRP	Mitigation Monitoring and Reporting Plan
mpg	Miles per Gallon
mph	miles per hour
MPN	most probable number
MPO	Metropolitan Planning Organization
MPOs	Metropolitan Planning Organizations
MRR	Master Recycling Requirements
MRZ	mineral resource zone
MSL	mean sea level
MT CO_2e	metric tons of CO_2 equivalent
MWh	Megawatt hours
N_2O	nitrous oxide
NA	not available, not applicable
NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission
NEPA	National Environmental Policy Act
NESHAP	National Emissions Standards for hazardous air pollutants
NF	nano-filtration
NFIP	National Flood Insurance Program

NHPA	National Historic Preservation Act
NHTSA	National Highway Traffic Safety Administration
NO	nitric oxide
NO_2	nitrogen dioxide
NOI	notice of intent
NOP	notice of preparation
NO_X	oxides of nitrogen
NO_X	Nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
NRHP	National Register of Historic Places
NRPA	National Recreation and Parks Association
NWP	Nationwide Permit
O&M	Operations and Maintenance
O_3	ozone
OHP	Office of Historic Preservation
OPR	California Governor's Office of Planning and Research
OSHA	Occupational Safety and Health Administration
Pb	Lead
PCE	Passenger Car Equivalents
PFCs	perflurorocarbons
PIR	Recycled Water Planning Investigation Report
PM_{10}	Particulate Matter 10 microns in diameter or less
$PM_{2.5}$	Particulate Matter 2.5 microns in diameter or less
ppm	parts per million
PPV	Peak particle velocity
psi	pounds per square inch
RCRA	Resource Conservation and Recovery Act of 1976
Reclamation	U.S. Department of the Interior, Bureau of Reclamation
RIX	Rapid Infiltration and Extraction Facility
RMS	Root mean square
RO	reverse osmosis
ROG	reactive organic gases
RPS	Renewable Portfolio Standard
RTP	Regional Transportation Plan
RTPA	Regional Transportation Planning Agency
RWQCB	Regional Water Quality Control Board
SANBAG	San Bernardino Associated Governments
SAR	Santa Ana River
SARA	Superfund Amendments and Reauthorization Act
SARI	Santa Ana River Interceptor
SASU	Santa Ana sucker
SAWPA	Santa Ana Watershed Project Authority
SB	Senate Bill
SBBA	San Bernardino Basin Area
SBCFCD	San Bernardino County Flood Control District
SBIA	San Bernardino International Airport
SBIA	San Bernardino International Airport

SBIAA	San Bernardino International Airport Authority
SBMWD	City of San Bernardino Municipal Water District
SBVMWD	San Bernardino Valley Municipal Water District
SBWRP	San Bernardino Water Reclamation Plant
SBX-7	Senate Bill SBx7-7 (The Water Conservation Act of 2009)
SCAB	South Coast Air Basin
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SCH	State Clearinghouse
SCS	Sustainable Communities Strategy
SDWA	Safe Drinking Water Act
SEMS	standardized emergency management system
sf	square feet
SF_6	Sulfur hexafluoride
SHPO	State Historic Preservation Officer
SIP	State implementation plan
SMARA	California Surface Mining and Reclamation Act
SO_2	sulfur dioxide
SOI	Sphere of Influence
SP	Service Population
spp.	species (plural)
SR	State Route
SRA	Source Receptor Area
SWP	State Water Project
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
SWWF	southwestern willow flycatcher
TACs	toxic air contaminants
TDS	total dissolved solids
THPO	Tribal Historic Preservation Officer
TIN	total inorganic nitrogen
TKN	total Kjeldahl nitrogen
TMDL	total maximum daily load
TMP	Traffic Management Plan
UBC	Uniform Building Code
UNFCCC	United Nations Framework Convention on Climate Change
UP	Union Pacific
USACE	U.S. Army Corps of Engineers
USC	United States Code
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UWMP	Urban Water Management Plan
VdB	velocity decibels
VHFHSZ	Very High Fire Hazard Severity Zone
VMT	vehicle miles traveled
VOC	volatile organic compounds
WDR	Waste Discharge Requirements

WMI	Wildermuth Environmental, Inc.
WRP	Water Reclamation Plant
WRR	Water Recycling Requirements

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Section 1.0
Executive Summary

Section 1.0
Executive Summary

1.1 PROJECT OVERVIEW

The Clean Water Factory Project ("Project") proposed by the City of San Bernardino Municipal Water Department (SBMWD) would reduce secondary effluent conveyed from the San Bernardino Water Reclamation Plant (SBWRP) to the Rapid Infiltration and Extraction (RIX) Facility to convey advanced treated recycled water to direct use customers and existing recharge basins. This would be accomplished through a series of conveyance systems.

The Project would include facility improvements of the SBWRP, multiple alternative pipeline alignments for treated water conveyance, SBWRP conveyance to the RIX Facility, pump station and water storage infrastructure, and potential delivery to existing alternate recharge basins and/or direct use customers. The Project would reduce SBMWD's dependence on imported water supplies by incorporating a reliable, sustainable, and local source of water to SBMWD's existing water supply portfolio. The Project would aid SBMWD in meeting future projected water demands through methods that uphold the groundwater management obligations of the Western Judgment.

This EIR will discuss the impacts of the Project's phased reduction of the current water discharge from the RIX Facility to the Santa Ana River, installation of new conveyance infrastructure and treatment systems, and the impacts of adding recycled water and advanced treated water to existing and potential future recharge basins.

1.2 PROJECT OBJECTIVES

CEQA Guidelines Section 15124(b) requires that an EIR contain a statement of the Project objectives, including the Project's underlying purpose.

Project Objectives

The following basic Project objectives were developed during the Project's early planning and public scoping phases.

- Reduce SBMWD's dependence on imported water and establish a safe, reliable, sustainable source of potable water in light of current and potential future drought conditions;
- Reduce the need for State Water Project (SWP) water to replenish local groundwater basins by providing an alternate source of recycled, Title 22 treated water;
- Maximize the availability of recycled water to local users;
- Allow SBMWD to effectively address the obligations of the Western Judgment; and
- Minimize risk to existing and potential future supply reliability and system operations associated with imported water, regulatory requirements, and other factors.

1.3 PROJECT COMPONENTS

The Clean Water Factory Project consists of the following key components. Each component is addressed in detail in the following sections. Key features of each component have been summarized in Table 1.0-1,

Summary of Project Components, below. Additional information may be found in Section 3.0, Project Description, as well as Appendix 10.2.2, *Preliminary Design Report*.

Table 1.0-1: Summary of Project Components[1]

Component	Proposed Features
RIX Phased Discharge Reduction	▪ Effluent from the RIX Facility to the Santa Ana River would be reduced by up to 17.9 MGD through the implementation of a phasing plan in order to allow the gradual reduction of flow into the Santa Ana River. The SBWRP would retain flows that would normally continue to the RIX Facility; they would be treated and conveyed for recharge or direct reuse.[2] ▪ The Project would involve minor updates to the RIX Facility under the Chino Basin recharge option. Updates would include the installation of a sodium hypochlorite (NaOCl) disinfection system, as well as storage and pumping facilities.
Water Reclamation Plant	▪ The San Bernardino Water Reclamation Plant (SBWRP) has an existing rated capacity of 33 MGD of secondary effluent, and currently treats 22 MGD; ▪ The SBWRP would be upgraded to provide enhanced treatment to meet projected 2035 demands of 33 MGD. Addition of up to 5 MGD of tertiary filtration/disinfection facilities to the SBWRP to provide a source of Title 22 water for potential direct use customers (i.e., parks, golf courses and other irrigation users) within the SBMWD service area; ▪ Addition of up to 15 MGD of advanced wastewater treatment facilities to provide a source of clean water for groundwater replenishment (indirect potable reuse); these treatment units may be phased in 5 MGD increments and could consist of a 5 MGD membrane bioreactor (MBR) expansion, a tertiary filtration process, a nano/reverse osmosis (RO) membrane treatment system and disinfection process using UV/advanced oxidation process (AOP) with post-treatment stabilization; and, ▪ Treatment improvements to reduce concentrated brine and/or increase product water available for recharge.
Conveyance and Storage Systems	▪ A system to convey advanced treated and/or recycled water to the recharge basins (Waterman Basins and the East Twin Creek Spreading Grounds and/or Chino Basins) for surface spreading, and to "target opportunity" customers for direct use applications near, or adjacent to, the conveyance alignment.
Direct Use Sites	▪ The proposed Project includes 5 MGD of tertiary water, treated at the SBWRP, for direct use by local municipal facilities and other recycled water users. ▪ Treated water may be conveyed through new conveyance pipelines to an existing Inland Empire Utilities Agency (IEUA) non-potable system for direct use by local municipal facilities and other recycled water users.
Recharge Basins	Existing Recharge Facilities within the SBMWD Service Area: ▪ Treated water from the SBWRP would be transported through conveyance pipelines to the existing East Twin Creek Spreading Grounds and the Waterman Basins. ▪ Treated water may be conveyed via existing pipelines to allow direct recharge into the Santa Ana River near the SBWRP.

Component	Proposed Features
	Existing Recharge Facilities Outside of the SBMWD Service Area: ▪ Treated water may be conveyed through new conveyance pipelines to existing IEUA recharge basins in the Chino Basin.

Notes:

1. SBMWD may also consider various project design alternatives addressed in Section 6.4, *Alternatives to the Proposed Project*. Refer specifically to Alternative 4, Project Variations Under Consideration.

2. Volumes represent the average RIX discharge in 2009/2010, the projected wastewater available for recycling due to growth over a 20-year period, and over-extraction.

1.4 PROJECT LOCATION

The Project area for this EIR includes areas that may be affected directly, indirectly, or cumulatively by Project implementation, as described in each EIR impact section under the Affected Environment sections. The Project Area has been broadly defined to ensure evaluation of potential impacts within all areas that would be affected by, and benefit from, Project implementation.

Regional Location

The Project is generally located east of Interstate 215 and north of Interstate 10 in the City of San Bernardino, San Bernardino County, California (Exhibit 3.0-1, *Regional Location Map*). The Project site is located within the San Bernardino North and San Bernardino South quadrangles of the United States Geological Survey's (USGS) 7.5-minute topographic map series in an un-sectioned area of Townships 1 north and 1 south, Range 4 west (Exhibit 3.0-2, *Project Vicinity Map*). The Project area is predominantly located within the City of San Bernardino, approximately 60 miles east of the City of Los Angeles in the upper Santa Ana River Valley Watershed; see Exhibit 3.0-2, *Project Vicinity Map*.

Project Area

Exhibit 3.0-3, *SBMWD Service Area and Groundwater Basins*, depicts the area where the Conveyance Facility Corridor is located within the San Bernardino Basin Area (SBBA). As depicted, the proposed Conveyance Facilities would be entirely within the SBBA and would lie above the Bunker Hill Basin, specifically above the Bunker Hill-A and Bunker Hill-B groundwater management zones. As also depicted in Exhibit 3.0-3, the proposed Conveyance Facilities would be predominantly within the SBMWD service area. The Conveyance Facility corridor would be roughly bounded by South E Street to the west, West Hospitality Lane to the south, North Tippecanoe Avenue to the east, and the San Bernardino National Forest to the north.

Exhibit 3.0-3 also depicts the Conveyance Facility Corridor, existing facilities (see discussion below), and Pipeline Alignment Options. Aerial maps of the existing and proposed facilities are provided in Exhibit 3.0-4, *Recycled Water System Conveyance Alternatives (Southerly Portion)*, Exhibit 3.0-5, *Recycled Water System Conveyance Alternatives (Northerly Portion)*, and Exhibit 3.0-6, *Recycled Water System Conveyance Alternatives (East-West Pipelines)*. The Conveyance Facilities Corridor is shown in a north/south configuration, extending approximately 7.5 miles.

The Project Area's existing facilities include (see Exhibits 3.0-3, 3.0-4, 3.0-5, and 3.0-6):

- Rapid Infiltration and Extraction (RIX) Facility: The RIX Facility is located approximately four miles southwest of the SBWRP, along the Santa Ana River.
- San Bernardino Water Reclamation Plant: The SBWRP is located just north of the confluence of the East Twin Creeks and the Santa Ana River, at 399 Chandler Place, San Bernardino.

- Waterman Basins and East Twin Creek Spreading Grounds: The recharge basins are located at the northern extent of the Conveyance Facility Corridor, east of Waterman Avenue, generally north and south of E 40th Street.
- Chino Basin: The Chino Basin is located in close proximity to the RIX Facility and would provide additional recharge capabilities.
- Conveyance Facilities: The Project Study Area contains a number of existing pipelines and other conveyance facilities that may be used by the Project, including existing reclaimed water pipelines and distribution infrastructure for direct use customers, conveyance pipelines for recharge basins, as well as other infrastructure.

1.5 SUMMARY OF ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

The following table is a summary of impacts and mitigation measures associated with the Project as identified in this EIR. Refer to Sections 4.1 through 4.11, for a detailed description of the environmental impacts and mitigation measures for the Project.

Table 1.0-2: Summary of Impacts and Mitigation Measures

Impact Statement	Significance	Mitigation Measure
Aesthetics, Light, and Glare		
Impact 4.2-1: Would the Project result in impacts to scenic vistas?	Less than Significant Impact with Mitigation Incorporated	AES-1 Prior to construction, SBMWD shall designate temporary construction equipment staging areas within the Project site. These staging areas shall be used throughout the duration of construction. Materials, heavy-duty equipment, and debris piles shall be clustered to minimize visual impacts during construction. At a minimum, these construction equipment and debris clusters shall be located at a distance of 100 feet from adjacent residence and shall be visually screened. BIO-7 Refer to Biological Resources.
Impact 4.2-2: Would the Project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	No Impact	No mitigation is required.
Impact 4.2-3: Would the Project substantially degrade the existing visual character or quality of the site and its surroundings?	Less than Significant Impact with Mitigation Incorporated	AES-1 Refer to Impact 4.2-1 above. BIO-7 Refer to Biological Resources.
Impact 4.2-4: Would the Project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	Less than Significant Impact	No mitigation is required.
Cumulative Impacts Would the Project result in cumulative impacts associated with implementation of the Clean Water Factory Project?	Less than Significant Impact with Mitigation Incorporated	AES-1 Refer to Impact 4.2-1 above. BIO-7 Refer to Biological Resources.
Air Quality and Greenhouse Gas Emissions		
Impact 4.3-1:	Significant and Unavoidable Impact	AQ-1 Prior to construction, SBMWD shall confirm that the Grading Plan, Building Plans, and specifications stipulate that, in compliance with SCAQMD Rule 403, excessive fugitive dust emissions shall be controlled

Impact Statement	Significance	Mitigation Measure
Would the Project violate any air quality standard or contribute substantially to an existing or projected air quality violation?		by regular watering or other dust prevention measures, as specified in the SCAQMD's Rules and Regulations. In addition, SCAQMD Rule 402 requires implementation of the following dust suppression techniques to prevent fugitive dust from creating a nuisance off-site and reduce short-term fugitive dust impacts on nearby sensitive receptors: ▪ All active portions of the construction site shall be watered twice daily during daily construction activities, on as needed during wet weather, and when dust is observed migrating from the Project site to prevent excessive amounts of dust. ▪ Pave or apply water three times daily during daily construction activities or apply non-toxic soil stabilizers on all unpaved access roads, parking areas, and staging areas, during dry weather. More frequent watering shall occur if dust is observed migrating from the site during site disturbance. ▪ During dry weather, any on site stockpiles of debris, dirt, or other dusty material with five percent or greater silt contrast shall be enclosed, covered, watered twice daily, or non-toxic soil binders shall be applied. ▪ All grading and excavation operations shall be suspended when wind speeds exceed 25 miles per hour. ▪ Disturbed areas shall be replaced with ground cover or paved immediately after construction is completed in the affected area. ▪ Track-out devices such as gravel bed track-out aprons (3 inches deep, 25 feet long, 12 feet wide per lane and edged by rock berm or row of stakes) shall be installed to reduce mud/dirt trackout from unpaved truck exit routes. Alternatively a wheel washer shall be used at truck exit routes. On site vehicle speed shall be limited to 15 miles per hour. ▪ All material transported off-site shall be either sufficiently watered or securely covered to prevent excessive amounts of dust before departing the job site. ▪ Reroute construction trucks away from congested streets or sensitive receptor areas.

Impact Statement	Significance	Mitigation Measure
		▪ Trucks associated with soil-hauling activities shall avoid residential streets and utilize SBMWD-designated truck routes to the extent feasible. AQ-2 During construction, all trucks that are to haul excavated or graded material on site shall comply with State Vehicle Code Section 23114 (Spilling Loads on Highways), with special attention to Sections 23114(b)(F), (e)(4) as amended, regarding the prevention of such material spilling onto public streets and roads. Before the issuance of Grading Permits, SBMWD shall indicate how operations subject to that specification during hauling activities shall comply with the provisions set forth in Sections 23114(b)(F), (e)(4). AQ-3 Prior to construction, the construction contractor shall provide evidence to SBMWD that the following measures will be implemented during construction: ▪ Provide temporary traffic controls such as a flag person, during all phases of construction to maintain smooth traffic flow. ▪ Provide dedicated turn lanes for movement of construction trucks and equipment on- and off-site. ▪ Improve traffic flow by signal synchronization, and ensure that all vehicles and equipment will be properly tuned and maintained according to manufacturers' specifications. ▪ Require the use of electricity from power poles rather than temporary diesel or gasoline powered generators, as feasible. ▪ Require the use of 2010 and newer diesel haul trucks (e.g., material delivery trucks and soil import/export) and if the lead agency determines that 2010 model year or newer diesel trucks cannot be obtained the lead agency shall use trucks that meet EPA 2007 model year NOX emissions requirements. ▪ During Project construction, all internal combustion engines/construction, equipment operating on the Project site shall meet EPA-Certified Tier 3 emissions standards, or higher according to the following: ○ All off-road diesel-powered construction equipment greater than 50 horsepower shall meet Tier 3 off-road emissions standards. In addition, all construction equipment shall be

Impact Statement	Significance	Mitigation Measure
		outfitted with BACT devices certified by CARB. Any emissions control device used by the contractor shall achieve emissions reductions that are no less than what could be achieved by a Level 3 diesel emissions control strategy for a similarly sized engine as defined by CARB regulations. ○ Post-January 1, 2015: All off-road diesel-powered construction equipment greater than 50 horsepower shall meet the Tier 4 emission standards, where available. In addition, all construction equipment shall be outfitted with BACT devices certified by CARB. Any emissions control device used by the contractor shall achieve emissions reductions that are no less than what could be achieved by a Level 3 diesel emissions control strategy for a similarly sized engine as defined by CARB regulations. ▪ A copy of each unit's certified tier specification, BACT documentation, and CARB or SCAQMD operating permit shall be provided at the time of mobilization of each applicable unit of equipment.
Impact 4.3-2: Would the Project result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	Significant and Unavoidable Impact	AQ-1 Refer to Impact 4.3-1 above. AQ-2 Refer to Impact 4.3-1 above. AQ-3 Refer to Impact 4.3-1 above.
Impact 4.3-3: Would the Project expose sensitive receptors to substantial pollutant concentrations?	Significant and Unavoidable Impact	AQ-1 Refer to Impact 4.3-1 above. AQ-2 Refer to Impact 4.3-1 above. AQ-3 Refer to Impact 4.3-1 above.
Impact 4.3-4: Would the Project create objectionable odors affecting a substantial number of people?	Less than Significant Impact	No mitigation is required.

Impact Statement	Significance	Mitigation Measure	
Impact 4.3-5: Would implementation of the proposed Project result in an exceedance of federal de minimis levels?	Less than Significant Impact with Mitigation Incorporated	AQ-1 AQ-2 AQ-3	Refer to Impact 4.3-1 above. Refer to Impact 4.3-1 above. Refer to Impact 4.3-1 above.
Impact 4.3-6: Would the Project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	Less than Significant impact with Mitigation Incorporated	GHG-1	To reduce Project-generated GHG emissions, the SBMWD may choose any combination of the following measures, as long as they result in net emissions below 10,000 MTCO2eq/yr or the applicable significance threshold at the time of each subsequent construction phase. ▪ Reduce consumption of non-renewable energy. This can be accomplished by: ○ As advanced water treatment would be phased in, future GHG emissions factors (i.e., the carbon intensity from power generation) may decline due the implementation of the State's Renewable Portfolio Standards. Advanced water treatment can be limited to 13.83 MGD (reducing 15 MGD of advanced water treatment by 1.17 MGD) until it can be shown that GHG emissions from full project implementation would not exceed 10,000 MTCO2eq/yr or applicable threshold at the time of project construction; ○ Providing onsite renewable energy such as solar panels, or similar means to offset fossil fuel powered electricity generation; or ○ Purchasing GHG offsets.
Impact 4.3-7: Would the Project conflict with an applicable plan, policy, or regulations adopted for the purpose of reducing the emissions of greenhouse gases?	Less than Significant Impact with Mitigation Incorporated	GHG-1	Refer to Impact 4.3-6 above.
Cumulative Impacts (Air Quality and Greenhouse Gas Emissions) Would the Project result in cumulative impacts associated with implementation of the Clean Water Factory Project?	Significant and Unavoidable Impact	AQ-1 AQ-2 AQ-3	Refer to Impact 4.3-1 above. Refer to Impact 4.3-1 above. Refer to Impact 4.3-1 above.

Impact Statement	Significance	Mitigation Measure	
Biological Resources			
Impact 4.4-1: Would the Project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or US Fish and Wildlife Service?	Less than Significant Impact with Mitigation Incorporated	BIO-1	Worker Awareness. A Worker Environmental Awareness Program (WEAP) shall be implemented to educate all construction personnel of the area's environmental concerns and conditions, including special-status species, and relevant environmental protection measures. The WEAP will constitute the conveyance of environmental concerns and appropriate work practices, including spill prevention, emergency response measures, protection of sensitive resources, and proper implementation of Best Management Practices, to all construction and maintenance personnel. All new workers that arrive after construction has started shall be trained under the WEAP within two days' time.
		BIO-2	Weed Control. Prior to construction, all heavy equipment that will be left on-site in laydown yards shall be washed offsite and cleaned of all potential non-native weed seeds. Worker trucks shall be washed daily if they will be driven off road or shall otherwise be left parked in laydown yards or on existing roads during construction.
		BIO-3	Small mammal trapping. SBMWD shall conduct a pre-construction small mammal trapping study of the Waterman Basins and East Twin Creek Spreading Grounds in order to determine the presence/absence of San Bernardino kangaroo rat or any other special status wildlife species. If San Bernardino kangaroo rat or another special status wildlife species are found within the Basins and Spreading Grounds, ground disturbing activities will not occur within these areas until SBMWD consults with US Fish and Wildlife Service and/or California Department of Fish and Wildlife and determines if avoidance measures are possible or if an incidental take permit is required before construction can resume within the Waterman Basins and/or the Spreading Grounds. SBMWD will comply with all permit conditions imposed on the Project as a result of consultation.
		BIO-4	Flagging. Following any preconstruction surveys required, all work areas and access routes will be visibly flagged or staked prior to construction, careful to avoid any identified special status plant or wildlife species. All construction activities will be limited to the designated work areas and access routes except with prior authorization from US Fish and Wildlife Service and/or California Department of Fish and Wildlife.

Impact Statement	Significance	Mitigation Measure	
		BIO-5	Construct outside avian breeding season. Where feasible, construction should occur outside of the avian breeding season (generally January 1 – August 30). If construction occurs during the avian breeding season, a qualified biologist shall conduct a preconstruction nesting bird clearance survey in all work areas and all areas within 500 feet of the general construction zone. This shall occur no more than one week prior to construction. Active nests shall be given an avoidance buffer, typically 300 feet for non-listed, non-raptor species, and 500 feet for listed and raptor species. This buffer shall remain in place until the young fledge or the nest otherwise becomes inactive, and may be reduced with approval from with US Fish and Wildlife Service and/or California Department of Fish and Wildlife.
		BIO-6	Least Bell's vireo (LBVI) surveys. If construction is scheduled to occur during the avian breeding season, a qualified biologist shall perform protocol nesting bird surveys for LBVI in suitable habitat prior to the start of construction. Protocol surveys shall last for the entire survey period of eight surveys between April 10 and July 31 unless LBVI is observed prior to survey completion or the surveys are otherwise concluded by US Fish and Wildlife Service (USFWS) and/or California Department of Fish and Wildlife (CDFW). Survey results shall be reported to the SBMWD, USFWS, and CDFW. If this species is found during surveys, appropriate nest protection measures for listed species as described in BIO-5 shall be incorporated.
		BIO-7	Adaptive Management Plan This measure requires the implementation of an adaptive management plan focusing on the Santa Ana sucker and its habitats. See Section 4.4 for the complete text of the measure.
		BIO-8	The SBMWD shall work through the USACE to initiate consultation with USFWS under Section 7 consultation of the federal endangered species act (ESA) regarding the loss and adverse modification of Critical Habitats for southwestern willow flycatcher and Santa Ana sucker as required under the Federal Endangered Species Act. Regulatory requirements associated with the Section 7 Consultation will address impacts to federally listed species that may be harmed during the operational phase of the Project, including the Santa Ana sucker and least Bell's

Impact Statement	Significance	Mitigation Measure	
			vireo, including any additional mitigation deemed necessary by the USFWS to ensure that Project impacts are not significant. SBMWD shall implement all conditions imposed on the Project as a result of consultation under the ESA.
		BIO-9	In areas adjacent to riparian habitat, particularly during avian nesting season, construction noise shall not exceed 65 decibels, as measured at the boundary of the riparian habitat.
		BIO-10	Night-time construction within 500 feet of sensitive species habitat shall be avoided.
		BIO-11	In areas within 100 feet of riparian habitat, Best Management Practices shall be implemented during both construction and operational phases. These should include, but are not limited to, sedimentation control, erosion control, spill prevention and cleanup, and hazardous materials.
Impact 4.4-2: Would the Project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or US Fish and Wildlife Service?	Less than Significant Impact with Mitigation Incorporated	BIO-7	Refer to Impact 4.4-1 above.
		BIO-8	Refer to Impact 4.4-1 above.
		BIO-12	SBMWD shall consult with the US Army Corps of Engineers, California Department of Fish and Wildlife, the US Fish and Wildlife Service, and the Regional Water Quality Control Board regarding anticipated impacts to waters of the State and waters of the U.S. and determine the regulatory requirements that must be addressed in the permits from each of these agencies in order to avoid substantial adverse impacts to riparian habitat or other sensitive natural communities. SBMWD will implement all permit conditions.
		BIO-13	Excavated Fill. All excavated material shall be removed from the Project site and disposed of properly or reused elsewhere. If left on-site, the material shall be moved into an area where it will not wash or erode into any riparian areas and shall be suitably covered or watered to reduce the potential for dust during high winds or rain events.
Impact 4.4-3: Would the Project have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including but not limited to, marsh, vernal pool, coastal, etc.) through direct removal,	No Impact	No mitigation is required.	

Impact Statement	Significance	Mitigation Measure
filling, hydrological interruption, or other means?		
Impact 4.4-4: Would the Project interfere substantially with the movement of any native resident or migratory wildlife corridors, or impede on the use of native wildlife nursery sites?	Less than Significant Impact with Mitigation Incorporated	BIO-1 Refer to Impact 4.4-1 above BIO-4 Refer to Impact 4.4-1 above. BIO-7 Refer to Impact 4.4-1 above. BIO-12 Refer to Impact 4.4-2 above.
Impact 4.4-5: Would the Project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	Less than Significant Impact	No mitigation is required.
Impact 4.4-6: Would the Project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	Less than Significant Impact	No mitigation is required.
Cumulative Impacts Would the Project result in cumulative impacts associated with implementation of the Clean Water Factory Project?	Less than Significant Impact with Mitigation Incorporated	BIO-7 Refer to Impact 4.4-1 above. BIO-14 Prior to initiating Project-related RIX discharge reductions, SBMWD will rehabilitate the RIX facility and implement improvements that will minimize automated shutdowns and provide for more reliable facility operation, in the form of the RIX UV System Rehabilitation Project. In the event that a shutdown is needed, and to the extent feasible, scheduled shutdowns will take place in conjunction with events that would continue to provide flow to the Santa Ana River (e.g. during or following a precipitation event or a scheduled water release). For scheduled shutdowns required during periods of low-flow within the Santa Ana River, SBMWD will facilitate, in conjunction with the US Fish and Wildlife Service, for a qualified team (such as the Riverside-Corona Resource Conservation District) to provide temporary on-site capture of Santa Ana sucker until flows have recovered and the fish can be released.

Impact Statement	Significance	Mitigation Measure	
Cultural Resources			
Impact 4.5-1: Would the proposed Project cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	No Impact	No mitigation is required.	
Impact 4.5-2: Would the Project cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	Less than Significant Impact with Mitigation Incorporated	CUL-1	If construction activities uncover potential archaeological resources, construction will be immediately halted within 50 feet of the find and a qualified archaeologist contracted to assess the resource. The qualified archaeologist will minimally document any isolates and clearly non-significant deposits in the field and grading shall proceed when the archaeologist is done. For any significant artifact deposits, the qualified archeologist will complete full data recovery per the following professional archaeological collection methods: The qualified archaeologist will catalogue and analyze recovered artifacts. The qualified archaeologist will complete a report describing the methods and results of the monitoring and data recovery. The qualified archaeologist will facilitate curation of artifacts to current professional repository standards at an appropriate curatorial facility, or the collection may be repatriated to the appropriate tribe.
Impact 4.5-3: Would the Project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	Less than Significant Impact with Mitigation Incorporated	CUL-2	If excavation activities include digging deeper than 10 feet below the ground surface, a qualified paleontologist will be contracted to monitor construction activities. If construction activities uncover potential paleontological (fossil) resources, construction will be temporarily halted within 50 feet of the find until the significance of the resources is determined by a qualified paleontologist. The paleontological monitor will be equipped to salvage fossils as they are unearthed to avoid construction delays, and to remove samples of sediments which are likely to contain the remains of small fossil invertebrates and vertebrates. Paleontological monitors will have stop-work authority to temporarily halt or divert equipment to allow removal of abundant or large specimens. The paleontologist will identify and permanently preserve

Impact Statement	Significance	Mitigation Measure	
			all recovered specimens and facilitate curation into an established, accredited, professional museum repository with permanent retrievable storage. The paleontologist will have a written repository agreement prior to the initiation of recovery activities. The qualified paleontologist will complete a report describing the methods and results of the monitoring and data recovery program that will be submitted to the SBMWD.
Impact 4.5-4: Would the Project disturb any human remains, including those interred outside of formal cemeteries?	Less than Significant Impact with Mitigation Incorporated	CUL-3	In the event of the discovery or recognition of any human remains in any location other than a dedicated cemetery, the following steps shall be taken: There shall be no further excavation or disturbance within 50 feet of the uncovered human remains until the project contractor contacts San Bernardino County Coroner to determine if the remains are prehistoric and that no investigation of the cause of death is required. If the coroner determines the remains to be Native American, the coroner shall contact the Native American Heritage Commission within 24 hours, and the Native American Heritage Commission shall identify the person or persons it believes to be the most likely descendent from the deceased Native American. The project contractor and landowner will follow procedures from California Health and Safety Code Sections 7050.5, 7051, and 7054, and Public Resources Code Section 5097.98 for handling of Native American remains and grave goods.
Cumulative Impacts (Cultural and Paleontological Resources): Would the Project result in cumulative impacts associated with implementation of the Clean Water Factory Project?	Less than Significant Impact with Mitigation Incorporated	CUL-1 CUL-2 CUL-3	Refer to Impact 4.4-2 above. Refer to Impact 4.4-3 above. Refer to Impact 4.4-4 above.
Hazardous Materials and Risk of Upset			
Impact 4.6-1: Would the Project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	Less than Significant Impact	No mitigation is required.	

Impact Statement	Significance	Mitigation Measure	
Impact 4.6-2: Would the Project create a significant hazard to the public or environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	Less than Significant Impact with Mitigation Incorporated	HAZ-1	The Project contract specifications shall require that, in the event evidence of potential soil contamination such as soil discoloration, noxious odors, debris, or buried storage containers, is encountered during construction, the contractor shall have a contingency plan for sampling and analysis of potentially hazardous substances. The contingency plan shall specify all stop work procedures and the required handling, storage, and disposal methods, particular to the types and concentrations of chemicals identified in the soil. Any site investigations or remediation shall comply with applicable laws, and the Project contractor shall coordinate with the appropriate regulatory agencies.
		HAZ-2	Prior to site disturbance activities, a Phase II/Site Characterization Specialist shall conduct sampling within bare soils in roadway right-of-way for highly traveled roadways located on-site in order to determine whether or not contamination exists from aerially deposited lead. Results of the sampling would indicate actions necessary, if any, to be taken during site disturbance activities to ensure worker safety.
		HAZ-3	Prior to site disturbance activities within 528 feet of the property boundaries for 208 Waterman Avenue North, San Bernardino, California, SBMWD shall retain a Phase II/Site Characterization Specialist to confirm whether the reported to ensure worker safety during construction. SBWMD shall review and approve the plan prior to site disturbance activities, and it shall be implemented upon that approval.
		HAZ-4	For work that would disturb exposed soils within railroad rights-of-way, a qualified Phase II/Site Characterization Specialist, retained by SBMWD, shall conduct sampling to determine whether contamination exists within the areas of proposed disturbance. Should a hazardous condition for construction workers be potentially present, the Phase II/Site Characterization Specialist shall prepare a Worker Safety Plan, in accordance with City, County, California Division of Occupational Safety and Health, and U.S. Environmental Protection Agency requirements, to ensure worker safety during construction. SBMWD shall review and approve the plan prior to site disturbance activities, and it shall be implemented upon that approval.

Impact Statement	Significance	Mitigation Measure	
		HAZ-5	The Project contractor shall coordinate the preparation for disposal of all hazardous waste with the San Bernardino County Fire Department or the appropriate local Certified Unified Program Agency (CUPA). The Project contractor shall follow the provisions of California Code of Regulations, Title 8, Section 5163 through 5167 for General Industry Safety Orders to protect the action area from being contaminated by the accidental release of any hazardous materials and/or wastes.
Impact 4.6-3: Would the Project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	Less than Significant Impact with Mitigation Incorporated	HAZ-1 HAZ-3	Refer to Impact 4.6-2 above. Refer to Impact 4.6-2 above.
Impact 4.6-4: Would the Project be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, create a significant hazard to the public or the environment?	Less than Significant Impact with Mitigation Incorporated	HAZ-1 HAZ-6	See Impact 4.6-2 above. If unknown Underground Storage Tanks (USTs) are discovered during construction, the UST, associated piping, and impacted soil shall be removed by a licensed and experienced UST removal contractor. The UST and contaminated soil shall be removed in compliance with applicable county and state requirements governing UST removal.
Impact 4.6-5: Would the Project impair implementation of or physical interfere with an adopted emergency response plan or emergency evacuation plan?	Less than Significant Impact with Mitigation Incorporated	HAZ-7 TRA-1	The SBMWD Project contractor shall inform the San Bernardino City Fire Department of approximate locations of work activities and ingress and egress points in and out of the construction site and coordinate with the Fire Department to ensure there is adequate access and communications protocols for emergency response vehicles during each of the proposed construction phases. Refer to Section 4.11, Transportation and Traffic.
Impact 4.6-6: Would the Project expose people or structures to significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences were intermixed with wildlands?	Less than Significant Impact with Mitigation Incorporated	HAZ-8	During Project construction, all staging areas, welding areas, or areas slated for development using spark-producing equipment shall be cleared of dried vegetation or other material that could ignite. Any construction equipment that includes a spark arrestor shall be equipped with a spark arrestor in good working order. All vehicles and crews working at the Project site(s) shall have access to functional fire extinguishers at all times. In addition, construction crews shall be

Impact Statement	Significance	Mitigation Measure
		required to have a spotter during welding activities to look out for potentially dangerous situations, including accidental sparks.
Impact 4.6-7: Would the Project be located within an Airport Land Use Plan, or where such a plan has not been adopted, within two miles of a public airport, such that the Project would result in a safety hazard for people residing or working in the Project area?	Less than Significant Impact	No mitigation is required.
Impact 4.6-8: For a Project within the vicinity of a private airstrip, would the Project result in a safety hazard for people residing or working in the Project area?	No Impact	No mitigation is required.
Cumulative Impacts (Hazards and Hazardous Materials) Would the Project result in cumulative impacts associated with implementation of the Clean Water Factory Project?	No Impact	No mitigation is required.
Hydrology and Water Quality		
Impact 4.7-1: Would the Project violate water quality standards or waste discharge requirements?	Less than Significant Impact with Mitigation Incorporated	HWQ-1 To reduce potential construction water quality impacts to less than significant the SBMWD shall prepare and submit a Notice of Intent (NOI) to comply with the Construction General Permit 2009 to the California State Water Resources Board. As applicable, the SBMWD shall obtain a permit from the Santa Ana Regional Water Quality Control Board for any dewatering activities. If the disturbed areas are less than 1-acre: ▪ Prepare erosion control plan. ▪ Dewatering activities may require regional board permit. Implementation of the above mitigation measures would reduce water quality impacts to a less than significant level. HWQ-2 Prior to issuance of a grading permit, the SBMWD shall prepare a Storm Water Pollution Prevention Plan (SWPPP) for the construction activities

Impact Statement	Significance	Mitigation Measure
		onsite. A copy of the SWPPP shall be available and implemented at the construction site at all times. The SWPPP outlines the source control and/or treatment control BMPs that will avoid or mitigate runoff pollutants at the construction site to the "maximum extent practicable." The SBMWD may request to be placed under individual NPDES permits rather than the general permit. The Regional Board may issue individual stormwater NPDES permits to construction projects when more stringent controls are necessary to protect water quality. Individual construction projects may also be regulated under a municipality's NPDES management program.
Impact 4.7-2: Would the Project substantially deplete groundwater supplies or interfere substantially with groundwater recharge?	Less than Significant Impact	No mitigation is required.
Impact 4.7-3: Would the Project substantially alter the existing drainage pattern of the site or area including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	Less than Significant Impact with Mitigation Incorporated	BIO-7 Refer to Biological Resources above.
Impact 4.7-4: Would the Project create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	Less than Significant Impact	No mitigation is required.
Impact 4.7-5: Would the Project place structures within the 100-year flood area which would impede or direct flows?	No Impact	No mitigation is required.

Impact Statement	Significance	Mitigation Measure
Impact 4.7-6: Would the Project expose people or structures to a significant risk of loss, injury or death involving inundation by seiche, tsunami, or mudflow?	Less than Significant Impact	No mitigation is required.
Impact 4.7-7: Would the Project expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	Less than Significant Impact	No mitigation is required.
Cumulative Impacts (Hydrology and Water Quality) Would the Project result in cumulative impacts associated with implementation of the Clean Water Factory Project?	Less than Significant Impact	No mitigation is required.
Land Use and Planning		
Impact 4.8-1: Would the Project physically divide an established community?	No Impact	No mitigation is required.
Impact 4.8-2: Would the Project Conflict any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	Less than Significant Impact with Mitigation Incorporated.	LUP-1 Siting, design, and construction of all aboveground facilities will comply with applicable local, State and federal regulations. The following mitigation measures will be implemented where necessary to comply with local, State, and federal regulations and policies, to mitigated potential land use impacts below a level of significance: ▪ Aboveground facilities shall be sited on compatible land uses, including existing publicly-owned parcels, public rights-of-way, or otherwise developed areas that are absent of significant natural resources; ▪ SBMWD shall ensure no net loss of public parkland through facility siting on non-recreational parcels, and/or by providing offsetting parkland within the affected communities (refer to Section 4.10, Recreation);

Impact Statement	Significance	Mitigation Measure	
			▪ Site design and construction shall avoid or substantially mitigate, consistent with applicable city and/or County policies, ordinances, and regulations, the potential aesthetic and noise effects of the Project's aboveground facilities. These siting and design considerations include but are not limited to siting facilities as far away as practicable from existing sensitive uses, providing adequate landscape screening or buffering between facilities and adjacent sensitive uses, providing adequate noise attenuation to meet relevant noise standards, and providing suitable architectural design of aboveground facilities so as to be consistent within the communities in which they are located.
Impact 4.8-3: Would the Project conflict with the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP) or the Santa Ana Sucker (SASU) Conservation Program.	Less than Significant Impact with Mitigation Incorporated.	BIO-7	Refer to Biological Resources above.
Cumulative Impacts Would the project result in cumulative impacts associated with implementation of the Clean Water Factory Project?	Less than Significant Impact with Mitigation Incorporated	BIO-7	Refer to Biological Resources above.
		Noise	
Impact 4.9-1: Would the Project result in the exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	Less than Significant with Mitigation Incorporated	NOI-1	Prior to construction, SBMWD shall confirm that the Grading Plan, Building Plans, and specifications stipulate that: ▪ All construction equipment, fixed or mobile, shall be equipped with properly operating and maintained mufflers and other State required noise attenuation devices. ▪ SBMWD shall provide a qualified "Noise Disturbance Coordinator." The Disturbance Coordinator shall be responsible for responding to any local complaints about construction noise. When a complaint is received, the Disturbance Coordinator shall notify the SBMWD within 24-hours of the complaint and determine the cause of the noise complaint (e.g., starting too early, bad muffler, etc.) and shall implement reasonable measures to resolve the complaint, as deemed acceptable by SBMWD. The contact name and the

Impact Statement	Significance	Mitigation Measure
		telephone number for the Disturbance Coordinator shall be clearly posted on site. ▪ When feasible, construction haul routes shall be designed to avoid noise sensitive uses (e.g., residences, convalescent homes, etc.). ▪ During construction, stationary construction equipment shall be placed such that emitted noise is directed away from sensitive noise receivers. ▪ Construction activities that produce noise shall not take place outside of the allowable hours specified by each affected jurisdiction's governing code. For the City of San Bernardino, this is Municipal Code Section 8.54.070 (8:00 AM to 8:00 PM in residential zones, and 7:00 AM to 8:00 PM in all other zones). For the County, this is Municipal Code Chapter 83.01.80 (7 a.m. to 7 p.m., not including Sundays and federal holidays). NOI-2 Water Reclamation Plant Noise. Prior to construction, SBMWD shall review noise specifications (noise ratings, power ratings, etc.) for all stationary equipment (microfiltration units, reverse osmosis units, pumps, generators, etc.) to confirm that the noise levels at the Project site are within the City's acceptable noise standards at nearby sensitive receptors. If noise levels are anticipated to exceed the City's noise standards, noise-attenuation measures, such as locating stationary equipment within enclosed structures with adequate setback and screening, would be required to achieve acceptable noise levels at the property lines of nearby residences in accordance with the noise standards identified within Section 19.20.030.15 (Noise) of the City of San Bernardino's Development Code. Once the equipment is installed, noise levels shall be monitored to ensure compliance with the City's noise standards. If stationary noise exceeds the City's standards, an acoustical engineer shall be retained to install additional noise attenuation measures in order to meet the applicable noise standard. NOI-3 Pump Station Noise. Prior to construction, SBMWD shall review noise specifications (noise ratings, power ratings, etc.) for all stationary equipment (conveyance pumps, generators, etc.) to confirm that the noise levels at the Project site are within the City's acceptable noise standards at nearby sensitive receptors. If noise levels are anticipated

Impact Statement	Significance	Mitigation Measure
		to exceed the City's noise standards, noise-attenuation measures, such as locating stationary equipment within enclosed structures with adequate setback and screening, would be incorporated into Project design sufficient to achieve acceptable noise levels at the property lines of nearby residences in accordance with the noise standards identified within Section 19.20.030.15 (Noise) of the City of San Bernardino's Development Code. Once the equipment is installed, noise levels shall be monitored to ensure compliance with the City's noise standards. If stationary noise exceeds City's standards, an acoustical engineer shall be retained to install additional noise attenuation measures in order to meet the applicable noise standard.
Impact 4.9-2: Would the Project result in the exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	Less than Significant Impact	No mitigation is required.
Impact 4.9-3: Would the Project result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	Less than Significant Impact with Mitigation Incorporated	NOI-1 Refer to Impact 4.9-1 above. NOI-2 Refer to Impact 4.9-1 above. NOI-3 Refer to Impact 4.9-1 above.
Impact 4.9-4: Would the Project result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	Less than Significant Impact with Mitigation Incorporated	NOI-1 Refer to Impact 4.9-1 above. NOI-2 Refer to Impact 4.9-1 above. NOI-3 Refer to Impact 4.9-1 above.
Impact 4.9-5: For a Project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	Less than Significant Impact	No mitigation is required.

Impact Statement	Significance	Mitigation Measure
Cumulative Impacts Would the project result in cumulative impacts associated with implementation of the Clean Water Factory Project?	Less than Significant Impact with Mitigation Incorporated	NOI-1 Refer to Impact 4.9-1 above. NOI-2 Refer to Impact 4.9-1 above. NOI-3 Refer to Impact 4.9-1 above.
Recreation		
Impact 4.10-1: Would the Project increase the use of existing neighborhood and regional parks and trails or other recreational facilities such that substantial physical deterioration of the facilities would occur or be accelerated?	Less than Significant Impact with Mitigation Incorporated	REC-1 Prior to commencement of construction, SBMWD shall coordinate with the City of San Bernardino Parks, Recreation, and Community Services Department to ensure Project construction activities within City parkland minimizes construction during peak-usage periods for any impacted facilities, to the extent practical. In addition, where practical, Project-related improvements should be timed with other park improvements to minimize the total time period that any one park is affected by construction activities. REC-2 SBMWD shall prioritize siting and design of Project facilities such that direct impacts to City parklands is minimized. Non-parkland areas are preferred, and if a park site must be affected due to Project design requirements or other constraints, SBMWD shall prioritize siting of pump stations and/or storage reservoirs that avoid direct impacts to active recreational areas (such as ballfields) and associated parkland parking. If facility siting requirements necessitate that the Project pump station/reservoir be cited within active parkland uses, including parking areas, prior to commencement of construction activities, SBMWD shall provide or fund replacement parkland of equivalent size, function, and value, such that the Project results in no net-loss of City active recreational parkland.
Impact 4.10-2: Would the Project include recreational facilities or would require the construction or expansion of recreational facilities which might have an adverse effect on the environment?	Less than Significant Impact	No mitigation is required.
Impact 4.10-3: Would the Project result in substantial adverse physical impacts associated with the provision	Less than Significant Impact	No mitigation is required.

Impact Statement	Significance	Mitigation Measure
of new or physically altered park/recreational facilities, need for new or physically altered park/recreation facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios or other performance objectives for any of the public services?		
Cumulative Impacts (Recreation): Would the project result in cumulative impacts associated with implementation of the Clean Water Factory Project?	Less than Significant Impact with Mitigation Incorporated	REC-1 Refer to Impact 4.10-1 above. REC-2 Refer to Impact 4.10-1 above.
Transportation and Circulation		
Impact 4.11-1: Would the Project cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?	Less than Significant Impact with Mitigation Incorporated	TRA-1 Short-term construction-related impacts to roadway use shall be mitigated by a Traffic Management Plan (TMP) to be established by SBMWD prior to construction of any improvements. This TMP shall require prior notices, adequate sign-posting, detours, phased construction and temporary driveways where necessary. The TMP shall specify implementation timing of each plan element (prior notices, sign-posting, detours, etc.) as determined appropriate by SBMWD. Adequate access shall be provided at all times to adjacent uses. Proper detours and warning signs shall be established to ensure public safety. The TMP shall be devised so that construction shall not interfere with any emergency response or evacuation plans. Construction activities shall proceed in a timely manner to reduce impacts.
Impact 4.11-2: Would the Project exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?	Less than Significant Impact with Mitigation Incorporated	TRA-1 Refer to Impact 4.11-2 above.
Impact 4.11-3: Would the Project result in a change in air traffic patterns, including either an increase in	No Impact	No mitigation is required.

Impact Statement	Significance	Mitigation Measure
traffic levels or a change in location that results in substantial safety risks?		
Impact 4.11-4: Would the Project substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	Less than Significant Impact	No mitigation is required.
Impact 4.11-5: Would the Project result in inadequate emergency access?	Less than Significant Impact with Mitigation Incorporated	TRA-1 Refer to Impact 4.11-2 above.
Impact 4.11-6: Would the Project conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?	Less than Significant Impact with Mitigation Incorporated	TRA-1 Refer to Impact 4.11-2 above.
Cumulative Impacts (Transportation and Circulation): Would the project result in cumulative impacts associated with implementation of the Clean Water Factory Project?	Less than Significant Impact with Mitigation Incorporated	TRA-1 Refer to Impact 4.11-2 above.

1.6 SIGNIFICANT AND UNAVOIDABLE ENVIRONMENTAL IMPACTS

The Project's potentially significant impacts are set forth in Sections 4.1 through 4.11 of this EIR. As noted in these sections, most of the potentially significant impacts identified can be mitigated to a less than significant level through implementation of feasible mitigation measures. However, significant and unavoidable impacts would occur as a result of implementation of the proposed Project in the following areas:

SIGNIFICANT UNAVOIDABLE ADVERSE IMPACTS OF THE PROPOSED PROJECT

- Regional Construction Related Emissions – Construction of the Project would exceed the SCAQMD daily emission threshold for regional NO_X after implementation of all feasible mitigation measures. Therefore, the construction of the Project would have a significant and unavoidable impact on regional air quality. Construction emissions would not exceed the SCAQMD significance threshold for ROG CO, SO_X, PM_{10}, and $PM_{2.5}$.
- Localized Construction Related Emission – Construction-related emissions would exceed the SCAQMD localized significance thresholds for PM_{10} and $PM_{2.5}$ after implementation of all feasible mitigation measures. Therefore, construction would have a significant and unavoidable impact on localized air quality.
- Cumulative Construction Emissions – As described in Section 4.3, *Air Quality and Greenhouse Gas*, compliance with SCAQMD rules and implementation of Mitigation Measures AQ-1 through AQ-3 would minimize construction emissions from the proposed Project. However, despite the implementation of these mitigation measures, total construction impacts would not be reduced to a less than significant level (refer to Table 4.3-7, *Maximum Daily Pollutant Emissions During Construction (Mitigated)*). Therefore, the proposed Project would have a cumulative contribution to air emissions in the region and impacts would be cumulatively considerable in this regard.
- Santa Ana Sucker–The Project identifies a significant unavoidable impact to Santa Ana sucker. It is noted that even with the Project's full implementation of BIO-7, BIO-14, other EIR mitigation measures and Project Design Features noted herein, as well as ongoing SBMWD commitment and participation in the HCP, the sheer listing of Santa Ana sucker in the federal ESA, along with the RIX Phased Discharge Reduction, would result in a significant unavoidable impact to Santa Ana sucker.

CUMULATIVE IMPACTS OF THE PROPOSED PROJECT

State CEQA Guidelines Section 15130 requires that an EIR include a discussion of cumulative impacts "…when the project's incremental effect is cumulatively considerable, as defined in [State CEQA Guidelines Section 15065(a)(3)]." Cumulatively considerable effects are those "…incremental effects of an individual project… when viewed in conjunction with the effects of past projects, the effects of other current projects, and the effects of probable future projects" [State CEQA Guidelines Section 15065(c)]. A lead agency need not consider an incremental effect as "cumulatively considerable," but does need to briefly describe its basis for concluding that the incremental effect is not cumulatively considerable.

Cumulative impacts of the proposed Project combined with past, present, and reasonably foreseeable future projects are evaluated in Sections 4.1 through 4.11 of this EIR. The assessment of cumulative

impacts takes into consideration existing conditions, plus the proposed project, in combination with other planned regional watershed projects.

An analysis of cumulative impacts determined that even with the implementation of mitigation measures, significant and unavoidable cumulative environmental impacts may occur with regard to air quality, including impacts to climate change during Project construction. Therefore, construction of the proposed Project would have a cumulative contribution to air emissions in the region and impacts would be cumulatively considerable in this regard.

1.7 SUMMARY OF ALTERNATIVES EVALUATED

As prescribed in Section 15126.6 of the State CEQA Guidelines, the following alternatives were selected by SBMWD for evaluation in the EIR. The project alternatives have been designed to alleviate identified environmental impacts, or were specifically requested for consideration during the preparation of the EIR.

The following sections provide a summary of Project alternatives described in Section 6.0, *Alternatives to the Proposed Action*, which contains a detailed discussion of the alternatives considered for the Project.

ALTERNATIVE 1: NO PROJECT ALTERNATIVE

The No Project Alternative (Alternative 1) evaluates the impacts and water supply implications should SBMWD not proceed with this Project, including consideration of other available water supply options (i.e., groundwater extraction) and increased reliance upon water conservation. Under the No Project Alternative, SBMWD would continue reducing water usage from water conservation (SBX-7-7) by 13,574 AFY by 2035 based on the 2010 Urban Water Management Plan (UWMP), augmented as needed to meet the State's mandatory conservation target of 26% for SBMWD. Under the No Project Alternative, water projected by the UWMP to be provided through recycling (25,500 AFY for 2035) would continue to be made up through increased reliance on SWP water (through Valley District, a SWP contractor) which would be provided at levels necessary to maintain safe yield for the groundwater basins. The SBWRP would be expanded/upgraded to meet long term treatment needs related to growth and the RIX Facility would be expanded/upgraded to meet treatment needs related to growth. However, this alternative would not necessarily include any of the physical improvements to the SBWRP identified under the Project.

The No Project Alternative would effectively avoid all potentially significant impacts identified for Project implementation. The No Project Alternative would not reduce dependence on imported water supplies and, as such, this alternative would likely still retain a significant unavoidable impact to air quality and greenhouse gases due to the large amount of energy required to transport imported water to the SBMWD service area (refer to Section 4.3, *Air Quality and Greenhouse Gas Emissions*). The No Project Alternative would not achieve any of the Project's objectives outlined in Section 1.2, above.

ALTERNATIVE 2: INCREASED WATER CONSERVATION ALTERNATIVE

Under the Increased Water Conservation Alternative (Alternative 2), SBMWD would continue reducing water usage from water conservation (SBX-7-7) based on the 2010 Urban Water Management Plan (UWMP) for 13,574 AFY by 2035, exceeding the State's mandatory conservation target of 26%. Under the Increased Water Conservation Alternative, water projected by the UWMP to be provided through recycling (25,500 AF/Y for 2035) would continue to be made up through increased reliance on SWP water

which would be provided by Valley District (a SWP contractor) at levels necessary to maintain safe yield for the groundwater basins, and the SBWRP and RIX Facility would be expanded/upgraded to meet long term treatment needs related to growth (i.e., expanded solids handling, aeration, etc.). However, this alternative would not necessarily include any of the physical improvements to the SBWRP identified under the Project as increased conservation would likely reduce the wastewater flow to the SBWRP and RIX Facility and thus none of the potentially significant construction or operation impacts would occur. This alternative would not achieve the Project's objectives outlined in Section 1.2, above.

This alternative is not a viable alternative to the proposed Project, as it does not meet the Project Objectives identified in Section 1.2, above. As demonstrated in SBMWD's *2010 Urban Water Management Plan*, conservation is part of a balanced water supply portfolio, but is itself not adequate to meet future water demands without developing new water supplies like the proposed Project. This is particularly true during the State's extraordinary drought conditions. Increased conservation may also have potential impacts on the Santa Ana River due to reduced flows from the RIX Facility, as reduced demand would generate a reduced supply of effluent water for treatment at the RIX Facility. Furthermore, increased conservation would likely result in increased concentration of waste to the wastewater treatment facilities and lower flows through the collection system. This would require increased collection system maintenance, and would likely result in increased sanitary sewer overflows, etc. The increased use of SWP water necessary for this alternative may also adversely affect the groundwater quality of the Bunker Hill Groundwater Basin. For the past two years, SWP water exceeded Bunker Hill A total dissolved solids (TDS) objective of 310 mg/L (335 mg/L and 361 mg/L TDS, for 2015 and 2016, respectively). As Basin water quality degrades, TDS into the SBWRP increases and the treated effluent gets closer to permit limits. If the trend continued, desalting prior to discharge would be required. However, water conservation remains a priority for the City and an essential component of its long-term water supply strategy. Refer to Section 6.0, *Alternatives to the Proposed Action*, for a detailed discussion of this alternative.

ALTERNATIVE 3: REDUCED CAPACITY ALTERNATIVE

The Reduced Capacity Alternative (Alternative 3) would involve all improvements proposed under the Project, but the RIX Phased Discharge would be partially reduced to the Phase 3 scenario, and water not used for recycled water supply would be discharged into the River as it is currently. This would reduce potential adverse impacts to the Santa Ana River, although Project impacts are anticipated to be mitigated to less than significant levels (refer to EIR Section 4.4, *Biological Resources*). Alternative 3 assumes that SBMWD would continue reducing water usage from water conservation (SBX-7-7) based on the *2010 Urban Water Management Plan* (UWMP) for 13,574 AFY by 2035, augmented as needed to meet the State's mandatory conservation target of 26% for SBMWD. Under Alternative 3, water projected by the UWMP to be provided through recycling (25,500 AF/Y for 2035) would continue to be made up through increased reliance on SWP water which would be provided by Valley District (a SWP contractor) at levels necessary to maintain safe yield for the groundwater basins and the SBWRP and RIX Facility would be expanded/upgraded in order to meet long term treatment needs related to growth. Alternative 3 would still require the construction of the conveyance pipelines and recharge facilities proposed under the Project.

Although perhaps a reduced capacity project would allow for smaller pipe diameters and a smaller area of recharge basin, these reductions are not anticipated to substantially reduce Project impacts relative to conveyance lines, pump stations and recharge basins due to similar construction footprint and operational requirements. While the Reduced Capacity Alternative would have reduced impacts on the Santa Ana

River and recharge basins, conveyance infrastructure would still be required and, as such, construction impacts would remain largely the same as the Project as proposed. Due to the State's extraordinary drought condition and constrained nature of the City's groundwater resources, any reduction in recycled water production would necessitate other water supply alternatives, thereby adding to the impacts of the Reduced Capacity Alternative. Furthermore, the Reduced Capacity Alternative would not fully achieve the Project Objectives as successfully as the proposed Project due to the reduced amount of product water that would ultimately be produced by the Project.

ALTERNATIVE 4: PROJECT VARIATIONS UNDER CONSIDERATION ALTERNATIVE

The Project Variations under Consideration Alternative (Alternative 4) would involve SBMWD partnering with relevant stakeholders to consider different project variations that could contribute to meeting future water demand and to the management of groundwater supplies throughout the region. In lieu or in supplement to the conveyance facility corridors and groundwater recharge basins analyzed for the proposed Project, there are three additional conveyance and recharge scenarios that could be considered for implementation as part of or in addition to the Project (Geothermal Pipeline and Baseline Feeder, Redlands Recharge Basin and Alabama Street Effluent Pipeline). Refer to Exhibit 6.0-1, *Alternative Pipeline Alignments*, for further information on the alternative pipelines and recharge facilities. Assumptions for Alternative 4 include that the Geothermal Pipeline and Alabama Street Effluent Pipeline pump station/storage would be located at the SBWRP, and that construction activities for the Geothermal Pipeline and Baseline Feeder would be less intensive than the proposed Project, as SBMWD would utilize existing water conveyance infrastructure. Construction would occur within existing facilities and public rights-of-way. Under this alternative, maintenance and operational impacts related to the Geothermal Pipeline, Baseline Feeder, and Alabama Street Effluent Pipeline would be similar to the activities proposed for the conveyance scenarios under the proposed Project. Construction activities for the Redlands Recharge Basin option would be similar to those proposed for the Waterman Basins and East Twin Creek Spreading Grounds options and would occur within existing facilities and public rights-of-way. It is noted that maintenance and operational impacts related to the Redlands Recharge Basin option would be similar to those proposed for the Waterman Basins and East Twin Creek Spreading Grounds options.

The alignments proposed under Alternative 4 are existing facilities (with the exception of the 200-foot extension of the Alabama Street Effluent Pipeline), thereby reducing the overall construction impacts as compared to the proposed Project. Alternative 4 satisfies the majority of the Project Objectives described under Section 1.2. However, Alternative 4 would not reduce SBMWD's dependence on imported water, or reduce the need for SWP water, since the groundwater recharge options proposed under this alternative do not contribute to the groundwater supply pumped by SBMWD for potable supply.

ALTERNATIVE 5: IMPORTED WATER SUPPLY ALTERNATIVE

Under the Imported Water Supply Alternative (Alternative 5), SBMWD would rely on imported water supplies to meet future demand and to manage current groundwater supplies within the Project area. The imported water supplies would primarily originate from the SWP. Since the reliability and availability of imported water can be restricted at times, particularly during drought conditions, it is assumed that

water banking could be used to increase water supply reliability. "Banked"[1] imported water would then be "wheeled"[2] to this area through neighboring water agencies. Implementation of this alternative would not preclude future development of Project facilities or other uses at the Project site, subject to applicable discretionary reviews and approvals. Refer to Section 6.0, *Alternatives to the Proposed Action*, for a detailed discussion of this alternative.

Under this alternative, the SBWRP and RIX Facility would be expanded/upgraded to meet long term treatment needs related to growth. These treatment upgrades would be minor in nature and would not include any of the physical improvements identified under the Project. These upgrades would not involve an increase in capacity beyond currently permitted and thus none of the potentially significant construction or operation impacts would occur. Although this alternative would avoid all of the physical environmental impacts of the Project, Alternative 5 would require imported water supplies to meet anticipated demands. Imported water has its own environmental impacts, so this Alternative would not completely avoid the significant impacts of the Project. For the purposes of this EIR, it is assumed that any imported water has already received environmental and regulatory permitting approvals to address such issues as impacts to local groundwater and freshwater resources, construction and operational impacts, and the GHG emission impact of conveying imported water to SBMWD. This alternative would not achieve the Project objective of creating a reliable, sustainable source of potable water for future use due to the uncertainties in securing long-term imported water. This alternative would not achieve the Project Objective of maximizing local potable water production since it would rely heavily on imported supplies. In addition, this alternative would represent an unreliable system for addressing potential future water supplies, as the ongoing availability and quantity of water supplies from the SWP remain uncertain due to potential climate change implications, sea level rise, restrictions of SWP operations from State and federal regulations protecting endangered species, and the vulnerability of delta levees and conveyance facilities to floods and earthquakes. Therefore, notwithstanding other concerns noted above, this alternative could only meet a small fraction of the projected additional water supplies necessary for the City to meet future water demands, even with conservation and recycling.

ALTERNATIVE 6: IN LIEU WATER SUPPLY ALTERNATIVE

An "In Lieu" Water Supply Alternative (Alternative 6) has been suggested by downstream Santa Ana River stakeholders. Under Alternative 6, no reduction would be made by SBMWD to the current flows to RIX/Santa Ana River from the SBWRP, resulting in a "loss" of recycled water for SBMWD (as recycled water that would have been diverted for direct use and recharge as part of the Project would instead be allowed to continue to be discharged to the Santa Ana River). This water supply "loss" would hypothetically be offset by SBMWD obtaining agreements either with Orange County Water District (OCWD) or other downstream entities to finance and secure an "In Lieu" imported water supply to replace the 23.3 MGD (26,100 AFY) that SBMWD would have recovered for recharge/recycling under the proposed Project. Although there are a myriad of different methods that could be utilized to provide water "In Lieu" of Project water under the SBMWD control, all such methods would likely involve imported water from outside the SBMWD service area. Increases in In Lieu supply could be phased over time and would, at a

[1] Water "banking" refers to the practice of foregoing water deliveries during certain periods, and "banking" either the right to use the foregone water in the future, or saving it for someone else to use in exchange for a fee or delivery in kind.

[2] Water "wheeling" refers to the conveyance of unused water to a receiving water agency by an alternate water provider with excess supplies.

minimum, need to provide a reliable supply of water necessary to offset groundwater overdraft of the basins that would otherwise occur. Assumptions for Alternative 6 include SBMWD reducing water usage from water conservation (SBX-7-7) based on the 2010 Urban Water Management Plan (UWMP) for 13,574 AFY by 2035, augmented as needed to meet the State's mandatory conservation target of 26% for SBMWD. Under Alternative 6, the SBWRP and RIX Facility would be still be expanded/upgraded in order to meet long term treatment needs related to growth. These treatment upgrades to the SBWRP would be minor in nature and would not necessarily include any of the physical improvements identified under the Project; thus, none of the potentially significant construction or operation impacts would occur. This alternative may also require modifications to existing SWP turnout facilities to convey in-lieu water and potential extension of conveyance facilities to allow recharge in larger Santa Ana River storage basins on behalf of SBMWD. Site improvements at the Waterman Basins, East Twin Creek Spreading Grounds and/or similar recharge basins may be necessary to accommodate additional recharge flows, consistent with the Project goals of groundwater recharge. A component of this alternative (as identified in the 2010 Petition for Change) -- identification of the future connection of the RIX Facility to the Chino Basin -- would support the conveyance of available SBWRP water that would otherwise be discharged to the Santa Ana River. Such water could then be exchanged for In-Lieu water from other sources.

Alternative 6 would reduce the Project's potential impacts to the federally endangered Santa Ana sucker and associated habitat and species in the Santa Ana River; however, these impacts would be phased, monitored and fully mitigated to less than significant levels as discussed in the EIR Section 4.4, *Biological Resources*. In addition, this alternative's potential reduction in the Project's Santa Ana River impacts would be offset by this alternative's contribution toward impacting biologically sensitive habitat and species in other surface water sources such as the Sacramento-San Joaquin Delta. This alternative could reduce the Project's unavoidable significant impacts of construction and operation-related greenhouse gas emissions (and other impacts related to the Project's physical construction footprint) due to overall reduced construction and avoiding the more GHG-intensive advanced water treatment components of the Project. However, the Project's air quality and GHG impacts would not be avoided and would likely remain significant, due to the various improvements anticipated to be required to convey, store, recharge and/or pump the imported water to SBMWD end users, as well as the additional GHG impact of conveying imported water long distances, especially if the source water is SWP. Alternative 6 would not effectively address the Project Objectives identified in Section 1.2.

ALTERNATIVE 7: HYBRID ALTERNATIVE

Alternative 7 would combine components of the Reduced Capacity Alternative (Alternative 3), and the In Lieu Water Supply Alternative (Alternative 6). Thus, under the Hybrid Alternative (Alternative 7), SBMWD would implement a reduced capacity scenario, consistent with the description for Alternative 3, plus utilize an in lieu mechanism to obtain imported water consistent with the potential mechanisms described in Alternative 6, in order to ultimately achieve the water volume consistent with Phase 5 of the proposed Project. The effects of this combined alternative are evaluated in discussion of Alternatives 3 and 6, and would result in a slight reduction in operational impacts compared to the proposed Project, associated with a smaller discharge reduction.

ALTERNATIVE 8: REGIONAL PARTNERSHIP ALTERNATIVE

Under the Regional Partnership Alternative (Alternative 8), SBMWD and Valley District would partner on recycled water conveyance and recharge facilities to reduce net construction impacts and cost. Note that while SBMWD has had preliminary discussions with Valley District and EVWD regarding this concept, this

remains a conceptual arrangement that has yet to be discussed in detail or agreed upon by all parties. Valley District approved the Sterling Natural Resource Center (SNRC) Project on March 15, 2016.[3] The SNRC (summarized further in Section 6.0, *Alternatives to the Proposed Action*) includes up to 10 MGD of advanced treated wastewater proposed for conveyance southerly from the SNRC treatment plant to the existing Redlands Recharge Basin. Alternative 8 envisions that, to provide additional conveyance and recharge options, Valley District could, in addition to the SNRC, convey this recycled water westerly in new conveyance pipelines (within existing streets) to tie into the proposed Clean Water Factory Project recycled water conveyance system. From this connection, the SNRC recycled water would be combined with Project recycled water and conveyed to the East Twin Creek Spreading Grounds and Waterman Basins for recharge. The net effect of this alternative would be to construct a relatively short pipeline segment to connect the proposed Clean Water Factory Project facilities with the proposed SNRC project facilities, and thereby share regional recycled water facilities with SBMWD from the Baseline Feeder northerly to the recharge basins.

The Regional Partnership Alternative assumes that no changes in the Clean Water Factory Project would occur, although the alternative may reduce the need for SBMWD to pursue some of the pipeline conveyance or recharge options described in the EIR. Alternative 8 assumes that the SNRC project would convey treated wastewater westerly, in addition to its proposed southerly route, adding a short segment of pipeline construction corridors. Valley District and SBMWD would share conveyance infrastructure under this alternative.

SBMWD would consider implementation of the Regional Partnership Alternative at the request of Valley District or other Santa Ana River stakeholders. Under this alternative, the construction-related and operational impacts across all environmental topic areas would likely be similar to those discussed within the EIR, as the project would involve shared conveyance facilities and recharge basins. Alternative 8 would satisfy the Project Objectives previously identified under Section 1.2.

ENVIRONMENTALLY SUPERIOR ALTERNATIVE

The Reduced Capacity Alternative (Alternative 3) is environmentally superior to the proposed Project.

The Hybrid Alternative (Alternative 7) would result in a slight reduction in impacts compared to the propose Project, and is therefore, considered an environmentally superior alternative.

The Imported Water Supply Alternative (Alternative 5) is an environmentally superior alternative to the proposed Project. It also is environmentally superior when compared to the other alternatives evaluated herein, and therefore, is considered *the* environmentally superior alternative.

1.8 MITIGATION MONITORING AND REPORTING

CEQA requires public agencies to adopt monitoring and reporting programs to ensure compliance with mitigation measures adopted or made conditions of project approval in order to mitigate or avoid the significant environmental effects identified in environmental impact reports. A Mitigation Monitoring and Reporting Program (MMRP) incorporating the mitigation measures set forth in this EIR will be prepared

[3] San Bernardino Valley Municipal Water District, *Sterling Natural Resources Center Draft EIR*, December 2015, and *Final EIR,* March 2016, prepared by ESA Associates.

and approved by the SBMWD decision-makers and other responsible agencies concurrently with adoption of the findings of this EIR and prior to approval of the proposed project.

1.9 AREAS OF CONTROVERSY AND ISSUES TO BE RESOLVED

CEQA Guidelines Sections 15123 (b)(2) and (3) require that the EIR summary identify areas of controversy known to the lead agency, issues raised by agencies and the public, and issues to be resolved, including the choice among alternatives and whether, or how to, mitigate significant adverse physical impacts.

Based on SBMWD staff's review of available information and comments received from the general public and other public agencies in response to the Notice of Preparation and public scoping meetings (Appendix 10.1, *Public Scoping*), the following issues may be either controversial or require further resolution:

- Potential adverse effects upon sensitive aquatic and riparian habitat and species within the Santa Ana River, particularly the Santa Ana sucker; and,
- Potential adverse effects on downstream water supply and water quality downstream of the RIX Facility.

These issues have been considered in this EIR, where applicable.

Section 2.0
Introduction and Purpose

Section 2.0
Introduction and Purpose

This document is an Environmental Impact Report (EIR) prepared for the City of San Bernardino Municipal Water Department Clean Water Factory Project (Project) in compliance with the California Environmental Quality Act (CEQA) CEQA-Plus requirements. This Draft EIR has been prepared by the City of San Bernardino Municipal Water Department (SBMWD) as the lead agency under CEQA.

This Draft EIR evaluates the potentially significant, adverse and beneficial impacts on the human and physical environment resulting from implementation of the proposed Clean Water Factory Project, hereinafter referred to as "Project." Section 3.0, *Project Description*, provides detailed descriptions of the construction and operational components of the proposed Project. Section 4.1, *Environmental Analysis*, discusses the regulatory environment, existing conditions, environmental impacts, and mitigation measures for the Project. Following public review of the Draft EIR, a Final Environmental Impact Report (EIR) will be prepared, in which the SBMWD will provide responses to comments relating to the environmental analysis provided in the Draft EIR.

2.1 PURPOSE OF THE EIR

According to Section 15121 of the State *CEQA Guidelines*, an EIR is an informational document that is written to inform public agency decision-makers and the public of the significant environmental effects of a proposed project. The purpose of this Draft EIR for the proposed Project is to review the existing conditions at and in the vicinity of the Project site; identify and analyze the potential environmental impacts; and suggest feasible mitigation measures or alternatives to reduce significant adverse environmental effects, as described in Section 3.0, *Project Description* and Section 6.0, *Alternatives to the Proposed Action*. The potential impacts include both temporary construction-related effects and the long-term effects of development, operation, and maintenance of the Project, as described in Section 3.0, *Project Description*.

The intent of this EIR is to address the potential Project impacts utilizing the most-current and detailed plans, technical studies, and related information available. This EIR will be used by SBMWD, other responsible agencies, interested parties, and the general public to evaluate the potential environmental impacts of the proposed Project (refer to Section 3.6, *Permits and Approvals*, for a list of responsible agencies and Project approvals).

The EIR includes five main components which are analyzed throughout this document: **RIX Phased Discharge Reduction, Water Reclamation Plant, Conveyance and Storage Systems, Direct Use Customers, and Recharge Basins**: These five components of the Project are analyzed at a Project-level, based on the amount of detail and information available during Project evaluation.

SBMWD determined that a CEQA-Plus compliant Project EIR is the appropriate CEQA document for the Project at this time, in accordance with Section 15161 of the State CEQA Guidelines and State Revolving Fund requirements. In addition to Project-level analysis based on available information, this EIR also functions as a Program EIR pursuant to CEQA Guidelines Section 15168, in that it evaluates a complete phased public works project where SBMWD may implement one or more options, and in that it evaluates a broad range of implementation options to accomplish SBMWD's Project objectives. This EIR has been prepared in conformance with CEQA (California Public Resources Code [PRC] §21000 et seq.); *CEQA Guidelines* (California Code of Regulations [CCR], Title 14, §15000 et seq. The principal *CEQA Guidelines*

sections governing the content of this document include Article 9 (*Contents of Environmental Impact Reports*) (§§15120 through 15132), and CEQA Guidelines §15168 (*Program EIR*).

2.2 COMPLIANCE WITH CEQA

According to the State CEQA Guidelines (14 CCR Section 15064[f][1]), preparation of an EIR is required whenever a project may result in a significant environmental impact. An EIR is an informational document used to inform public agency decision-makers and the general public of the significant environmental effects of a project, identify possible ways to minimize the significant effects, and describe reasonable alternatives to the project that could feasibly attain most of the basic objectives of the project while substantially lessening or avoiding any of the significant environmental impacts. Public agencies are required to consider the information presented in the EIR when determining whether to approve a project. CEQA requires that state and local government agencies consider the environmental effects of projects over which they have discretionary authority before taking action on those projects (Public Resources Code Section 21000 et seq.).

CEQA also requires that each public agency avoid or mitigate to less than significant levels, wherever feasible, the significant environmental effects of projects it approves or implements. If a project would result in significant and unavoidable environmental impacts that cannot be feasibly mitigated to less than significant levels, the project can still be approved, but the lead agency's decision makers must issue a "statement of overriding considerations" explaining in writing the specific economic, social, or other considerations that they believe make those significant effects acceptable.

This document analyzes the environmental effects of the project to the degree of specificity appropriate to the current proposed actions, as required by Section 15146 of the State *CEQA Guidelines*. The analysis considers the activities associated with the Project, to determine the short-term and long-term effects associated with their implementation. This EIR discusses both direct and indirect impacts of the Project, as well as cumulative impacts associated with other past, present, and reasonably foreseeable future projects. CEQA requires preparation of an objective, full-disclosure document to inform agency decision-makers and the general public of the direct and indirect environmental effects of the proposed action; provide mitigation measures to avoid or substantially lessen the significant effects; and identify and evaluate reasonable alternatives that could avoid or substantially lessen one or more of such effects.

2.3 COMPLIANCE WITH SRF CEQA-PLUS

The State Water Resources Control Board (SWRCB) administers the State Revolving Fund (SRF) Loan Program, which is partially funded by the United States Environmental Protection Agency (USEPA) and is a low-interest loan funding source for large water and sanitation projects. To receive State Revolving Funds, a Project applicant must demonstrate compliance with several federal regulations, including the Endangered Species Act (ESA), National Historic Preservation Act (NHPA), and the General Conformity Rule for the Clean Air Act (CAA). Rather than utilizing a separate document to comply with the National Environmental Policy Act for the SRF distribution, USEPA uses CEQA in conjunction with the following additional requirements as mandated by ESA, NHPA, and CAA, generally referred to as "CEQA-Plus."

Endangered Species Act

The purpose of the ESA is to protect and recover imperiled wildlife and plant species and the habitats/ecosystems upon which they depend for survival. Section 7 of the ESA requires federal agencies to utilize their legal and discretionary authorities to conserve and assist in the recovery of threatened and endangered species. Federal agencies are required to consult with the United States Fish and Wildlife

Service (USFWS) to ensure actions they authorize, permit, fund, or implement are not likely to jeopardize the continued existence of the listed threatened or endangered species. To comply with the ESA, a project applicant analyzes the project's effects on threatened and endangered species, as well as any critical habitat designated for any of the species. The applicant uses biological assessments that have been prepared for the Project, as well as any documents pertaining to the Project's effects on listed species and designated critical habitat. If a listed species may be adversely affected by a project, SWRCB staff will confer with the USFWS, and/or National Marine Fisheries Service (NMFS) to inform these agencies of project impacts to any federally listed species or critical habitat. If USFWS/NMFS and SWRCB staff determine the project will adversely impact a federally listed species or designated critical habitat, formal consultation is initiated, where USEPA assumes the role as the lead agency.

National Historic Preservation Act

Federal agencies are required to determine a SRF project's significant impacts on historic properties pursuant to Section 106 of the National Historic Preservation Act (NHPA) and to initiate consultation with the Advisory Council on Historic Preservation. Historic properties are defined as historic-era buildings, archaeological sites, and traditional cultural properties. The USEPA delegates the SWRCB's Cultural Resource Officer the responsibility of carrying out NHPA Section 106 consultation.

Clean Air Act

The federal Clean Air Act (CAA) general conformity analysis is applied to all actions a federal agency intends to take in a nonattainment air basin where the criteria air pollutants do not meet National Ambient Air Quality Standards (NAAQS) and are subject to a maintenance plan. If a project does not meet NAAQS or is subject to a maintenance plan, the project must specifically analyze criteria pollutants including ozone, carbon monoxide, sulfur dioxide, lead, nitrogen dioxide, and inhalable particulate matter. If the project emissions are above the "de minimis" levels, a conformity determination must be made if the proposed facilities are sized to meet current population prediction needs found in an approved air quality State Implementation Plan. The conformity determination must include detailed descriptions of the proposed capacity increase calculations. If it is determined that project emissions are below "de minimis" levels and result in less than 10% of the nonattainment or maintenance area emissions inventory, a general conformity analysis is not needed.

2.4 NOTICE OF PREPARATION/EARLY CONSULTATION

SBMWD filed a "Petition for Change for Owners of Waste Water Treatment Plants" with the State Water Resources Control Board (SWRCB) on April 22, 2010 (Petition revised June 7, 2010), pursuant to Water Code Section 1211 (and in accordance with Water Code Sections 461, 13500 e*t seq*. and 13575 *et seq*.) to decrease current tertiary discharge from the Rapid Infiltration and Extraction Facility (RIX) to the Santa Ana River from approximately 35.7 mgd (40,000 acre-feet per year) to approximately 11.9 mgd (13,300 acre-feet per year).[1] The Petition for Change proposes the "reuse of recycled water in [SBWMD's] service area and the marketing of surplus recycled water to water agencies outside the SBMWD service area." The "change" that would result from approval of this Petition includes the "place of use" and the "purpose of use" of SBMWD's existing and future effluent. The Petition elicited four response letters from stakeholders including the United States Fish and Wildlife Service, California Department of Fish and

[1] City of San Bernardino Municipal Water Department, April 22, 2010, "Petition for Change: For Owners of Waste Water Treatment Plants" (WW0059). http://www.waterboards.ca.gov/waterrights/water_issues/programs/applications/petitions/2010.shtml. Accessed on March 1, 2012.

Wildlife (Formerly California Department of Fish and Game), the Center for Biological Diversity, and East Valley Water District. These letters requested, in part, that SBMWD formally analyze potential changes to discharge regimes and the resulting downstream impacts to the Santa Ana River. These comments helped to further refine the impact areas that would be analyzed as part of the environmental document and can be found in Appendix 10.1, *Public Scoping*.

Pursuant to CEQA, the discussion of potential effects on the environment is focused on those impacts that the lead agencies have determined may be potentially significant. On November 5, 2014, SBMWD issued a Notice of Preparation (NOP) (Appendix 10.1.1) to inform agencies and the general public that an EIR was being prepared and invited comments on the scope and content of the document and participation at a public scoping meeting held November 19, 2014. The NOP was distributed to Federal agencies, responsible and trustee agencies, interested parties and organizations. The NOP was circulated through December 8, 2014, beyond the CEQA-required 30 day circulation period.

The Bureau of Reclamation (Reclamation) issued a Notice of Intent (NOI) (Appendix 10.1.2) to inform agencies and the general public that a joint EIS/EIR was being considered and invited comments on the scope and content of the EIS. The NOI was published in the *Federal Register*, Vol. 80, No. 25, on February 6, 2015.

Through continued Project refinement, and consultation with Reclamation, it was determined that the appropriate environmental document was a CEQA-Plus Program EIR, rather than a joint EIR/EIS. SBMWD may pursue a separate NEPA document at a later date should additional federal funding or regulatory permits require NEPA compliance. Refer to Section 2.3, *Compliance with SRF CEQA-Plus*, for additional details.

Appendix 10.1.2 of this Draft EIR contains the Scoping Summary Report with a table listing the substantive comments on the NOI and NOP, as well as copies of the comment letters. Public participation during the scoping meeting was limited to two other water districts asking general questions. No environmental concerns were voiced.

This Draft EIR includes an evaluation of 10 environmental resource areas and other CEQA-mandated issues (e.g., cumulative impacts, growth-inducing impacts). The 10 environmental issue areas are as follows:

- Aesthetics, Light, and Glare
- Air Quality, Energy, and Greenhouse Gas Emissions
- Biological Resources
- Cultural Resources
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Land Use and Planning
- Noise and Vibration
- Recreation
- Transportation

Mandatory Findings of Significance

Based on significance criteria, the effects of the Project have been categorized as either “no impact”, “less than significant impact,” “less than significant with mitigation incorporated,” or “significant unavoidable

impact" (refer to Section 4.1, *Environmental Analysis)*. Mitigation measures are recommended for potentially significant impacts, to avoid or lessen impacts. In the event the project results in significant impacts with implementation of mitigation measures, the decision-makers are able to approve the project based on a "Statement of Overriding Considerations." This determination would require the decision-makers to provide a discussion of how the benefits of the project outweigh identified unavoidable impacts. The State *CEQA Guidelines* Section 15093 provide in part the following:

a) CEQA requires that the decision-maker balance the benefits of a proposed project against its unavoidable environmental risks in determining whether to approve the project. If the benefits of the project outweigh the unavoidable adverse environmental effects, the adverse environmental effects may be considered "acceptable."

b) Where the decision of the public agency allows the occurrence of significant effects that are identified in the Final EIR but are not mitigated, the agency must state in writing the reasons to support its action based on the Final EIR and/or other information in the record. This statement may be necessary if the agency also makes the finding under Section 15091 (a)(2) or (a)(3) of the CEQA Guidelines.

c) If an agency makes a Statement of Overriding Considerations, the statement should be included in the record of the project approval and should be mentioned in the Notice of Determination.

2.5 FORMAT OF THE EIR

It is the intent of this EIR to enable SBMWD and other responsible agencies and interested parties to evaluate the environmental impacts of the Project (refer to Section 3.6, *Permits and Approvals*, for a list of responsible agencies having permit approval responsibilities for the Project). It is the intent of this EIR to provide environmental clearance for the Project, such that SBMWD will be able to utilize this EIR to satisfy CEQA and CEQA-Plus requirements for project-related permits or approvals.

The Draft EIR is organized into nine sections:

Section 1.0 *Executive Summary*, provides a brief Project description and summary of the environmental impacts, and the mitigation measures proposed to reduce each impact.

Section 2.0 *Introduction and Purpose*, provides CEQA compliance information.

Section 3.0 *Project Description*, provides the Project location, background and history, environmental setting (including on and offsite use), Project characteristics, Project objectives, Project phasing, and permits and approvals that are required for the Project.

Section 4.0 *Environmental Analysis Methodology,* discusses the existing conditions for each environmental issue area. This section describes the methodology for significance determination; identifies short-term and long-term environmental impacts of the Project; recommends feasible mitigation measures to reduce the significance of impacts; and identifies areas of significant unavoidable impacts after mitigation. This section also discusses cumulative impacts resulting with the proposed Project, in combination with other projects in the vicinity.

Section 5.0 *Other CEQA Considerations*, summarizes the significant irreversible environmental changes that would be involved in the proposed Project should it be implemented. It also discusses the Project's significant environmental changes that would result from the Project and growth-inducing impacts.

Section 6.0 *Alternatives to the Proposed Action*, describes alternatives to the Project, some of which may be considered during Project deliberations, and analyzes impacts for each resource by alternative.

Section 7.0 *Effects Found Not to Be Significant*, explains potential impacts that were determined not to be significant in the Expanded NOP and throughout the EIR process.

Section 8.0 *Bibliography*, identifies reference sources utilized for the EIR.

Section 9.0 *List of Preparers*, identifies the lead and responsible agencies, preparers of the EIR, and other organizations and individuals consulted during the preparation of the EIR.

2.6 RESPONSIBLE AND TRUSTEE AGENCIES

2.6.1 LEAD AGENCY

City of San Bernardino Municipal Water Department (SBMWD)

For this Project, SBMWD is the lead agency under CEQA and the proponent of the Project. This Draft EIR has been prepared in accordance with Public Resources Code [PRC] Section 21000 *et seq*. and the State CEQA Guidelines (California Code of Regulations Section 15000 *et seq*.). CEQA requires lead agencies to consider potential environmental effects that may occur with implementation of a project and to avoid or substantially lessen significant effects to the environment when feasible. When a project may have a significant effect on the environment, the agency with primary responsibility for carrying out or approving the project (the lead agency) is required to prepare an EIR.

2.6.2 TRUSTEE, RESPONSIBLE AND COOPERATING AGENCIES

Other federal, State, and local agencies are involved in the review and approval of the proposed action, including trustee and responsible agencies under CEQA. Under CEQA, a trustee agency is a State agency that has jurisdiction by law over natural resources that are held in trust for the people of the State of California. Also, under CEQA, a responsible agency is an agency other than the lead agency that has legal responsibility for carrying out or approving a project or elements of a project (Public Resources Code Section 21069).

Responsible and trustee agencies are consulted by the CEQA lead agency to ensure the opportunity for input and also review and comment on the Draft EIR. Responsible agencies also use the CEQA document in their decision-making. Several agencies other than SBMWD will require permits, approvals, and/or consultation in order to implement various elements of the Project, including:

Federal Agencies

- U.S. Army Corps of Engineers (USACE)
- U.S. Environmental Protection Agency (EPA)
- U.S. Fish and Wildlife Service (USFWS)
- U.S. Bureau of Reclamation

State Responsible Agencies

- Santa Ana Regional Water Quality Control Board (SARWQCB)
- California Department of Transportation (Caltrans)
- State Water Resources Control Board (SWRCB) Division of Water Rights
- SWRCB Division of Drinking Water

State Trustee Agency

- California Department of Fish and Wildlife

Local and Regional Agencies

- County of San Bernardino Public Works Department
- San Bernardino Valley Municipal Water District
- East Valley Water District
- San Bernardino County Flood Control District
- South Coast Air Quality Management District
- Local Agencies (encroachment permits)
- San Bernardino Valley Water Conservation District
- City of Riverside

2.7 INCORPORATION BY REFERENCE

In accordance with State *CEQA Guidelines*, Section 15150, this EIR incorporates by reference the following documents:

City of San Bernardino General Plan (2005)

The *City of San Bernardino General Plan* is a policy-planning document that provides a long-term outlook for the future growth of the City of San Bernardino. The *City of San Bernardino General Plan* study area takes into consideration areas outside the City's current City limits and its Sphere of Influence (SOI), in recognition of the interrelationships between land use and other issues affecting the City and surrounding lands. The General Plan identifies issues pertaining the physical development within the City's jurisdiction, including general locations, timing, and extent of land uses and supporting infrastructure, as well as social concerns. Information contained within the General Plan was incorporated herein, because it is the primary source for City policies, objectives, and citywide planning analysis. The City of San Bernardino recently updated its General Plan Housing Element in 2013, and can be accessed online at **http://www.sbcity.org/cityhall/community_development/planning/planning_documents.asp**.

Location: City of San Bernardino, Community Development Department – 300 N. "D" Street, Third Floor, San Bernardino, California 92418.

City of San Bernardino EIR (2005)

The *City of San Bernardino General Plan Environmental Impact Report (EIR)* summarizes potential environmental impacts associated with the implementation of the *City of San Bernardino General Plan*, and is guided by the General Plan's Vision Statement and Key Strategies, which describe the direction of

the General Plan policies and community's future vision. Information from the *General Plan EIR* is incorporated herein, as it contains intensive information concerning impacts associated with the implementation of City policies and objectives. This impact analysis is pertinent to the Clean Water Factory Project EIR, because it includes impacts that will occur within the project area due to the implementation of the General Plan. The *General Plan EIR* is available online at: **http://www.sbcity.org/pdf/DevSvcs/General%20Plan%20Document.pdf**.

Location: City of San Bernardino, Community Development Department – 300 N. "D" Street, Third Floor, San Bernardino, California 92418.

County of San Bernardino General Plan (2007)

The *County of San Bernardino General Plan* contains policies and programs intended to underlie the County's land use decisions. The *County of San Bernardino General Plan* functions to guide future development, facilitate economic development, enhance neighborhoods and commercial areas, and ensure adequate infrastructure and community facilities to support anticipated County population growth. The County of San Bernardino addresses the seven CEQA-mandated elements of a general plan in addition to one optional element: Economic Development. The General Plan was adopted in July 1989 and was most recently amended in April 2007. The *County of San Bernardino General Plan* is used as the primary planning consistency document for the Project components located within County jurisdiction. This document is available online at **http://www.sbcounty.gov/Uploads/lus/GeneralPlan/FINALGP.pdf**.

Location: County of San Bernardino, Land Use Services Department—385 North Arrowhead Avenue, 1st floor, San Bernardino, California 92415.

County of San Bernardino General Plan EIR (2007)

The *County of San Bernardino General Plan EIR* summarizes potential environmental impacts associated with the implementation of the *County of San Bernardino General Plan*, including growth-inducing and cumulative impacts. Information from the *General Plan EIR* is incorporated herein, as it contains extensive information concerning impacts associated with the implementation of County policies and objectives. This impact analysis is pertinent to the Clean Water Factory Project EIR, because it includes impacts that will occur within the Project area due to the implementation of the General Plan. This document is available online at **http://www.sbcounty.gov/Uploads/lus/GeneralPlan/FinalEIR2007.pdf**.

Location: County of San Bernardino, Land Use Services Department—385 North Arrowhead Avenue, 1st floor, San Bernardino, California 92415.

Southern California Association of Governments Regional Comprehensive Plan (2008)

Southern California Association of Government's (SCAG) *2008 Regional Comprehensive Plan (RCP)* addresses regional issues such as housing, traffic/transportation, water, and air quality. The RCP serves as an advisory document to local agencies in the Southern California region for their information and voluntary use in preparing local plans and handling local issues of regional significance. The RCP presents a vision of how Southern California can balance resource conservation, economic vitality and quality of life. The RCP identifies voluntary best practices to approach growth and infrastructure challenges in an integrated and comprehensive way. It also includes goals and outcomes to measure progress toward a more sustainable region. The Regional Comprehensive Plan is available online at: **https://www.scag.ca.gov/NewsAndMedia/Pages/RegionalComprehensivePlan.aspx**.

Location: Southern California Association of Governments—818 West 7th Street, 12th Floor, Los Angeles, California 90017.

Southern California Association of Governments Regional Transportation Plan/Sustainable Communities Strategy Plan (2012)

On April 4, 2012, SCAG's Regional Council adopted the landmark 2012-2035 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS): Towards a Sustainable Future. The 2012-2035 RTP/SCS provides goals for the long-range plan, identifies key transportation investments to address the growing population in the region and strategies to reduce traffic congestion and greenhouse gas emissions. The SCS is a new element of the long-range plan that demonstrates the integration of land use, transportation strategies, and transportation investments within the Plan. The RTP/SCS is updated every four years to reflect changes in economic trends, state and federal requirements, progress made on projects and adjustments for population and jobs. Transportation projects must be included in the RTP in order to qualify for federal and state funding.

SCAG reviews environmental documents for regionally significant projects for their consistency with the adopted RTP/SCS. Specific RTP/SCS goals applicable to the proposed Project, as identified by SCAG, are listed in the Project impacts discussion of this Section, along with a discussion of the Project's consistency with each of these goals. SCAG is currently developing the 2016-2040 RTP/SCS which is scheduled to have an adoption date of April 2016. The current RTP/SCS is available online at: **http://rtpscs.scag.ca.gov/Documents/2012/final/f2012RTPSCS.pdf**.

Location: Southern California Association of Governments—818 West 7th Street, 12th Floor, Los Angeles, California 90017.

Upper Santa Ana River Watershed Integrated Regional Water Management Plan Report (January 2015)

The Upper Santa Ana Water Resources Association members prepared this Integrated Regional Water Management Plan (IRWMP). The plan concentrates on water management issues for users within the Upper Santa Ana River Watershed. The purpose of the plan is to fulfill current water management requirements while developing water supply reliability and furthering the use of local and imported resources. Implementation of this IRWM Plan will assist the region with optimizing the management and use of water resources in the region while protecting water quality from degradation. Information contained within the IRWMP was incorporated herein, because it is the primary source for water planning information for San Bernardino Valley Municipal Water District and its member agencies.

Location: San Bernardino Valley Municipal Water District – 380 East Vanderbilt Way, San Bernardino, CA 92408

Additional documents cited in the Draft EIR are noted in the applicable EIR section, including extensive additional policy planning, regulatory, and CEQA documents that provide context and impact analysis with respect to cumulative impacts within the Upper Santa Ana River watershed.

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Section 3.0
Project Description

Section 3.0
Project Description

3.1 PROJECT OVERVIEW

The Clean Water Factory Project (Project), proposed by the City of San Bernardino Municipal Water Department (SBMWD), would add tertiary/advanced wastewater treatment facilities at the San Bernardino Water Reclamation Plant (SBWRP), as well as recycling at the Rapid Infiltration and Extraction (RIX) Facility, for the purpose of providing tertiary/advanced treated recycled water to direct use customers, and existing and potential future groundwater recharge basins.

The Project would include facility improvements of the SBWRP, multiple alternative pipeline alignments for treated water conveyance, additional disinfection processes at the RIX Facility, pump station and water storage infrastructure, and potential delivery to existing alternate recharge basins, and/or direct use customers. The Project would reduce SBMWD's dependence on imported water supplies by incorporating a reliable, sustainable, and local source of water to SBMWD's existing water supply portfolio. The Project would aid SBMWD in meeting future projected water demands through methods that uphold the groundwater management obligations of the Western Judgment. By adding advanced treatment at the SBWRP, the Project would reduce the amount of secondary treated effluent currently conveyed to and treated at the RIX Facility.

The volume of water currently discharged from the RIX Facility to the Santa Ana River (SAR) would be reduced under the Project, as treated water is delivered instead to existing and potential future direct use customers and recharge basins.

3.1.1 PROJECT LOCATION

The Project area for this EIR includes areas that may be affected directly, indirectly, or cumulatively by Project implementation, as described in each EIR impact section under the Affected Environment sections. The Project Area has been broadly defined to ensure evaluation of potential impacts within all areas that would be affected by, and benefit from, Project implementation.

Regional Location

The Project is generally located east of Interstate 215 and north of Interstate 10 in the City of San Bernardino, San Bernardino County, California (Exhibit 3.0-1, *Regional Location Map*). The Project site is located within the San Bernardino North and San Bernardino South quadrangles of the United States Geological Survey's (USGS) 7.5-minute topographic map series in an un-sectioned area of Townships 1 north and 1 south, Range 4 west (Exhibit 3.0-2, *Project Vicinity Map*). The Project area is predominantly located within the City of San Bernardino, approximately 60 miles east of the City of Los Angeles in the upper SAR Valley Watershed; see Exhibit 3.0-2, *Project Vicinity Map*.

Project Area

Exhibit 3.0-3, *SBMWD Service Area and Groundwater Basins*, depicts the area where the Conveyance Facility Corridor is located within the San Bernardino Basin Area (SBBA). As depicted, the proposed Conveyance Facilities would be entirely within the SBBA and would lie above the Bunker Hill Basin, specifically above the Bunker Hill-A and Bunker Hill-B groundwater management zones. As also depicted

in Exhibit 3.0-3, the proposed Conveyance Facilities would be predominantly within the SBMWD service area. The Conveyance Facility corridor would be roughly bounded by South E Street to the west, West Hospitality Lane to the south, North Tippecanoe Avenue to the east, and the San Bernardino National Forest to the north.

Exhibit 3.0-3 also depicts the Conveyance Facility Corridor, existing facilities (see discussion below), and Pipeline Alignment Options. Aerial maps of the existing and proposed facilities are provided in Exhibit 3.0-4, *Recycled Water System Conveyance Alternatives (Southerly Portion*), Exhibit 3.0-5, *Recycled Water System Conveyance Alternatives (Northerly Portion)*, and Exhibit 3.0-6, *Recycled Water System Conveyance Alternatives (East-West Pipelines)*. The Conveyance Facilities Corridor is shown in a north/south configuration, extending approximately 7.5 miles.

The Project Area's existing facilities include (see Exhibits 3.0-3, 3.0-4, 3.0-5, and 3.0-6):

- Rapid Infiltration and Extraction (RIX) Facility: The RIX Facility is located approximately four miles southwest of the SBWRP, along the SAR.
- San Bernardino Water Reclamation Plant: The SBWRP is located just north of the confluence of the East Twin Creeks and the SAR, at 399 Chandler Place, San Bernardino.
- Waterman Basins and East Twin Creek Spreading Grounds: The recharge basins are located at the northern extent of the Conveyance Facility Corridor, east of Waterman Avenue, generally north and south of E 40th Street.
- Chino Basin: The Chino Basin is located in close proximity to the RIX Facility and would provide additional recharge capabilities.
- Conveyance Facilities: The Project Study Area contains a number of existing pipelines and other conveyance facilities that may be used by the Project, including existing reclaimed water pipelines and distribution infrastructure for direct use customers, conveyance pipelines for recharge basins, as well as other infrastructure.

3.1.2 ENVIRONMENTAL SETTING

City of San Bernardino Municipal Water Department

The SBMWD was formed as a municipal utility by Article 9 of the City of San Bernardino Charter, as adopted on January 6, 1905. SBMWD has a potable water service area of approximately 45-square miles, and provides water to roughly 195,000 individuals throughout the City of San Bernardino as well as unincorporated areas of San Bernardino County. The SBMWD service area is bounded by the San Bernardino National Forest to the north, by East Valley Water District and Redlands Municipal Utilities Department to the east, by the cities of Loma Linda and Colton to the south, and by West Valley Water District, the City of Rialto, and the Muscoy Mutual Water Company to the west.[1] The SBMWD currently produces all of its own water supplies from groundwater wells supplied by the Bunker Hill Groundwater Basin within the San Bernardino Basin Area.

New facilities required for this Project would be constructed within the SBMWD service area, above the Bunker Hill Basin.

[1] *2010 San Bernardino Valley Regional Urban Water Management Plan*, Chapter 10: San Bernardino Municipal Water Department, Page 10-1, September 2012.

Santa Ana River

The Project area falls within Region 8 (Santa Ana Region) of the California Regional Water Quality Control Board (RWQCB). The Santa Ana River (SAR) is the largest stream system in Southern California. It begins high in the San Bernardino Mountains where snowmelt and rainfall flow more than 100 miles southwesterly to discharge into the Pacific Ocean between Newport Beach and Huntington Beach. The SAR watershed covers over 2,650 square miles of urban, rural, agricultural, and forested terrain and the more populated urban areas of San Bernardino, Riverside, and Orange Counties, as well as a small portion of Los Angeles County. The SAR has a number of tributaries in the vicinity of San Bernardino that contribute flow to the main stem of the river including Lytle Creek, East Twin Creek, East Warm Creek, Plunge Creek, and San Timoteo Creek.

The SBWRP currently conveys secondary-treated effluent to the RIX Facility for tertiary treatment. From the RIX Facility, tertiary-treated water then discharges into Reach 4 of the Santa Ana River. The river passes under several major highways and railroads in this area, and parts of the river bottom are lined with concrete. West Warm Creek, fully improved by the United States Army Corps of Engineers (USACE) for flood control, also joins the SAR in this area.

The main stem of the Santa Ana River is divided into six reaches. Each reach is as follows:

- **Reach 6** includes the river upstream of Seven Oaks Dam. Flows consist largely of snowmelt and storm runoff.
- **Reach 5** extends from Seven Oaks Dam to San Bernardino, to the San Jacinto Fault (Bunker Hill Dike), which marks the downstream edge of the Bunker Hill groundwater basin. Most of this reach tends to be dry, except as a result of storm flows, and the channel is largely operated as a flood control facility. The extreme lower end of this reach includes rising water and intermittently, San Timoteo Creek flows.
- **Reach 4** includes the river from the Bunker Hill Dike down to Mission Boulevard Bridge in Riverside. That bridge marks the upstream limit of rising water induced by the flow constriction in the Riverside Narrows. Until about 1985, most water in the reach percolated to the local groundwater leaving the lower part of the reach dry. However, flows in the lower end of this reach may now intermittently contain rising groundwater, and discharge from RIX and the Rialto wastewater treatment plant.
- **Reach 3** includes the river from Mission Bridge to Prado Dam. In the Narrows, rising water feeds several small tributaries (Sunnyslope Channel, Tequesquite Arroyo, and Anza Park Drain) which could be important breeding and nursery areas for the native fish. Temescal, Chino, and Mill/Cucamonga Creeks in Prado Basin are also important river tributaries.
- **Reach 2** carries all the upstream flows down through Santa Ana Canyon to Orange County where as much of the water as possible is recharged into the Orange County groundwater basin. The downstream end of the forebay/recharge area and, therefore, the ordinary limit of surface flows, is at 17th Street in Santa Ana.
- **Reach 1** is a normally dry flood control facility, presently being expanded and improved even further as a part of the US Army Corps of Engineers' Santa Ana River Project. This reach extends from 17th Street to the tidal prism at the ocean.

The Project area is located near regulatory Reaches 4 and 5 of the Santa Ana River.

3.1.3 BACKGROUND AND HISTORY

The Western and Orange County Judgments

The Western Judgment, entered simultaneously with the Orange County Judgment, settled rights within the upper Santa Ana River watershed to ensure that those resources would be sufficient to meet the flow obligations in the lower Santa Ana River watershed set by the Orange County Judgment (Western Municipal Water District of Riverside County v. East San Bernardino County Water District, Superior Court of Riverside County, Case No. 78426 [April 17, 1969]). Toward this end, the Western Judgment generally provides for:

- A determination of safe yield of the San Bernardino Basin Area (SBBA);
- Establishment of specific amounts (64,862 acre feet (AF)) of water that can be extracted from the SBBA by plaintiff parties (parties in Riverside County). This is equal to 27.95 percent of safe yield (safe yield is set at 232,100 acre feet per year (AFY), 27.95 percent of this is 64,862 AF);
- An obligation of San Bernardino Valley Municipal Water District (Valley District) to provide replenishment for any extractions from the SBBA by non-plaintiffs (entities in the Valley District service area) in aggregate in excess of 72.05 percent of safe yield (safe yield is set at 232,100 AFY, 72.05 percent of this is 167,238 AF);
- An obligation of Western Municipal Water District of Riverside County (Western) to replenish the Colton and Riverside basins if extractions for use in Riverside County in aggregate exceed certain specific amounts; and
- An obligation of Valley District to replenish the Colton and Riverside basins if water levels are lower than certain specific water level elevations in specified wells.

The Orange County Judgment imposes a physical solution that requires parties in the upper Santa Ana River watershed to deliver a minimum quantity of water to points downstream including Riverside Narrows and Prado Dam. A provision of the Orange County Judgment related to conservation establishes that, once the flow requirements are met, the Upper Area parties "may engage in unlimited water conservation activities, including spreading, impounding, and other methods, in the area above Prado Reservoir."

Although SBMWD is not a party to the Western Judgment and Orange County Judgment,[2] these two rulings have significant influence on Upper Santa Ana River water management and help to dictate how water resources in the Upper Santa Ana River are managed.

Variations in Water Supply

Southern California is facing an unprecedented water crisis. This crisis stems from the impacts of climate change, continuing population growth, severe drought on the Colorado River Basin and the threat of failing levees and endangered species issues in the Bay Delta. These conditions are severely testing the

[2] The City of San Bernardino was dismissed pursuant to stipulated dismissals with other parties from the Orange County case. As a condition of dismissal, the City agreed to the physical solution ordered under the Judgment, and to perform on its April 10, 1969 agreement with Valley District to continue discharging at least 16,000 acre-feet of effluent each year from the City's treatment plants to the Santa Ana River. The Western Judgment requires that Valley District shall keep that 1969 agreement with the City in place. In any event, even with the Clean Water Factory Project fully implemented, a substantial quantity of treated wastewater and extracted groundwater will continue to be discharged from the RIX facility to the Santa Ana River, and in excess of the 16,000 acre-foot annual amount required under the City's 1969 agreement with Valley District.

region's ability to provide clean water, both now and in the future. In its 2009 Recycled Water Policy statement, the SWRCB encouraged local and regional water agencies to move toward local water sustainability by emphasizing water recycling, water conservation, improved maintenance of supply infrastructure and the capture and use of stormwater and dry-weather urban runoff.[3]

The *2015 Upper Santa Ana River Watershed Integrated Regional Water Management Plan* (January 2015) indicates climate change could deeply impact water supplies due to changes in temperature and precipitation by:

- Decrease in precipitation;
- Less frequent but more intense storms;
- Higher temperatures;
- Potential challenges related to capturing stormwater during more intense storms;
- Water quality impacts due to more frequent and intense wildfires;
- Degraded water quality and aquatic habitat impacts due to higher temperatures;
- Flood system impacts related to more intense storms; and
- Increased irrigation demand due to higher temperatures.

The San Bernardino Valley utilizes a mix of water resources, including water imported from the State Water Project (SWP), local surface water, and groundwater. Because of future water supply reliability issues, recycled water is becoming a growing component of water supply. Many of these sources will be affected, directly and indirectly, by climate change. According to the studies conducted as a result of Executive Order S-3-05, which included six different global climate change models for a total of 12 scenarios, climate change has already been observed in rising temperatures and greater variance in precipitation with extreme in both heavy flooding and droughts. As outdoor water use is already a large component of San Bernardino water demands, these demands are expected to increase and place more pressure on the water supply system and its reliability.

As discussed throughout the *Upper Santa Ana Watershed Integrated Regional Water Management Plan* (January 2015), the IRWMP Region is highly dependent on its local water supplies, particularly precipitation stored as groundwater, which provides approximately 67 percent of supplies during average years and over 70 percent of supplies during drought years. During wet years, the Watershed captures rain water to the largest extent possible for usage at a later date. Nonetheless, the IRWMP region also relies on imported water to meet between 13 and 16 percent of its demands. Both the dependence on rain water and imported water are outlined as potential issues due to impacts of climate change and extended times of drought and the increasing lack of reliability of imported water sources.

Currently, SBMWD relies completely on groundwater from the Bunker Hill Groundwater Basin to meet the water supply needs of its service area. However, the Bunker Hill Basin is presently in a condition of groundwater depletion and, as described above, future demand is expected to increase over time.

[3] State Water Resources Control Board, 2009, *Recycled Water Policy,* approved May 14, 2009.

Project History

Due to the extended drought in California, limitations on SWP supplies, the current groundwater depletion of the Bunker Hill Basin, and compliance with SBX-7,[4] SBMWD faces the challenge of satisfying its anticipated water demands. To meet this challenge, SBMWD commissioned a Recycled Water Planning Investigation Report (Wildermuth Environmental, Inc., 2010) to assess the feasibility of using recycled water to augment its water supply.

SBMWD owns and operates the SBWRP. SBMWD and the City of Colton are members of a Joint Powers Agency that own and operate the RIX Facility. Currently, the SBWRP treats approximately 22 million gallons per day (mgd) of raw wastewater from the City of San Bernardino, the City of Loma Linda, and the East Valley Water District to secondary standards.[5] SBWRP conveys this secondary-treated effluent to the RIX facility for tertiary treatment[6] and then discharges it to the Santa Ana River (SAR). The City of Colton conveys an additional 5.3 mgd of secondary-treated effluent to the RIX facility for tertiary treatment and discharge to the SAR. RIX currently discharges approximately 31.3 mgd to the SAR. This volume of discharge includes the wastewater treated at the RIX Facility and groundwater that is extracted (over-extraction) from below the RIX facility. Over-extraction rates have varied from when the RIX facility first went into operation in 1996, to present day (over-extraction has ranged from over 40% to approximately 5%, or from over 12.6 MGD to approximately 2.5 MGD).

In the Recycled Water Planning Investigation Report, a range of recycled water reuse alternatives were developed. These alternatives included a variety of different treatment technologies, conveyance systems, and reuse. The feasibility of different treatment and reuse alternatives was also explored. SBMWD subsequently prepared a Preliminary Design Report (Appendix 10.2.2) to evaluate WRP improvements and recommended conveyance, reuse, and recharge options to utilize the advanced treated wastewater. This investigation led to the selection of a set of options that are discussed and evaluated in this EIR. To ensure that potential environmental impacts of the Project are considered, a comprehensive and programmatic approach is taken in this EIR to evaluate various Project implementation options.

SBMWD filed a "Petition for Change for Owners of Waste Water Treatment Plants" with the SWRCB on April 22, 2010 (Petition revised June 7, 2010), pursuant to Water Code Section 1211 (and in accordance with Water Code Sections 461, 13500 e*t seq*. and 13575 *et seq*.) to decrease current tertiary discharge from the RIX facility to the SAR from approximately 35.7 mgd (40,000 acre-feet per year) to approximately 11.9 mgd (13,300 acre-feet per year).[7,8] The Petition for Change proposes the "reuse of recycled water in [SBWMD's] service area and the marketing of surplus recycled water to water agencies outside the SBMWD service area." The "change" that would result from approval of this Petition includes the "place of use" and the "purpose of use" of SBMWD's existing and future effluent.

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4 SBX-7 requires urban water retailers to reduce per capita water demands by 10 percent by 2015 and by 20 percent by 2020, with that reduction measured against a specified per capita baseline.

5 Secondary treatment is a treatment process for wastewater to achieve a certain degree of effluent quality by using a wastewater treatment plant with physical phase separation to remove settleable solids and a biological process to remove dissolved and suspended organic compounds. After this kind of treatment, the wastewater may be called "secondary-treated wastewater."

6 The purpose of tertiary treatment (also called "advanced treatment") is to provide a final treatment stage to further improve the effluent quality before it is discharged to the receiving environment (sea, river, lake, wet lands, ground, etc.).

7 City of San Bernardino Municipal Water Department, April 22, 2010, *Petition for Change: For Owners of Waste Water Treatment Plants* (WW0059), www.waterboards.ca.gov/waterrights/water_issues/programs/applications/petitions/2010.shtml. Accessed on March 1, 2012.

8 Volumes represent the average RIX discharge in 2009/2010, the projected wastewater available for recycling due to growth over a 20-year period, and over-extraction.

SBMWD has further refined the proposed Project through the NOP Public Scoping efforts, as well as through participation in the recent recycled water stakeholder meetings for the *Regional Recycled Water Concept Study*. The NOP Public Scoping efforts included a public outreach meeting that SBMWD, along with an extended NOP circulation period (refer to Section 2.4, *Notice of Preparation/Early Consultation*). Additionally, Valley District and several other local agencies are currently in the planning process for a *Regional Recycled Water Concept Study* for recycled water projects in the region (Refer to Section 4.1.3, *Cumulative Impact Analysis* (*Regional Recycled Water Supply Concept Study*)). These efforts have resulted in the Project refinements that are reflected below.

3.1.4 PROJECT OBJECTIVES

CEQA Guidelines Section 15124(b) requires that the project description contain a clear statement of the project objectives, including the Project's underlying purpose.

Project Objectives

The following basic Project objectives were developed during the Project's early planning and public scoping phases.

- Reduce SBMWD's dependence on imported water and establish a safe, reliable, sustainable source of potable water in light of current and potential future drought conditions;
- Reduce the need for SWP water to replenish local groundwater basins by providing an alternate source of recycled, Title 22 treated water;
- Maximize the availability of recycled water to local users;
- Allow SBMWD to effectively address the groundwater replenishment obligations of the Western Judgment; and
- Minimize risk to existing and potential future supply reliability and system operations associated with imported water, regulatory requirements, and other factors.

3.2 PROJECT COMPONENTS

The Clean Water Factory Project consists of the following key components. Each component is addressed in detail in the following section. Key features of each component have been summarized in Table 3.0-1, *Summary of Project Components*, below. Additional information may be found in Appendix 10.2.2, *Preliminary Design Report*.

Table 3.0-1: Summary of Project Components[1]

Component	Proposed Features
RIX Phased Discharge Reduction	▪ Effluent from the RIX facility to the SAR would be reduced by up to 17.9 MGD through the implementation of a phasing plan in order to allow the gradual reduction of flow into the SAR. The SBWRP would retain flows that would normally continue to the RIX Facility; they would be treated and conveyed for recharge or direct reuse.[2] ▪ The Project would involve minor updates to the RIX Facility under the Chino Basin recharge option. Updates would include the installation of a sodium hypochlorite (NaOCl) disinfection system, as well as storage and pumping facilities.

Table 3.0-1, continued

Component	Proposed Features
Water Reclamation Plant	▪ The San Bernardino Water Reclamation Plant (SBWRP) has an existing rated capacity of 33 MGD of secondary effluent, and currently treats 22 MGD; ▪ The SBWRP would be upgraded to provide enhanced treatment to meet projected 2035 demands of 33 MGD. Addition of up to 5 MGD of tertiary filtration/disinfection facilities to the SBWRP to provide a source of Title 22 water for potential direct use customers (i.e., parks, golf courses and other irrigation users) within the SBMWD service area; ▪ Addition of up to 15 MGD of advanced wastewater treatment facilities to provide a source of clean water for groundwater replenishment (indirect potable reuse); these treatment units may be phased in 5 MGD increments and could consist of a 5 MGD membrane bioreactor (MBR) expansion, a tertiary filtration process, a nano/reverse osmosis (RO) membrane treatment system and disinfection process using UV/advanced oxidation process (AOP) with post-treatment stabilization; and, ▪ Treatment improvements to reduce concentrated brine and/or increase product water available for recharge.
Conveyance and Storage Systems	▪ A system to convey advanced treated and/or recycled water to the recharge basins (Waterman Basins and the East Twin Creek Spreading Grounds and/or Chino Basin) for surface spreading, and to "target opportunity" customers for direct use applications near, or adjacent to, the conveyance alignment.
Direct Use Sites	▪ The proposed Project includes 5 MGD of tertiary water, treated at the SBWRP, for direct use by local municipal facilities and other recycled water users. ▪ Treated water may be conveyed through new conveyance pipelines to an existing Inland Empire Utilities Agency (IEUA) non-potable system for direct use by local municipal facilities and other recycled water users.
Recharge Basins	Existing Recharge Facilities within the SBMWD Service Area: ▪ Treated water from the SBWRP would be transported through conveyance pipelines to the existing East Twin Creek Spreading Grounds and the Waterman Basins. ▪ Treated water may be conveyed via existing pipelines to allow direct recharge into the Santa Ana River near the SBWRP. Existing Recharge Facilities Outside of the SBMWD Service Area: ▪ Treated water may be conveyed through new conveyance pipelines to existing IEUA recharge basins in the Chino Basin.

Notes:

1. SBMWD may also consider various project design alternatives addressed in Section 6.4, *Alternatives to the Proposed Project*. Refer specifically to Alternative 4, Project Variations Under Consideration.

2. Volumes represent the average RIX discharge in 2009/2010, the projected wastewater available for recycling due to growth over a 20-year period, and over-extraction.

3.2.1 RIX Phased Discharge Reduction

The Project would reduce secondary effluent from the SBWRP to the RIX Facility from approximately 22 MGD (current flow) to between 4 and 7 MGD over a period of 15 to 20 years. The Project would ultimately treat approximately 28 MGD to an advanced/tertiary level pursuant to State Water Resources Control Board Division of Drinking Water (DDW) and Regional Water Quality Control Board (RWQCB) requirements, and convey the advanced treated and/or recycled water to direct use customers or

Recharge Basins. Recycled water spread at the Recharge Basins would be used to recharge the Bunker Hill Groundwater Basin (specifically, the Bunker Hill-A groundwater management zone) as shown in Exhibit 3.0-3. The remainder of the secondary treated wastewater would continue to be conveyed from the SBWRP to the RIX Facility for tertiary treatment, and either discharged into the SAR or conveyed to the IEUA service area.

San Bernardino Water Reclamation Plant (SBWRP)

The Project includes an initial Pilot-Demonstration study to evaluate various purification technologies and a full-scale element based on Pilot study results. These options are shown in Table 3.0-2 below, along with the description of what each option would entail.

Table 3.0-2: Advanced Water Treatment Options

Option Number/Name	Option Description
Option A1 Conventional Tertiary Treatment	Secondary effluent from the existing SBWRP would be treated to "Title 22" standards. The treatment would consist of tertiary filtration, followed by chlorine disinfection. This option may require blending to dilute the water and meet Bunker Hill Groundwater Basin (specifically, Bunker Hill "A" Management Zone) water quality objectives for total dissolved solids (TDS) (310 mg/L) and total inorganic nitrogen (TIN) (2.7 mg/L).
Option A2 Micro/Nano-Filtration (MF/NF) Advanced Treatment	Option A2 would consist of full secondary effluent flow undergoing microfiltration MF/NF. Concentrate from the filtration process would be returned for further treatment in the WRP or discharged to the Inland Empire Brine Line (IEBL) pipeline. However, some blending may be required to meet the current DDW regulations and basin objectives.
Options A3 MF/NF Reverse Osmosis (RO) Advanced Treatment	Option A3 would consist of a combination of MF/NF and RO. Similar to Option A2, the secondary effluent would be treated with MF/NF, followed by a portion of the MF/NF effluent treated with RO. The NF/RO products would be blended to achieve water quality objectives of the Bunker Hill Groundwater Basin. Concentrate from the RO process would be discharged to the IEBL pipeline.
Option A4 MF/RO Advanced Treatment	Under Option A4, the highest quality effluent would be produced. The advanced treatment would consist first of MF followed by RO. Following the MF/RO process, permeate would be conveyed to a UV/Advanced Oxidation Process (AOP). Product water would be suitable for both direct use and groundwater recharge, and concentrate would be disposed of in the IEBL pipeline.
Option A5 Combined Conventional Treatment and MF/RO Advanced Treatment	Option A5 involves the same processes described in Options A1 and A4. However, wastewater processed under Option A1 would be conveyed to various end users for irrigation purposes; water produced under Option A4 would be provided under a separate conveyance system to spreading basins for recharge; and/or the water produced from both options could be blended and provided for reuse and recharge in a combined conveyance system.
Notes: * All facility modifications would take place within the SBWRP complex. For any of the above Options that include MF, a new MBR system could be constructed to replace the microfiltration process.	

3.2.2 CONVEYANCE AND STORAGE SYSTEMS

The EIR considers six primary Conveyance and Storage Scenarios, which represent possible overall Conveyance System configurations to deliver advanced treated and/or recycled water to: 1) direct use customers along the conveyance alignments for unrestricted irrigation uses in the SBMWD service area; and/or 2) Recharge Basins (i.e., the Waterman Basins and East Twin Creek Spreading Grounds, as well as the Chino Basin) for recharge by surface spreading. The six Conveyance Scenarios involve possible configurations of conveyance facilities involving single and dual pipelines. Each Conveyance Scenario could utilize different Alignment Options in which to locate transmission pipelines.

Four specific Alignment Options are considered within this EIR. The alignment options include potential variations that would allow the use of existing pipelines where possible. These scenarios are independent of each other. Therefore, overall there are more than 100 possible combinations of Conveyance Scenarios with pipeline Alignment Options, Conveyance Facility Site Options, and SBWRP improvement options. Additionally, other appurtenant water facilities would be necessary typical of water conveyance, including pump stations, valves, vaults, and monitoring or metering equipment. The Conveyance Scenarios, pipeline Alignment Options, and Conveyance Facility Site Options are described in greater detail in the *Clean Water Factory Project Recycled/Advanced Water Conveyance System Engineering Analysis Summary Report* (Appendix 10.2.2, *Preliminary Design Report*). The scenario/options that are ultimately selected would be identified as part of the final facilities design process, and would occur after the EIR is certified.

The key Project components analyzed in this EIR are described below.

Conveyance Scenarios

Conveying the treated wastewater from the SBWRP to the Waterman Basins and the East Twin Creek Spreading Grounds, and various end users would involve the following elements:

Table 3.0-3: Summary of Conveyance Components and Scenarios[1]

Conveyance Element	Element Details
Total Pipeline	approximately 100,000 linear feet (LF)
Pipeline sizes	20 to 36 inches in diameter
Number of Pipelines	1 or 2 pipes per alignment
Distribution piping sizes	8 to 16 inches in diameter and a single pipe
Conveyance Facility Configuration (includes pipelines, pump stations and storage reservoirs): *Any one of these different configurations of conveyance facilities including pipelines, pump stations, and storage reservoirs may be implemented in the final design phase.*	**Scenario 1** – A single pipeline conveyance system with two pump stations and three storage reservoirs.
	Scenario 2 – A single pipeline conveyance system with three pump stations and three storage reservoirs.
	Scenario 3 – A dual transmission pipeline conveyance system with three pump stations and three storage reservoirs.
	Scenario 4 – A dual transmission pipeline conveyance system with four pump stations and four storage reservoirs.
	Scenario 5 – A single pipeline conveyance system with one pump station and two storage tanks. Advanced treatment located offsite near the recharge basins.

Conveyance Element	Element Details
	Scenario 6 – A single pipeline conveyance system with one pump station and two storage tanks. Advanced treatment located offsite near the recharge basins.

Notes:
1. The conveyance scenarios contain general preliminary alignments that may be modified as final design is completed. All scenarios would accommodate recharge into the Waterman Basins and East Twin Creek Spreading Grounds.

To move treated effluent from the SBWRP to recharge basins and direct end users, pumping stations and storage tanks would be constructed at the SBWRP and/or along pipeline routes. Seven potential sites for the development of co-located reservoirs and pump stations were identified and are discussed below.

Pipeline Alignments Options

Each Conveyance Scenario described above could utilize different Alignment Options in which to locate transmission pipelines. Four specific Alignment Options are considered in this EIR. Table 3.0-4, below, describes each Alignment Option and outlines the estimated length, width, and area.

Table 3.0-4: Pipeline Alignment Options

Segment Number	Length (ft)	Width (ft)	Estimated Area (sq ft)	Description
Alignment Option 1				
1	1,400	35	49,000	Twin Creek Channel
5	6,220	34	211,480	Twin Creek Channel, Crossing Streets, Railroad Crossing
10	11,320	34	384,880	Twin Creek Channel, Street Crossing
18	5,600	25	140,000	Twin Creek Channel, Street Crossings, Perris Hill Park
24	10,660	41	437,060	Twin Creek Channel, Street Crossings, Highway SR-210 Crossing, East Twin Creek Spreading Grounds
27	3,260	--	0	Waterman Basins
Total	**38,460**	**--**	**1,222,420**	
Alignment Option 2				
1	1,400	35	49,000	Twin Creek Channel
2	900	40	36,000	West Orange Show Road
4	7,710	30	231,300	Arrowhead Avenue, Railroad Crossing
8	1,370	65	89,050	West Rialto Avenue
11	7,460	28	208,880	Sierra Way
13	1,930	70	135,100	East Baseline Street
14	1,590	70	111,300	East Baseline Street
17A	4,660	35	163,100	Crestview Avenue
17B	1,100	35	38,500	East 21st Street and Valencia Avenue
23	10,580	44	465,520	Valencia Avenue, Bridge over Highway 210
26	890	60	53,400	East 40th Street
27	3,260	--	0	Waterman Basins
Total	**42,850**	**--**	**1,581,150**	

Table 3.0-4, continued

Segment Number	Length (ft)	Width (ft)	Estimated Area (sq ft)	Description
Alignment Option 3				
1	1,400	35	49,000	Twin Creek Channel
2	950	40	36,000	West Orange Show Road
4	7,710	30	231,000	Arrowhead Avenue, Railroad Crossing
8	1,370	65	45,500	West Rialto Avenue
11	7,460	28	212,750	Sierra Way
13	1,930	70	66,500	East Baseline Street
16	5,310	16	84,000	Waterman Avenue
22	10,570	31	323,425	Waterman Avenue, Bride over Highway SR-210
25	1,890	60	54,000	East 40th Street
26	890	60	27,000	East 40th Street
27	3,260	--	0	Waterman Basins
Total	**42,740**	**--**	**1,330,760**	
Alignment Option 4				
Consists of Alignment Option 1 plus Alignment Option 2				

Notes:

1. The pipeline alignment options contain preliminary pipeline alignments that may be modified as final design is completed. All alignment options would accommodate recharge into the Waterman Basins and East Twin Creek Spreading Grounds.

Since the Conveyance Scenarios and Alignment Options are independent of each other, any of the four Alignment Options can be applied to any of the six Conveyance Scenarios. The conveyance pipeline Alignment Options are illustrated on Exhibit 3.0-4, *Recycled Water System Conveyance Alternatives (Southerly Portion)*, Exhibit 3.0-5, *Recycled Water Conveyance Alternatives (Northerly Portion),* and Exhibit 3.0-6, *Recycled Water System Conveyance System Alternatives (East-West Pipelines)*.

Precise alignments are subject to modification through the EIR, permitting, and final design process. For purposes of the environmental impact analyses, the following Project details are assumed (as maximums):

- Conveyance pipeline length: 87,700 linear feet;
- Storage tank capacity: 8.7 million gallons; and
- Pump: 3,650 HP.[9]

A future connection of the RIX Facility to the Chino Basin and IEUA's non-potable system could be provided. The future approximately ten-mile conveyance pipeline would generally be aligned along Riverside, Slover, Citrus, and Jurupa Avenues, conveying advanced treated wastewater to an existing recharge basin; see Exhibit 3.0-6, *Conveyance System Alternatives (East – West Pipelines)* and Exhibit 3.0-7, *Inter-Agency Conveyance Facilities*.

Pump Station/Storage Reservoir Site Options

Seven potential sites (A – G) for development of co-located reservoirs and pump stations, ranging in size from approximately 1 to 1.5 acres were identified; see Exhibit 3.0-5. Specific site layouts for each of the seven preferred sites were developed, based upon facility site requirements for a typical storage reservoir site, pumping station site, and combined storage reservoir/pumping station site.

[9] The assumed operational energy consumption associated with the pump is 23,980,500 kwh/yr (23,981 MWh/yr1).

Two potential areas for Pump Station/Storage Reservoir Sites were identified, depending on the conveyance scenario selected: at an intermediate location; or at a northern location. Different site options were identified for each location. For purposes of the environmental impact analyses, the following storage reservoir details are assumed (as maximums):

- Capacity (above-ground): 4.3 million gallons;
- Capacity (buried): 4.0 million gallons;
- Size (diameter): 157 feet;
- Height: 30 feet;
- Excavated volume: 39,775 cubic yards; and
- Grading volume: 4,412 cubic yard.

3.2.3 DIRECT USE SITES

The Project would treat effluent from the SBWRP to a quality approved for reuse and convey it to specific sites close to the conveyance pipelines for direct use applications. Prior to accepting recycled water from the SBWRP, direct use sites which presently operate independent of recycled water supplies would need to implement site improvements on their properties to comply with reuse regulations pursuant to CCR Title 22, Division 4, Chapter 3. Those improvements are unknown at this time but would be subject to CEQA compliance prior to approval. Direct use sites that irrigate or use recycled water are required to meet the following criteria:

(1) install dual plumbing (i.e., no physical connection is allowed between potable and non-potable conveyance systems);

(2) contain recycled water used on-site (i.e., ensure recycled water does not drain offsite);

(3) ensure a 50-foot irrigation buffer from domestic water supply wells;

(4) ensure a 100-foot buffer between impounded recycled water and domestic water supply wells;

(5) control recycled water spray, mist, or runoff from entering dwellings, designated outdoor eating areas, or food handling facilities; and

(6) post signs that inform visitors of recycled water use.

In addition, each direct use site would need to be listed in SBMWD's Master Recycling Permit prior to accepting recycled water.

Potential direct use types of sites identified in the *Recycled Water Planning Investigation Report* (Wildermuth Environmental, Inc., November 2010), as well as those identified within close proximity to the conveyance pipeline alignments, include golf courses, parks, schools, nurseries, cemeteries, public uses, and Caltrans; see Summary Report Appendix A Table A-1. A total of 60 potential types of sites were identified comprising a total gross area of approximately 936 acres.

Once the conveyance pipeline system is in place, SBMWD would have the opportunity to serve direct use customers. Distribution lines would be installed within existing street rights-of-way to connect customers to the conveyance pipelines where necessary and on an as-needed basis.

3.2.4 RECHARGE BASINS

Prior to accepting recycled water, the following site improvements would be needed at the Recharge Basins (i.e., Waterman Basins, East Twin Creek Spreading Grounds, and Chino Basin):

(1) Flow measuring and recording devices for all source waters (i.e., storm, imported, and recycled) recharged. Currently, imported water for the Waterman Basins and East Twin Creek Spreading Grounds is measured and recorded by Valley District.

(2) Monitoring wells between the recharge sites and nearby potable wells. One monitoring well per recharge facility is assumed. However, it is possible that existing production wells within six months travel time of the proposed recharge facilities may be used for monitoring purposes.

(3) Signs throughout the facilities to inform visitors that recycled water is being used.

(4) General improvements to increase the operational flexibility of the recharge facilities:

   a. At the Waterman Basins, required improvements may include rehabilitating or replacing the outlet valves from each cell (i.e., sub-basin), adding level transmitters to each cell and telemetry, performing weed abatement, and adding erosion control near the outlet of the recharge distribution pipeline.

   b. At the East Twin Creek Spreading Grounds, required improvements may include repairing the internal berms between cells, adding a turnout on the Foothill Pipeline (i.e., a 72-inch diameter imported water transmission pipeline located on the northerly boundary of the Spreading Grounds), adding level transmitters to each cell and telemetry, performing weed abatement, and adding erosion control near the outlet of the recharge distribution pipeline.

3.3 PROJECT CONSTRUCTION

Construction Activities

Project construction would require activities such as grading, excavating, trenching, pipe installation, placement of backfill, asphalt patching, and the construction of reservoirs, pump stations, and other limited structural improvements.

Most construction activities would occur within existing public rights-of-way or easements within roadways or other developed areas. Depending on the Conveyance Scenario selected, there would be temporary construction that would occur along East Twin Creek (within maintenance access areas) and along the east and northeast edges of the Waterman Basins. Grading and construction for these areas would be conducted in a manner that avoids and minimizes effects to sensitive habitat areas or other identified sensitive biological resources.

Construction Equipment

Construction would involve grading, excavation, structural erection, and backfilling within Project area. Energy efficient equipment would be used wherever feasible. Heavy construction could include the following equipment:

- Tunnel Boring Machine
- Pavement Saw
- Air Compressors
- Concrete Trucks

- Jack hammer
- Back hoe
- Front-end loader
- 10-wheel dump trucks
- Flat-bed delivery truck
- Sweepers
- Crane
- Compactor
- Water Truck
- Trench Shields
- Concrete pump trucks
- Welding trucks
- Side boom pipe handler truck
- Earth movers
- Bulldozers
- Excavators
- Road grader
- Paving equipment
- Jack and bore rig

Trenching

A conventional cut-and-cover construction technique would be used for trenching. At sites with non-native species or no sensitive biological resources present, the recycled water pipelines would likely be installed using open-cut trenching. The trenching technique includes clearing the construction site, saw cutting of the pavement where applicable, trench excavation, pipe installation, backfill operations, and re-paving where applicable.

In undeveloped areas, an approximately 50-foot wide corridor for construction would be utilized to maximize construction efficiency. Sufficient space would be available to allow the contractor to store the excavated soil to the side of the trench, install the pipe, and backfill the trench reusing the soil. Pipes would be staged along the alignment in advance of the recycled water pipeline installation. In areas encumbered by existing improvements, high-volume roadways, or environmentally sensitive areas, a narrower construction corridor of approximately 25 feet would be used. Specific estimates of construction corridor widths for each pipeline segment are provided above in Table 3.0-4.

Pipeline diameters for the various Conveyance Scenarios and Alignments Options range from 12 to 36 inches with typical depths of 3 to 5 feet; however, pipeline diameter and depth would vary depending on the pipeline alignment chosen. For purposes of the environmental impact analyses, the following pipeline excavation details are assumed (as maximums):

- Length: 87,700 linear feet;
- Width: 5.0 feet;
- Depth: 10 feet; and
- Volume: 3,508,000 cubic feet (129,926 cubic yards).

Except where adequate space is unavailable, prior to installation, pipes would be staged within the pipeline construction corridor and installed within the trench. Pipelines that are constructed within existing streets would require temporary lane closures and, in some cases for narrower streets, temporary full closures would be necessary. Construction would be geared to minimize traffic disruption and limit the duration of closures. Open trenches would be plated at the end of each day and on weekends when construction is not occurring. Actual closures would be limited to areas where work is occurring and road segments would be reopened once construction is complete. Final repaving would be performed after segments of pipeline construction are complete.

Recycled water pipeline construction would occur at a rate of approximately 300 to 500 feet per day where the pipelines would cross open land or low-use sections of roadways. In more developed areas, where there are narrow construction corridors, higher traffic volumes, and more utilities, the construction rate is expected to average approximately 200 to 300 feet per day.

Spoils resulting from pipeline work, excluding asphalt and concrete, would primarily be retained for replacement to avoid soil importation and reduce truck trips. Backfill material would also be imported where necessary. In open space areas, native excavated soils would be retained for backfill. Due to the potential displacement of soil occurring as a result of the installation of pipelines, minimal soil export may occur during construction.

During construction, vertical wall trenches (if utilized) would be temporarily closed at the end of each work day, either by covering with steel trench plates, backfill material, or installing barricades to restrict access, depending on physical conditions and conditions of the encroachment permit (along roadways). If the area is paved prior to construction, a temporary patch or covering would be used until final repaving of the affected area occurs. Final paving would occur approximately two to six weeks after pipeline construction is complete within a given road segment. For purposes of the environmental impact analyses, the following roadway pavement demolition details are assumed (as maximums):

- Length: 87,700 linear feet;
- Width: 6.0 feet;
- Thickness: 0.5 feet; and
- Demolition volume: 263,100 cubic feet (9,744 cubic yards/19,075 tons).

Overall, it is assumed that pipeline construction would be completed at a rate of approximately 100 feet per day (two crews) and would occur over an estimated 439 days.

Jack and Bore Tunneling

Jack and bore tunneling could be employed in areas where open cut trenching is not feasible due to limited construction area, geotechnical conditions, railroad crossings, major road crossings, or presence of sensitive biological resources. Jack and bore tunneling is a trenchless construction method that would be utilized for installing underground pipelines for short distances without disturbing the ground surface. This method employs a horizontal boring machine or an auger that is advanced in a tunnel bore to remove material ahead of the pipe. Powerful hydraulic jacks are used to push pipe from a launch (jacking) pit to a receiving pit. As the tunneling auger is driven forward, a jacking pipe is added into the pipe string. Each jack and bore undercrossing would require a jacking pit measuring approximately 30 feet by 10 feet. The temporary pits typically would be excavated to a maximum depth of 20 feet. Recycled water pipeline installation by this method would require approximately one to two weeks per waterway crossing; excavated soils would be retained for backfill.

Directional Drilling

Horizontal directional drilling is another trenchless construction method that could be used for installing underground pipelines without disturbing the ground surface. Using a horizontal drill rig, the pipeline is installed in two stages: (1) a small diameter pilot hole is directionally drilled along a designed directional path, and (2) the pilot hole is then enlarged to a diameter that would accommodate the pipeline and the pipeline would be pulled back through the enlarged hole. Slurry, typically bentonite (an inert clay), is used as a drilling lubricant and processed by separating solids from the slurry and discharging the clear liquid to waterways or storm drains. Recycled water pipeline installation by this method would require

approximately one to two weeks per waterway crossing. Any unused excavated soils would be hauled off site.

Booster Pump Station and Reservoir Sites

The site options for locating conveyance facilities (i.e., pump stations and reservoirs) are depicted on Exhibit 3.0-5. Final site selection would consider avoidance of sensitive resources, preference for existing disturbed or developed sites, and absence of adjacent sensitive receptors. Survey staking would be used to define construction limits for proposed facilities. Following rough grading, additional excavation or filling would bring the site to final grade and prepare the soil for underground piping and structural slabs. Site work would involve installing manholes, valve pits, structural foundations, curbs, site drainage, fencing, and sidewalks. After the structure has been erected and roofed, electrical equipment (e.g., machinery control consoles, panels, switchboards, lighting, etc.) would be installed. Site work such as installing pull boxes, conduits, and cables would continue. Pumps would be installed and piped through the process facilities. Reservoirs would be either welded steel or pre-stressed concrete and may be above-ground, partially buried or buried. Construction of each booster pump station and reservoir is estimated to take six months.

Staging Areas

Equipment and vehicle staging would be accommodated at the SBWRP facility, the Waterman Basins, East Twin Creek Spreading Grounds, Chino Basin, or at one or more of the seven pump station/reservoir sites (see Exhibit 3.0-5). Staging would be avoided within sensitive areas such as riparian or other habitats.

Pipes would typically be staged/stored within pipeline construction corridors and would be lined up along the path of the pipeline. In those areas where space limitations prevent using this approach, pipes would be stored at one of the locations identified in the preceding paragraph. Materials for pump station/reservoir construction would be staged at their respective building sites. Materials related to improvements at the SBWRP or Recharge Basins would be staged at these respective locations.

Construction Hours and Phasing

Construction hours and activities would be consistent with City of San Bernardino regulations and requirements as defined in their Municipal Code (Chapter 8.54, “Noise Control”), except for well drilling (monitoring) which may temporarily exceed allowable construction noise levels. In residential zones, construction would occur between the hours of 8:00 a.m. and 8:00 p.m., and in all other zones between the hours of 7:00 a.m. and 8:00 p.m.

Additionally, construction hours and activities proposed under County jurisdiction would be consistent with County of San Bernardino regulations and requirements as defined in its Municipal Code (Chapter 83.01.80, “Noise”). County of San Bernardino Municipal Code identifies that “temporary construction, maintenance, repair, or demolition activities between the hours of 7:00 a.m. and 7:00 p.m.” shall be exempt from noise regulations, except on Sundays and Federal holidays.

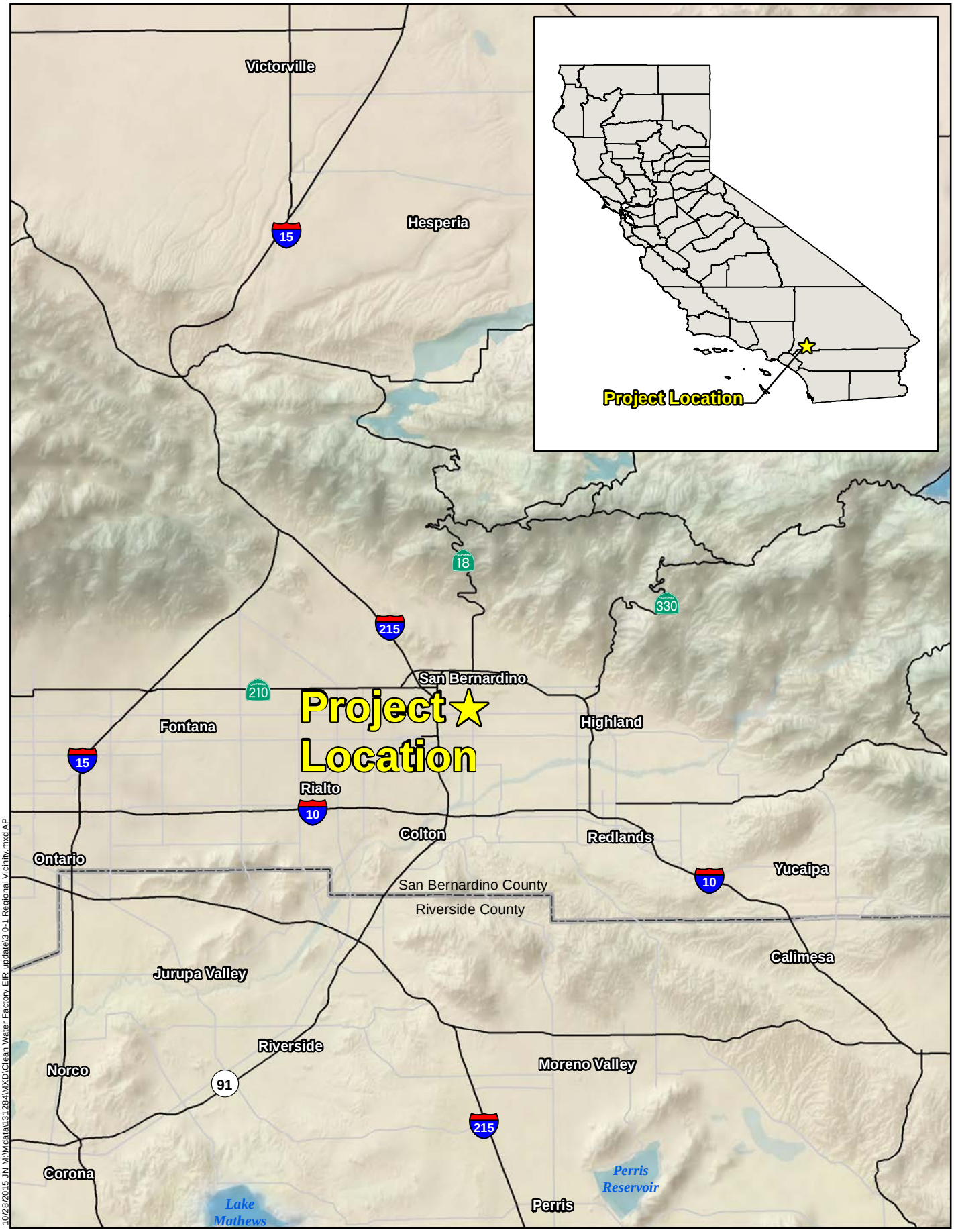
Table 3.0-5, *Construction Assumptions*, outlines the assumed duration of construction activities, earthwork, and construction traffic, for each Project component.

Table 3.0-5: Construction Assumptions[1, 2, 3, 4]

Project Components		Duration (days)	Earthwork (CY)		Construction Trips: Worker Trips/ Day[2]	Construction Trips: Total Hauling Trips[3]	Notes
1	SBWRP Improvements (within SBWRP complex)	396	N/A	Duration 18 months	23	N/A	
2	Pipeline/ Conveyance[4]	519	269,185		38	1,886	Hauling would be required for demolished pavement and soil replaced by pipe. Most excavation would be backfilled.
	Pump Stations and Reservoir Sites	132	39,775	Estimated earthwork/ export based on buried reservoirs	15	4,972	Round trips, assumes 16 CY truck capacity
			4,412	Cut/fill for tank foundation and piping.		N/A	Assumes balanced
3	Recharge Site Improvements	132	250,000	Duration 6 months	20	N/A	Assumes balanced

N/A=not applicable, CY=cubic yards

Notes:
1. The Construction Assumptions were calculated using the worst-case, highest-intensity construction requirements to ensure that all conveyance options have been adequately analyzed during construction impact analysis.
2. Worker trips are based on California Emissions Estimator Model (CalEEMod) survey data.
3. Hauling trips are round trips and assume 16 CY truck capacity.
4. Pipeline earthwork assumes soil would not need to be hauled away.



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Michael Baker INTERNATIONAL

0 2.5 5 10 Miles

Source: ESRI Relief Map, National Highway Planning Network

CLEAN WATER FACTORY PROJECT EIR

Regional Location Map

Exhibit 3.0-1

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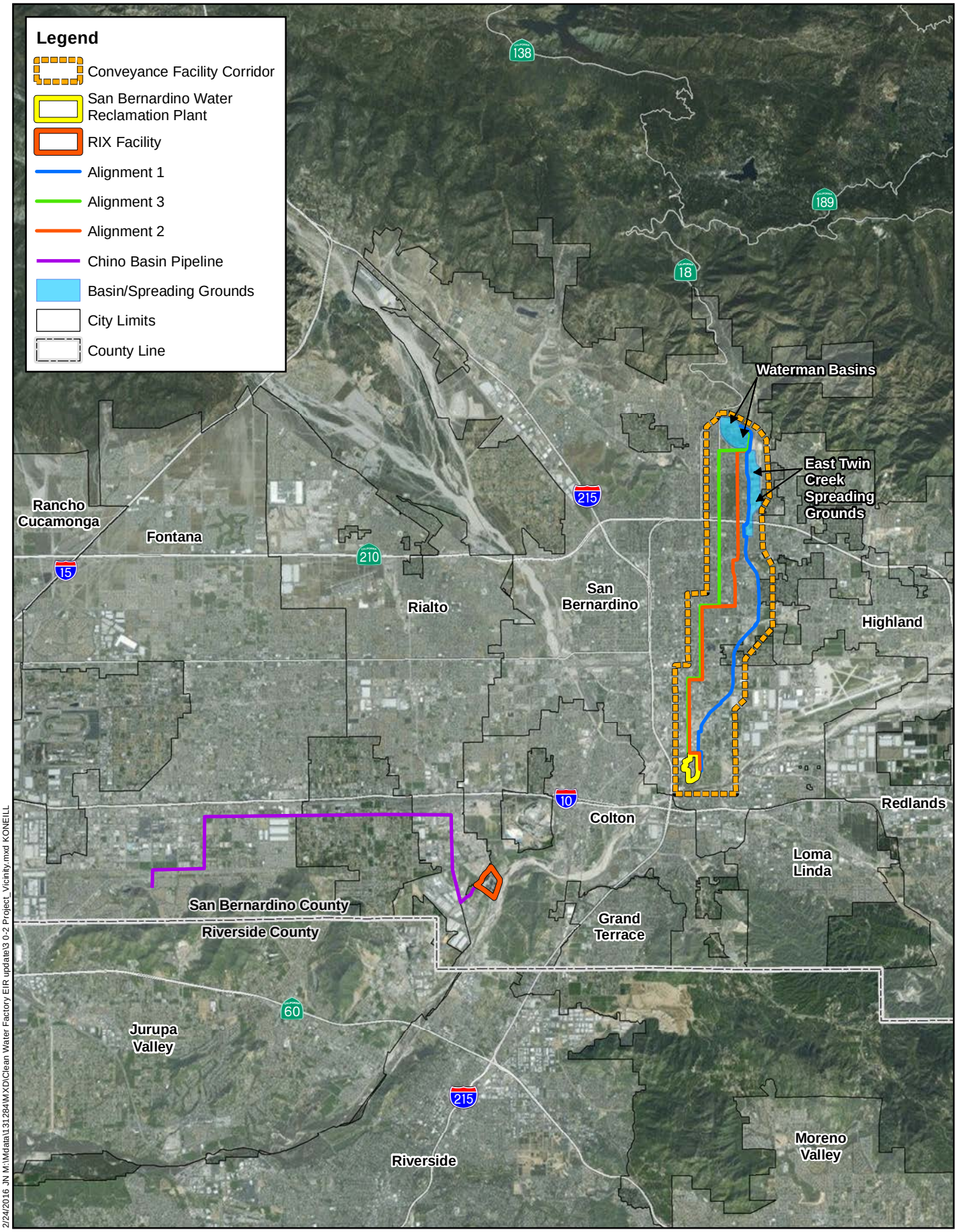

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Michael Baker INTERNATIONAL

0 1.25 2.5 5 Miles

Source: ESRI World Imagery, San Bernardino Couty GIS

CLEAN WATER FACTORY PROJECT EIR

Project Vicinity Map

Exhibit 3.0-2

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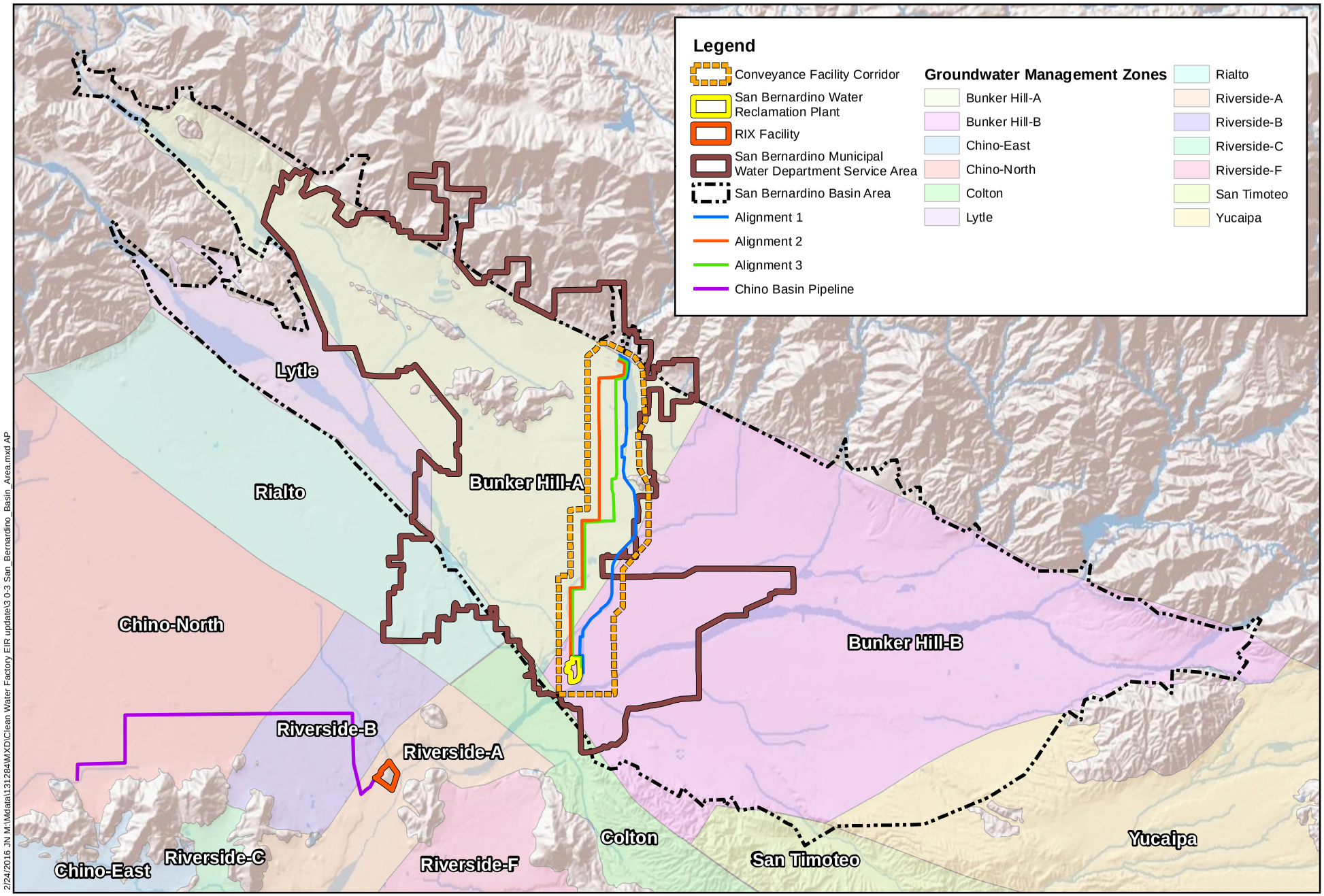

2/24/2016 JN M:\Mdata\131284\MXD\Clean Water Factory EIR update\3 0-3 San_Bernardino_Basin_Area.mxd AP

Michael Baker INTERNATIONAL

0 7,500 15,000 30,000 Feet

Source: ESIR Base Map Imagery, Recycled Water Planning Investigation Report, Wildermuth 2010, SAWPA

CLEAN WATER FACTORY PROJECT EIR

SBMWD Service Area and Groundwater Basins

Exhibit 3.0-3

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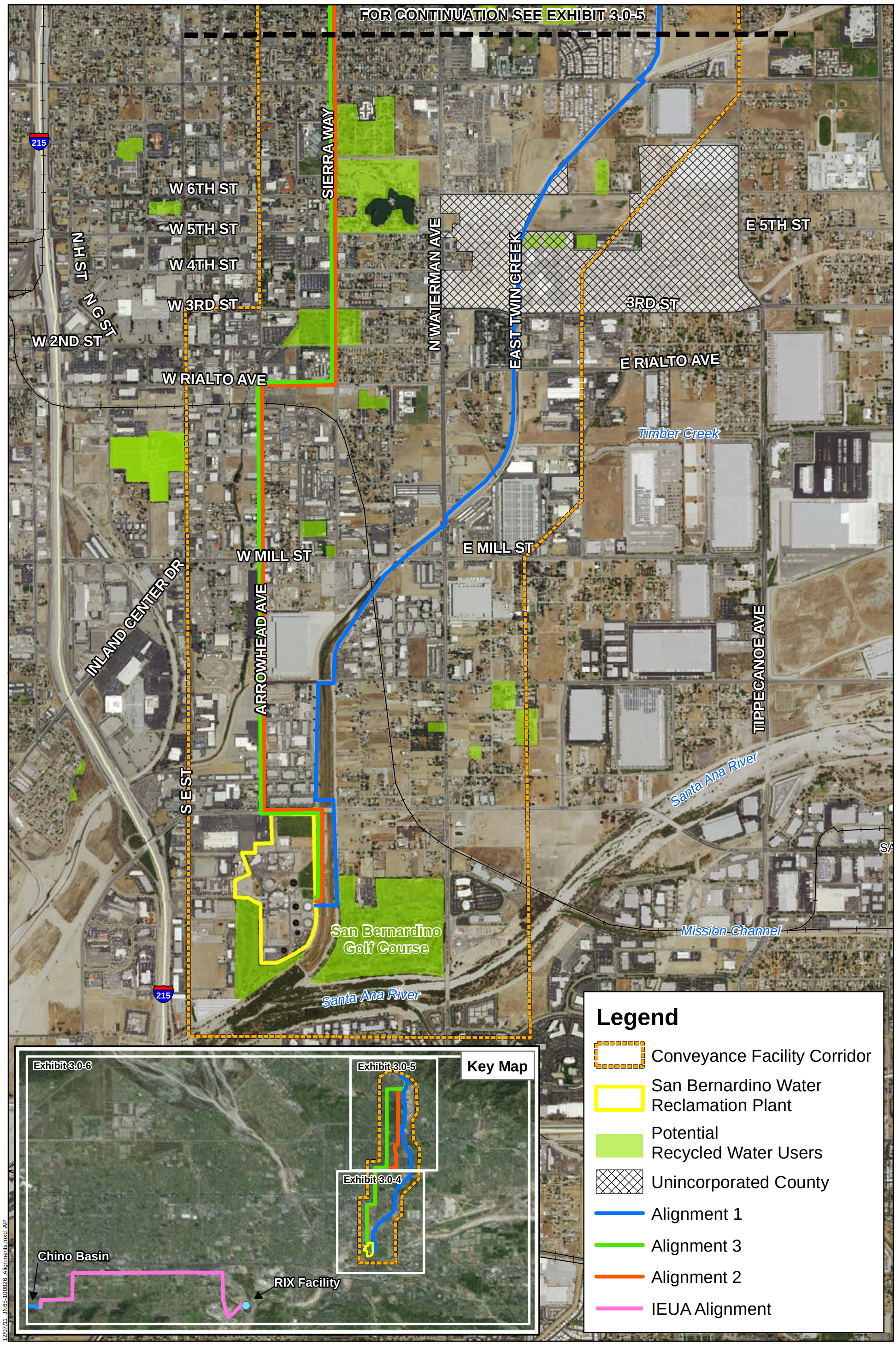

Michael Baker INTERNATIONAL

0 800 1,600 3,200 Feet

Source: ESRI World Imagery

CLEAN WATER FACTORY PROJECT EIR

Recycled Water System
Conveyance System Alternatives (Southerly Portion)

Exhibit 3.0-4

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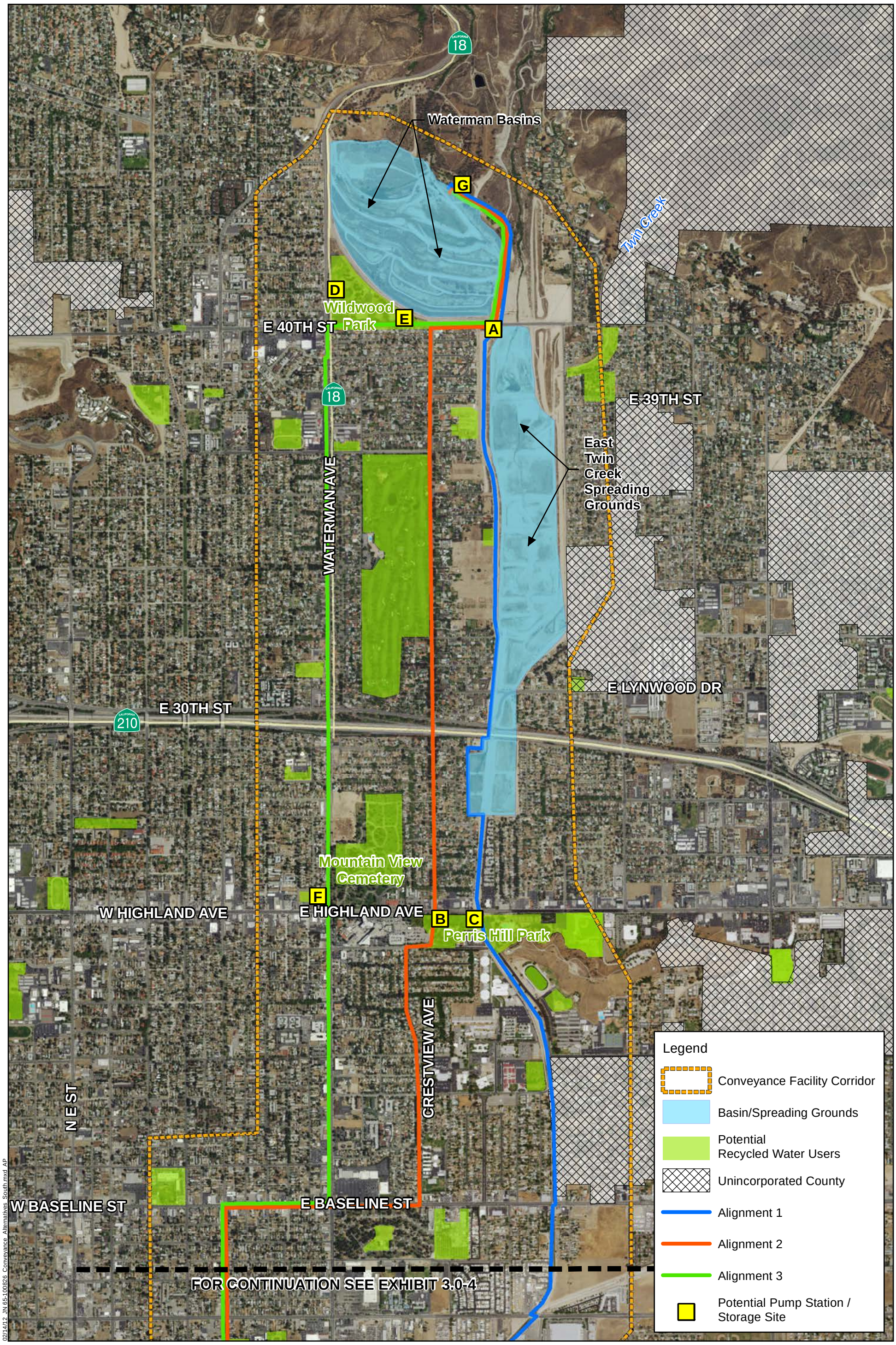

02/14/12 JN 65-100826 Conveyance Alternatives South.mxd AP

Michael Baker INTERNATIONAL

0 800 1,600 3,200 Feet

Source: ESRI World Imagery

CLEAN WATER FACTORY PROJECT EIR

Recycled Water System
Conveyance System Alternatives (Northerly Portion)

Exhibit 3.0-5

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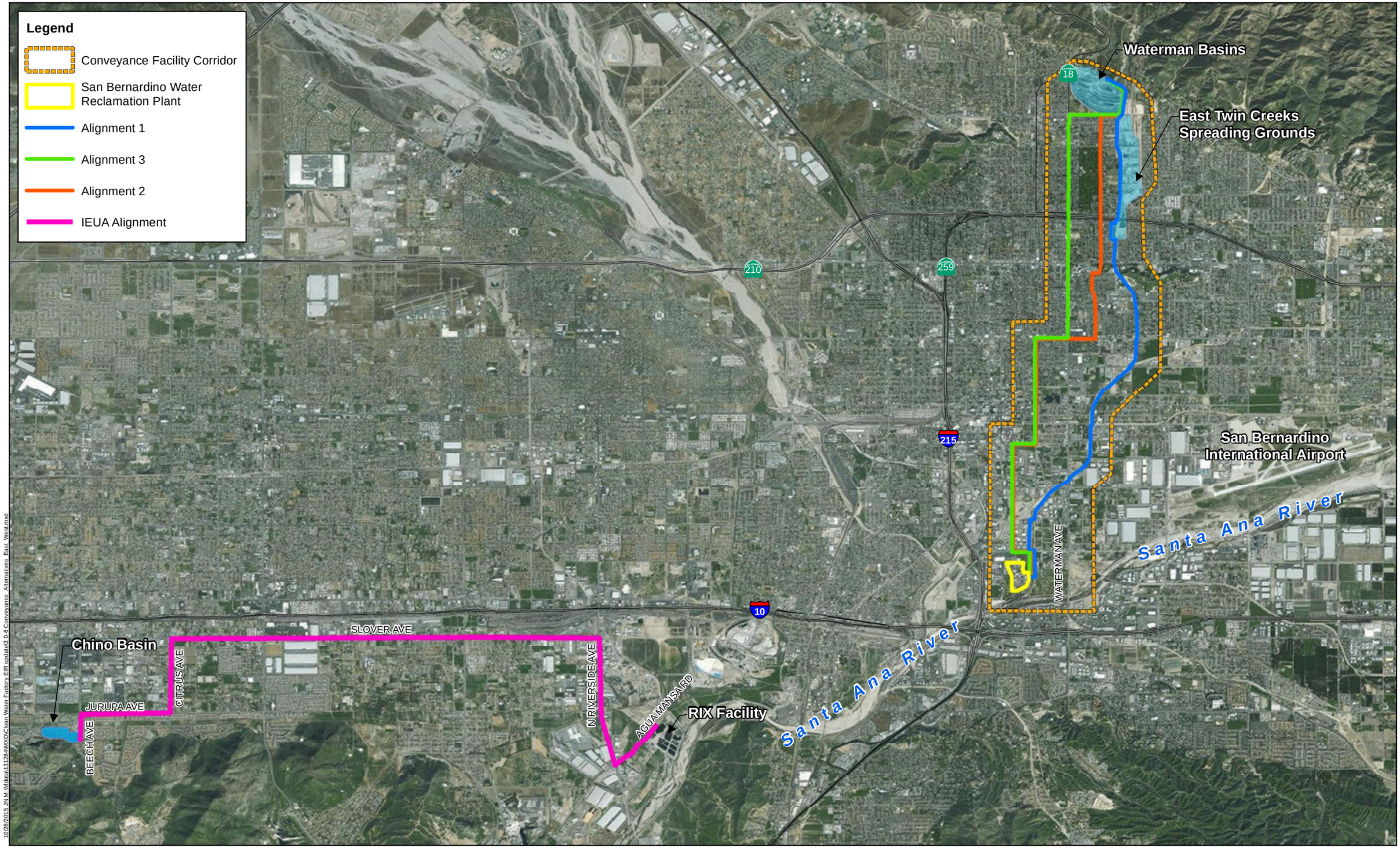

10/28/2015 JN:M:\Mdata\13128\MXD\Clean Water Factory EIR update\3.0-6 Conveyance Alternatives East West.mxd

Michael Baker INTERNATIONAL

0 0.5 1 2 Miles

Source: ESRI World Imagery

CLEAN WATER FACTORY PROJECT EIR

Conveyance System Alternatives (East - West Pipelines)

Exhibit 3.0-6

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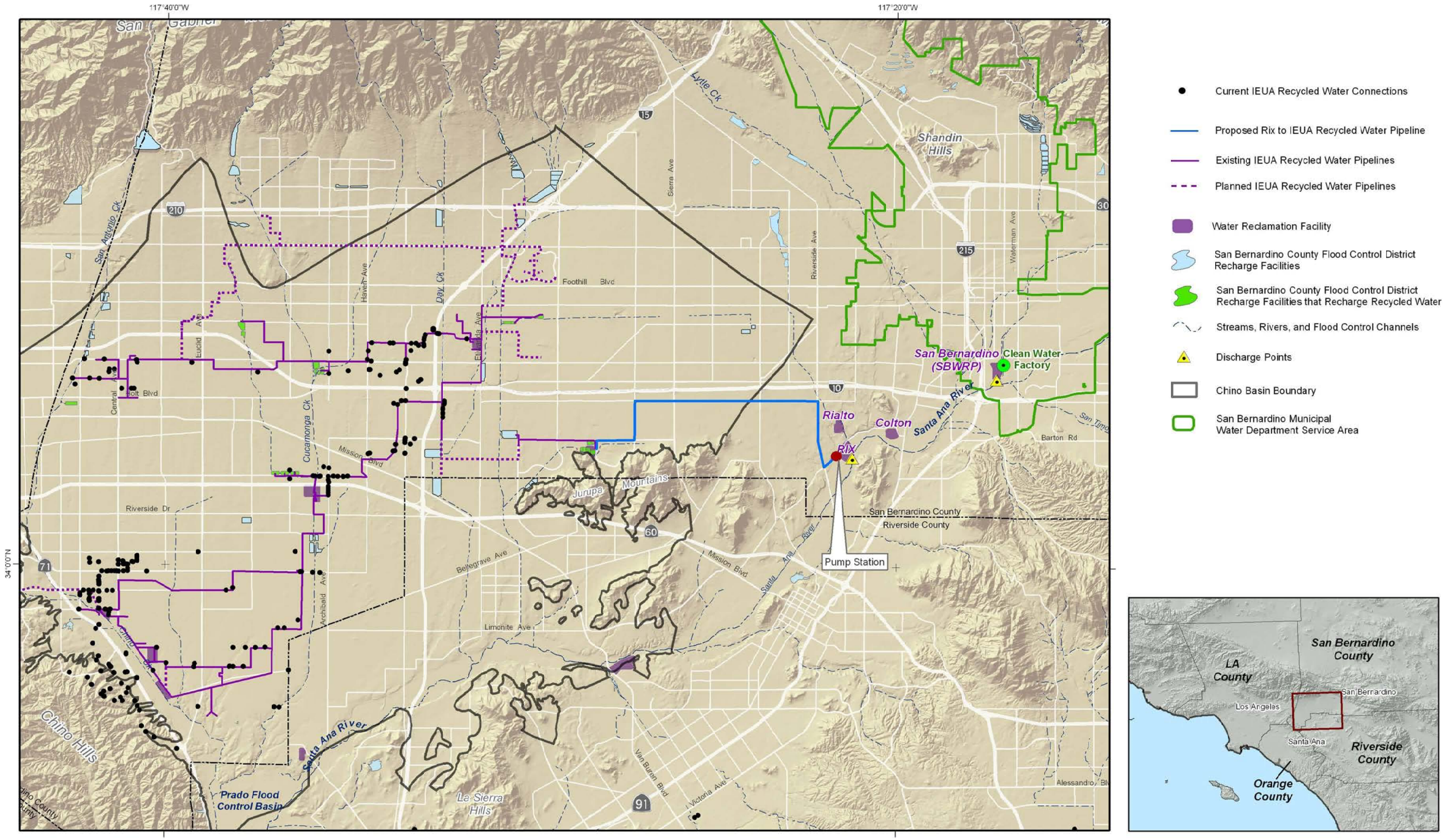

WILDERMUTH ENVIRONMENTAL INC.
23692 Birtcher Drive
Lake Forest, CA 92630
949.420.3030
www.wildermuthenvironmental.com

0 1 2 4 Miles

Source: Wildermuth Environmental Inc.

CLEAN WATER FACTORY PROJECT EIR

Inter-Agency Conveyance Facilities

Exhibit 3.0-7

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3.4 PROJECT OPERATION AND MAINTENANCE

Phased RIX Discharge Reduction

Currently, the SBWRP treats approximately 22 MGD of wastewater to a secondary treatment standard. The plant provides treatment for effluent from the Cities of San Bernardino and Loma Linda, and Valley District. Secondary-treated effluent is conveyed offsite to the RIX Facility, where it is treated to tertiary standards and discharged to the Santa Ana River. Currently, RIX discharges approximately 31.3 MGD into the Santa Ana River. This discharge amount would be reduced over a period of 15-20 years to a minimum flow of 13.4 MGD. Refer to Section 3.5, *Project Phasing*, for further information pertaining to Project phasing and flow diversion from the RIX Facility to the Santa Ana River.

Current operations at the RIX and SBWRP facilities would continue to function in a similar manner as present day operations; however, Project improvements would require increased operation activities at the SBWRP, reduced operation activities at the RIX when recycling from the SBWRP is in operation, and equivalent or increased operation activities at the RIX when recycling from the RIX facility is in operation.

Recharge Basins[10]

The Project would include operations within the Waterman Basins, East Twin Creek Spreading Grounds, and could also include recharge in the Chino Basin, and Santa Ana River.

The following parameters were evaluated for the Recharge Basins to determine the maximum recharge potential: effective area; infiltration rate; and maintenance requirements. Table 3.0-6 shows the estimated maximum recharge capacity for the Waterman Basins and the Twin Creek Spreading Grounds. While water may be conveyed to Chino Basin, the specific locations and capacities of the recharge basins that would be used have not yet been determined.

The long-term infiltration rate was estimated to be 1.5 feet per day. While initial infiltration rates may be significantly higher at startup and for the first few months, the infiltration rate would decrease over time due to the deposition of fine-grained materials at the bottom of the basins. It is assumed that each facility would be offline for two months per year for maintenance activities.

The recycled water would discharge into these basins when storage capacity is available and not needed for flood control purposes. An agreement between the San Bernardino County Flood Control District (SBCFCD) and SBMWD that defines the operational requirements, as described in this EIR, would be developed and executed.

[10] Refer to Section 6.0, *Alternatives to the Proposed Action* for the full list of recharge basins considered by the Clean Water Factory Environmental Impact Report. Further analysis, pertaining to alternative recharge basin locations and related conveyance facilities, has been provided.

Table 3.0-6: Estimated Recharge Capacity of Recharge Basins[1]

Recharge Site	Gross Area[2] (acres)	Effective Area[3] (acres)	Infiltration Rate[4] (ft/day)	Storage Capacity[5] (acre-ft)	Maximum Recharge Capacity (acre-ft/day)	Maximum Recharge Capacity[6] (acre-ft/year)
Waterman Basins	230	70	1.5	105	105	32,000
East Twin Creek Spreading Grounds	170	93	1.5	180	139	42,100
Total	**400**	**163**	**--**	**285**	**244**	**74,100**

Notes:

1. Although a detailed analysis of the recharge capacity has not been completed for the Chino Basin, data on these basins is available through the Chino Basin Watermaster (available at www.cbwm.org/).
2. The total area of the recharge facility, or gross area, is the parcel surface area.
3. The effective area is the surface area of the recharge facility available for storing and infiltrating water.
4. The infiltration rate, expressed as feet per day (ft/day) is the spatially averaged rate at which surface water infiltrates on the wetted area of the recharge basins.
5. For these Storage Basins, storage capacity is the volume of water that can be stored at an elevation of 3 feet above bottom of basin.
6. This calculation is based on all recharge basins within the spreading facility being online about 300 days or 10 months per year. Annual maintenance of the recharge facility would occur during a 2-month period.

Source: San Bernardino Municipal Water Department, 2010 November, *Recycled Water Planning Investigation Report,* Prepared by Wildermuth Environmental, Inc.

A similar agreement was approved for the *Chino Basin Recharge Master Plan*. This agreement was established between the San Bernardino County Flood Control District, Inland Empire Utilities Agency, Chino Basin Water Conservation District, and Chino Basin Watermaster to govern the operation and maintenance of the Chino Basin recharge facilities. The agreement states that the priority of use of capacity is first for flood control, second for recharge of native water, and third for recharge of supplement water (i.e., imported water and recycled water). Each of the Parties to this agreement is given the sole authority to determine when its respective facilities are available for recharge of supplemental water and to release water or order the cessation of the delivery of supplemental water to maintain the full flood control capacity of its facilities. The agreement requires the preparation of a Conservation Plan with a schedule of "conservation pool elevations, or criteria that defines when water can be stored for conservation and when water in conservation must be released to restore the full flood protection capabilities of the basins or allow for facility maintenance and repair, etc."[11] This agreement, therefore, defines the parameters of the facilities' operations. It is anticipated that a similar agreement would be required for the proposed Project.

This EIR examines historical data showing the quantity of stormwater that has been captured in the Recharge Basins and compares this information with a month-by-month breakdown of the potential recycled water recharge to show whether the two purposes would conflict.

[11] County of San Bernardino, Department of Public Works – Flood Control. (January 14, 2003). "Agreement for operation and maintenance of Facilities to Implement the Chino Recharge Basin Master Plan." (Agreement No. 03-0083). Pgs. 1 and 3, and Attachment No. 1, Pages 1-2.

Underground Retention Time

The recycled water would be retained underground in the aquifer for a minimum six-month period before it is extracted as a drinking water supply. Within three months of commencing operations, the Project would be required to demonstrate that the minimum two-month underground retention time to the closest down gradient drinking water well has been met.[12] Evidence of Project compliance with this requirement would be based on sample results at a monitoring well located or constructed along the flow path at a distance equal to at least three months underground travel time from the nearest down gradient drinking water well.

Maintenance of the Spreading Grounds and Basins

Similar to the conveyance pipelines, periodic maintenance of the spreading grounds, basins, and appurtenant structures would be required once the Project is in operation. Because the Recharge Basins are currently being used and seasonally filled with water, periodic maintenance is on-going. With Project implementation, more frequent maintenance may be required, as discussed below. This maintenance cycle assumes that some part of each facility would be offline for a two-month period per year for maintenance-related activities. Before heavy equipment can enter a spreading basin to remove silt and debris, the site must be allowed to dry. Following are typical maintenance activities for Recharge Basins:

Standard (Regularly/As-Needed)

- Mow and remove litter/debris
- Stabilize eroded banks
- Repair undercut and eroded areas at inflow and outflow structures

Semi-Annually

- Inspect facility for signs of damage to structures
- Note eroded areas
- If dead or dying grass on the bottom is observed, check to ensure that water percolates 2-3 days following storms
- Note signs of contamination, if any, and handle properly

Annually

- Scarify, disc, or otherwise aerate bottom
- Dethatch basin bottom
- Remove fine sediments from the basin bottoms
- Perform weed abatement and erosion control

Five-Year

- Scrape bottom and remove sediment
- Restore original cross-section and infiltration rate
- Seed or sod to restore ground cover

[12] 22 CCR Section 60320.124(b), requires that the underground retention time for treated recycled wastewater or recharge water is no less than two months.

Conveyance Pipelines and Other Facilities[13]

Pipeline valves would be inspected about once a month. Pump station and reservoir sites would be visited on a daily basis to ensure equipment is operating properly, and backup generators at these sites would be tested approximately once a month. The interiors of welded steel reservoirs would require resurfacing every 10 to 15 years. All equipment and machinery would be maintained and tested in accordance with the manufacturer's specifications and would be replaced if broken, worn out or exceeds its manufacturer recommended lifespan.

3.5 PROJECT PHASING

Project implementation contains two primary phasing components: 1) phasing of reduction in the amount of water that would be discharged from the RIX facility to the SAR; and 2) phasing of facility improvements needed to accommodate the reuse/recharge of the water diverted from the RIX facility over/into the Bunker Hill Basin.

Phasing of Discharge Amount

Table 3.0-7 presents the proposed reduction in the amount of water that would be discharged from the RIX facility to the SAR, in cubic feet per second (cfs) and MGD (cfs/MGD) by phase. Discharge reduction is anticipated to occur over five phases, based on the expected need for this water to be recharged over time. The phasing presented in Table 3.0-7 is conceptual, and may be modified through the permitting process and in consultation with regulatory agencies and other stakeholders. SBMWD recognizes that other water agencies are considering projects that, if approved, could also reduce flows to the Santa Ana River along the study reaches. However, this EIR, as summarized in the table below, analyzes what is considered as the cumulative worst-case condition for potential future wastewater treatment plant discharge reductions in the study reaches based on the limit of acceptable potential impacts to biological resources.

Table 3.0-7: Proposed RIX Wastewater Discharge Phased Reduction Scenarios[1]

	Baseline[2]	Phase 1	Phase 2	Phase 3	Phase 4	Phase 5	Zero[3]
RIX	53.0 cfs/ 34.3 MGD	44.9 cfs/ 29.0 MGD	38.4 cfs/ 24.8 MGD	32.2 cfs/ 20.8 MGD	26.3 cfs/ 17.0 MGD	20.8 cfs/ 13.4 MGD	0
Rialto Drain	9.5 cfs/ 6.1 MGD						
Model SAR Input	62.5 cfs/ 40.4 MGD	54.4 cfs/ 35.2 MGD	47.9 cfs/ 31.0 MGD	41.7 cfs/ 27.0 MGD	35.8 cfs/ 23.1 MGD	30.3 cfs/ 19.6 MGD	9.5 cfs/ 6.1 MGD

cfs = cubic feet per second, MGD= million gallons per day, SAR=Santa Ana River

Notes:
1. The Project assumes phased discharge reduction approach, with additional reductions in discharge occurring every five years.
2. For the model, baseline discharge was based on average RIX discharge measured on October 18-19, 2012. Average discharge was approximately 53 cfs. Annual RIX discharge has varied from 55.7 cfs in 2010 to 48.4 cfs in 2013.
3. The Zero scenario assumes a RIX shutdown, for instance for maintenance, in which case all discharge would come from the Rialto Drain, and a total flow volume of 9.5 cfs is used as a model assumption.

Source: City of San Bernardino Municipal Water Department 2015.

[13] Refer to Section 6.0 *Alternatives* for the full list conveyance facility alignments considered by the Clean Water Factory Environmental Impact Report. Further analysis, pertaining to alternative recharge basin locations and related conveyance facilities, has been provided.

For instance, Valley District's proposed Sterling Natural Resource Center (SNRC) would provide tertiary treatment to wastewater generated within East Valley Water District's (EVWD) service area, modify EVWD's wastewater collection facilities, and construct treated water conveyance systems to beneficially use treated water in the upper Santa Ana River watershed. Currently EVWD conveys wastewater to SBWRP for conveyance to RIX, where it is discharged to the Santa Ana River. If approved, and constructed, the SNRC would treat wastewater further upstream and reuse it for other beneficial uses that may reduce flows to the Santa Ana River.[14] The SNRC proposes to initially treat up to 9.28 cfs (6 MGD) associated with existing wastewater volumes, and up to 15.4 cfs (10 MGD) with consideration of wastewater increases from future growth and development. Under this scenario, the flows that are diverted from the Santa Ana River as a result of the SNRC would thereby limit the amount of discharge that could be reduced by the Project. The City of Rialto has filed a Petition for Change to reduce its current wastewater treatment plant discharge, proposing a 100% reduction to zero discharge. If both of these cumulative projects are approved in full (SNRC and the Rialto Petition for Change[15]), the net reduction of flows could be as much as 24.0 cfs (15.5 MGD). This flow reduction would not be in addition to proposed Project discharge reductions, but would reduce the amount of RIX discharge reduction available to SBMWD. Given the regulatory constraints and importance of downstream habitat, it is considered unlikely that greater than the modeled Phase 5 flow reductions would receive necessary regulatory agency permitting, and the modeled Phase 5 flow therefore represents the worst-case discharge reduction to the Study Reaches from RIX and the Rialto wastewater treatment plant.

Phasing of Facilities Improvements

Facility improvements needed to accommodate the recharge of the water diverted from the RIX facility into the Bunker Hill Basin would be done in phases, to allow for accommodation of Project needs and Project flows.

Table 3.0-8 provides an estimate of when individual facilities would need to be provided, by phase for each of the six Conveyance Scenarios.

Table 3.0-8: Estimated Conveyance Facilities Phasing

	Phases				
Facility	1	2	3	4	5
Conveyance Scenario 1					
Storage Tank 1-1	100%				
Storage Tank 1-2	100%				
Storage Tank 1-3			100%		
Pump Station 1-1	100%				
Pump Station 1-2	50%				
Pipeline 1-1	100%				
Conveyance Scenario 2					
Storage Tank 2-1	100%				
Storage Tank 2-2	100%				
Storage Tank 2-3	100%				
Pump Station 2-1	100%				
Pump Station 2-2	50%		100%		
Pump Station 2-3	50%		100%		

[14] There Sterling NRC includes provisions for the delivery of water to the Santa Ana River when needed for environmental benefits.

[15] SWRCB Petition number WW0079; notice dated June 18, 2015.

Phases					
Facility	1	2	3	4	5
Pipeline 2-1	100%				
Pipeline 2-2	100%				
Conveyance Scenario 3					
Storage Tank 3-1	100%				
Storage Tank 3-2	100%				
Storage Tank 3-3				100%	
Pump Station 3-1	50%			100%	
Pump Station 3-2	50%		100%		
Pump Station 3-3				100%	
Pipeline 3-1	100%				
Pipeline 3-2	100%				
Pipeline 3-3	100%				
Conveyance Scenario 4					
Storage Tank 4-1	100%				
Storage Tank 4-2	100%				
Storage Tank 4-3				100%	
Storage Tank 4-4	100%				
Pump Station 4-1	50%			100%	
Pump Station 4-2	50%		100%		
Pump Station 4-3				100%	
Pump Station 4-4	50%		100%		
Pipeline 4-1	100%				
Pipeline 4-2	100%				
Pipeline 4-3	100%				
Pipeline 4-4	100%				
Conveyance Scenario 5					
Storage Tank 5-1	100%				
Storage Tank 5-2			100%		
Pump Station 5-1			50%	100%	
Pipeline 5-1	100%				
Pipeline 5-2	100%				
Conveyance Scenario 6					
Storage Tank 6-1	100%				
Storage Tank 6-2	100%				
Pump Station 6-1	50%		100%		
Pump Station 6-2	50%		100%		
Pipeline 6-1	100%				
Pipeline 6-2	100%				
Pipeline 6-3	100%				
Source: City of San Bernardino Municipal Water Department 2015.					

3.6 PERMITS AND APPROVALS

SBMWD is the Lead Agency with respect to CEQA, which has discretionary authority over the Project. The EIR is intended to be used to support all SBMWD actions necessary for Project implementation, including the design, construction and maintenance of facilities necessary as well as activities related to water recharge and extraction for the basins. In addition it is anticipated that the agencies listed below in Table 3.0-9 will use the EIR to approve the listed agreements, permits, and approvals.

Table 3.0-9: Anticipated Agreements, Permits and Approvals for the Project

Agreements, Permits, and Approvals	Agency
Federal Agencies	
▪ Endangered Species Act (ESA) Compliance, (including Section 7 Consultation)	U.S. Fish and Wildlife Service
▪ Discharge of Dredge or Fill Material into Waters of the US (Clean Water Act , Section 404 Permit) ▪ Modifications to U.S. Army Corps of Engineers Constructed Facilities (Rivers and Harbors Act, Section 408 Permit)	U.S. Army Corps of Engineers
State Agencies	
▪ National Historic Preservation –Section 106 Compliance	State Office of Historic Preservation (OHP), California Department of Parks and Recreation
▪ California Endangered Species Act (CESA) Compliance ▪ Section 1602 Streambed Alteration Agreement	California Department of Fish and Wildlife (CDFW)
▪ Water Recycling Requirements (WRR) or Master Recycling Requirements (MRR) permit ▪ Institutional Controls Groundwater Management Program (ICGMP) permit (related to the Newmark and Muscoy Plumes) ▪ Clean Water Act Section 401 Water Quality Standards Certification ▪ National Pollutant Discharge Elimination System (NPDES) Permits/Wastewater Discharge Requirements	California State Water Resources Control Board (SWRCB), Santa Ana Regional Water Quality Control (RWQCB)
▪ Amended Waterworks Permit ▪ New well permitting (for monitoring wells) ▪ Review, prepare findings of fact, and provide conditions (i.e., requirements) to SARWQCB for recycled water reuse permits	California State Water Resources Control Board Division of Drinking Water
▪ Encroachment Permit for pipeline construction under or within the right-of-way of facilities within its jurisdiction	California Department of Transportation (Caltrans) California Public Utilities Commission
Local and Regional Agencies	
▪ Environmental Impact Report (EIR) Certification	City of San Bernardino Municipal Water Department
▪ Agreement defining the operational and maintenance requirements to ensure acceptable flood control function of the Waterman Basins and East Twin Creek Spreading Grounds ▪ Rivers and Harbors Act Section 408 Permit Certification	County of San Bernardino Flood Control District
▪ Air Quality Permit(s)	South Coast Air Quality Management District

Agreements, Permits, and Approvals	Agency
▪ Various Permits (e.g., Encroachment Permits, etc.)	County of San Bernardino Public Works Department, other local agencies
▪ New well permitting (for monitoring wells)	County of San Bernardino, Department of Public Health
▪ Encroachment permit	San Bernardino International Airport Authority San Bernardino Association of Governments Burlington Northern Santa Fe Railway Company
▪ Various recharge and conveyance agreements/permits	San Bernardino Valley Municipal Water District Inland Empire Utilities Agency East Valley Water District

Section 4.0
Environmental Analysis Methodology

Section 4.1
Environmental Analysis

Section 4.1
Environmental Analysis

Organized by environmental resource category, Section 4, *Environmental Analysis*, provides an integrated discussion of the affected environment including regulatory and environmental settings and environmental impacts and mitigation measures to reduce or avoid potentially significant impacts associated with implementation of the Project. Section 5.0, *Other CEQA Considerations*, discusses mandatory findings of significance and other required CEQA topics.

4.1.1 APPROACH TO THE ENVIRONMENTAL ANALYSIS

CEQA-PLUS REQUIREMENTS AND COMPLIANCE INTEGRATION

As described previously in Section 3.0, this environmental document serves as an Environmental Impact Report (EIR) under the California Environmental Quality Act (CEQA) requirements (Public Resources Code §§ 21100 et seq.), as well as the CEQA-Plus environmental review requirements for the State Revolving Fund (SRF) Loan Program, administered by the SWRCB Division of Financial Assistance. SBMWD determined that a CEQA-Plus compliant Project EIR is the appropriate CEQA document for the Project at this time, in accordance with Section 15161 of the State CEQA Guidelines and State Revolving Fund requirements. Compliance with CEQA-Plus is required for any Project that involves a State Revolving Fund loan. CEQA-Plus is a "NEPA-like" process that generally requires that a proposed Project demonstrates compliance with: the Federal Air Quality Act; Section 7 of the Endangered Species Act; Section 106 of the National Historic Preservation Act; the Coastal Zone Management Act; Farmland Preservation Policy Act; Wild and Scenic Rivers Act; Migratory Bird Treaty Act; as well as demonstrates adequate floodplain management and wetland protection (refer to Section 2.3, *Compliance with SRF CEQA-Plus*).

In addition to Project-level analysis based on available information, this EIR also functions as a Program EIR pursuant to CEQA Guidelines Section 15168, in that it evaluates a complete phased public works project where SBMWD may implement one or more options, and also in that it evaluates a broad range of implementation options to accomplish SBMWD's Project objectives. This EIR has been prepared in conformance with the CEQA (California Public Resources Code [PRC] §21000 et seq.); *CEQA Guidelines* (California Code of Regulations [CCR], Title 14, §15000 et seq. The principal *CEQA Guidelines* sections governing the content of this document include Article 9 (*Contents of Environmental Impact Reports*) (§§15120 through 15132) and CEQA Guidelines §15168 (*Program EIR*).

The preparation of this CEQA-Plus Draft EIR requires close coordination and cooperation among federal, State, and local agencies. Most agency involvement is limited to specific permitting and approvals related to each agency's authority and responsibility. As the lead agency, SBMWD is responsible for the preparation of this Draft EIR in accordance with CEQA. Additionally, the CEQA document will be sent directly to several federally designated agencies as part of the CEQA-Plus review process.

In California, environmental review for this size and scope of project or plan requires an EIR. The EIR records the scope of the applicant's proposal and analyzes all its known environmental impacts. Project information is used by State and local permitting agencies in their evaluation of the proposed Project.

The State *CEQA Guidelines* require that an EIR evaluate environmental impacts resulting from implementation of the proposed project and identify feasible mitigation for any potentially significant impacts. All phases of a proposed project, including development and operation, are evaluated in the analysis (*CEQA Guidelines* Section 15126.2). The EIR must identify significant or potentially significant

effects on the environment, which consist of substantial or potentially substantial adverse changes on the physical environment associated with the project. An EIR must also discuss any inconsistencies between the project and relevant local and regional plans (*CEQA Guidelines* Section 15125[d]).

An EIR must detail any feasible mitigation measures that could reduce significant adverse impacts, and the measures are to be fully enforceable through permit conditions of approval, agreements, or other legally binding instruments (*CEQA Guidelines* Section 15126.4[a]). For effects that are found to be less than significant, mitigation measures are not required.

4.1.2 SECTION CONTENT AND DEFINITION OF TERMS

The environmental setting, impacts, and mitigation measures related to each environmental impact area are described in Sections 4.2 through 4.11. Section 4 is organized into the following environmental topic areas:

- Section 4.1, Environmental Analysis
- Section 4.2, Aesthetics and Scenic Resources
- Section 4.3, Air Quality and Greenhouse Gas Emissions
- Section 4.4, Biological Resources
- Section 4.5, Cultural and Paleontological Resources
- Section 4.6, Hazards and Hazardous Materials
- Section 4.7, Hydrology and Water Quality
- Section 4.8, Land Use and Planning
- Section 4.9, Noise
- Section 4.10, Recreation
- Section 4.11, Transportation and Circulation

Sections 4.2 through 4.11 follow the same general format:

"**Affected Environment**" consists of two subsections: Regulatory Setting and Environmental Setting, which include the following information:

"Regulatory Setting" identifies the plans, policies, laws, and regulations that are relevant to each resource area and describes permits and other approvals necessary to implement the Project. As noted above, the EIR needs to address possible conflicts between the Project and the requirements of federal, State, regional, or local agencies, including consistency with adopted land use plans, policies, or other regulations for the area. Therefore, this subsection summarizes or lists the potentially relevant policies and objectives, such as from the applicable *City of San Bernardino General Plan* and *Municipal Code*.

"Environmental Setting" provides an overview of the existing physical environmental conditions in the study area that could be affected by implementation of the Project (i.e., the "affected environment").

"**Environmental Impacts**" discusses the effects of the Project on the environment. The following discussions are included in this subsection:

"Significance Criteria" provides the criteria used in this document to define the level at which an impact would be considered significant in accordance with CEQA. Significance criteria used in this EIR are based

on the checklist presented in Appendix G of the State *CEQA Guidelines*, factual or scientific information and data, and regulatory standards of federal, State, and local agencies.

"Project-Related Impacts" are listed numerically and sequentially throughout each section, for each Project component. A bold font impact statement precedes the discussion of each impact and provides a summary of each impact and its level of significance. The discussion that follows the impact statement includes the analysis on which a conclusion is based regarding the level of impact.

The level of impact of the Project is determined by comparing estimated effects with baseline conditions, in light of the thresholds of significance identified in the EIR. Under CEQA, the existing environmental setting (as defined above) normally represents baseline conditions against which impacts are compared to determine significance. The environmental baseline is typically set as the date of Notice of Preparation distribution, unless more recent data is determined appropriate for utilization in the EIR. Project component-specific analyses are conducted to evaluate each potential impact on the existing environment. This assessment also specifies why impacts are found to be significant, potentially significant, or less than significant, or why there is no environmental impact.

A significant impact is defined for CEQA purposes as a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the Project. A potentially significant impact is one that, if it were to occur, would be considered a significant impact; however, the occurrence of the impact is uncertain. A "potentially significant" impact and "significant" impact are treated the same under CEQA in terms of procedural requirements and the need to identify feasible mitigation. A less than significant impact is one that would not result in a substantial adverse change in the physical environment (applicable significance thresholds would not be exceeded in consideration of Project Design Features and existing laws, ordinances, standards or regulations).

Both direct and indirect effects of the Project are evaluated for each environmental resource area. Direct effects are those that are caused by the action and occur at the same time and place. Indirect effects are reasonably foreseeable consequences that may occur at a later time or at a distance that is removed from the Project area, such as growth-inducing effects and other effects related to changes in land use patterns, population density, or growth rate, and related effects on the physical environment.

Cumulative impacts are discussed throughout Section 4.0, at the end of each individual resource section. The approach is discussed in more detail below.

"Mitigation Measures" are recommended where feasible to avoid, minimize, offset, or otherwise compensate for significant and potentially significant impacts of the Project, in accordance with the State *CEQA Guidelines* (Section 15126.4). Each mitigation measure is identified by resource area, numerically, and sequentially. For example, mitigation measures in Section 4.2, *Aesthetics and Scenic Resources*, are numbered AES-1, AES-2, AES-3 and so on. Pursuant to CEQA, the EIR provides a brief discussion of potential significant impacts of a given mitigation measure, if applicable.

There are no mitigation measures proposed when the impact is determined to be "less than significant" prior to mitigation. Where sufficient feasible mitigation is not available to reduce impacts to a less-than-significant level, the impacts are identified as remaining "significant and unavoidable." For significant unavoidable impacts, the EIR addresses any recommended mitigation measures that could avoid or reduce the significant impact, but were rejected or are not presently being considered by SBMWD, as well as mitigation or alternatives capable of reducing impacts, even if it is not feasible to reduce them to a less than significant level.

4.1.3 CUMULATIVE IMPACT ANALYSIS

This section, found at the end of each impact section, provides an analysis of overall cumulative effects of the Project taken together with other past, present, and reasonably foreseeable probable future projects.

DEFINITION OF CUMULATIVE IMPACTS

Cumulative impacts are defined in the State *CEQA Guidelines* (Section 15355) as "two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts." A cumulative impact occurs from a "change in the environment which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor, but collectively significant, projects taking place over a period of time." Consistent with *CEQA Guidelines* Section 15130[a], the discussion in this EIR focuses on significant and potentially significant cumulative impacts. The CEQA Guidelines (Section 15130 (a)), state the following:

> *The discussion of cumulative impacts shall reflect the severity of the impacts and their likelihood of occurrence, but the discussion need not provide as great detail as is provided for the effects attributable to the project alone. The discussion should be guided by the standards of practicality and reasonableness, and should focus on the cumulative impact to which the identified other projects contribute rather than the attributes of other projects which do not contribute to the cumulative impact.*

METHODOLOGY

To identify the projects to be analyzed in the evaluation of cumulative impacts, Section 15130(b) of the CEQA Guidelines require that an EIR employ either:

- the list approach, which entails listing past, present, and probable future projects producing related or cumulative impacts, including, if necessary, those projects outside the control of the agency; or
- the projection approach, which uses a summary of projections contained in an adopted general plan or related planning document, or in a prior environmental document that has been adopted or certified, which described or evaluated regional or area-wide conditions contributing to the cumulative impact.

The approach and geographic scope of the cumulative impact evaluation vary depending on the environmental topic area being analyzed. The individual "Cumulative Impacts" subsections within each environmental topic present impacts and mitigation measures for the proposed Project. Each impact begins with a summary of the approach and the geographic area relevant to that environmental topic area. For most environmental topic areas, the list approach is used. The list of potentially relevant projects as well as detailed methodology and relevant planning documents are discussed in detail in each "Cumulative Impacts."

In respect to this EIR analysis, cumulative effects can generally be geographically classified as localized, site-specific resource issues, regional, watershed level resource issues and global resource issues. At the ***localized, site-specific resource scale***, the Project's cumulative impacts have been analyzed for Aesthetics, Light, and Glare, Air Quality, Energy, and Greenhouse Gas, Biological Resources, Cultural Resources, Hazards and Hazardous Materials, Hydrology and Water Quality, Land Use and Planning, Noise,

Recreation, and Transportation and Circulation impacts. The key documents incorporated for the analysis of these impacts were the *City of San Bernardino General Plan EIR*, and *San Bernardino County General Plan EIR*. For the ***regional, watershed-level resource scale***, the Project's cumulative impacts have been analyzed for biological resources and hydrology. The key documents incorporated for this analysis included the Upper Santa Ana River Habitat Conservation Plan (HCP), Valley District's *Water Rights Applications for Supplemental Water Supply EIR,* Western Riverside MSHCP, *San Bernardino County General Plan EIR*, as well as the Riverside County and San Bernardino County MS4 Permits and Watershed Action Plans. Lastly, at the ***global resource scale***, analysis of the Project's cumulative impacts related to Air Quality and Greenhouse Gasses have been considered. The key document used for the analysis of the cumulative air quality impacts was the SCAQMD *Final 2012 Air Quality Management Plan.* These documents are cited where appropriate in the respective EIR section(s).

Additionally, two previous EIRs have been completed for activities at the RIX Facility, and are incorporated into this EIR's cumulative analysis. In 1989, the Santa Ana Watershed Project Authority (SAWPA) prepared an EIR for the *Regional Tertiary Treatment System for San Bernardino and Colton* (SCH# 87070605) in response to the Santa Ana Regional Water Quality Control Board's 1983 amendment to the Regional Water Quality Control Plan that mandated all wastewater treatment plants discharging into the Santa Ana River provide tertiary treatment up to a dilution point of 20:1 at any time the River has continuous flow. The EIR evaluated a four phase program to implement over a 20 year period that included demonstration facilities, monitoring of operational standards and costs, and a full scale build out of either a conventional tertiary filtration or rapid infiltration and extraction (RIX) facility to accommodate future flow demands.

The Final EIR for the *Regional Tertiary Treatment System for San Bernardino and Colton* committed to the development of Supplemental EIR following completion of the RIX Demonstration Project, which was certified in 1992 (SCH# 92012012). The Supplemental EIR focused on operational impacts associated with the RIX Facility including its: potential impacts to surface and groundwater quality; effectiveness at removing effluent nitrogen; and the RIX technology's effect on regional groundwater levels due to its required over-extraction. Both the 1989 EIR and 1992 Supplemental EIR are incorporated into this document's cumulative analysis.

Each of the cumulative impact categories (EIR Section 4) is analyzed and regulated by different agencies and associated regulatory or policy documents, in order to best protect the resource in question. The EIR addresses the Project's potentially significant impacts, recommends Project-specific mitigation measures, and then also identifies existing or recommended measures to address potential cumulative impacts.

REGIONAL WATER SUPPLY PROJECTS

The Santa Ana River Watermaster Action Team, made up of Inland Empire Utilities Agency, Eastern Municipal Water District, Orange County Water District, Valley District and Western Municipal Water District are working together to identify large, watershed-wide projects that would improve water supply reliability in the Santa Ana River Watershed. The following types of projects are presently being developed:

1. **"Economic based water use efficiency"–** This project will develop a set of "tools" for economic-based strategies that have proven effective at increasing water conservation in the watershed. These tools are intended to reduce the implementation cost to retail water agencies.
2. **"Watershed-Scale Conjunctive Use" –**This project would increase wet year storage and dry year groundwater production within the watershed to help reduce the impacts associated with drought.

3. **"Habitat Restoration and Arundo Removal" –**This project would create habitat for the Santa Ana sucker to help mitigate any "take" associated with water supply projects in the watershed. It will also remove the last amount of arundo, a non-native, water thirsty reed that has nearly been eradicated from the watershed.

UPPER SANTA ANA RIVER HABITAT CONSERVATION PLAN

Development of the Upper Santa Ana River Habitat Conservation Plan (HCP) is currently underway in a joint effort led by the Valley District. The current draft HCP Study Area includes areas of San Bernardino and Riverside County, and is bounded in the north by the Santa Ana River watershed, and in the east by the Deer Creek-Santa Ana River and Mill Creek sub-watersheds. The southern boundary of the HCP Study Area includes Yucaipa Creek, San Timoteo Canyon-San Timoteo Wash, Reche Canyon, Tequesquite Arroyo, and East Etiwanda Creek-Santa Ana River. The western boundary of the HCP Study Area is the San Bernardino-Orange County and San Bernardino-Los Angeles County lines. The HCP participants include the permittees, the wildlife agencies, and other stakeholders. As of the end of the current HCP Phase 1, there are ten water resource agencies participating in the HCP planning process, which include:

1. San Bernardino Valley Municipal Water District
2. Western Municipal Water District of Riverside County
3. San Bernardino Municipal Water Department
4. San Bernardino Valley Water Conservation District
5. Riverside Public Utilities
6. East Valley Water District
7. West Valley Water District
8. Inland Empire Utilities Agency
9. San Bernardino County Flood Control District
10. City of Rialto

This effort will analyze the impacts of proposed water supply projects on the Santa Ana sucker and other select species. Should the analysis conclude there would be a “take” of listed species; the agencies would work with the wildlife agencies to develop and implement required mitigation. The ultimate goal for the HCP is to obtain an Incidental Take Permit for the proposed water supply projects, which include, but are not limited to, recharge projects, channel diversion projects, recycled water projects, as well as various maintenance and improvement projects along the Santa Ana River. Exhibit 4.1-1, *Cumulative Projects*, along with Table 4.1-1, *Cumulative Projects Summary*, depict proposed preliminary covered activities from the *Final Phase 1 Report: Upper Santa Ana River Habitat Conservation Plan*, prepared in March 2014 (note that there are other potential cumulative projects in the Upper Santa Ana River watershed, including various development projects, infrastructure, and other facilities traversing along or across the River, which are subject to the regulatory review process of multiple agencies and programs, as discussed further in Sections 4.4, *Biological Resources* and 4.7, *Hydrology and Water Quality*).

The HCP is being prepared in coordination with the USFWS, CDFW, and other interested parties. Preparation of the HCP is anticipated to take approximately two to three years. The HCP will be coordinated with other regional HCPs.

SANTA ANA RIVER WATER RIGHT APPLICATIONS FOR SUPPLEMENTAL WATER SUPPLY EIR

The *Santa Ana River Water Right Applications for Supplemental Water Supply Environmental Impact Report* (certified March 22, 2007) evaluated the potential environmental impacts associated with water right applications filed by the Valley District and Western Municipal Water District of Riverside County. The applications were filed with the SWRCB to appropriate water from the Santa Ana River. The applications would divert and put to beneficial use a total of up to 200,000 acre-feet of water per year from the Santa Ana River. The applications would increase water supply reliability by reducing dependence on imported water; develop and deliver a new, local, high quality, long-term water supply that is needed to meet part of anticipated future demands; and expand operational flexibility by adding infrastructure and varying sources of water, thereby providing the water agencies with greater capability to match varying supply and demand. This EIR included an extensive analysis of cumulative impacts, specifically addressing diversion of Santa Ana River flows. The Final EIR itself contained extensive supplemental discussion of potential cumulative impacts downstream of Seven Oaks Dam (pages 2-27 through 2-114).

The project related facilities that had to be either modified or constructed are located in four areas:

1. The Seven Oaks Dam and Reservoir Area
2. The Santa Ana River Construction Area
3. The Devil Canyon Construction Area
4. The Lytle Creek Construction Area

This water right application process will improve the reliability of regional water supplies and allow for effective conjunctive use of groundwater and surface water supplies. This supplemental water has the added benefit of making water that is not imported by the water agencies available to help meet the needs of other areas that depend on sources such as the State Water Project and Colorado River.

UPPER SANTA ANA RIVER WATERSHED INTEGRATED REGIONAL WATER MANAGEMENT PLAN

Valley District, as Lead Agency, in partnership with numerous other upper watershed agencies and stakeholders, developed the *Upper Santa Ana River Watershed Integrated Regional Water Management Plan*. The Upper Santa Ana Water Resources Association members prepared this Integrated Regional Water Management Plan (IRWMP). The plan concentrates on water management issues for users within the Upper Santa Ana River Watershed. The purpose of the plan is to fulfill current water management requirements while developing water supply reliability and furthering the use of local and imported resources. Implementation of this IRWMP will assist the region with optimizing the management and use of water resources in the region while protecting water quality from degradation. Information contained within the IRWMP is incorporated herein, because it is the primary source for water planning information for Valley District and its member agencies.

REGIONAL RECYCLED WATER CONCEPT STUDY

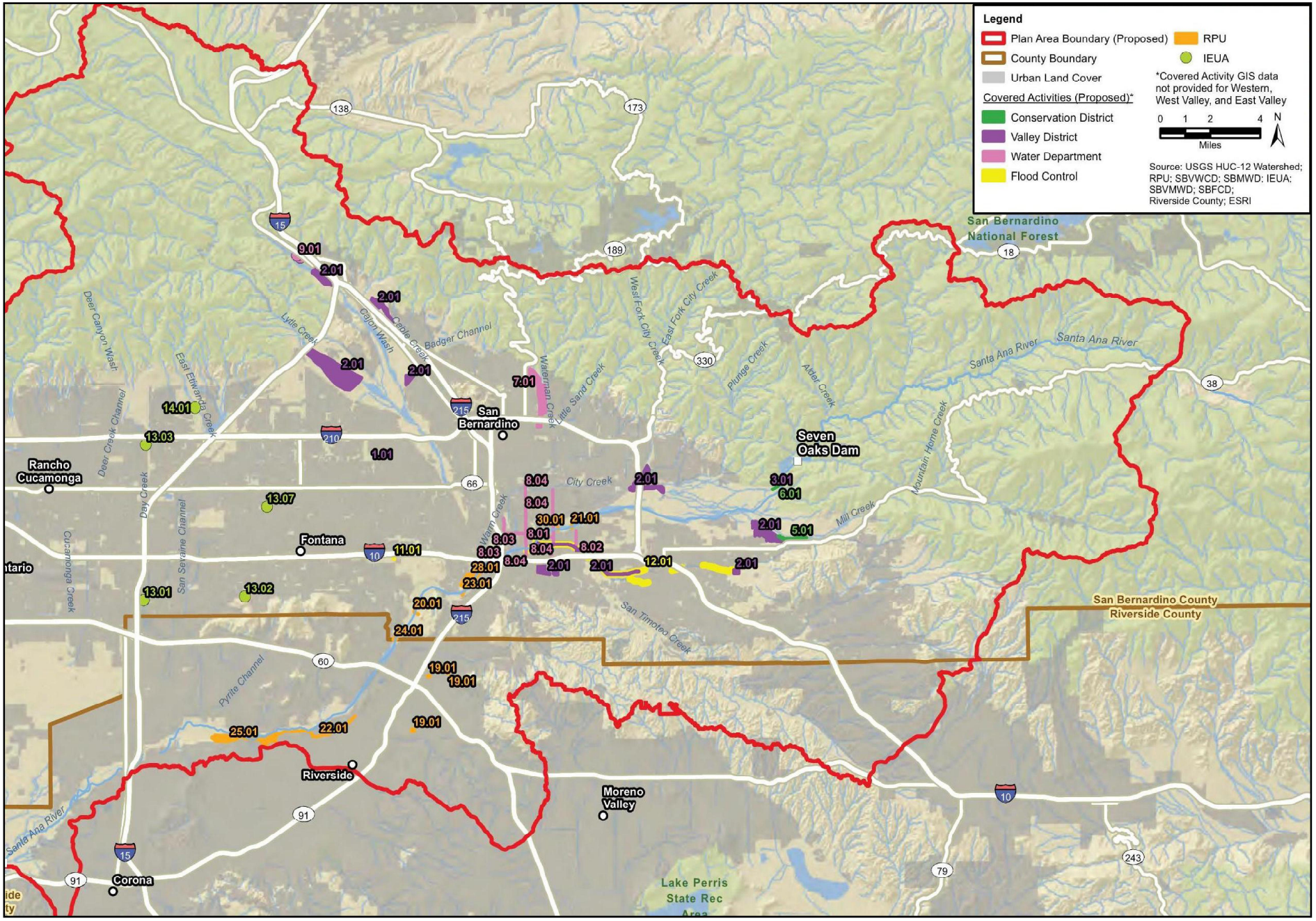
Valley District, along with SBMWD and several other local agencies, is currently preparing a Regional Recycled Water Concept Study in combination with multiple grant applications (Water Recycling Funding Program) to fund individual recycled water projects within the region. The Water Recycling Funding Program will provide grants and loans to local agencies to plan, design, and construct water recycling

facilities, as authorized through Proposition 50,[1] the Seawater Intrusion Control Loan Fund, Clean Water Bond Law of 1984, Proposition 13,[2] the Clean Water State Revolving Fund, and Proposition 1.[3] The Regional Recycled Water Concept Study will identify both existing recycled water projects and planned projects, as well as aid in the development of new recycled water ideas that will be assessed based on environmental, economic, and social criteria. The Recycled Water Concept Study will highlight recycled water projects that benefit water quality goals, supply reliability, and habitat sustainability.

The Regional Recycled Water Concept Study is considering numerous conceptual alternatives, including but not limited to the following:

- SBMWD North Subregional WRP
- EVWD Recycled Water Center
- EVWD Recycled Water Center – Expanded
- SBMWD Clean Water Factory
- SBMWD Clean Water Factory – Phase 1 to Santa Ana River
- RPU Santa Ana River Discharge
- Upgraded Lytle Creek North WRP (Owned by SB County Special Districts Department)
- Rialto Subregional WRP
- YVWD Wilson Creek Recharge

[1] Water Security, Clean Drinking Water, Coastal and Beach protection Act of 2002
[2] Costa Mechado Water Act of 2000
[3] Water Quality, Supply, and Infrastructure Improvement Act of 2014



Source: Phase I Report: Upper Santa Ana River Habitat Conservation Plan, Figure 2-1 (2014)

CLEAN WATER FACTORY PROJECT EIR

Cumulative Projects

Michael Baker INTERNATIONAL

Source: Phase I Report: Upper Santa Ana River Habitat Conservation Plan, Figure 2-1 (2014)

Exhibit 4.1-1

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Table 4.1-1 Cumulative Projects Summary

ID	Proposed Covered Activity	Lead Agencies	Project Type Construction, Improvement, Operation, Maintenance
1.01	Cactus Basin Recharge 1, 2, 3, 3A	Valley District/Flood Control	O,M
2.01	Active Recharge Project	Valley District/Flood Control	O,M
3.01	Enhanced Recharge Project	Conservation District	I,O
4.01	Pipelines: Foothill at City Creek, Santa Ana River Crossing, East Branch extension of SWP, Greenspot at Mill Creek	Valley District	O,M
5.01	Mill Creek Diversion and Channel Maintenance	Conservation District	M
6.01	Santa Ana River Channel Diversion and Cuttle Weir Maintenance	Conservation District	M
7.01	San Bernardino Recycle Water Project – Clean Water Factory	Water Department	C,O,M
8.01	Pipeline maintenance (Tippecanoe Ave, Mt. View Ave., E St, Waterman Ave, Orange Show Rd, Geothermal Pipeline)	Water Department	O,M
9.01	Kenwood Well Field and Pipeline	Water Department	C, O, M
10.01	Devil Creek Diversion Groundwater Recharge Basin	Water Department	C, O, M
11.01	Rialto Channel-Phase III	Flood Control	C, O, M
12.01	Basin and Channel Maintenance	Flood Control	M
13.01	Wineville Basin Recharge Master Plan Improvements	IEUA	I, M
13.02	RP-3 Basin Recharge Master Plan Improvements	IEUA	I, C
13.03	Lower Day Basin Recharge Master Plan Improvements	IEUA	I
13.07	Vulcan Basin Recharge Master Plan Improvements	IEUA	C, M
14.01	Etiwanda Debris Basin Improvements	IEUA	C
15.01	Basin Maintenance	West Valley	M
16.01	Pipeline Maintenance	West Valley	M
17.01	Canal Maintenance	West Valley	M
18.01	Other Routine Maintenance	West Valley	M
42.01	Lytle Creek Ranch Development Recycled Water Project	West Valley	O
19.01	Storm Water Capture Projects	RPU	C, O, M
20.01	Pipeline Crossing from Rapid Infiltration and Extraction	RPU	C, M
21.01	Future Gage Canal Transmission Main	RPU	C, M
22.01	Recycled Water Transmission Main Project	RPU	C, M
23.01	Flume and Riverside Canal Pipeline Replacements	RPU	C, M
24.01	Jurupa Ditch Company Well Maintenance	RPU	C,M

Table 4.1-1, continued

ID	Proposed Covered Activity	Lead Agencies	Project Type Construction, Improvement, Operation, Maintenance
25.01	Hidden Valley Wetlands Restoration and Proposed Conveyance Facilities	RPU	C,O,M
26.01	Riverside Basin Proposed Recharge Project	RPU	C,O,M
27.01	Riverside Basin Proposed Wells and Pipelines	RPU	C,O,M
28.01	Riverside North Aquifer Storage and Recovery Project	RPU/Valley District/Western	C,O,M
29.01	Bunker Hill Basin Proposed Wells and Pipelines	RPU	C,O,M
30.01	Gage Canal Transmission Main Replacement	RPU	C,O,M
31.01	Harmony Development Surface Water Treatment Plant	East Valley	C,O,M
32.01	Harmony Development Wastewater Treatment Plant	East Valley	C,O,M
33.01	Routine Maintenance	East Valley	M
42.01	Pipeline Rehabilitation and Replacement Program	Western	M
43.01	Water Delivery and Wastewater Collection System Operation	Western	C,O,M
44.01	Recycled Water Live Stream Discharge	Western	C,O,M
45.01	Recycled Water Crossing to South AFC	Western	C,O,M
46.01	Stormwater Channel and Recycled Water Impoundment Upgrades to Western Water Recycling Facility	Western	I,O,M
47.01	Arlington Basin Water Quality Improvement Project	Western	C,O,M
48.01	La Sierra Pipeline Project	Western	C,O,M
49.01	Lake Mathews Water Treatment Plant	Western	C,O,M
50.01	Riverside Corona Feeder Project	Western	C,O,M
51.01	Replacement of the Owl Tree and March Line Pipelines	Western	I,O,M
52.01	Lake Mathews and Burwood Drive Pipeline Construction	Western	C,O,M
53.01	Construction of Potable Water/Recycled Water Tanks	Western	C,O,M
Source: Final Phase 1 Report: Upper Santa Ana River Habitat Conservation Plan (March, 2014), pg. 2-5 to 2-6.			

Section 4.2
Aesthetics, Light, and Glare

Section 4.2
Aesthetics, Light, and Glare

The purpose of this section is to identify and analyze aesthetic resources in the Project area, defined as the area surrounding the key Project elements and the alignment options. Potential Project-related impacts have been analyzed and mitigation measures have been incorporated to reduce potential aesthetic impacts, where necessary. Aesthetic and visual resource information included in this section has been compiled from aerial photographs, photographs of the site and surrounding areas, site surveys conducted by Michael Baker International (formerly RBF Consulting) personnel, the *County of San Bernardino General Plan* (2007), *City of San Bernardino General Plan EIR* (2005), and available Geographical Information Systems (GIS) data and maps. This section identifies potential impacts to aesthetic and scenic Resources for all proposed aboveground Project components and visible construction activities.

4.2.1 AFFECTED ENVIRONMENT

ENVIRONMENTAL SETTING

Regional Context

The Project area is located within the City of San Bernardino (City) in San Bernardino County. Most of the City is characterized by urbanized development, and is largely built out. Regional geography is characterized by the foothills and the San Bernardino Valley.

To the north, the San Bernardino Mountains provide a backdrop for residents of the City. The *City of San Bernardino General Plan* (San Bernardino General Plan) describes these mountains as a valuable scenic resource for the City.[1] In the southern portion of the City, the Santa Ana River meanders through the valley, containing unique natural biological communities.

Project Area

Visual character is the overall impression of a landscape created by its unique combination of visual features such as landform, vegetation, water, and structures. Scenic quality is a measure of the degree to which these elements blend together to create a landscape that is visually pleasing to a viewer. Viewer sensitivity informs the degree to which changes in visual quality may be considered significant. Generally, the key factors in determining the potential impact on visual character and quality are based on overall visual change/contrast, dominance, and view blockage. An adverse visual impact may occur when a project (1) perceptibly and substantially changes the existing physical features of the landscape that are characteristic of the region or locale; (2) introduces new features to the physical landscape that are perceptibly uncharacteristic of the region or locale or that become visually dominant from common view points; or (3) block or completely obscure scenic resources within the landscape. The degree of impact depends on how noticeable the adverse change might be to sensitive viewer groups.

The Project site (Project area) includes the boundary of the existing San Bernardino Water Reclamation Plant (SBWRP), which has an industrial visual character, as well as the proposed basins and conveyance systems. Because of the large area that the Project covers, the visual character is described for the area itself and where needed for specific elements. The Project area is situated on level terrain among industrial, commercial and residential uses typical of an urbanized area. The area is developed and urban

[1] *City of San Bernardino General Plan*, Land Use Element, page 2-6

in nature, largely built out with the exception of vacant parcels along the alignments. Some of the vacant parcels are undergoing development while others remain vacant. The San Bernardino Mountains are visible to the north of the Project site and serve as a focal point in the background viewshed. The Santa Ana River is visible to the south from the Project site and is visible from the SBWRP site. The San Bernardino Mountains and the Santa Ana River add to the scenic quality of the Project area as they are dominant parts of the surrounding landscape. Nonetheless, the surrounding environment in the immediate vicinity of the Project area is characterized by urban development with a mixture of residential, industrial, commercial and open space, as shown in Table 4.2-1, *Surrounding Land Uses*.

Table 4.2-1: Surrounding Land Uses

Area	Existing Land Use
San Bernardino Water Reclamation Plant	
North	AMF Arrowhead Bowling Lanes, Target
South	San Bernardino Public Golf Course, Santa Ana River
East	San Bernardino Public Golf Course, East Twin Creek
West	Industrial Development including the San Bernardino Animal Control and Shelter, other industrial/commercial buildings
East Twin Creek Spreading Grounds	
North	Residential and Waterman Basins
South	Residential and CA-210
East	Residential
West	Residential
Waterman Basins	
North	Open Space and Residential
South	Wildwood Park and Residential
East	Residential
West	Residential
Chino Basin	
North, South, West, East	Surrounded by various existing uses depending on the Basin option that would ultimately be selected.
Note: The above table does not include the RIX Phased Discharge Reduction (as downstream aesthetic impacts would span several land uses) or Direct Use Customers, and this Project component is not anticipated to have impacts related to aesthetic and scenic resources.	

The visually prominent features of the Project include the existing SBWRP, the Waterman Basins and East Twin Creek Spreading Grounds, and Chino Basin. Perris Hill is the primary topographic landmark within the immediate Project area.

A series of photos were taken from public roadways on and around the Project site to show the visual character of the Project site and its surroundings. Exhibit 4.2-1, *Site Photograph Keymap*, shows the six identified viewpoints. The respective views are shown in Exhibit 4.2-2, *Site Photographs*. The viewpoints were selected as they represent focal points in the Project area located at key Project elements. In Exhibit 4.2-2, the dominance of the San Bernardino Mountains, as well as the meandering nature of the Santa Ana River in the Project area is apparent. The urban character is also apparent along the Project's path.

Overall, due to the urban character of the Project area the area is considered to have a low visual sensitivity.

Scenic Highways

The *County of San Bernardino General Plan EIR*, and the *City of San Bernardino General Plan EIR* do not identify any designated routes or scenic highways within the vicinity of the Project area. State Route 18 (SR 18) runs from State Route 210 in San Bernardino to State Route 138 near Adelanto and is a primary route into the San Bernardino Mountains. SR 18 is known as Waterman Avenue in the City of San Bernardino before turning into State Route 18. SR 18 is eligible for the State Scenic Highways System; however, it has not been designated as a scenic highways by Caltrans.[2]

Light and Glare

There are two typical types of light intrusion. First, light emanates from the interior of structures and passes out through windows. Second, light projects from exterior sources, such as street lighting, security lighting, and landscape lighting. "Light spill" is typically defined as the presence of unwanted and/or misdirected light on properties adjacent to the property being illuminated. Glare is the sensation produced by luminance within the visual field that is significantly greater than the luminance to which the eyes are adapted, which causes annoyance, discomfort, or loss in visual performance and visibility.

The existing Project site currently generates some light and glare from lighting at the SBWRP. Within the vicinity of the Project site, nighttime illumination is generated by vehicular lights and lighting associated with industrial and residential uses. Due to the highly urbanized nature of the surrounding area, night sky views and nighttime vistas are limited.

Scenic Resources

Scenic vistas are defined as areas that provide a vista of undisturbed natural areas, including a unique or unusual feature that comprises an important or dominant portion of the viewshed, or an area that offers a distant vista that provides relief from less attractive views of nearby features. Designated federal, State, and local open space and recreational areas offer scenic vistas and views if they are visible and provide a break from the urban landscape.

The Santa Ana River corridor contains an extensive swath of land that offers significant scenic vistas, which contrast against developed urban areas in the Project area. As discussed above, views of Santa Ana River are available from the Project site. Further, the San Bernardino Mountains, which tower over the Project area, are visible from the Project area and comprise an important and dominant portion of the viewshed.

[2] California Department of Transportation, Officially Designated Scenic Highways, http://www.dot.ca.gov/hq/LandArch/scenic/schwy.htm, accessed 01/22/2015.

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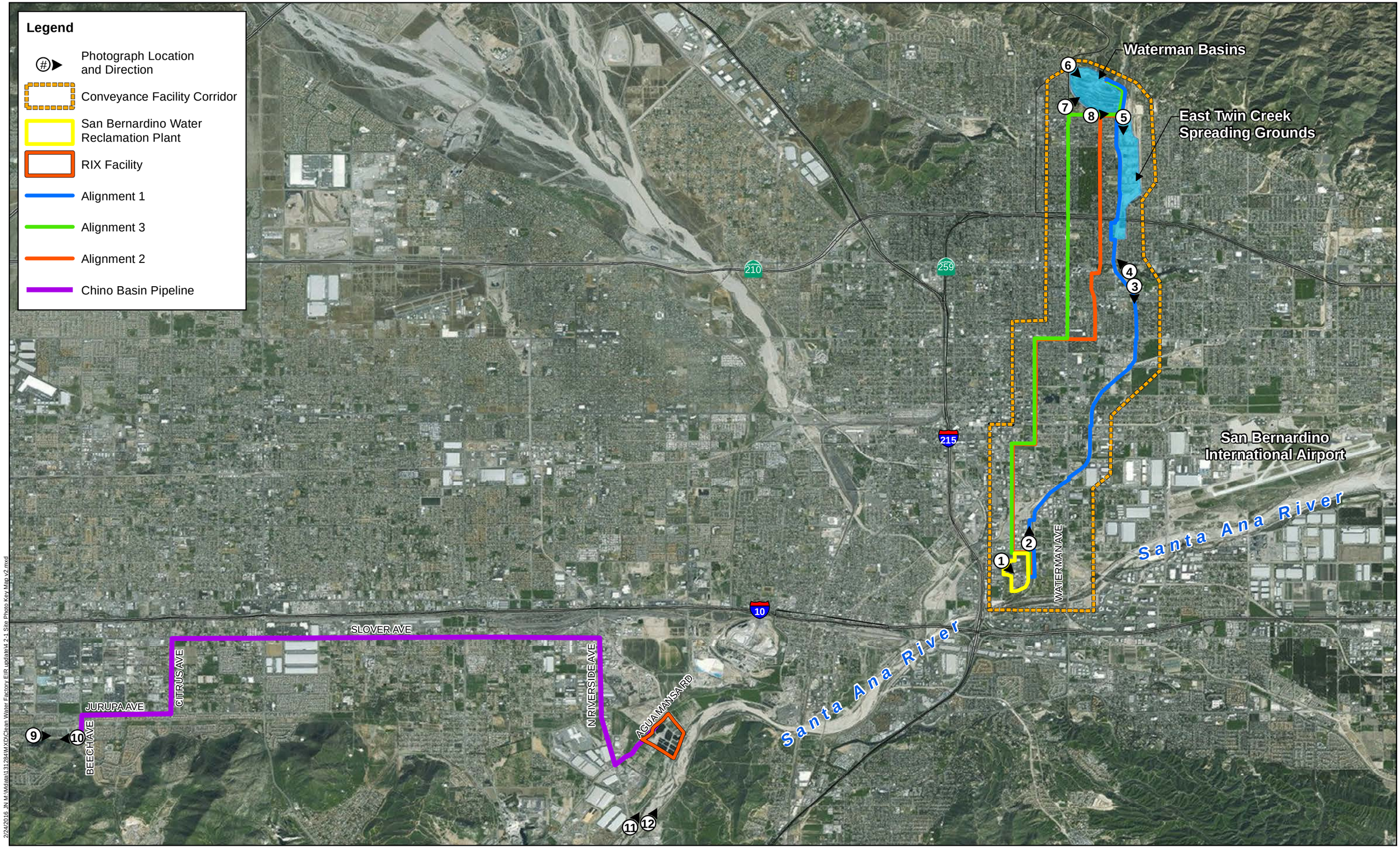

2/24/2016 JN M:\Metalal\1912\84\MXD\Clean Water Factory EIR update\4.2-1 Site Photo Key Map v2.mxd

Michael Baker INTERNATIONAL

0 0.5 1 2 Miles

Source: ESRI World Imagery

CLEAN WATER FACTORY PROJECT EIR

Site Photograph Keymap

Exhibit 4.2-1

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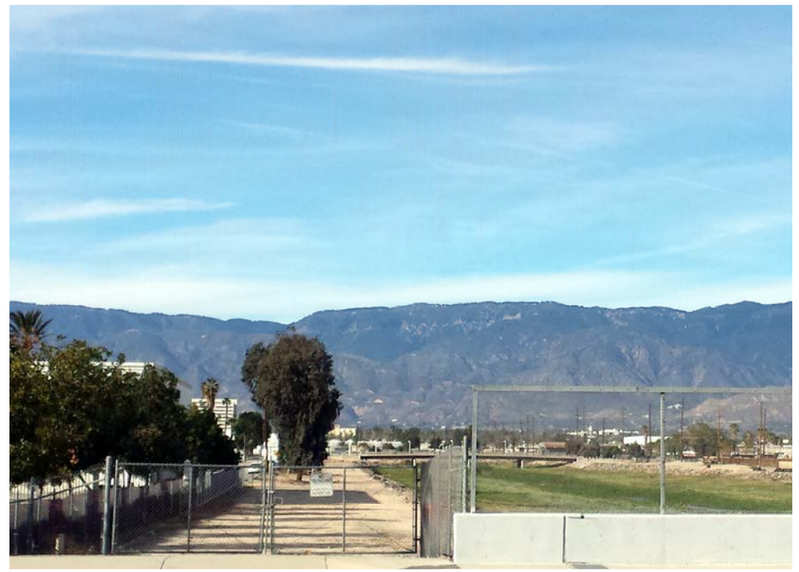
1. Looking southeast toward San Bernardino Water Reclamation Plant entrance from West Blood Bank Road.



2. Looking north where West Orange Show Road crosses the Santa Ana River.

3. Looking south from Perris Hill Park toward proposed project alignment

4. Looking northwest from Perris Hill Park toward proposed project alignment.

5. Looking south toward East Twin Creeks Spreading Grounds from East 40th Street.

6. Looking southeast toward Waterman Basins from the intersection of North Waterman Avenue and Arrowhead Road.

3/3/2015 JN M:\Mdata\131284\MXD\EIS EIR\Site Photos.mxd

Michael Baker INTERNATIONAL

Source: Michael Baker International, Google Earth Pro

CLEAN WATER FACTORY PROJECT EIR

Site Photographs

Exhibit 4.2-2

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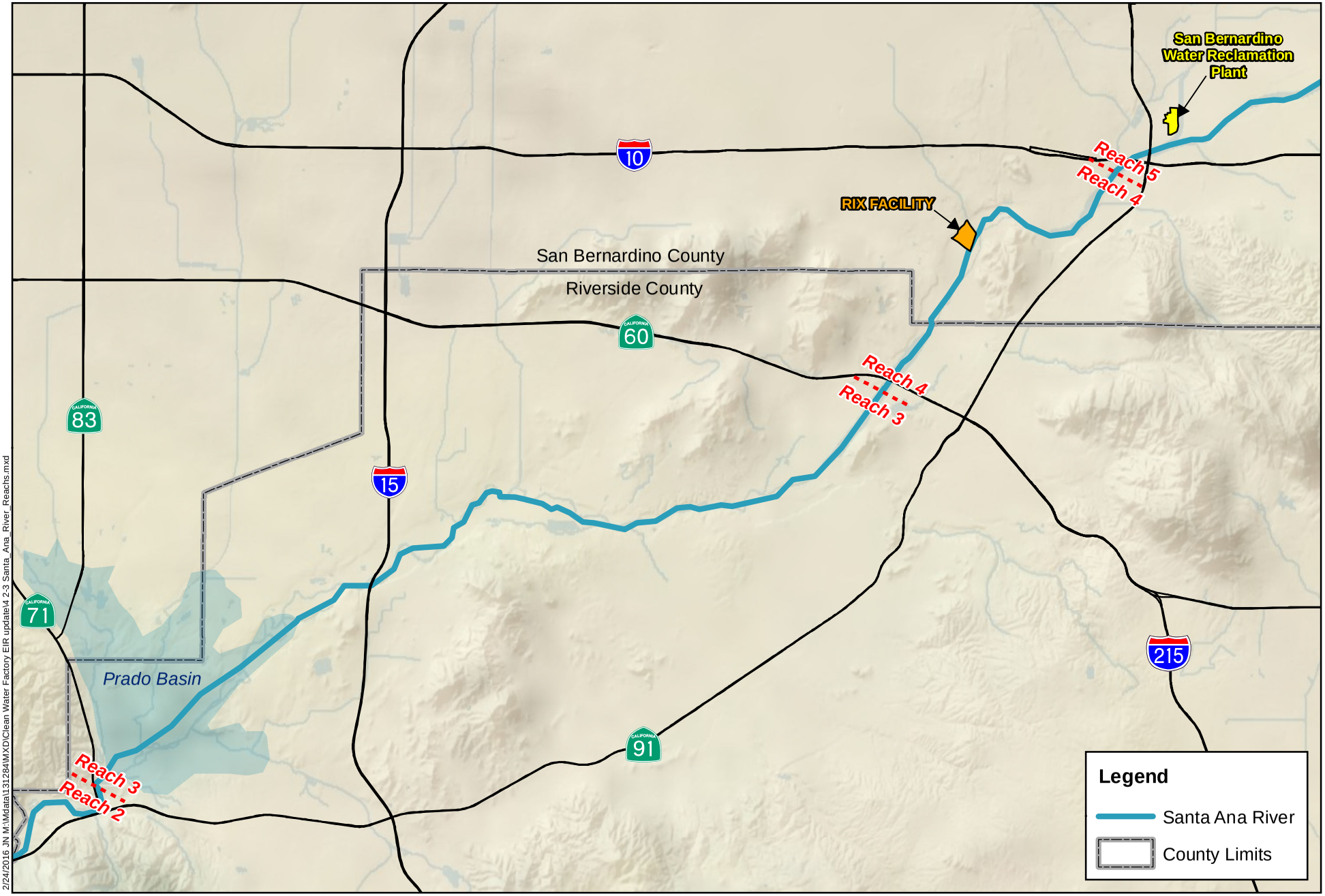

2/24/2016 JN M:\Mdata\131284\MXD\Clean Water Factory EIR update\4 2-3 Santa_Ana_River_Reachs.mxd

Michael Baker INTERNATIONAL

0 1.25 2.5 5 Miles

Source: SAWPA, ESRI Shaded Relief

CLEAN WATER FACTORY PROJECT EIR

Santa Ana River Reaches

Exhibit 4.2-3

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4.2.2 REGULATORY FRAMEWORK

FEDERAL

No federal laws, regulations, or executive orders apply to scenic resources within the Project area.

STATE

Nighttime Sky – Title 24 Outdoor Lighting Standards

The California Energy Commission (CEC) regulates the energy efficiency of outdoor lighting for residential and nonresidential development. The standards, put in place in 2005, have helped to improve the quality of outdoor lighting and help to reduce the impacts of light pollution, light trespass, and glare. The standards regulate lighting characteristics such as maximum power and brightness, shielding, and sensor controls to turn lighting on and off. Different lighting standards are set by classifying areas by lighting zone. The classification is based on population figures of the 2000 Census. Areas can be designated as LZ1 (dark), LZ2 (rural), or LZ3 (urban). The City of San Bernardino is classified LZ3.

LOCAL

County of San Bernardino General Plan

The Conservation Element of the General Plan includes concepts and guidelines to manage, preserve, and utilize natural resources. The following goals, policies, and programs are applicable to the proposed Project:

Goal OS.5 The County will maintain and enhance the visual character of scenic routes in the County.

Policy OS 5.3 The County desires to retain the scenic character of visually important roadways throughout the County. A "scenic route" is a roadway that has scenic vistas and other scenic and aesthetic qualities that over time have been found to add beauty to the County. Therefore, the County designates the following routes as scenic highways and applies all applicable policies to development on these routes:

VALLEY REGION:

a. Beaumont Avenue within the Loma Linda SOI.

b. Citrus Avenue within the Redlands SOI.

c. Colton Avenue within the Redlands SOI.

d. Crafton Avenue within the Redlands SOI.

e. Fifth Avenue within the Redlands SOI.

f. Highland Avenue within the Redlands SOI.

g. Interstate 10 from the City of Redlands to the City of Yucaipa.

h. Mentone Boulevard within the Redlands SOI.

i. San Bernardino Avenue within the Redlands SOI.

j. Sand Canyon Road between Crafton Avenue and the City of Yucaipa.

k. San Timoteo Canyon Road in the Loma Linda SOI.

l. State Route 71 - All of the route in unincorporated County area.

County of San Bernardino General Plan

Chapter 83.07, Glare and Outdoor Lighting, of the County of San Bernardino Development Code, includes regulations and standards pertaining to lighting. Chapter 83.07 outlines light shielding, lamp type, and height requirements for lighting within the desert region. The purpose of this chapter of the General Plan is to minimize light pollution, glare, and light trespass, conserve energy resources, and curtail the degradation of the nighttime visual environment.

City of San Bernardino General Plan

The General Plan Land Use and Community Design Elements contain policies related to aesthetics, lighting, and glare. These policies are provided below:

Land Use Element

Policy 2.1.1: Actively enforce development standards, design guidelines, and policies to preserve and enhance the character of San Bernardino's neighborhoods.

Policy 2.1.2: Require that new development with potentially adverse impacts on existing neighborhoods or residents such as noise, traffic, emissions, and storm water runoff, be located and designed so that quality of life and safety in existing neighborhoods are preserved.

Policy 2.2.2: Require new uses to provide mitigation or buffers between existing uses where potential adverse impacts could occur, including, as appropriate, decorative walls, landscape setbacks, restricted vehicular access, enclosure of parking structures to prevent sound transmission, and control of lighting and ambient illumination.

Policy 2.2.3: Sensitively integrate regionally beneficial land uses such as transportation corridors, flood control systems, utility corridors, and recreational corridors into the community.

Policy 2.2.4: Hillside development and development adjacent to natural areas shall be designed and landscaped to preserve natural features and habitat and protect structures from the threats from natural disasters, such as wildfires and floods.

Policy 2.2.7: Control the development of industrial and similar uses that use, store, produce or transport toxics, air emissions, and other pollutants.

Policy 2.5.4: Require that all new structures achieve a high level of architectural design and provide a careful attention to detail.

Community Design Element

Policy 5.2.4: Screen public facilities and above-ground infrastructure support structures and equipment, such as electrical substations and water wells, through sensitive site design, appropriately scaled landscaping, undergrounding of utilities, and other methods of screening (e.g., cell tower stealthing).

Policy 5.7.9: Ensure that the scale and massing of office, commercial, and industrial uses are sensitive to the context of surrounding residential development.

Policy 5.7.10: Lighting should provide for safety and to highlight features of center but not shine directly onto neighboring properties or into the eyes of motorists.

Policy 12.8.1: Carefully review new projects on properties that:

a. Contain sloping topography,

b. Provide limited abilities to provide infrastructure to new development based upon severely sloping terrain;

c. Provide natural vistas and views enjoyed by the community; or

d. Serve as landmark features within the City.

Policy 12.8.2: Condition and modify plans to preserve the City's natural features to the greatest extent possible.

Policy 12.8.3: Review grading, access, and site plans for new projects to ensure that they are sensitively designed to minimize impacts to the City's natural features.

City of San Bernardino Development Code

Section 19.20.030

"Property Development Code: General Standards"). This Section states that "exterior lighting shall be … shielded or recessed so that direct glare and reflections are contained within the boundaries of the parcel, and shall be directed downward and away from adjoining properties and public rights-of-way. No lighting shall blink, flash, or be of unusually high intensity or brightness. All lighting fixtures shall be appropriate in scale, intensity, and height to the use it is serving. Conformance to this standard is meant to reduce lighting impacts associated with development."

4.2.3 ENVIRONMENTAL IMPACTS

SIGNIFICANCE CRITERIA UNDER CEQA

Appendix G of the State *CEQA Guidelines* contains the Initial Study Checklist form, which includes questions related to aesthetic and scenic resources. The issues presented in the Initial Study Checklist have been utilized as Thresholds of Significance in this Section. Accordingly, a project may create a significant environmental impact if one or more of the following occurs:

a) Have a substantial adverse effect on a scenic vista; (refer to Impact Statement 4.2-1)

b) Substantially damage scenic resources, including but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway; (refer to Impact Statement 4.2-2)

c) Substantially degrade the existing visual character or quality of the site and its surroundings; (refer to Impact Statement 4.2-3)

d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area (refer to Impact Statement 4.2-4).

The SBWRP, conveyance systems, Waterman Basins and East Twin Creek Spreading Grounds are not anticipated to emit significant amounts of light and glare during long-term operation of the Project. These sources would be required to adhere to existing City regulations and standards, such as the City of San Bernardino Development Code Section 19.20.030, and County of San Bernardino Development Code

Chapter 83.07. Should the SBMWD utilize the Chino Basin pipeline recharge option, impacts to light and glare would be similar to those anticipated for the Waterman Basins and East Twin Creek Spreading Grounds, and would be required to comply with the relevant development codes relating to light and glare.

The pump station and storage reservoir sites proposed under the various Project alignments may include lighting necessary for security. This lighting has the potential to create spillover into adjacent uses. To prevent such spillover, the Project would be required to adhere to the City/County policies and standards regarding lighting as described above. In addition, the Project would be required to use materials that minimize/prevent glare. Therefore, light- and glare-related operational impacts of the Project would be considered less than significant and are not further discussed in this Draft EIR.

METHODS AND ASSUMPTIONS

The scenic quality of an area is determined through the variety and contrasts of the area's visual features, the character of those features, and the scope and scale of the scene. The aesthetic quality of an area depends on the relationships between its features and their importance in the overall view. Evaluating scenic resources requires a method that objectively characterizes visual features, assesses their quality in relation to the visual character of the surrounding area, and identifies their importance to the individuals viewing them. This process is derived from established federal procedures for visual assessment and is commonly used for a variety of project types.

The following impact analysis is based on field review of the Project site, review of topographic conditions and aerial photographs, and review of the Project description. This analysis is based on anticipated changes on the site from Project implementation.

SUMMARY OF APPLICABLE PROJECT DESIGN FEATURES AND EXISTING LAWS, ORDINANCES, AND REGULATIONS

Any impacts on aesthetic and scenic resources associated with the proposed Project would occur during the construction phase, primarily at the SBWRP and along the conveyance system routes, and would be temporary in nature. This would not conflict with any existing laws, ordinances, or regulations that address aesthetic and scenic resources.

4.2.4 CONSTRUCTION AND OPERATIONAL IMPACTS TO AESTHETICS, LIGHT, AND GLARE

The following discussion identifies the potential construction and operational impacts that implementation of each Project component would have regarding land use. This discussion is used as a basis for the significance determinations identified for each Aesthetics, Light, and Glare impact area.

RIX PHASED DISCHARGE REDUCTION

Construction

Overall, the Project does not propose any construction activities in the vicinity of the RIX Facility. The Project would not change the physical aspect of the RIX Facility, other than the amount of secondary effluent it receives from the SBWRP. There would be no impacts to aesthetics and scenic resources associated with construction.

However, the RIX Facility would require the installation of a sodium hypochlorite (NaOCl) disinfection system as well as storage and pumping facilities under the Chino Basin pipeline recharge alternative. These improvements would be minor in nature and would occur within the existing RIX Facility boundaries. Construction would occur during allowable work hours and storing of equipment would be within designated staging areas. As such, construction activities under the Chino Basin pipeline recharge option would result in less than significant impacts to aesthetics and scenic resources.

Operation

The RIX Phased Reduction has implications for potential impacts to the aesthetics of the Santa Ana River, as flows would be decreased over the course of five phases. At present, the RIX Facility constitutes approximately 74 to 80 percent of the stable baseflow within this reach of the river. Further downstream (Regulatory Reach 3 – Mission Boulevard Bridge to Prado Dam), flows are supplemented by rising groundwater, additional wastewater treatment plant discharges (i.e., Western Riverside County Regional Wastewater Treatment Plant, City of Riverside Regional Water Quality Control Plant and Gage Canal), surface runoff, and flows from Temescal Creek, Chino Creek, Day Creek, Mill Creek, and Hole Lake. Project implementation could result in a change in the visual quality and/or character of the river system that is considered a scenic resource in the area.

WATER RECLAMATION PLANT

The SBWRP is an existing water treatment plant that will be expanded/upgraded to meet projected 2030 water demands. Treatment improvements would improve the recovery of product water, in order to reduce concentrated brine and increase product water available for recharge. Five water treatment options have been proposed for the SBWRP; including conventional tertiary treatment (Option A1), Micro/Nano-filtration (MF/NF) Advanced Treatment (Option A2), MF/NF Reverse Osmosis (RO) Advanced Treatment (Option A3), MF/RO Advanced Treatment (Option A4), and Combined Conventional Treatment and MF/RO Advanced Treatment (Option A5). To incorporate one, or a combination of, these water treatment technologies, existing physical facilities of the SBWRP will be modified.

Construction

Improvements and modifications to the SBWRP would necessitate construction activities related to the installation of water purification technologies in order to meet water quality standards for groundwater injection and/or direct use applications. However, facility modifications would be minor in nature and would occur within the existing SBWRP boundaries. Construction would occur during allowable work hours and storing of equipment would be within designated staging areas. Construction activities would result in less than significant impacts to aesthetics and scenic resources.

Operation

Operation of the SBWRP would be similar to current operation activities. Although improvements would take place at the site, they would not impede or alter views. Project implementation would have a less than significant impact to aesthetics and scenic resources.

CONVEYANCE AND STORAGE

The conveyance systems proposed to divert water to the Waterman Basins and East Twin Creek Spreading Grounds would occur within the City of San Bernardino, within existing roadway or other public right of

ways. If the Chino Basin pipeline option is selected, a future connection from the RIX Facility to an undetermined recharge basin within IEUA's non-potable system would be provided.

Construction

Pipelines would be constructed from the SBWRP north to the Waterman Basins and East Twin Creek Spreading Grounds. Alternatively, pipelines may also be constructed from the SBWRP west to the Chino Basin. These pipelines would be installed underground and installation would occur within existing roadways and/or public rights-of-way. Conveyance system construction would require trenching and installation and would progress in a linear manner. Construction impacts would be temporary in nature, and would not result in impacts to aesthetics and scenic resources.

Construction of the pump stations and storage reservoirs would occur on properties up to 0.5-acres in size, adjacent to the conveyance pipeline alignments, would require limited grading with construction of underground piping to connect with proposed pipelines and structural foundation. Project-related construction will be localized to the booster pump/reservoir sites, and due to the relatively small size of the sites, there would be no significant impacts to aesthetics and scenic resources.

Operation

Maintenance and operations of the conveyance and storage facilities would include periodic, scheduled inspections and the replacement of any equipment that has reached the end of their lifetime or failed during use. If replacement of parts is needed, impacts would be similar to the construction impacts described above. While the pump stations and storage reservoirs would introduce a new element within the surrounding viewshed, all aboveground elements would be enclosed and appropriately screened, in compliance with the applicable General Plan. Operation and maintenance activities of the conveyance system would not involve significant impacts to aesthetics and scenic resources.

Direct Use Customers

Direct use customers (i.e., parks, golf course, and other irrigation users) would be located within the SBMWD service area, near the chosen conveyance alignment. Distribution lines would be installed underground within existing right-of-way to connect customers to the conveyance pipelines where necessary.

Construction

Construction impacts for Direct Use Customers would be similar to those identified in the Conveyance and Storage System discussion, above. As construction would be temporary in nature, there would be no significant impacts in regards to aesthetics and scenic resources.

Operation

There would be no operational impacts related to aesthetics and scenic resources, as infrastructure necessary for direct use customers would be located belowground within public rights-of-way.

Recharge Basins

Recharge site improvements would occur within the existing Waterman Basins, East Twin Creek Spreading Grounds, and potential IEUA-owned basin along the Chino Basin Pipeline, or in the case of the proposed monitoring wells, between the recharge sites and nearby potable wells.

Construction

Construction activities associated with recharge site improvements would alter depending on the specific recharge basin(s) selected. Construction would be similar to those proposed for the conveyance systems, and would require excavation and/or grading of soils for construction of the outlet works and erosion control. Additionally, all construction impacts would be temporary in nature. Any equipment required for construction purposes would be stored in a designated staging area, away from residential uses. No significant impacts would occur in regards to aesthetics and scenic resources.

Operation

Operation and maintenance impacts would be similar to the Conveyance and Storage System, provided above. There would be no significant impacts to aesthetics and scenic resources.

MITIGATION MEASURES

No mitigation is required.

Impact 4.2-1: Would the Project result in impacts to scenic vistas? *Level of Significance: Less Than Significant Impact with Mitigation Incorporated.*

The Project site is not located within a scenic vista, viewshed, or other visually sensitive area, as designated by the San Bernardino General Plan or County of San Bernardino General Plan. Aside from Scenic Highways, the San Bernardino General Plan does not designate scenic viewsheds or scenic vistas.

As described previously, the Project area is located in an urban environment. The San Bernardino Mountains and the Santa Ana River are part of the background views in the Project area. Nonetheless, due to their sheer size and massing, Project elements would not impact these two important features as discussed below.

CONSTRUCTION-RELATED IMPACTS

As described above in Section 4.2.4, *Construction and Operational Impacts to Aesthetics and Scenic Resources*, no significant impacts would occur in regards to construction at the RIX Facility, SBWRP, Conveyance and Storage System, Direct Use Customers, and Recharge Basins. All construction activities are temporary in nature, and thus all visual impacts would be temporary as well. Much of the construction and other improvements are proposed within already existing facilities, including the RIX Facility, SBWRP and Recharge Basins. Further, Mitigation Measure AES-1 requires the designation of temporary equipment staging areas within the Project site. Materials, equipment and debris piles will be clustered in staging areas to minimize visual impacts during construction. Thus, impacts to scenic vistas are less than significant.

OPERATIONS-RELATED IMPACTS

As described above in Section 4.2.4, *Construction and Operational Impacts to Aesthetics and Scenic Resources*, no significant impacts would occur in regard to operations at the SBWRP, Conveyance and Storage System, Direct Use Customers, and Recharge Basins. Operations at the SBWRP and Recharge Basins would occur in a manner similar to existing conditions. The Conveyance and Storage System and Direct Use Customers would involve underground piping and properly screened pump stations and storage areas. Thus, impacts to scenic vistas are less than significant.

RIX PHASED DISCHARGE REDUCTION

Currently the SBWRP treats approximately 22 mgd of wastewater to a secondary treatment standard. The Project proposes to change the discharge schedule, which would impact Santa Ana River flows. The riparian vegetation along Regulatory Reach 4 (section of the river from Bunker Hill Dike down to Mission Boulevard Bridge – see Exhibit 4.2-3, *Santa Ana River Reaches*) is dependent on Santa Ana River flows and would be impacted by a reduction of discharge. At present, the RIX Facility constitutes approximately 74 to 80 percent of the stable baseflow within this reach of the river. Further downstream (Regulatory Reach 3 – Mission Boulevard Bridge to Prado Dam), flows are supplemented by rising groundwater, additional wastewater treatment plant discharges (i.e., Western Riverside County Regional Wastewater Treatment Plant, City of Riverside Regional Water Quality Control Plant and Gage Canal), surface runoff, and flows from Temescal Creek, Chino Creek, Day Creek, Mill Creek, and Hole Lake.

Within Regulatory Reach 4, Project implementation could result in a change in the visual quality and/or character of the river system that is considered a scenic resource in the area. Flow reduction could lead to degradation in the quality and quantity of riparian habitat thus modifying the Santa Ana River's viewshed vividness and form. The proposed diversion is not anticipated to significantly aesthetically impact the eight-mile portion of the Santa Ana River extending from the RIX Facility to Regulatory Reach 3.

As outlined in Section 4.4, *Biological Resources*, an Adaptive Management Plan (AMP) would be required, to avoid or minimize potential impacts to the Santa Ana River and associated habitat and species. The AMP would protect the functions and integrity of the riparian corridor during the phased discharge decrease. As impacts to the biological resources in the Santa Ana River would be largely minimized by the AMP, changes to the visual quality and character of the Santa Ana River would also be minimized. Because of this active management of the Santa Ana River, impacts to scenic vistas related to the RIX Phased Discharge Reduction would be less than significant with mitigation incorporated.

MITIGATION MEASURES

Refer to BIO-7, and the mitigation measure below:

AES-1 Prior to construction, SBMWD shall designate temporary construction equipment staging areas within the Project site. These staging areas shall be used throughout the duration of construction. Materials, heavy-duty equipment, and debris piles shall be clustered to minimize visual impacts during construction. At a minimum, these construction equipment and debris clusters shall be located at a distance of 100 feet from adjacent residence and shall be visually screened.

Impact 4.2-2: Would the Project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway? *Level of Significance: No Impact.*

Development of any of the Project would have no impact on a State-designated scenic highway. The nearest highways to the Project site are I-10 and I-215, and State Route 210 (SR-210), none of which are designated as scenic highways by the State of California. In addition, the City's General Plan designates portions of State Route 18 (SR-18), south of State Route 330 (SR-330), and SR-330 that pass through the City as Eligible Scenic Highways. However, both of these facilities would be located at a distance of approximately four miles from the Project site, and therefore would not be visually impacted by development of the Project site. Construction of the recharge sites improvements would not significantly

impact scenic resources. Although the San Bernardino Mountains are considered a scenic resources, the temporary improvements at the recharge sites are located low in the foothills of the mountains and would do little to alter the scenic qualities of the resource. Further, there are no historic buildings or rock outcroppings are located on-site and no tree removal operations are proposed as part of the Project. No impact would occur in this regard.

Impact 4.2-3: Would the Project substantially degrade the existing visual character or quality of the site and its surroundings? *Level of Significance: Less Than Significant Impact with Mitigation Incorporated*.

As previously discussed, the Project area's visual character is that of a developed urban environment surrounded by residential, commercial and industrial uses. Because of the lack of identified scenic vistas, the Project area is considered to have a low visual quality. The most dominant visual elements in the Project area are the San Bernardino Mountains and the Santa Ana River. Project elements would not interfere with views of these two important elements. Also, because of their distant views from the Project area, they are not considered central to the surrounding area's visual character. Project elements would be built at existing water conveyance infrastructure sites, while a portion of the water conveyance system would be located underground. Therefore, the Project would not impact the urban character of the area. Project impacts are discussed below for both the construction and operation phases.

CONSTRUCTION-RELATED IMPACTS

As described above in Section 4.2.4, *Construction and Operational Impacts to Aesthetics and Scenic Resources*, no significant impacts would occur in regard to construction at the RIX Facility, SBWRP, Conveyance and Storage System, Direct Use Customers, and Recharge Basins. All construction activities are temporary in nature, and thus all visual impacts would be temporary as well. Much of the construction and other improvements are proposed within already existing facilities, including the RIX Facility, SBWRP and Recharge Basins. Further, Mitigation Measure AES-1 requires the designation of temporary equipment staging areas within the Project site. Materials, equipment and debris piles will be clustered in staging areas to minimize visual impacts during construction. As the Project site is within an urbanized area and construction impacts would be temporary, the Project would not degrade the existing visual character or quality of the site and its surroundings. Thus, impacts in this regard are less than significant.

OPERATIONS-RELATED IMPACTS

As described above in Section 4.2.4, *Construction and Operational Impacts to Aesthetics and Scenic Resources*, no significant impacts would occur in regard to operations at the SBWRP, RIX Facility, Conveyance and Storage System, Direct Use Customers, and Recharge Basins. As the SBWRP, RIX Facility, and Recharge Basins are existing facilities, the implementation of the Project would not degrade the existing visual character or quality of the site and its surroundings. The Conveyance and Storage System and Direct Use Customers would involve underground piping and properly screened pump stations and storage areas. As the Project is located within urbanized San Bernardino, operational impacts would not affect the visual character of the area. Thus, impacts to existing visual character or quality of the site and its surroundings would be less than significant.

RIX PHASED DISCHARGE REDUCTION

As discussed previously in Impact 4.2-1, Project implementation may result in a change in the visual quality and/or character of the Santa Ana River system, by reducing a significant portion of the surface flows in

Regulatory Reach 4 and thus impacting the riparian vegetation that depends on this flow. The Project would phase diversions, thus minimizing impacts to the Santa Ana River and its riparian corridor. Further, an Adaptive Management Plan as outlined in Mitigation Measure BIO-7 would be implemented to avoid or minimize potential impacts to the Santa Ana River and associated sensitive habitat and species. Because impacts to the biological resources in the Santa Ana River would be avoided or minimized, changes to the visual quality and character of the Santa Ana River would also be minimized. Therefore, Project impacts would be less than significant with mitigation incorporated to the visual character of the Santa Ana River due to phased discharge reduction.

MITIGATION MEASURES

Refer to BIO-7, and the mitigation measure below:

AES-1 Refer to Impact 4.2-1 above.

Impact 4.2-4: Would the Project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area? *Level of Significance: Less Than Significant Impact.*

Project implementation would have a less than significant impact regarding light and glare. Construction impacts including the use of lighting (i.e., security lighting) would be temporary in nature and occur between 8:00 am and 10:00 pm, the construction hours allowed under the City's Municipal Code (Chapter 8.54, "Noise Control"). Because lighting would meet the requirements of both City and County lighting codes, construction of the improvements to the SBWRP, conveyance facilities, recharge facilities and the RIX facility proposed for the Project regarding light and glare would be considered less than significant.

LEVEL OF SIGNIFICANCE AFTER MITIGATION

Visual impacts associated with Project construction would be temporary in nature; however, AES-1 would minimize those temporary impacts. With the implementation of AES-1, impacts to scenic vistas and visual character would be reduced to a less than significant level through the strategic staging of construction equipment out of view when not in use.

Additionally, refer to BIO-7 regarding the AMP, which would also minimize visual impacts to the Santa Ana River.

4.2.5 CUMULATIVE IMPACTS

The cumulative setting for this Draft EIR is the City of San Bernardino, County of San Bernardino, and the Santa Ana River watershed. The Santa Ana River watershed is included because the Project would reduce flows in the river. Traditionally, impacts associated with aesthetics resources are generally confined to a particular project site and the project site's immediate surrounding area.

Planned or future projects in the area could consist of many types of development projects ranging from residential/commercial/industrial developments. Further, there are a variety of projects proposed along the Santa Ana River that would include, but would not be limited to, dam projects, channel diversion projects, recycled water projects, and various maintenance and improvement projects. These projects could cumulatively impact the visual character of the Santa Ana River, as well as the City of San Bernardino.

As discussed above the Project would have a less than significant impact on aesthetic resources due to both construction and operation of the Project. Construction related aesthetic impacts would be confined to the immediate area and would be temporary in nature. Project operation would not substantially degrade the visual character of the Project area or the viewshed, made up of the San Bernardino Mountains and the Santa Ana River. Further, the Project would take place within a well-developed urban environment and in areas with existing water conveyance infrastructure. With implementation of applicable existing regulations and incorporation of Mitigation Measures AES-1 the Project would not create significant new or cumulatively considerable aesthetic impacts. Therefore, the proposed Project's contribution to cumulative visual impacts in the region would be less than cumulatively considerable.

Further, the Project would implement an Adaptive Management Plan (Mitigation Measure BIO-7) to actively manage the Santa Ana River discharges and the Project's potential impacts on this watershed. Any future projects proposed on the Santa Ana River would undergo CEQA evaluation and would be subject to federal, State and local regulations. Because the Project would have a less than significant impact on the Santa Ana River watershed visual character the proposed Project's contribution to cumulative visual impacts in the watershed would be less than cumulatively considerable.

As such, the incremental impacts of the proposed Project to aesthetics, light, and glare, are not "cumulative considerable" and no further mitigation is required.

4.2.6 SIGNIFICANT UNAVOIDABLE IMPACTS

No significant and unavoidable impacts related to aesthetic and scenic resources have been identified.

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Section 4.3
Air Quality and Greenhouse Gas Emissions

Section 4.3
Air Quality and Greenhouse Gas Emissions

This section describes the environmental and regulatory settings of air quality and greenhouse gas emissions, as they pertain to implementation of the Project. Information given in this section is based on the *City of San Bernardino General Plan* (2005), *City of San Bernardino General Plan* EIR (2005), and the *Clean Water Factory Project Recycled/Advanced Water Conveyance System Engineering Analysis Summary Report*, prepared by Michael Baker International (formerly RBF Consulting) and Black & Veatch (July 2012).

4.3.1 AFFECTED ENVIRONMENT

SOUTH COAST AIR BASIN

Geography

The Project site is located in the South Coast Air Basin (Basin), a 6,600-square mile area bounded by the Pacific Ocean to the west and the San Gabriel, San Bernardino and San Jacinto Mountains to the north and east. The Basin includes all of Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino Counties, in addition to the San Gorgonio Pass area of Riverside County.

The extent and severity of the air pollution problem in the Basin is a function of the area's natural physical characteristics (weather and topography), as well as man-made influences (development patterns and lifestyle). Factors such as wind, sunlight, temperature, humidity, rainfall, and topography all affect the accumulation and/or dispersion of air pollutants throughout the Basin.

Climate

The general region lies in the semi-permanent high-pressure zone of the eastern Pacific. As a result, the climate is mild, tempered by cool sea breezes. The climate consists of a semiarid environment with mild winters, warm summers, moderate temperatures, and comfortable humidity. Precipitation is limited to a few winter storms. The usually mild climatological pattern is interrupted infrequently by periods of extremely hot weather, winter storms, or Santa Ana winds. The average annual temperature varies little throughout the Basin, averaging 75 degrees Fahrenheit (°F). However, with a less-pronounced oceanic influence, the eastern inland portions of the Basin show greater variability in annual minimum and maximum temperatures. All portions of the Basin have recorded temperatures over 100°F in recent years.

Although the Basin has a semi-arid climate, the air near the surface is moist due to the presence of a shallow marine layer. Except for infrequent periods when dry, continental air is brought into the Basin by offshore winds, the ocean effect is dominant. Periods with heavy fog are frequent, and low stratus clouds, occasionally referred to as "high fog," are a characteristic climate feature. Annual average relative humidity is 70 percent at the coast and 57 percent in the eastern part of the Basin. Precipitation in the Basin is typically 9 to 14 inches annually and is rarely in the form of snow or hail due to typically warm weather. The frequency and amount of rainfall is greater in the coastal areas of the Basin.

The height of the inversion is important in determining pollutant concentration. When the inversion is approximately 2,500 feet above sea level, the sea breezes carry the pollutants inland to escape over the mountain slopes or through the passes. At a height of 1,200 feet, the terrain prevents the pollutants from entering the upper atmosphere, resulting in a settlement in the foothill communities. Below 1,200

feet, the inversion puts a tight lid on pollutants, concentrating them in a shallow layer over the entire coastal basin. Usually, inversions are lower before sunrise than during the day. Mixing heights for inversions are lower in the summer and more persistent, being partly responsible for the high levels of ozone (O_3) observed during summer months in the Basin. Smog in southern California is generally the result of these temperature inversions combining with coastal day winds and local mountains to contain the pollutants for long periods of time, allowing them to form secondary pollutants by reacting with sunlight. The Basin has a limited ability to disperse these pollutants due to typically low wind speeds.

The area in which the Project is located offers clear skies and sunshine, yet is still susceptible to air inversions. These inversions trap a layer of stagnant air near the ground, where it is then further loaded with pollutants. These inversions cause haziness, which is caused by moisture, suspended dust, and a variety of chemical aerosols emitted by trucks, automobiles, furnaces, and other sources.

The local climate is typically warm during summer when temperatures tend to be in the 70s and cool during winter when temperatures tend to be in the 60s. The warmest months of the year are July and August with an average maximum temperature of 96 degrees Fahrenheit, while the coldest month of the year is December with an average minimum temperature of 41 degrees Fahrenheit.[1] Temperature variations between night and day tend to be moderate during summer with a difference that can reach 21 degrees Fahrenheit, and moderate during winter with a difference of approximately 24 degrees Fahrenheit. The annual average precipitation in the City of San Bernardino is 16 inches.

LOCAL AMBIENT AIR QUALITY

The SCAQMD has divided its jurisdiction into 38 source receptor areas (SRA) with a designated ambient air monitoring station in most areas. The Project is located in the Central San Bernardino Valley SRA (SRA 34). The monitoring station representative of this area is the San Bernardino – 4th Street Monitoring Station, which is located just east of the Project site at 24302 East 4th Street. The air pollutants measured at the San Bernardino – 4th Street Monitoring Station include CO, NO_X, O_3, PM_{10}, and $PM_{2.5}$. The nearest station to the Project site measuring SO_X is the Fontana – Arrow Highway Monitoring Station, which is located approximately 12 miles west of the Project site (within SRA 34) at 14360 Arrow Highway in the City of Fontana. The air quality data monitored at the San Bernardino – 4th Street and Fontana – Arrow Highway monitoring stations from 2012 to 2014 are presented in Table 4.3-1, *Monitored Air Quality Levels*.

CRITERIA POLLUTANTS

The Federal Clean Air Act (FCAA) established Federal air quality standards for six common air pollutants known as criteria pollutants. A summary of the six criteria pollutants analyzed for local air quality are discussed below.

Carbon Monoxide (CO). CO is an odorless, colorless toxic gas that is emitted by mobile and stationary sources as a result of incomplete combustion of hydrocarbons or other carbon-based fuels. In cities, automobile exhaust can cause as much as 95 percent of all CO emissions.

CO replaces oxygen in the body's red blood cells. Individuals with a deficient blood supply to the heart, patients with diseases involving heart and blood vessels, fetuses (unborn babies), and patients with

[1] The Weather Channel, *San Bernardino, California Monthly Average Temperatures*, https://weather.com/weather/monthly/l/USCA0978:1:US, accessed February 2, 2016.

chronic hypoxemia (oxygen deficiency) as seen in high altitudes are most susceptible to the adverse effects of CO exposure. People with heart disease are also more susceptible to developing chest pains when exposed to low levels of carbon monoxide. Exposure to high levels of carbon monoxide can slow reflexes and cause drowsiness, and result in death in confined spaces at very high concentrations.

Table 4.3-1: Monitored Air Quality Levels

Pollutant	Primary Standard California	Primary Standard Federal	Year	Maximum Concentration[1]	Number of Days State/Federal Std. Exceeded
Carbon Monoxide (CO) [2] (1-Hour)	20 ppm for 1 hour	35 ppm for 1 hour	2012 2013 2014	3.10 ppm 3.83 4.12	0/0 0/0 0/0
Carbon Monoxide (CO) [2] (8-Hour)	9.0 ppm for 8 hours	9.0 ppm for 8 hours	2012 2013 2014	1.64 ppm NM NM	0/0 0/0 0/0
Ozone (O_3) [2] (1-Hour)	0.09 ppm for 1 hour	NA	2012 2013 2014	0.124 ppm 0.139 0.121	41/NA 22/NA 38/NA
Ozone (O_3) [2] (8-Hour)	0.070 ppm for 8 hours	0.070 ppm for 8 hours	2012 2013 2014	0.109 ppm 0.113 0.100	77/54 53/36 76/51
Nitrogen Dioxide [2] (NO_X)	0.18 ppm for 1 hour	0.100 ppm	2012 2013 2014	0.067 ppm 0.072 0.726	0/0 0/0 0/0
Sulfur Dioxide (SO_X) [3]	0.04 ppm for 24 hours	0.14 ppm for 24 hours	2012 2013 2014	0.004 ppm 0.001 NM	NA NA NA
Particulate Matter (PM_{10}) [2, 4, 5]	50 µg/m^3 for 24 hours	150 µg/m^3 for 24 hours	2012 2013 2014	68.1 µg/m^3 177.3 157.2	1/0 2/1 2/1
Fine Particulate Matter ($PM_{2.5}$) [2, 4]	No Separate State Standard	35 µg/m^3 for 24 hours	2012 2013 2014	34.8 µg/m^3 55.3 73.9	NA/0 NA/1 NA/1

ppm = parts per million
µg/m^3 = micrograms per cubic meter
NM = Not Measured
PM_{10} = particulate matter 10 microns in diameter or less
$PM_{2.5}$ = particulate matter 2.5 microns in diameter or less
NA = Not Applicable

Notes:
1. Maximum concentration is measured over the same period as the California Standard.
2. Measurements taken at the San Bernardino – 4th Street Monitoring Station located at 24302 East 4th Street, San Bernardino, CA 92410.
3. Measurements taken at the Fontana – Arrow Highway Monitoring Station located at 14360 Arrow Highway, Fontana, CA 92335.
4. PM_{10} and $PM_{2.5}$ exceedances are derived from the number of samples exceeded, not days.
5. PM_{10} statistics may include data that are related to an exceptional event.

Source: California Air Resources Board, *ADAM Air Quality Data Statistics*, http://www.arb.ca.gov/adam/welcome.html, accessed on October 19, 2015.

Ozone (O_3). Ozone occurs in two layers of the atmosphere. The layer surrounding the earth's surface is the troposphere. The troposphere extends approximately 10 miles above ground level, where it meets the second layer, the stratosphere. The stratospheric (the "good" ozone layer) extends upward from about 10 to 30 miles and protects life on earth from the sun's harmful ultraviolet rays.

"Bad" ozone is a photochemical pollutant, and needs volatile organic compounds (VOCs), nitrogen oxides (NO_X), and sunlight to form; therefore, VOCs and NO_X are ozone precursors. To reduce ozone concentrations, it is necessary to control the emissions of these ozone precursors. Significant ozone formation generally requires an adequate amount of precursors in the atmosphere and a period of several hours in a stable atmosphere with strong sunlight. High ozone concentrations can form over large regions when emissions from motor vehicles and stationary sources are carried hundreds of miles from their origins.

While ozone in the upper atmosphere (stratosphere) protects the earth from harmful ultraviolet radiation, high concentrations of ground-level ozone (in the troposphere) can adversely affect the human respiratory system and other tissues. Ozone is a strong irritant that can constrict the airways, forcing the respiratory system to work hard to deliver oxygen. Individuals exercising outdoors, children, and people with pre-existing lung disease such as asthma and chronic pulmonary lung disease are considered to be the most susceptible to the health effects of ozone. Short-term exposure (lasting for a few hours) to ozone at levels typically observed in Southern California can result in aggravated respiratory diseases such as emphysema, bronchitis and asthma, shortness of breath, increased susceptibility to infections, inflammation of the lung tissue, increased fatigue, as well as chest pain, dry throat, headache, and nausea.

Nitrogen Dioxide (NO_2). Nitrogen oxides (NO_X) are a family of highly reactive gases that are a primary precursor to the formation of ground-level ozone, and react in the atmosphere to form acid rain. NO_2 (often used interchangeably with NO_X) is a reddish-brown gas that can cause breathing difficulties at high levels. Peak readings of NO_2 occur in areas that have a high concentration of combustion sources (e.g., motor vehicle engines, power plants, refineries, and other industrial operations).

NO_2 can irritate and damage the lungs, and lower resistance to respiratory infections such as influenza. The health effects of short-term exposure are still unclear. However, continued or frequent exposure to NO_2 concentrations that are typically much higher than those normally found in the ambient air may increase acute respiratory illnesses in children and increase the incidence of chronic bronchitis and lung irritation. Chronic exposure to NO_2 may aggravate eyes and mucus membranes and cause pulmonary dysfunction.

Coarse Particulate Matter (PM_{10}). PM_{10} refers to suspended particulate matter, which is smaller than 10 microns or ten one-millionths of a meter. PM_{10} arises from sources such as road dust, diesel soot, combustion products, construction operations, and dust storms. PM_{10} scatters light and significantly reduces visibility. In addition, these particulates penetrate into lungs and can potentially damage the respiratory tract. On June 19, 2003, the California Air Resources Board (CARB) adopted amendments to the statewide 24-hour particulate matter standards based upon requirements set forth in the Children's Environmental Health Protection Act (Senate Bill 25).

Fine Particulate Matter ($PM_{2.5}$). Due to recent increased concerns over health impacts related to fine particulate matter (particulate matter 2.5 microns in diameter or less), both State and Federal $PM_{2.5}$ standards have been created. Particulate matter impacts primarily affect infants, children, the elderly, and those with pre-existing cardiopulmonary disease. In 1997, the U.S. Environmental Protection Agency (EPA) announced new $PM_{2.5}$ standards. Industry groups challenged the new standard in court and the

implementation of the standard was blocked. However, upon appeal by the EPA, the United States Supreme Court reversed this decision and upheld the EPA's new standards.

On January 5, 2005, the EPA published a Final Rule in the Federal Register that designates the Basin as a nonattainment area for Federal $PM_{2.5}$ standards. On June 20, 2002, CARB adopted amendments for statewide annual ambient particulate matter air quality standards. These standards were revised/established due to increasing concerns by CARB that previous standards were inadequate, as almost everyone in California is exposed to levels at or above the current State standards during some parts of the year, and the statewide potential for significant health impacts associated with particulate matter exposure was determined to be large and wide-ranging.

Sulfur Dioxide (SO_2). SO_2 is a colorless, irritating gas with a rotten egg smell; it is formed primarily by the combustion of sulfur-containing fossil fuels. Sulfur dioxide is often used interchangeably with SO_X and lead (Pb). Exposure of a few minutes to low levels of SO_2 can result in airway constriction in some asthmatics.

Reactive Organic Gases (ROG) and Volatile Organic Compounds (VOC). Hydrocarbons are organic gases that are formed solely of hydrogen and carbon. There are several subsets of organic gases including ROGs and VOCs. Both ROGs and VOCs are emitted from the incomplete combustion of hydrocarbons or other carbon-based fuels. The major sources of hydrocarbons are combustion engine exhaust, oil refineries, and oil-fueled power plants; other common sources are petroleum fuels, solvents, dry cleaning solutions, and paint (via evaporation).

SENSITIVE RECEPTORS

Sensitive populations are more susceptible to the effects of air pollution than the general population. Sensitive populations (sensitive receptors) that are in proximity to localized sources of toxics and CO are of particular concern. Some land uses are considered more sensitive to changes in air quality than others, depending on the population groups and the activities involved. The following types of people are most likely to be adversely affected by air pollution, as identified by CARB: children under 14, elderly over 65, athletes, and people with cardiovascular and chronic respiratory diseases. Locations that may contain a high concentration of these sensitive population groups are called sensitive receptors and include residential areas, hospitals, day-care facilities, elder-care facilities, elementary schools, and parks. Sensitive uses within a 0.5-mile radius of the Project site are summarized in Table 4.3-2, *Sensitive Receptors*.

Table 4.3-2: Sensitive Receptors

Type	Name	Address	Distance from Project Site (miles)
Medical Facilities	St. Bernardine Medical Center	2101 North Waterman Avenue	0.36
	Kaiser Permanente San Bernardino Mental Health Offices	325 West Hospitality Lane	0.44
	Planned Parenthood – San Bernardino Health Center	1873 South Commercenter Drive West	0.35
Places of Worship	Church of Jesus Christ of LDS	1894 South Commercenter Drive West	0.33
	First Presbyterian Church	1900 North D Street	0.22
	St. Mark Baptist Church	259 East Central Avenue	0.29
	Roadhouse Biker Church	255 West Benedict Street	0.12
	Greater Victory Church COGIC	253 West Mill Street	0.29

Table 4.3-2, continued

Type	Name	Address	Distance from Project Site (miles)
	Greater Bethel Baptist Church	222 East 2nd Street	0.35
	Trinity Full Gospel Church	235 North Lena Road	0.40
	Our Lady of Fatima Church	1000 North Valencia	0.40
	Unified Baptist Church	1094 East Baseline Street	0.10
	The Church of Jesus Christ of Latter-Day Saints	1244 Pacific Street	0.32
	Judson Baptist Church	1406 Pacific Street	0.50
	Strong Faith Ministries	1200 East Highland Avenue	0.50
	Grace Baptist Church	1333 East 39th Street	0.50
	Lutheran Church of Our Savior	5050 North Sierra Way	0.50
Schools	Concorde Career College	201 East Airport Drive	0.45
	Options for Youth – San Bernardino School	985 South E Street	0.35
	Community School / Independent Alternative Education	679 South Allen Street	0.12
	Burbank Elementary School	198 West Mill Street	0.28
	Bing Wong Elementary School	1250 Ninth Street East	0.46
	Sierra High School	570 East Ninth Street	0.40
	Bradley Elementary School	1300 Valencia Avenue	0.41
	SBCUSD – Roger Anton Elementary School	1501 Anton Court	0.10
	Pacific High School	1020 Pacific Street	Adjacent
	Fairfax Elementary School	1362 Pacific Street	0.46
	Options for Youth	1181 East Highland Avenue	0.41
	Parkside Elementary School	3775 North Waterman Avenue	0.50
	Golden Valley Middle School	3800 North Waterman Avenue	0.50
Parks	Meadowbrook Recreation Park	179 East Rialto Avenue	0.41
	Meadowbrook Park	250 North Sierra Way	0.50
	Seccombe Lake Park	160 West 5th Street	0.35
	Palm Field Park	No address	0.10
	Community Gardens	No address	0.10
	Paris Hill Park	1135 East Highland Avenue	Adjacent
	Hampshire Floodway Park	No address	Adjacent
	Harrison Canyon Park	No address	Adjacent
	Wildwood Park	No address	Adjacent
	San Bernardino National Forest	No address	0.35
Source: Google Earth 2015.			

GREENHOUSE GAS EMISSIONS

The natural process through which heat is retained in the troposphere is called the "greenhouse effect."[2] The greenhouse effect traps heat in the troposphere through a threefold process as follows: Short wave radiation emitted by the sun is absorbed by the Earth; the Earth emits a portion of this

[2] The troposphere is the bottom layer of the atmosphere, which varies in height from the Earth's surface to 10 to 12 kilometers.

energy in the form of long wave radiation; and greenhouse gases (GHG) in the upper atmosphere absorb this long wave radiation and emit this long wave radiation into space and toward the Earth. This "trapping" of the long wave (thermal) radiation emitted back toward the Earth is the underlying process of the greenhouse effect.

The most abundant GHGs are water vapor and carbon dioxide (CO_2). Many other trace gases have greater ability to absorb and re-radiate long wave radiation; however, these gases are not as plentiful. For this reason, and to gauge the potency of GHGs, scientists have established a Global Warming Potential (GWP) for each GHG based on its ability to absorb and re-radiate long wave radiation.

GHGs normally associated with the proposed Project include the following:[3]

- *Water Vapor (H_2O)*. Although water vapor has not received the scrutiny of other GHGs, it is the primary contributor to the greenhouse effect. Natural processes, such as evaporation from oceans and rivers, and transpiration from plants, contribute 90 percent and 10 percent of the water vapor in our atmosphere, respectively.
- The primary human related source of water vapor comes from fuel combustion in motor vehicles; however, this is not believed to contribute a significant amount (less than one percent) to atmospheric concentrations of water vapor. The Intergovernmental Panel on Climate Change (IPCC) has not determined a GWP for water vapor.
- *Carbon Dioxide (CO_2)*. Carbon dioxide is primarily generated by fossil fuel combustion in stationary and mobile sources. Due to the emergence of industrial facilities and mobile sources in the past 250 years, the concentration of carbon dioxide in the atmosphere has increased 39 percent.[4] Carbon dioxide is the most widely emitted GHG and is the reference gas (GWP of 1) for determining GWP for other GHGs.
- *Methane (CH_4)*. Methane is emitted from biogenic sources, incomplete combustion in forest fires, landfills, manure management, and leaks in natural gas pipelines. In the United States, the top three sources of methane are landfills, natural gas systems, and enteric fermentation. Methane is the primary component of natural gas, which is used for space and water heating, steam production, and power generation. The GWP of methane is 21.
- *Nitrous Oxide (N_2O)*. Nitrous oxide is produced by both natural and human related sources. Primary human related sources include agricultural soil management, animal manure management, sewage treatment, mobile and stationary combustion of fossil fuel, adipic acid production, and nitric acid production. The GWP of nitrous oxide is 310.
- *Hydrofluorocarbons (HFCs)*. HFCs are typically used as refrigerants for both stationary refrigeration and mobile air conditioning. The use of HFCs for cooling and foam blowing is growing, as the continued phase out of chlorofluorocarbons (CFCs) and hydrochlorofluorocarbons (HCFCs) gains momentum. The GWP of HFCs range from 140 for HFC-152a to 11,700 for HFC-23.[5]

[3] All Global Warming Potentials are given as 100 year GWP. Unless noted otherwise, all Global Warming Potentials were obtained from the Intergovernmental Panel on Climate Change.

[4] U.S. Environmental Protection Agency, Inventory of United States Greenhouse Gas Emissions and Sinks 1990 to 2011, April 2013.

[5] U.S. Environmental Protection Agency, *Greenhouse Gas Emissions – Emissions of Fluorinated Gases,* June 14, 2012.

- *Perfluorocarbons (PFCs)*. Perfluorocarbons are compounds consisting of carbon and fluorine. They are primarily created as a byproduct of aluminum production and semiconductor manufacturing. Perfluorocarbons are potent GHGs with a GWP several thousand times that of carbon dioxide, depending on the specific PFC. Another area of concern regarding PFCs is their long atmospheric lifetime (up to 50,000 years).[6] The GWP of PFCs range from 6,500 to 9,200.
- *Sulfur hexafluoride (SF_6)*. Sulfur hexafluoride is a colorless, odorless, nontoxic, nonflammable gas. It is most commonly used as an electrical insulator in high voltage equipment that transmits and distributes electricity. Sulfur hexafluoride is the most potent GHG that has been evaluated by the IPCC with a GWP of 23,900. However, its global warming contribution is not as high as the GWP would indicate due to its low mixing ratio compared to carbon dioxide (4 parts per trillion [ppt] in 1990 versus 365 parts per million [ppm], respectively).[7]

In addition to the six major GHGs discussed above (excluding water vapor), many other compounds have the potential to contribute to the greenhouse effect. Some of these substances were previously identified as stratospheric ozone (O_3) depletors; therefore, their gradual phase out is currently in effect. The following is a listing of these compounds:

- *Hydrochlorofluorocarbons (HCFCs)*. HCFCs are solvents, similar in use and chemical composition to CFCs. The main uses of HCFCs are for refrigerant products and air conditioning systems. All developed countries that adhere to the Montreal Protocol are subject to a consumption cap and gradual phase out of HCFCs. The United States is scheduled to achieve a 100 percent reduction to the cap by 2030. The GWP of HCFCs range from 93 for HCFC-123 to 2,000 for HCFC-142b.[8]
- *1,1,1 trichloroethane*. 1,1,1 trichloroethane or methyl chloroform is a solvent and degreasing agent commonly used by manufacturers. The GWP of methyl chloroform is 110 times that of carbon dioxide.[9]
- *Chlorofluorocarbons (CFCs)*. CFCs are used as refrigerants, cleaning solvents, and aerosols spray propellants. CFCs were also part of the U.S. Environmental Protection Agency's (EPA) Final Rule (57 FR 3374) for the phase out of O_3 depleting substances. Currently, CFCs have been replaced by HFCs in cooling systems and a variety of alternatives for cleaning solvents. Nevertheless, CFCs remain suspended in the atmosphere contributing to the greenhouse effect. CFCs are potent GHGs with GWP ranging from 4,600 for CFC 11 to 14,000 for CFC 13.[10]

COUNTY OF SAN BERNARDINO GREENHOUSE GAS EMISSIONS

The City of San Bernardino does not currently inventory its GHG emissions. In 2011, the County of San Bernardino adopted its *Greenhouse Gas Emissions Reduction Plan* (GHG Plan) to provide a framework and strategy for the reducing the County's GHG emissions. In developing the GHG Plan, the County inventoried their GHG emissions for 2007, and projected their unmitigated emissions for 2020 (refer to Table 4.3-3, *County of San Bernardino Greenhouse Gas Emissions*). In descending order of magnitude, external emission sources are dominated by stationary sources, followed by on-road transportation,

[6] Ibid.
[7] Ibid.
[8] U.S. Environmental Protection Agency, *Strategic Ozone Protection and Climate Change,* http://www.epa.gov/ozone/climate.html, dated August 19, 2010.
[9] Ibid.
[10] U.S. Environmental Protection Agency, *Class I Ozone Depleting Substances*, August 19, 2010. http://www.epa.gov/ozone/ods.html.

industrial sources, residential energy consumption, commercial energy consumption, landfill waste, off-road transportation, agriculture, wastewater, water conveyance, and miscellaneous emissions (i.e., residential fires and cooking).

Table 4.3-3: County of San Bernardino Greenhouse Gas Emissions

Sector		2007 Emissions ($MTCO_2e$)	2007 Percent	2020 Emissions ($MTCO_2e$)	2020 Percent
Stationary Sources		2,866,435	45.8	3,173,592	41.8
Transportation	On-road	1,631,666	26.1	2,176,132	28.7
	Off-road	157,185	2.5	235,054	3.1
Building Energy Use	Industrial	593,716	9.5	760,834	10.0
	Residential	440,851	7.1	467,217	6.2
	Commercial	246,364	3.9	314,603	4.1
Solid Waste/Landfills		213,191	3.4	359,318	4.7
Agriculture		64,619	1.0	50,991	0.7
Water-related	Wastewater	27,994	0.4	35,525	0.5
	Water Conveyance	10,696	0.2	13,211	0.2
Miscellaneous		346	0.01	431	0.01
Total		***6,253,063***	***100***	***7,586,908***	***100***

Source: County of San Bernardino, *Greenhouse Gas Emissions Reduction Plan,* September 2011.

4.3.2 REGULATORY FRAMEWORK

FEDERAL

U.S. Environmental Protection Agency

The EPA is responsible for implementing the FCAA, which was first enacted in 1955 and amended numerous times after. The FCAA established Federal air quality standards known as the National Ambient Air Quality Standards (NAAQS). These standards identify levels of air quality for "criteria" pollutants that are considered the maximum levels of ambient (background) air pollutants considered safe, with an adequate margin of safety, to protect the public health and welfare; refer to Table 4.3-4, *National and California Ambient Air Quality Standards*.

Table 4.3-4: National and California Ambient Air Quality Standards

Pollutant	Averaging Time	California[1]		Federal[2]	
		Standard[3]	Attainment Status	Standards[4]	Attainment Status
Ozone (O_3)	1 Hour	0.09 ppm (180 μg/m^3)	**Nonattainment**	N/A[5]	N/A[5]
	8 Hour	0.070 ppm (137 μg/m^3)	N/A	0.070 ppm (137 μg/m^3)	**Nonattainment**
Particulate Matter (PM_{10})	24 Hour	50 μg/m^3	**Nonattainment**	150 μg/m^3	Attainment/ Maintenance
	Annual Arithmetic Mean	20 μg/m^3	**Nonattainment**	N/A[7]	N/A
Fine Particulate Matter ($PM_{2.5}$)[6]	24 Hour	No Separate State Standard		35 μg/m^3	**Nonattainment**
	Annual Arithmetic Mean	12 μg/m^3	**Nonattainment**	12.0 μg/m^3	**Nonattainment**
Carbon Monoxide (CO)	8 Hour	9.0 ppm (10 mg/m^3)	Attainment	9 ppm (10 mg/m^3)	Attainment/ Maintenance
	1 Hour	20 ppm (23 mg/m^3)	Attainment	35 ppm (40 mg/m^3)	Attainment/ Maintenance
Nitrogen Dioxide (NO_2)[7]	Annual Arithmetic Mean	0.030 ppm (57 μg/m^3)	**Nonattainment**	53 ppb (100 μg/m^3)	Attainment/ Maintenance
	1 Hour	0.18 ppm (339 μg/m^3)	**Nonattainment**	100 ppb (188 μg/m^3)	Attainment/ Maintenance
Lead (Pb)[8, 9]	30 day average	1.5 μg/m^3	Attainment	N/A	N/A
	Calendar Quarter	N/A	N/A	1.5 μg/m^3	Attainment
	Rolling 3-month Average	N/A	N/A	0.15 μg/m^3	Attainment
Sulfur Dioxide (SO_2)[10]	Annual Arithmetic Mean	N/A	N/A	0.030 ppm (for certain areas)	Attainment
	24 Hour	0.04 ppm (105 μg/m^3)	Attainment	0.14 ppm (for certain areas)	Attainment
	3 Hour	N/A	N/A	N/A	Attainment
	1 Hour	0.25 ppm (655 μg/m^3)	Attainment	75 ppb (196 μg/m^3)	N/A
Visibility-Reducing Particles[11]	8 Hours (10 a.m. to 6 p.m., PST)	Extinction coefficient = 0.23 km@<70% RH	Unclassified	**No Federal Standards**	
Sulfates	24 Hour	25 μg/m3	Attainment		
Hydrogen Sulfide	1 Hour	0.03 ppm (42 μg/m^3)	Unclassified		
Vinyl Chloride[8]	24 Hour	0.01 ppm (23 ug/m^3)	N/A		

μg/m^3 = micrograms per cubic meter; ppm = parts per million; ppb = parts per billion; km = kilometer(s); RH = relative humidity; PST = Pacific Standard Time; N/A = Not Applicable.

Table 4.3-4, continued

1. California standards for ozone, carbon monoxide (except Lake Tahoe), sulfur dioxide (1- and 24-hour), nitrogen dioxide, suspended particulate matter-PM_{10} and visibility-reducing particles, are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations. In 1990, CARB identified vinyl chloride as a toxic air contaminant, but determined that there was not sufficient available scientific evidence to support the identification of a threshold exposure level. This action allows the implementation of health-protective control measures at levels below the 0.010 ppm ambient concentration specified in the 1978 standard.
2. National standards (other than ozone, particulate matter and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. The EPA also may designate an area as *attainment/unclassifiable*, if: (1) it has monitored air quality data that show that the area has not violated the ozone standard over a three-year period; or (2) there is not enough information to determine the air quality in the area. For PM_{10}, the 24-hour standard is attained when 99 percent of the daily concentrations, averaged over the three years, are equal to or less than the standard. For $PM_{2.5}$, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard.
3. Concentration is expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 mm of mercury. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 mm of mercury (1,013.2 millibar); ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.
4. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety, to protect the public health.
5. The Federal 1-hour ozone standard was revoked on June 15, 2005 in all areas except the 14 8-hour ozone nonattainment Early Action Compact (EAC) areas.
6. On December 14, 2012, the national annual $PM_{2.5}$ primary standard was lowered from 15 $\mu g/m^3$ to 12.0 $\mu g/m^3$. The existing national 24-hour $PM_{2.5}$ standards (primary and secondary) were retained at 35 $\mu g/m^3$, as was the annual secondary standard of 15 $\mu g/m^3$. The existing 24-hour PM_{10} standards (primary and secondary) of 150 $\mu g/m^3$ also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.
7. To attain this standard, the 3-year average of the 98th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 0.100 ppm (effective January 22, 2010).
8. CARB has identified lead and vinyl chloride as “toxic air contaminants” with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.
9. National lead standard, rolling 3-month average: final rule signed October 15, 2008
10. On June 2, 2010, a new 1-hour SO_2 standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO_2 national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved. Note that the 1-hour national standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the 1-hour national standard to the California standard the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.
11. In 1989, CARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the statewide and Lake Tahoe Air Basin standards, respectively.

Source: California Air Resources Board and U.S. Environmental Protection Agency October 1, 2015.

Greenhouse Gas Emissions

The Federal government is extensively engaged in international climate change activities in areas such as science, mitigation, and environmental monitoring. The EPA actively participates in multilateral and bilateral activities by establishing partnerships and providing leadership and technical expertise. Multilaterally, the United States is a strong supporter of activities under the United Nations Framework Convention on Climate Change (UNFCCC) and the IPCC.

In 1988, the United Nations and the World Meteorological Organization established the IPCC to assess the scientific, technical, and socioeconomic information relevant to understanding the scientific basis of human-induced climate change, its potential impacts, and options for adaptation and mitigation. The most recent reports of the IPCC have emphasized the scientific consensus around the evidence that real and measurable changes to the climate are occurring, that they are caused by human activity, and that significant adverse impacts on the environment, the economy, and human health and welfare are unavoidable.

In December 2007, Congress passed the first increase in corporate average fleet fuel economy (CAFE) standards. The new CAFE standards represent an increase to 35 miles per gallon (mpg) by 2020. In March 2009, the Obama Administration announced that for the 2011 model year, the standard for cars and light trucks will be 27.3 mpg, the standard for cars will be 30.2 mpg; and standard for trucks would be 24.1 mpg. Additionally, in May 2009 President Barack Obama announced plans for a national fuel-economy and GHG emissions standard that would significantly increase mileage requirements for cars and trucks by 2016. The new requirements represent an average standard of 39 mpg for cars and 30 mpg for trucks by 2016.

In May 2010, EPA and Department of Transportation's National Highway Traffic Safety Administration (NHTSA) issued a joint Final Rule to establish a National Program comprised of new standards for light-duty vehicles that will reduce GHG emissions and improve fuel economy. In October 2012, the EPA and NHTSA issued final rules to extend the National Program standards to further decrease greenhouse gas emissions and increase fuel economy for light-duty vehicles for model years 2017-2025. NHTSA is finalizing CAFÉ standards for model years 2017-2025 while issuing augural standards for 2022-2025 model years under the Energy and Security Act. EPA is finalizing GHG emission standards for 2017-2025 model years under the Federal Clean Air Act (FCAA) and modifying changes to the regulations applicable to model years 2012-2016 in regards to air conditions performance, nitrous oxides measurement, off-cycle technology credits, and police and emergency vehicles.

In September 2009, the EPA finalized a GHG reporting and monitoring system that began on January 1, 2010. In general, this national reporting requirement will provide the EPA with accurate and timely GHG emissions data from facilities that emit 25,000 metric tons (MT) or more of CO2 per year. This publicly available data will allow the reporters to track their own emissions, compare them to similar facilities, and aid in identifying cost-effective emissions reduction strategies. This new program covers approximately 85 percent of the nation's GHG emissions and applies to approximately 10,000 facilities. The reporting system is intended to provide a better understanding of where GHGs are coming from and will guide development of the best possible policies and programs to reduce emissions.

Currently, the EPA is moving forward with two key climate change regulatory proposals, one to establish a mandatory GHG reporting system and one to address the 2007 Supreme Court decision in Massachusetts v. EPA (Supreme Court Case 05-1120) regarding the EPA's obligation to make an endangerment finding under Section 202(a) of the FCAA with respect to GHGs. Under the FCAA, the EPA is now obligated to issue rules regulating global warming pollution from all major sources. In April 2009, the EPA concluded that GHGs are a danger to public health and welfare, establishing the basis for GHG regulation.

STATE

California Air Resources Board

CARB administers the air quality policy in California. The California Ambient Air Quality Standards (CAAQS) were established in 1969 pursuant to the Mulford-Carrell Act. These standards, included with the NAAQS in Table 4.3-4, are generally more stringent and apply to more pollutants than the NAAQS. In addition to the criteria pollutants, CAAQS have been established for visibility reducing particulates, hydrogen sulfide, and sulfates. The California Clean Air Act (CCAA), which was approved in 1988, requires that each local air district prepare and maintain an Air Quality Management Plan (AQMP) to achieve compliance with CAAQS.

Like the EPA, CARB also designates areas within California as either attainment or nonattainment for each criteria pollutant based on whether the CAAQS have been achieved. Under the CCAA, areas are designated as nonattainment for a pollutant if air quality data show that a state standard for the pollutant was violated at least once during the previous three calendar years. Exceedances that are affected by highly irregular or infrequent events are not considered violations of a state standard, and are not used as a basis for designating areas as nonattainment.

Executive Order S-1-07

Executive Order S-1-07 proclaims that the transportation sector is the main source of GHG emissions in California, generating more than 40 percent of statewide emissions. It establishes a goal to reduce the carbon intensity of transportation fuels sold in California by at least ten percent by 2020. This order also directs CARB to determine whether this Low Carbon Fuel Standard (LCFS) could be adopted as a discrete early-action measure as part of the effort to meet the mandates in AB 32.

Executive Order S-3-05

Executive Order S-3-05 set forth a series of target dates by which statewide emissions of GHGs would be progressively reduced, as follows:

- By 2010, reduce GHG emissions to 2000 levels;
- By 2020, reduce GHG emissions to 1990 levels; and
- By 2050, reduce GHG emissions to 80 percent below 1990 levels.

The Executive Order directed the secretary of the California Environmental Protection Agency (Cal/EPA) to coordinate a multi-agency effort to reduce GHG emissions to the target levels. The secretary will also submit biannual reports to the governor and California Legislature describing the progress made toward the emissions targets, the impacts of global climate change on California's resources, and mitigation and adaptation plans to combat these impacts. To comply with the executive order, the secretary of Cal/EPA created the California Climate Action Team (CAT), made up of members from various State agencies and commissions. The team released its first report in March 2006. The report proposed to achieve the targets by building on the voluntary actions of California businesses, local governments, and communities and through State incentive and regulatory programs.

Executive Order B-30-15

Executive Order B-30-15 added the interim target to reduce GHG emissions 40 percent below 1990 levels by 2030.

Executive Order S-13-08

Executive Order S-13-08 seeks to enhance the State's management of climate impacts including sea level rise, increased temperatures, shifting precipitation, and extreme weather events by facilitating the development of State's first climate adaptation strategy. This will result in consistent guidance from experts on how to address climate change impacts in the State of California.

Executive Order S-14-08

Executive Order S-14-08 expands the State's Renewable Energy Standard to 33 percent renewable power by 2020. Additionally, Executive Order S-21-09 (signed on September 15, 2009) directs CARB to adopt regulations requiring 33 percent of electricity sold in the State come from renewable energy by 2020. CARB adopted the "Renewable Electricity Standard" on September 23, 2010, which requires 33 percent renewable energy by 2020 for most publicly owned electricity retailers.

Executive Order S-20-04

Executive Order S-20-04, the California Green Building Initiative, (signed into law on December 14, 2004), establishes a goal of reducing energy use in State-owned buildings by 20 percent from a 2003 baseline by 2015. It also encourages the private commercial sector to set the same goal. The initiative places the California Energy Commission (CEC) in charge of developing a building efficiency benchmarking system, commissioning and retro-commissioning (commissioning for existing commercial buildings) guidelines, and developing and refining building energy efficiency standards under Title 24 to meet this goal.

Executive Order S-21-09

Executive Order S-21-09, 33 percent Renewable Energy for California, directs CARB to adopt regulations to increase California's Renewable Portfolio Standard (RPS) to 33 percent by 2020. This builds upon SB 1078 (2002) which established the California RPS program, requiring 20 percent renewable energy by 2017, and SB 107 (2006) which advanced the 20 percent deadline to 2010, a goal which was expanded to 33 percent by 2020 in the 2005 Energy Action Plan II.

Assembly Bill 32 (California Global Warming Solutions Act of 2006)

California passed the California Global Warming Solutions Act of 2006 (AB 32; *California Health and Safety Code* Division 25.5, Sections 38500 - 38599). AB 32 establishes regulatory, reporting, and market mechanisms to achieve quantifiable reductions in GHG emissions and establishes a cap on statewide GHG emissions. AB 32 requires that statewide GHG emissions be reduced to 1990 levels by 2020. AB 32 specifies that regulations adopted in response to AB 1493 should be used to address GHG emissions from vehicles. However, AB 32 also includes language stating that if the AB 1493 regulations cannot be implemented, then CARB should develop new regulations to control vehicle GHG emissions under the authorization of AB 32.

Assembly Bill 1493

AB 1493 (also known as the Pavley Bill) requires that CARB develop and adopt, by January 1, 2005, regulations that achieve "the maximum feasible reduction of GHG emitted by passenger vehicles and light-duty trucks and other vehicles determined by CARB to be vehicles whose primary use is noncommercial personal transportation in the State."

To meet the requirements of AB 1493, CARB approved amendments to the California Code of Regulations (CCR) in 2004 by adding GHG emissions standards to California's existing standards for

motor vehicle emissions. Amendments to CCR Title 13, Sections 1900 and 1961 and adoption of 13 CCR Section 1961.1 require automobile manufacturers to meet fleet-average GHG emissions limits for all passenger cars, light-duty trucks within various weight criteria, and medium-duty weight classes for passenger vehicles (i.e., any medium-duty vehicle with a gross vehicle weight rating less than 10,000 pounds that is designed primarily to transport people), beginning with the 2009 model year. Emissions limits are reduced further in each model year through 2016. When fully phased in, the near-term standards will result in a reduction of about 22 percent in GHG emissions compared to the emissions from the 2002 fleet, while the mid-term standards will result in a reduction of about 30 percent.

Assembly Bill 3018

AB 3018 established the Green Collar Jobs Council (GCJC) under the California Workforce Investment Board (CWIB). The GCJC will develop a comprehensive approach to address California's emerging workforce needs associated with the emerging green economy. This bill will ignite the development of job training programs in the clean and green technology sectors.

Senate Bill 97

SB 97, signed in August 2007 (Chapter 185, Statutes of 2007; PRC Sections 21083.05 and 21097), acknowledges that climate change is a prominent environmental issue that requires analysis under CEQA. This bill directs the Governor's Office of Planning and Research (OPR), which is part of the State Natural Resources Agency, to prepare, develop, and transmit to CARB guidelines for the feasible mitigation of GHG emissions (or the effects of GHG emissions), as required by CEQA.

OPR published a technical advisory recommending that CEQA lead agencies make a good-faith effort to estimate the quantity of GHG emissions that would be generated by a proposed project. Specifically, based on available information, CEQA lead agencies should estimate the emissions associated with project-related vehicular traffic, energy consumption, water usage, and construction activities to determine whether project-level or cumulative impacts could occur, and should mitigate the impacts where feasible. OPR requested CARB technical staff to recommend a method for setting CEQA thresholds of significance as described in CEQA Guidelines Section 15064.7 that will encourage consistency and uniformity in the CEQA analysis of GHG emissions throughout the State.

The Natural Resources Agency adopted the CEQA Guidelines Amendments prepared by OPR, as directed by SB 97. On February 16, 2010, the Office of Administration Law approved the CEQA Guidelines Amendments, and filed them with the Secretary of State for inclusion in the California Code of Regulations. The CEQA Guidelines Amendments became effective on March 18, 2010.

Senate Bill 375

SB 375, signed in September 2008 (Chapter 728, Statutes of 2008), aligns regional transportation planning efforts, regional GHG reduction targets, and land use and housing allocation. SB 375 requires Metropolitan Planning Organizations (MPOs) to adopt a sustainable communities strategy (SCS) or alternative planning strategy (APS) that will prescribe land use allocation in that MPOs regional transportation plan. CARB, in consultation with MPOs, will provide each affected region with reduction targets for GHGs emitted by passenger cars and light trucks in the region for the years 2020 and 2035. These reduction targets will be updated every eight years but can be updated every four years if advancements in emissions technologies affect the reduction strategies to achieve the targets. CARB is also charged with reviewing each MPO's SCS or APS for consistency with its assigned targets. If MPOs do not meet the GHG reduction targets, transportation projects may not be eligible for funding programmed after January 1, 2012.

Senate Bills 1078 and 107

SB 1078 (Chapter 516, Statutes of 2002) requires retail sellers of electricity, including investor-owned utilities and community choice aggregators, to provide at least 20 percent of their supply from renewable sources by 2017. SB 107 (Chapter 464, Statutes of 2006) changed the target date to 2010.

Senate Bill 1368

SB 1368 (Chapter 598, Statutes of 2006) is the companion bill of AB 32 and was signed into law in September 2006. SB 1368 required the California Public Utilities Commission (CPUC) to establish a performance standard for baseload generation of GHG emissions by investor-owned utilities by February 1, 2007. SB 1368 also required the CEC to establish a similar standard for local publicly owned utilities by June 30, 2007. These standards could not exceed the GHG emissions rate from a baseload combined-cycle, natural gas fired plant. Furthermore, the legislation states that all electricity provided to California, including imported electricity, must be generated by plants that meet the standards set by CPUC and CEC.

CARB Scoping Plan

On December 11, 2008, CARB adopted its Scoping Plan, which functions as a roadmap to achieve GHG reductions in California required by AB 32 through subsequently enacted regulations. CARB's Scoping Plan contains the main strategies California will implement to reduce CO_2eq[11] emissions by 174 million MT, or approximately 30 percent, from the State's projected 2020 emissions level of 596 million MT CO_2eq under a business as usual (BAU)[12] scenario. This is a reduction of 42 million MT CO_2eq, or almost ten percent, from 2002 to 2004 average emissions, but requires the reductions in the face of population and economic growth through 2020.

CARB's Scoping Plan calculates 2020 BAU emissions as the emissions that would be expected to occur in the absence of any GHG reduction measures. The 2020 BAU emissions estimate was derived by projecting emissions from a past baseline year using growth factors specific to each of the different economic sectors (e.g., transportation, electrical power, commercial and residential, industrial, etc.). CARB used three-year average emissions, by sector, for 2002 to 2004 to forecast emissions to 2020. At the time CARB's Scoping Plan process was initiated, 2004 was the most recent year for which actual data was available. The measures described in CARB's Scoping Plan are intended to reduce the projected 2020 BAU to 1990 levels, as required by AB 32. On February 10, 2014, CARB released the draft proposed first update. The appendices to the report, including the environmental analysis will be released at a later date. On May 22, 2014, CARB approved the First Update to the AB 32 Scoping Plan. The update identifies opportunities to leverage existing and new funds to further drive GHG emissions reductions through strategic planning and targeted low carbon investments. The update also defined CARB's climate change priorities for the next five years, and sets the groundwork to each long-term goals set forth in Executive Orders S-3-05 and B-15-2012. Lastly, the update highlights California's progress toward meeting the "near-term" 2020 GHG emission reduction goals defined in the initial Scoping Plan, and evaluates how to align the State's "longer-term" GHG reduction strategies with other State policy priorities in water, waste, natural resources, clean energy, transportation, and land use.

[11] Carbon Dioxide Equivalent (CO_2eq) - A metric measure used to compare the emissions from various greenhouse gases based upon their global warming potential.

[12] "Business as Usual" refers to emissions that would be expected to occur in the absence of GHG reductions. See http://www.arb.ca.gov/cc/inventory/data/forecast.htm. Note that there is significant controversy as to what BAU means. In determining the GHG 2020 limit, CARB used the above as the "definition." It is broad enough to allow for design features to be counted as reductions.

LOCAL

South Coast Air Quality Management District

The SCAQMD is one of 35 air quality management districts that have prepared AQMP's to accomplish a five-percent annual reduction in emissions. The *2012 Air Quality Management Plan* (2012 AQMP) is the latest AQMP and outlines strategies for meeting the NAAQS for $PM_{2.5}$ and ozone. The 2012 AQMP relies on a multi-level partnership of governmental agencies at the federal, state, regional, and local level. The 2012 AQMP proposes policies and measures to achieve federal and state standards for improved air quality in the South Coast Air Basin and those portions of the Salton Sea Air Basin that are under SCAQMD jurisdiction.

The 2012 AQMP includes information on key elements such as:

- Current air quality;
- Improved emission inventories, especially significant increases in mobile source emissions;
- An overall control strategy comprised of: Stationary and Mobile Source Control Measures, SCAQMD, State and Federal Stationary and Mobile Source Control Measures, and the Southern California Association of Governments Regional Transportation Strategy and Control Measures;
- New attainment demonstration for $PM_{2.5}$ and O_3;
- Milestones to the Federal Reasonable Further Progress Plan; and
- Preliminary motor vehicle emission budgets for transportation conformity purposes.

In addition to the 2012 AQMP and its rules and regulations, the SCAQMD published the *CEQA Air Quality Handbook*. The SCAQMD *CEQA Air Quality Handbook* provides guidance to assist local government agencies and consultants in developing the environmental documents required by CEQA. With the help of the *CEQA Air Quality Handbook*, local land use planners and other consultants are able to analyze and document how proposed and existing projects affect air quality and should be able to fulfill the requirements of the CEQA review process. The SCAQMD is in the process of developing an Air Quality Analysis Guidance Handbook to replace the current *CEQA Air Quality Handbook* approved by the SCAQMD Governing Board in 1993.

Southern California Association of Governments

The Southern California Association of Governments (SCAG) is a council of governments for the Counties of Imperial, Los Angeles, Orange, Riverside, San Bernardino, and Ventura. As a regional planning agency, SCAG serves as a forum for regional issues relating to transportation, the economy, community development, and the environment. SCAG also serves as the regional clearinghouse for projects requiring environmental documentation under federal and state law. In this role, SCAG reviews projects to analyze their impacts on SCAG's regional planning efforts.

Although SCAG is not an air quality management agency, it is responsible for several air quality planning issues. Specifically, as the designated Metropolitan Planning Organization (MPO) for the Southern California region, it is responsible, pursuant to Section 176(c) of the 1990 amendments to the CAA, for providing current population, employment, travel, and congestion projections for regional air quality planning efforts. It is required to quantify and document the demographic and employment factors influencing expected transportation demand, including land use forecasts. Pursuant to California Health and Safety Code Section 40460(b), SCAG is also responsible for preparing and approving the portions of the Basin's air quality management plans relating to demographic projections and integrated regional

land use, housing, employment, and transportation programs, measures, and strategies. SCAG's method of accomplishing these requirements is through the preparation of demographic projections published in its 2012 Regional Transportation Plan (RTP), which was used by the SCAQMD in the preparation of its 2012 AQMP.

City of San Bernardino General Plan

Goal 10.1 Protect the environment, public health, safety, and welfare from hazardous wastes.

Policy 10.1.1 Ensure the protection of surface and groundwater quality, land resources, air quality, and environmentally sensitive areas through safe transportation of waste through the City and comprehensive planning of hazardous materials, wastes, and sites.

Goal 12.5 Promote air quality that is compatible with the health, well-being, and enjoyment of life.

Policy 12.5.1 Reduce the emission of pollutants including carbon monoxide, oxides of nitrogen, photochemical smog, and sulfate in accordance with SCAQMD standards.

Policy 12.5.2 Prohibit the development of land uses (e.g. heavy manufacturing) that will contribute significantly to air quality degradation, unless sufficient mitigation measures are undertaken according to SCQAMD standards.

Policy 12.5.3 Require dust abatement measures during grading and construction operations.

Policy 12.5.4 Evaluate the air emissions of industrial land uses to ensure that they will not impact adjacent uses.

Policy 12.5.5 Purchase City vehicles that use energy efficient fuel and minimize air pollution.

Goal 12.7 Participate in regional initiatives and programs to improve the South Coast Basin's air quality.

Policy 12.7.1 Cooperate with SCAQMD and incorporate pertinent local implementation provisions of the Air Quality Management Plan.

Policy 12.7.2 Work with SCAQMD to establish controls and monitor uses in the City that could add to the air basin's degradation (e.g. auto repair, manufacturers).

Policy 12.7.3 Coordinate with SCAQMD to ensure that all elements of air quality plans regarding reduction of air pollutant emissions are being enforced.

Policy 12.7.4 Work with the other cities in the South Coast Air Basin to implement regional mechanisms to reduce air emissions and improve air quality.

Policy 12.7.5 Support legislation that promotes cleaner industry, clean fuel vehicles, and more efficient burning engines and fuels.

Policy 12.7.6 Encourage, publicly recognize, and reward innovative approaches to improve air quality.

Policy 12.7.7 Involve environmental groups, the business community, special interests, and the general public in the formulation and implementation of programs that actively reduce airborne pollutants.

4.3.3 ENVIRONMENTAL IMPACTS

AIR QUALITY

In its *CEQA Air Quality Handbook* (November 1993), the SCAQMD has established significance thresholds to assess the impact of project related air pollutant emissions. Table 4.3-5, *SCAQMD Regional Pollutant Emission Thresholds of Significance*, presents these significance thresholds. There are separate thresholds for short-term construction and long-term operational emissions. A project with daily emission rates below these thresholds is considered to have a less than significant effect on regional air quality. The SCAQMD is in the process of updating the thresholds.

Table 4.3-5: SCAQMD Regional Pollutant Emissions Thresholds of Significance

	Pollutant (lbs/day)					
Phase	**VOC**	**NO_X**	**CO**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
Construction	75	100	550	150	150	55
Operation	55	55	550	150	150	55
CO = carbon monoxide; VOC = volatile organic compounds; NO_X = nitrogen oxides; PM_{10} = particulate matter smaller than 10 microns; $PM_{2.5}$ = particulate matter smaller than 2.5 microns						
Source: South Coast Air Quality Management District, *CEQA Air Quality Handbook,* November 1993.						

GREENHOUSE GASES

At this time, there is no absolute consensus in the State of California among CEQA lead agencies regarding the analysis of global climate change and selection of significance criteria. In fact, numerous organizations, both public and private, have released advisories and guidance with recommendations designed to assist decision-makers in the evaluation of GHG emissions given the current uncertainty regarding emissions thresholds of significance.

Lead agencies may elect to rely on thresholds of significance recommended or adopted by State or regional agencies with expertise in the field of global climate change (CEQA Guidelines Section 15064.7[c]). CEQA leaves the determination of significance to the reasonable discretion of the lead agency and encourages lead agencies to develop and publish thresholds of significance to use in determining the significance of environmental effects. However, the City has not yet established specific quantitative significance thresholds for GHG emissions for development projects.

The SCAQMD has formed a GHG CEQA Significance Threshold Working Group (Working Group) to provide guidance to local lead agencies on determining significance for GHG emissions in their CEQA documents. As of the last Working Group meeting (Meeting No. 15, September 2010), the SCAQMD is proposing to adopt a tiered approach for evaluating GHG emissions for development projects where SCAQMD is not the lead agency.

With the tiered approach, the project is compared to the requirements of each tier sequentially and would not result in a significant impact if it complies with any tier. Tier 1 excludes projects that are specifically exempt from SB 97 from resulting in a significant impact. Tier 2 excludes projects that are consistent with a GHG reduction plan that has a certified final CEQA document and complies with AB 32 GHG reduction goals. Tier 3 excludes projects with annual emissions lower than a screening threshold. The SCAQMD is proposing a screening threshold of 10,000 $MTCO_2eq$ per year for industrial projects and a screening threshold of 3,000 $MTCO_2eq$ per year for non-industrial projects. SCAQMD concluded that

projects with emissions less than the screening threshold would not result in a significant cumulative impact.

Tier 4 consists of three decision tree options. Under the Tier 4 first option, the project would be excluded if design features and/or mitigation measures resulted in emissions 30 percent lower than business as usual emissions. Under the Tier 4 second option the project would be excluded if it had early compliance with AB 32 through early implementation of CARB's Scoping Plan measures. Under the Tier 4 third option, project would be excluded if was below an efficiency-based threshold of 4.8 $MTCO_2eq$ per service population (SP) per year.[13] Tier 5 would exclude projects that implement offsite mitigation (GHG reduction projects) or purchase offsets to reduce GHG emission impacts to less than the proposed screening level.

Based on the size of the Project and the tiered approach above, the 10,000 $MTCO_2eq$ per year industrial threshold has been selected as the significance threshold, as it is most applicable to the proposed project. The 10,000 $MTCO_2eq$ per year threshold is used in addition to the qualitative thresholds of significance set forth below from section VII of Appendix G to the CEQA Guidelines.

SIGNIFICANCE CRITERIA UNDER CEQA

Based on Appendix G of the State CEQA Guidelines, air quality and/or GHG emissions impacts are considered significant if implementation of the Project would do any of the following:

- Conflict with or obstruct implementation of the applicable air quality plan? (refer to Section 7.0, *Effects Found not to be Significant*)
- Violate any air quality standard or contribute substantially to an existing or projected air quality violation? (refer to Impact Statement 4.3-1)
- Result in cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)? (refer to Impact Statement 4.3-2)
- Expose sensitive receptors to substantial pollutant concentrations? (refer to Impact Statement 4.3-3)
- Create objectionable odors affecting a substantial number of people? (refer to Impact Statement 4.3-4)

METHODS AND ASSUMPTIONS

Construction

Construction of the proposed Project has the potential to create air quality impacts through the use of heavy-duty construction equipment and through vehicle trips generated from construction workers traveling to and from the Project site. In addition, fugitive dust emissions would result from earthwork

[13] The project-level efficiency-based threshold of 4.8 $MTCO_2eq$ per SP per year is relative to the 2020 target date. The SCAQMD has also proposed efficiency-based thresholds relative to the 2035 target date to be consistent with the GHG reduction target date of SB 375. GHG reductions by the SB 375 target date of 2035 would be approximately 40 percent. Applying this 40 percent reduction to the 2020 targets results in an efficiency threshold for plans of 4.1 $MTCO_2eq$ per SP per year and an efficiency threshold at the project level of 3.0 $MTCO_2eq$/year.

and construction activities. Construction would consist of separate activities for the Water Reclamation Plant, conveyance systems, and recharge sites that would occur concurrently during the first phase. The future phased plant expansions would occur independent of the conveyance and recharge basin construction activities. The emissions modeling conservatively assumes that these various construction activities would occur concurrently. Water Reclamation Plant construction would involve improvements at the San Bernardino Water Reclamation Plant (SBWRP) that include the installation of new equipment for water treatment. Several different pipeline alignments could potentially be developed, including an alternative alignment that consists of the combination of two different alignments. Therefore, the scenario with the maximum potential impacts was quantified and analyzed.

Mass daily emissions during construction were calculated using the California Emissions Estimator Model (CalEEMod) version 2013.2.2, which is an emissions estimation/evaluation model developed in conjunction with SCAQMD and other California Air Districts. CalEEMod was used to assist in quantifying emissions from construction activities for the Project. Project construction emissions are associated with construction equipment, excavation and earthwork, construction-related vehicle trips, and off-gassing emissions from paving. Construction activities were based upon construction scheduling and other preliminary construction details. Where appropriate, CalEEMod defaults were utilized. A complete listing of the construction equipment by phase and construction phase duration assumptions used in this analysis is included within the CalEEMod output sheets that are provided in Appendix 10.3, *Air Quality/Greenhouse Gas Modeling Data*.

Operations

The Project primarily involves the addition of treatment improvements and conveyance system for surface spreading into the groundwater basin. Operation of the Project has the potential to create air quality impacts primarily from energy consumption from additional treatment and pumping. As the Project is not a trip generating land use (except for minor increases in employee trips and deliveries associated with the expanded wastewater treatment facilities), mobile source emissions would be associated with periodic maintenance activities and would be nominal. Emissions from energy consumption were calculated based on total energy use and energy emissions factors. The energy emissions calculations are provided in Appendix 10.3.

Localized Significance Thresholds

Localized Significance Thresholds (LSTs) were developed in response to the SCAQMD Governing Board's Environmental Justice Enhancement Initiative (I-4). The SCAQMD provided the *Final Localized Significance Threshold Methodology* (revised July 2008) for guidance. The LST methodology assists lead agencies in analyzing localized impacts associated with project-specific level proposed projects. The SCAQMD provides the LST lookup tables for one, two, and five acre projects emitting CO, NO_X, PM_{10}, and $PM_{2.5}$. The LST methodology and associated mass rates are not designed to evaluate localized impacts from mobile sources traveling over the roadways. The SCAQMD recommends that any project over five acres should perform air quality dispersion modeling to assess impacts to nearby sensitive receptors.

Cumulative Emissions

The SCAQMD's 2012 AQMP was prepared to accommodate growth, meet state and federal air quality standards, and minimize the fiscal impact that pollution control measures have on the local economy. According to the SCAQMD *CEQA Air Quality Handbook*, project-related emissions that fall below the established construction and operational thresholds should be considered less than significant unless there is pertinent information to the contrary.

If a project exceeds these emission thresholds, the SCAQMD *CEQA Air Quality Handbook* states that the significance of a project's contribution to cumulative impacts should be determined based on whether the rate of growth in average daily trips exceeds the rate of growth in population.

EFFECTS FOUND NOT TO BE SIGNIFICANT AND NOT DISCUSSED FURTHER

Air Quality Plan Consistency - According to the SCAQMD's *Air Quality Analysis Guidance Handbook* (SCAQMD, updated November 1993), the purpose of the consistency finding is to determine if a project is inconsistent with the assumptions and objectives of the regional air quality plans, and thus if it would interfere with the region's ability to comply with federal and state Ambient Air Quality Standards (AAQS). Growth assumptions within the Air Quality Management Plan (AQMP) are based on growth assumptions and land use designations included within local general plans. The proposed Project would not modify the City's current General Plan land use designations and would not induce additional growth. The improvements planned under the Project would serve to accommodate anticipated growth within the City of San Bernardino and southern California. Refer to Section 5.2, *Growth Inducing Impacts of the Proposed Project*, for further discussion. Therefore, it can be concluded that the Project would be consistent with the projections in the AQMP. Implementation of the Project would result in no significant impact related to implementation of the applicable air quality plans.

SUMMARY OF APPLICABLE PROJECT DESIGN FEATURES AND EXISTING LAWS, ORDINANCES, AND REGULATIONS

The proposed Project would be subject to all applicable rules and regulations established by the SCAQMD, as discussed below. Potential air quality and GHG impacts associated with the proposed Project would occur primarily during the construction phase, primarily at the SBWRP and along the conveyance system routes, and would be temporary in nature. Operational emissions would primarily occur from energy consumption. However, SBMWD is considering future projects to minimize energy consumption. Specifically, SBMWD is considering offsetting its energy consumption with renewable sources (refer to Section 5.4, *Energy Conservation*). The reduction in energy consumption is conservatively not included in this analysis because it is not part of the proposed Project and design specifics are not known at this time. As noted in Section 5.4, the purpose of the Project is to reduce the region's dependence on imported water supplies by incorporating a reliable, sustainable, and local source of water to SBMWD's existing water supply portfolio. The Project would aid SBMWD in meeting future projected water demands through methods that uphold the groundwater management obligations of the Western Judgment and not result in an inefficient or wasteful use of energy. SBMWD plans to potentially utilize its property adjacent to the Water Reclamation Plant for solar photovoltaic electricity generation to potentially offset the Project's energy consumption. SBMWD's property is currently vacant, already graded, and would require minimal preparation for the application of photovoltaic electricity generation[14]. Additionally, implementation of on-site renewable energy would support various energy conservation policies within the City's General Plan as well as the State building codes, GHG reduction targets, and renewable portfolio standard targets.

[14] Preliminary estimates indicate that these parcels could generate 5 GWh or more of power, substantially offsetting the Project's total energy demand and associated GHG emissions.

The City owned vacant parcels total approximately 13 acres, and are all zoned Industrial-Light (I-L). The parcels, which are currently vacant and disturbed, and do not contain any mapped constraints with the exception of liquefaction due to the neighboring river. The Industrial-Light zoning does allow for the development of public utility uses. Refer to Exhibit 4.3-1, *Solar Development Sites*, for further information on the parcels.

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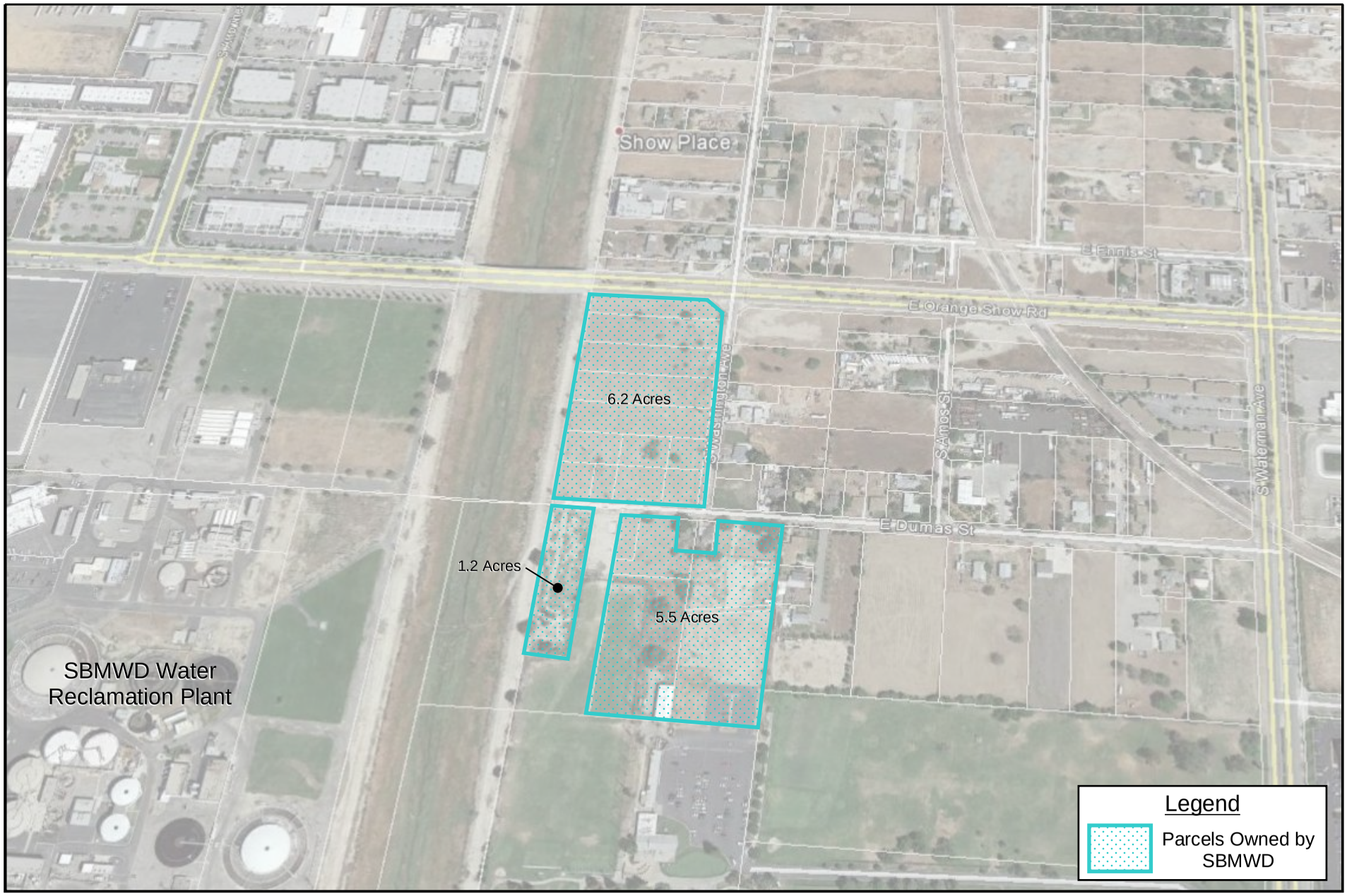

Source: Google Earth

Michael Baker INTERNATIONAL

Source: SAWPA, ESRI Shaded Relief

CLEAN WATER FACTORY PROJECT EIR

Solar Development Sites

Exhibit 4.3-1

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4.3.4 CONSTRUCTION AND OPERATIONAL IMPACTS TO AIR QUALITY

Impact 4.3-1: Would the Project violate any air quality standard or contribute substantially to an existing or projected air quality violation? *Level of Significance: Significant and Unavoidable Impact.*

CONSTRUCTION-RELATED IMPACTS

Short-term air quality impacts are predicted to occur during demolition, grading, and construction operations associated with implementation of the Project. Temporary impacts would result from Project construction activities. Short-term air emissions would result from the following activities:

- Particulate (fugitive dust) emissions from grading and building construction; and
- Exhaust emissions from the construction equipment and the motor vehicles of the construction crew.

The proposed Project would consist of separate activities for the Water Reclamation Plant, conveyance systems, and recharge sites that would occur concurrently. Water Reclamation Plant construction would involve improvements at the SBWRP that include the installation of new equipment for water treatment. Construction of the conveyance systems would have the longest duration and would involve excavation, pipeline installation, backfill, paving, and development of pump stations and reservoirs/water tanks. Recharge site improvements would include the installation of monitoring wells, flow measurement and recording devices, outlet valve replacement, berm repair, pipeline turnout, and erosion control features.

Project construction would require excavators, tractors, loaders, concrete/industrial saws, cranes, and various other construction equipment. Emissions for each construction phase have been quantified based upon the phase durations and equipment types. The analysis of daily construction emissions has been prepared utilizing the California Emissions Estimator Model (CalEEMod). Refer to Appendix 10.3, *Air Quality/Greenhouse Gas Emissions Data*, for the CalEEMod outputs and results. Table 4.3-6, *Maximum Daily Pollutant Emissions During Construction (Unmitigated)*, and Table 4.3-7, *Maximum Daily Pollutant Emissions During Construction (Mitigated)*, presents the anticipated unmitigated and mitigated daily short-term construction emissions. Mitigated fugitive dust emissions accounted for watering and other dust control methods required to be implemented consistent with SCAQMD Rule 403 and mitigated exhaust emissions accounted for the use of CARB Tier 3 certified engines.

Table 4.3-6: Maximum Daily Pollutant Emissions During Construction (Unmitigated)

	Daily Pollutant Emissions (lbs/day)[1]					
Emissions Source	ROG	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Year 1 (2016)						
Water Reclamation Plant Improvements	2.20	20.29	13.86	0.02	1.68	1.39
Conveyance Systems – Pipelines	8.29	85.30	69.12	0.09	17.16	8.55
Conveyance Systems – Pump Stations and Reservoirs	11.59	154.13	111.90	0.27	18.73	9.40
Recharge Sites Improvements	7.43	77.45	67.43	0.07	10.15	6.72
Total Year 1 Construction Emissions	**29.51**	**337.17**	**262.31**	**0.45**	**47.72**	**26.06**
SCAQMD Construction Thresholds	*75*	*100*	*550*	*150*	*150*	*55*
Emissions Exceed Thresholds?	***No***	***Yes***	***No***	***No***	***No***	***No***

Table 4.3-6, continued

Emissions Source	Daily Pollutant Emissions (lbs/day)[1]					
	ROG	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Year 2 (2017)						
Water Reclamation Plant Improvements	2.03	18.81	13.50	0.02	1.55	1.28
Conveyance Systems – Pipelines	7.72	78.87	67.42	0.09	16.78	8.20
Total Year 2 Construction Emissions	**9.75**	**97.68**	**80.92**	**0.11**	**18.33**	**9.48**
SCAQMD Construction Thresholds	*75*	*100*	*550*	*150*	*150*	*55*
Emissions Exceed Thresholds?	***No***	***No***	***No***	***No***	***No***	***No***

CO = carbon monoxide; ROG = reactive organic gases; NO_X = nitrogen oxides; PM_{10} = particulate matter smaller than 10 microns; $PM_{2.5}$ = particulate matter smaller than 2.5 microns

Notes:
1. Emissions were calculated using CalEEMod, as recommended by the SCAQMD.

Refer to Appendix 10.3, *Air Quality/Greenhouse Gas Emissions Data*, for assumptions used in this analysis.

Table 4.3-7: Maximum Daily Pollutant Emissions During Construction (Mitigated)

Emissions Source	Daily Pollutant Emissions (lbs/day)[1, 2]					
	ROG	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Year 1 (2016)						
Water Reclamation Plant Improvements	0.53	9.40	13.27	0.02	0.76	0.63
Conveyance Systems – Pipelines	3.39	49.92	68.31	0.09	8.07	4.34
Conveyance Systems – Pump Stations and Reservoirs	6.62	109.09	100.70	0.27	10.36	5.10
Recharge Sites Improvements	2.46	32.42	56.24	0.07	4.22	2.82
Total Year 1 Mitigated Construction Emissions	**13.00**	**200.83**	**238.52**	**0.45**	**23.41**	**12.89**
SCAQMD Construction Thresholds	*75*	*100*	*550*	*150*	*150*	*55*
Mitigated Emissions Exceed Thresholds?	***No***	***Yes***	***No***	***No***	***No***	***No***
Year 2 (2017)						
Water Reclamation Plant Improvements	0.51	9.34	13.13	0.02	0.76	0.63
Conveyance Systems – Pipelines	3.30	49.10	67.34	0.09	8.03	4.31
Total Year 2 Mitigated Construction Emissions	**3.81**	**58.44**	**80.47**	**0.11**	**8.79**	**4.94**
SCAQMD Construction Thresholds	*75*	*100*	*550*	*150*	*150*	*55*
Mitigated Emissions Exceed Thresholds?	***No***	***No***	***No***	***No***	***No***	***No***

CO = carbon monoxide; ROG = reactive organic gases; NOX = nitrogen oxides; PM_{10} = particulate matter smaller than 10 microns; $PM_{2.5}$ = particulate matter smaller than 2.5 microns

Notes:
1. Emissions were calculated using CalEEMod, as recommended by the SCAQMD.
2. The reduction/credits for construction emission mitigations are based on mitigation included in CalEEMod and as typically required by the SCAQMD through Rule 403 and other exhaust emissions reduction measures. The mitigation includes the following: properly maintain mobile and other construction equipment; replace ground cover in disturbed areas quickly; water exposed surfaces three times daily; cover stock piles with tarps; water all haul roads three times daily; limit speeds on unpaved roads to 15 miles per hour; and use CARB certified Tier 3 engines.

Refer to Appendix 10.3, *Air Quality/Greenhouse Gas Emissions Data*, for assumptions used in this analysis.

Fugitive Dust Emissions

Fugitive dust (PM_{10} and $PM_{2.5}$) from grading and construction is expected to be short-term and would cease following Project completion. Most of this material is composed of inert silicates, which are less

harmful to health than the complex organic particulates released from combustion sources. These particles are either directly emitted or are formed in the atmosphere from the combustion of gases such as NO_X and SO_X combining with ammonia. The greatest amount of fugitive dust generated is expected to occur during site grading and excavation. Dust generated by such activities usually becomes more of a local nuisance than a serious health problem. Of particular concern is the amount of PM_{10} generated as a part of fugitive dust emissions.

CalEEMod calculates PM_{10} and $PM_{2.5}$ fugitive dust as part of the site earthwork activity emissions; refer to Table 4.3-6 and Table 4.3-7. Maximum particulate matter emissions would occur during the initial stages of construction, when grading activities would occur. Mitigation Measure AQ-1 requires that construction activities comply with SCAQMD Rule 403, such that excessive fugitive dust emissions shall be controlled by regular watering or other dust prevention measures. In addition, SCAQMD Rule 402 is required for implementation of dust suppression techniques to prevent fugitive dust from creating a nuisance off-site and after implementation would reduce short-term fugitive dust impacts on nearby sensitive receptors. Mitigation Measure AQ-2 requires all trucks that are to haul excavated or graded material on site comply with State Vehicle Code Section 23114. With adherence to Mitigation Measures AQ-1, AQ-2, and other dust control techniques, the maximum mitigated particulate matter concentration would be 10.63 pounds per day (lbs/day) for PM_{10} and 7.33 lbs/day for $PM_{2.5}$ in construction Year 1. Emissions in each subsequent year would be lower and would also fall below the SCAQMD thresholds of 150 lbs/day for PM_{10} and 55 lbs/day for $PM_{2.5}$. Although the unmitigated particulate matter levels are below the SCAQMD thresholds absent of specific dust reduction measures, Mitigation Measures AQ-1 and AQ-2 are recommended to ensure compliance with SCAQMD rules and regulations (i.e., Rules 402 and 403).

ROG Emissions

In addition to gaseous and particulate emissions, the application of asphalt and surface coatings creates ROG emissions, which are O_3 precursors. As shown in Table 4.3-6 and Table 4.3-7, ROG emissions would be below SCAQMD thresholds and impacts would be less than significant.

Construction Exhaust Emissions

Exhaust emissions from construction activities include emissions associated with the transport of machinery and supplies to and from the Project site, emissions produced on site as the equipment is used, and emissions from trucks transporting materials to/from the site. The majority of construction equipment and vehicles would be diesel powered, which tends to be more efficient than gasoline-powered equipment. Diesel-powered equipment produces lower carbon monoxide and hydrocarbon emissions than gasoline equipment, but produces greater amounts of NO_X, SO_X, and particulates per hour of activity. The transportation of machinery, equipment and materials to and from the Project site, as well as construction worker trips, would also generate vehicle emissions during construction. As presented in Table 4.3-6, construction-related unmitigated NO_X emissions would result in a significant impact due to its contribution in forming ozone. As NO_X emissions are primarily generated by engine combustion in construction equipment, haul trucks, and employee commuting, requiring the use of newer construction equipment with better emissions controls would reduce short-term NO_X emissions. Therefore, Mitigation Measure AQ-3 would require the Project to use diesel construction equipment that complies with Tier 3-level emissions standards during all construction phases. Tier 4 certified equipment is generally available and would reduce short-term NO_X emissions and these standards apply to new equipment. However, construction fleets typically include a mix of older and newer equipment and other non-Tier 4 equipment are still permitted to operate. Mitigation requiring all construction equipment to meet Tier 4 standards is not considered feasible because it means that the entire

construction fleet would need to consist of new (or newly retrofitted) equipment. No other feasible mitigation measures exist that would reduce these emissions to levels that are less than significant. Despite the implementation of Mitigation Measure AQ-3, construction exhaust emissions would remain significant and unavoidable.

Asbestos

Pursuant to guidance issued by the Governor's Office of Planning and Research, State Clearinghouse, lead agencies are encouraged to analyze potential impacts related to naturally occurring asbestos (NOA). Asbestos is a term used for several types of naturally occurring fibrous minerals that are a human health hazard when airborne. The most common type of asbestos is chrysotile, but other types such as tremolite and actinolite are also found in California. Asbestos is classified as a known human carcinogen by State, Federal, and international agencies and was identified as a toxic air contaminant by the CARB in 1986.

Asbestos can be released from serpentinite and ultramafic rocks when the rock is broken or crushed. At the point of release, the asbestos fibers may become airborne, causing air quality and human health hazards. These rocks have been commonly used for unpaved gravel roads, landscaping, fill projects, and other improvement projects in some localities. Asbestos may be released to the atmosphere due to vehicular traffic on unpaved roads, during grading for development projects, and at quarry operations. All of these activities may have the effect of releasing potentially harmful asbestos into the air. Natural weathering and erosion processes can act on asbestos bearing rock and make it easier for asbestos fibers to become airborne if such rock is disturbed.

Serpentinite and/or ultramafic rock are known to be present in 44 of California's 58 counties. These rocks are particularly abundant in the counties of the Sierra Nevada foothills, the Klamath Mountains, and Coast Ranges. According to the California Geological Survey, *A General Location Guide for Ultramafic Rocks in California – Areas More Likely to Contain Naturally Occurring Asbestos Report* (dated August 2000), the Project is not located in an area where NOA is likely to be present. Therefore impacts would be less than significant.

Total Daily Construction Emissions

In accordance with the SCAQMD Guidelines, CalEEMod was utilized to model construction emissions for ROG, NO_X, CO, SO_X, PM_{10}, and $PM_{2.5}$. Construction would occur over several years, with the greatest emissions being generated during the first year of construction. CalEEMod allows the user to input mitigation measures such as watering the construction area to limit fugitive dust and applying soil stabilizers to the Project area. Mitigation measures selected within CalEEMod allow for certain reduction credits and result in a decrease of pollutant emissions. Reduction credits are based upon studies developed by CARB, SCAQMD, and other air quality management districts throughout California, and were programmed within CalEEMod.

As indicated in Table 4.3-6 and Table 4.3-7, NO_X emissions would exceed SCAQMD thresholds during construction. Implementation of Mitigation Measures AQ-1 through AQ-3 would lessen construction-related impacts by requiring measures to reduce air pollutant emissions from construction activities. These measures call for the maintenance of construction equipment, use of non-polluting and non-toxic building equipment, the use of Tier 3 engines, and minimizing fugitive dust. . . However, despite the implementation of Mitigation Measures AQ-1 through AQ-3, construction impacts would be significant and unavoidable.

Water Reclamation Plant

As described above, construction activities at the Water Reclamation Plant, conveyance systems, and recharge sites would occur concurrently during the first phase. The future phased plant expansions would occur independent of the conveyance and recharge basin construction activities. The emissions modeling conservatively assumes that these various construction activities would occur concurrently. Emissions associated with each of these components are depicted in Table 4.3-6 and Table 4.3-7. As depicted in Table 4.3-7, construction emissions would be significant and unavoidable despite the implementation of Mitigation Measures AQ-1 through AQ-3.

Conveyance Systems

Emissions associated with the conveyance systems are depicted in Table 4.3-6 and Table 4.3-7. As depicted in Table 4.3-7, construction emissions would be significant and unavoidable despite the implementation of Mitigation Measures AQ-1 through AQ-3.

Recharge Sites

Emissions associated with the recharge sites are depicted in Table 4.3-6 and Table 4.3-7. As depicted in Table 4.3-7, construction emissions would be significant and unavoidable despite the implementation of Mitigation Measures AQ-1 through AQ-3.

OPERATIONS-RELATED IMPACTS

Long-term air emissions generally consist of mobile source emissions generated from Project-related traffic and from stationary source emissions generated directly from natural gas and electricity consumption. As described above, operation of the proposed Project has the potential to create air quality impacts primarily from energy consumption from additional treatment and pumping. Mobile source emissions would occur from periodic maintenance activities as well as minor increases in employee trips and deliveries associated with the expanded wastewater treatment facilities and would be nominal. It should be noted that the San Bernardino Municipal Water Department's (SBMWD) on-road vehicle fleet complies with CARB's standard for particulate matter. Diesel truck engines that do not meet CARB limits are required to install particulate matter filters. The SBMWD fleet is also required to comply with SCAQMD Rules 1191 (Clean On-Road Light- and Medium-Duty Public Fleet Vehicles) and 1196 (Clean On-Road Heavy-Duty Public Fleet Vehicles). As the new facilities would be implemented at existing SBMWD locations (e.g., SBWRP, recharge sites, etc.), Project maintenance activities would be part of SBMWD's normal routine and would not significantly increase vehicle fleet operations.

Table 4.3-8, *Long-Term Operational Air Emissions*, presents the anticipated emissions from energy consumption required for the additional Water Reclamation Plant facilities and the conveyance system pumps. As depicted in Table 4.3-8, energy emissions would not exceed SCAQMD thresholds. Therefore, impacts in this regard would be less than significant.

Water Reclamation Plant

As described above, long-term operational emissions associated with the SBWRP would occur from energy consumption of the new treatment equipment. As depicted in Table 4.3-8, emissions associated with the SBWRP would be within the SCAQMD thresholds. Emissions associated with periodic maintenance would be infrequent and irregular and emissions would be nominal. As indicated above, the Project also proposes to offset its energy consumption with solar photovoltaic electricity generation.

The reduction in energy consumption is conservatively not quantified in Table 4.3-8 because specifics of this design feature are not known at this time.

Table 4.3-8: Long-Term Operational Air Emissions

	Pollutant (pounds/day)[1, 2, 3]					
Emissions Source	**ROG**	**NO_X**	**CO**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
Water Reclamation Plant	0.70	18.86	13.97	8.38	6.29	4.19
Conveyance System	0.66	17.74	13.14	7.88	5.91	3.94
RIX Reduction	-0.28	-7.51	-5.56	-3.34	-2.5	-1.67
Total Energy Emissions	**1.08**	**29.09**	**21.55**	**12.92**	**9.7**	**6.46**
SCAQMD Threshold	*55*	*55*	*550*	*150*	*150*	*55*
Is Threshold Exceeded? (Significant Impact?)	***No***	***No***	***No***	***No***	***No***	***No***

Notes:
1. Emissions would primarily occur from operation of pumps associated with water conveyance. Emissions are based on emissions factors from the CalEEMod user guide and the EPA eGRID database.
2. Refer to Appendix 10.3, *Air Quality/Greenhouse Gas Emissions Data*, for assumptions used in this analysis.

Conveyance Systems

As described above, long-term operational emissions associated with the conveyance system would occur from energy consumption of the pumps. As depicted in Table 4.3-8, emissions associated with the conveyance system would be within the SCAQMD thresholds. Emissions associated with periodic maintenance would be infrequent and irregular and emissions would be nominal.

Recharge Sites

Long-term operations of the recharge sites would not generate a substantial amount of daily emissions. Under the proposed Project, recycled water would discharge into the basins for groundwater recharge. As the recycled water would be pumped into the basins via the conveyance system and would naturally percolate into the groundwater basin, no operational emissions would be associated with the recharge sites. Periodic maintenance would include semi-annual inspections, sediment removal, and annual discing/aeration of the basin. As these activities would occur infrequently, emissions associated with maintenance would be nominal.

RIX Phased Discharge Reduction

Effluent discharge from the RIX facility to the Santa Ana River would be reduced though the implementation of a phasing plan in order to allow the gradual reduction of flow into the Santa Ana River. The flow from RIX to the Santa Ana River would be diverted at the SBWRP, where it would be treated and conveyed for recharge or direct reuse. The impacts associated with the diverted flow at the SBWRP and processing at the SBWRP are analyzed above. As indicated in Table 4.3-8, diversion at the SBWRP would reduce the need for tertiary treatment at the RIX facility. Therefore, the increased treatment proposed at the SBWRP would be partially offset by the reduction at the RIX facility.

MITIGATION MEASURES

AQ-1 Prior to construction, SBMWD shall confirm that the Grading Plan, Building Plans, and specifications stipulate that, in compliance with SCAQMD Rule 403, excessive fugitive dust emissions shall be controlled by regular watering or other dust prevention measures, as specified in the SCAQMD's Rules and Regulations. In addition, SCAQMD Rule 402 requires implementation of the following dust suppression techniques to prevent fugitive dust from creating a nuisance off-site and reduce short-term fugitive dust impacts on nearby sensitive receptors:

- All active portions of the construction site shall be watered twice daily during daily construction activities, on as needed during wet weather, and when dust is observed migrating from the Project site to prevent excessive amounts of dust.
- Pave or apply water three times daily during daily construction activities or apply non-toxic soil stabilizers on all unpaved access roads, parking areas, and staging areas, during dry weather. More frequent watering shall occur if dust is observed migrating from the site during site disturbance.
- During dry weather, any on site stockpiles of debris, dirt, or other dusty material with five percent or greater silt contrast shall be enclosed, covered, watered twice daily, or non-toxic soil binders shall be applied.
- All grading and excavation operations shall be suspended when wind speeds exceed 25 miles per hour.
- Disturbed areas shall be replaced with ground cover or paved immediately after construction is completed in the affected area.
- Track-out devices such as gravel bed track-out aprons (3 inches deep, 25 feet long, 12 feet wide per lane and edged by rock berm or row of stakes) shall be installed to reduce mud/dirt trackout from unpaved truck exit routes. Alternatively a wheel washer shall be used at truck exit routes. On site vehicle speed shall be limited to 15 miles per hour.
- All material transported off-site shall be either sufficiently watered or securely covered to prevent excessive amounts of dust before departing the job site.
- Reroute construction trucks away from congested streets or sensitive receptor areas.
- Trucks associated with soil-hauling activities shall avoid residential streets and utilize SBMWD-designated truck routes to the extent feasible.

AQ-2 During construction, all trucks that are to haul excavated or graded material on site shall comply with State Vehicle Code Section 23114 (Spilling Loads on Highways), with special attention to Sections 23114(b)(F), (e)(4) as amended, regarding the prevention of such material spilling onto public streets and roads. Before the issuance of Grading Permits, SBMWD shall indicate how operations subject to that specification during hauling activities shall comply with the provisions set forth in Sections 23114(b)(F), (e)(4).

AQ-3 Prior to construction, the construction contractor shall provide evidence to SBMWD that the following measures will be implemented during construction:

- Provide temporary traffic controls such as a flag person, during all phases of construction to maintain smooth traffic flow.
- Provide dedicated turn lanes for movement of construction trucks and equipment on- and off-site.
- Improve traffic flow by signal synchronization, and ensure that all vehicles and equipment will be properly tuned and maintained according to manufacturers' specifications.
- Require the use of electricity from power poles rather than temporary diesel or gasoline powered generators, as feasible.
- Require the use of 2010 and newer diesel haul trucks (e.g., material delivery trucks and soil import/export) and if the lead agency determines that 2010 model year or newer diesel trucks cannot be obtained the lead agency shall use trucks that meet EPA 2007 model year NO_X emissions requirements.
- During Project construction, all internal combustion engines/construction, equipment operating on the Project site shall meet EPA-Certified Tier 3 emissions standards, or higher according to the following:
    - All off-road diesel-powered construction equipment greater than 50 horsepower shall meet Tier 3 off-road emissions standards. In addition, all construction equipment shall be outfitted with BACT devices certified by CARB. Any emissions control device used by the contractor shall achieve emissions reductions that are no less than what could be achieved by a Level 3 diesel emissions control strategy for a similarly sized engine as defined by CARB regulations.
    - Post-January 1, 2015: All off-road diesel-powered construction equipment greater than 50 horsepower shall meet the Tier 4 emission standards, where available. In addition, all construction equipment shall be outfitted with BACT devices certified by CARB. Any emissions control device used by the contractor shall achieve emissions reductions that are no less than what could be achieved by a Level 3 diesel emissions control strategy for a similarly sized engine as defined by CARB regulations.
    - A copy of each unit's certified tier specification, BACT documentation, and CARB or SCAQMD operating permit shall be provided at the time of mobilization of each applicable unit of equipment.

Impact 4.3-2: Would the Project result in a cumulatively considerable net increase of any criteria pollutant for which the air basin is in nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)? *Level of Significance: Significant and Unavoidable Impact.*

CONSTRUCTION-RELATED IMPACTS

With respect to the proposed Project's construction-period air quality emissions and cumulative Basin-wide conditions, the SCAQMD has developed strategies to reduce criteria pollutant emissions outlined in

the 2012 AQMP pursuant to FCAA mandates. As such, the proposed Project would comply with SCAQMD Rule 403 requirements, and implement all feasible mitigation measures. Rule 403 requires that fugitive dust be controlled with the best available control measures in order to reduce dust so that it does not remain visible in the atmosphere beyond the property line of the construction site. In addition, the proposed Project would comply with adopted 2012 AQMP emissions control measures. Based on SCAQMD rules and mandates, as well as the CEQA requirement that significant impacts be mitigated to the extent feasible, these same requirements (i.e., Rule 403 compliance, the implementation of all feasible mitigation measures, and compliance with adopted Air Quality Management Plan emissions control measures) would also be imposed on construction projects throughout the Basin, which would include related projects.

Water Reclamation Plant

As described above, compliance with SCAQMD rules and implementation of Mitigation Measures AQ-1 through AQ-3 would minimize SBWRP construction emissions from the proposed Project. However, despite the implementation of these mitigation measures, total construction impacts would not be reduced to a less than significant level (refer to Table 4.3-7, above). Therefore, the proposed Project would have a cumulative contribution to air emissions in the region and impacts would be cumulatively considerable in this regard.

Conveyance Systems

As described above, compliance with SCAQMD rules and implementation of Mitigation Measures AQ-1 through AQ-3 would minimize conveyance system construction emissions from the proposed Project. However, despite the implementation of these mitigation measures, total construction impacts would not be reduced to a less than significant level (refer to Table 4.3-7, above). Therefore, the proposed Project would have a cumulative contribution to air emissions in the region and impacts would be cumulatively considerable in this regard.

Recharge Sites

As described above, compliance with SCAQMD rules and implementation of Mitigation Measures AQ-1 through AQ-3 would minimize recharge sites construction emissions from the proposed Project. However, despite the implementation of these mitigation measures, total construction impacts would not be reduced to a less than significant level (refer to Table 4.3-7, above). Therefore, the proposed Project would have a cumulative contribution to air emissions in the region and impacts would be cumulatively considerable in this regard.

OPERATIONS-RELATED IMPACTS

As discussed previously, the proposed Project would not result in significant long-term air quality impacts, as emissions would not exceed the SCAQMD adopted operational thresholds. Additionally, adherence to SCAQMD rules and regulations would alleviate potential impacts related to cumulative conditions on a project-by-project basis. Emission reduction technology, strategies, and plans are constantly being developed. As a result, the proposed Project would not contribute a cumulatively considerable net increase of any nonattainment criteria pollutant. Therefore, cumulative operational impacts associated with implementation of the proposed Project would be less than significant.

Water Reclamation Plant

As described above, operational emissions associated with the SBWRP would not exceed the SCAQMD adopted operational thresholds. Therefore, SBWRP operations would not contribute a cumulatively considerable net increase of any nonattainment criteria pollutant and cumulative operational impacts would be less than significant.

Conveyance Systems

As described above, operational emissions associated with the conveyance system would not exceed the SCAQMD adopted operational thresholds. Therefore, the conveyance system operations would not contribute a cumulatively considerable net increase of any nonattainment criteria pollutant and cumulative operational impacts would be less than significant.

Recharge Sites

Operations of the recharge sites would not generate any air emissions. Therefore, operations of the recharge sites would not contribute a cumulatively considerable net increase of any nonattainment criteria pollutant. Therefore, cumulative operational impacts associated with the recharge sites would be less than significant.

RIX Phased Discharge Reduction

Effluent discharge from the RIX facility to the Santa Ana River would be reduced though the implementation of a phasing plan in order to allow the gradual reduction of flow into the Santa Ana River. The flow from RIX to the Santa Ana River would be diverted to the SBWRP, where it would be treated and conveyed for recharge or direct reuse. The impacts associated with the diverted flow to the SBWRP and processing at the SBWRP are analyzed above. As indicated above, the increased treatment proposed at the SBWRP would be offset by the reduction at the RIX facility. Therefore, the RIX Phased Discharge Reduction component would not contribute a cumulatively considerable net increase of any nonattainment criteria pollutant and cumulative operational impacts would be less than significant.

MITIGATION MEASURES

AQ-1 Refer to Impact 4.3-1 above.

AQ-2 Refer to Impact 4.3-1 above.

AQ-3 Refer to Impact 4.3-1 above.

Impact 4.3-3: Would the Project expose sensitive receptors to substantial pollutant concentrations? *Level of Significance: Significant and Unavoidable Impact.*

Sensitive receptors are defined as facilities or land uses that include members of the population that are particularly sensitive to the effects of air pollutants, such as children, the elderly, and people with illnesses. Examples of these sensitive receptors are residences, schools, hospitals, and daycare centers. CARB has identified the following groups of individuals as the most likely to be affected by air pollution: the elderly over 65, children under 14, athletes, and persons with cardiovascular and chronic respiratory diseases such as asthma, emphysema, and bronchitis.

Sensitive receptors near the Project site include surrounding residences located approximately 480 feet to the north/northwest, and 600 feet to the south; a church approximately 85 feet to the north; and a school approximately 90 feet to the west. In order to identify impacts to sensitive receptors, the

SCAQMD recommends addressing localized significance thresholds (LSTs) for construction and operations impacts (area sources only). Project operations would not result in any new sources of operational mobile source or area source GHG emissions, as the proposed facilities would be electrically operated. Therefore, a localized CO hotspot analysis is not required to addresses localized mobile source impacts.

LOCALIZED SIGNIFICANCE THRESHOLDS

LSTs were developed in response to SCAQMD Governing Boards' Environmental Justice Enhancement Initiative (I-4). The SCAQMD provided the *Final Localized Significance Threshold Methodology* (dated June 2003 [revised 2008]) for guidance. The LST methodology assists lead agencies in analyzing localized air quality impacts. The SCAQMD provides the LST screening lookup tables for one, two, and five acre projects emitting CO, NO_X, $PM_{2.5}$, or PM_{10}. The LST methodology and associated mass rates are not designed to evaluate localized impacts from mobile sources traveling over the roadways. The SCAQMD recommends that any project over five acres should perform air quality dispersion modeling to assess impacts to nearby sensitive receptors. The Project is located within Sensitive Receptor Area (SRA) 34, Central San Bernardino Valley.

Construction-related Impacts

Water Reclamation Plant

The closest sensitive receptor to the SBWRP is the San Bernardino Public Golf Course that is located to the south, east, and west. The new facilities at the SBWRP could be located as close as 100 meters to the golf course. Table 4.3-9, *SBWRP - Localized Significance of Emissions*, depicts the mitigated construction-related emissions for NO_X, CO, PM_{10}, and $PM_{2.5}$ compared to the LSTs for SRA 34, Central San Bernardino Valley. It should be noted that Table 4.3-9 conservatively uses the 1-acre LST threshold. As shown in Table 4.3-9, construction emissions would not exceed the LSTs for NO_X, PM_{10}, and $PM_{2.5}$.

Table 4.3-9: SBWRP - Localized Significance of Emissions

	Pollutant (pounds/day)			
On Site Sources	**NO_X**	**CO**	**PM_{10}**	**$PM_{2.5}$**
Year 1				
Unmitigated On Site Emissions	20.29	13.86	1.68	1.39
Mitigated On Site Emissions	9.40	13.27	0.76	0.63
Localized Significance Threshold	*211*	*2,109*	*33*	*9*
Thresholds Exceeded?	***No***	***No***	***No***	***No***
Year 2				
Unmitigated On Site Emissions	18.81	13.50	1.55	1.28
Mitigated On Site Emissions	9.34	13.13	0.76	0.63
Localized Significance Threshold	*211*	*2,109*	*33*	*9*
Thresholds Exceeded?	***No***	***No***	***No***	***No***

Note:
1. The Localized Significance Threshold was determined using Appendix C of the SCAQMD *Final Localized Significant Threshold Methodology* guidance document for pollutants NO_X, CO, PM_{10}, and $PM_{2.5}$. The Localized Significance Threshold conservatively uses the 1 acre threshold, the distance to sensitive receptors (100 meters), and the source receptor area (SRA 34).

Conveyance Systems

The closest sensitive receptors to the conveyance system would be the residences located along the various pipeline alignments or adjacent to a reservoir or pump station. As construction for these components could be located within the street and/or adjacent to existing residences, the 25 meter LST was used. It should be noted that the 25 meter LST is applicable for sensitive receptors located 25 meters away or less. Table 4.3-10, *Conveyance Systems - Localized Significance of Emissions*, depicts the mitigated construction-related emissions for NO_X, CO, PM_{10}, and $PM_{2.5}$ compared to the LSTs for SRA 34, Central San Bernardino Valley. It should be noted that Table 4.3-10 uses the 1-acre LST threshold as pipeline construction would occur at a rate of approximately 300 to 500 feet per day (depending on location). Additionally, construction of the reservoirs would occur at separate locations (approximately 1 acre sites, each). As shown in Table 4.3-10, construction emissions would exceed the LSTs for PM_{10} and $PM_{2.5}$, despite the implementation of Mitigation Measures AQ-1 through AQ-3. Mitigation Measures AQ-1 through AQ-3 require the implementation of dust control measures to reduce fugitive dust (PM_{10} and $PM_{2.5}$) to the maximum extent practicable. These measures include compliance with SCAQMD Rules 403 and 402 (e.g., watering loose soils, cleaning trackouts, covering stockpiles, preventing nuisances, etc.) as well as compliance with the State vehicle code that requires haul trucks to be covered. There are no other feasible mitigation measures that would further reduce PM_{10} and $PM_{2.5}$ emissions or reduce emissions to a less than significant level.

Table 4.3-10: Conveyance Systems - Localized Significance of Emissions

	Pollutant (pounds/day)			
On Site Sources	**NO_X**	**CO**	**PM_{10}**	**$PM_{2.5}$**
Year 1 - Pipelines				
Unmitigated On Site Emissions	85.30	69.12	17.16	8.55
Mitigated On Site Emissions	49.92	68.31	8.07	4.34
Localized Significance Threshold	*118*	*657*	*4*	*3*
Thresholds Exceeded?	***No***	***No***	***Yes***	***Yes***
Year 1 – Pumps and Reservoirs				
Unmitigated On Site Emissions	154.12	111.90	18.73	9.40
Mitigated On Site Emissions	109.09	100.70	10.36	5.10
Localized Significance Threshold	*118*	*657*	*4*	*3*
Thresholds Exceeded?	***No***	***No***	***Yes***	***Yes***
Year 2 - Pipelines				
Unmitigated On Site Emissions	78.87	67.42	16.78	8.20
Mitigated On Site Emissions	49.10	67.34	8.03	4.31
Localized Significance Threshold	*118*	*657*	*4*	*3*
Thresholds Exceeded?	***No***	***No***	***Yes***	***Yes***

Note:
1. The Localized Significance Threshold was determined using Appendix C of the SCAQMD *Final Localized Significant Threshold Methodology* guidance document for pollutants NO_X, CO, PM_{10}, and $PM_{2.5}$. The Localized Significance Threshold conservatively uses the 1 acre threshold, the distance to sensitive receptors (25 meters), and the source receptor area (SRA 34).

Recharge Sites

The closest sensitive receptors to the recharge sites would be the surrounding residences, which are located as close as 50 meters. Table 4.3-11, *Recharge Sites- Localized Significance of Emissions*, depicts the mitigated construction-related emissions for NO_X, CO, PM_{10}, and $PM_{2.5}$ compared to the LSTs for SRA

34, Central San Bernardino Valley. It should be noted that Table 4.3-11 conservatively uses the 1-acre LST threshold. As shown in Table 4.3-11, construction emissions would not exceed the LSTs with the implementation of Mitigation Measures AQ-1 and AQ-2.

Table 4.3-11: Recharge Sites - Localized Significance of Emissions

	Pollutant (pounds/day)			
On Site Sources	**NO_X**	**CO**	**PM_{10}**	**$PM_{2.5}$**
Year 1				
Unmitigated On Site Emissions	77.45	67.43	10.15	6.72
Mitigated On Site Emissions	32.42	56.24	4.22	2.82
Localized Significance Threshold	*148*	*1,044*	*13*	*5*
Thresholds Exceeded?	***No***	***No***	***No***	***No***

Note:
1. The Localized Significance Threshold was determined using Appendix C of the SCAQMD *Final Localized Significant Threshold Methodology* guidance document for pollutants NO_X, CO, PM_{10}, and $PM_{2.5}$. The Localized Significance Threshold conservatively uses the 1 acre threshold, the distance to sensitive receptors (50 meters), and the source receptor area (SRA 34).

Operations-related Impacts

Water Reclamation Plant

Operations at the Water Reclamation Plant would involve equipment that uses electricity. Therefore, any emissions would occur indirectly from the use of electricity. Electrical emissions would occur regionally, at various power plants, and would not have local emissions or localized impacts. Therefore, impacts would be less than significant in this regard.

Conveyance Systems

Operation of the conveyance system involves pumps and pipelines. The pumps would be electrical, and any emissions would occur indirectly from the use of electricity. Therefore, the conveyance system would not have localized emissions. Impacts would be less than significant in this regard.

Recharge Sites

Long-term operations of the recharge sites would not generate emissions. Under the proposed Project, recycled water would discharge into the basins for groundwater recharge. As the recycled water would be pumped into the basins via the conveyance system and would naturally percolate into the groundwater basin, no operational emissions (including localized emissions) would be associated with the recharge sites.

RIX Phased Discharge Reduction

Effluent discharge from the RIX facility to the Santa Ana River would be reduced though the implementation of a phasing plan in order to allow the gradual reduction of flow into the Santa Ana River. The flow from RIX to the Santa Ana River would be diverted at the SBWRP, where it would be treated and conveyed for recharge or direct reuse. The impacts associated with the diverted flow at the SBWRP and processing at the SBWRP are analyzed above. As indicated above, the diversion to the SBWRP would not result in localized emissions at the RIX.

MITIGATION MEASURES

AQ-1 Refer to Impact 4.3-1 above.

AQ-2 Refer to Impact 4.3-1 above.

AQ-3 Refer to Impact 4.3-1 above.

Impact 4.3-4: Odors. Would the Project create objectionable odors affecting a substantial number of people? *Level of Significance: Less Than Significant Impact.*

CONSTRUCTION-RELATED IMPACTS

Water Reclamation Plant

Construction activity associated with the SBWRP may generate detectable odors from heavy-duty equipment exhaust. Construction-related odors would be short-term in nature and cease upon Project completion. Any construction-related odor impacts to existing adjacent land uses would be short-term, would not affect a substantial number of people, and are considered less than significant.

Conveyance Systems

Construction activity associated with the conveyance systems may generate detectable odors from heavy-duty equipment exhaust. Construction-related odors would be short-term in nature and cease upon Project completion. Any construction-related odor impacts to existing adjacent land uses would be short-term, would not affect a substantial number of people, and are considered less than significant.

Recharge Sites

Construction activity associated with the recharge sites improvements may generate detectable odors from heavy-duty equipment exhaust. Construction-related odors would be short-term in nature and cease upon Project completion. Any construction-related odor impacts to existing adjacent land uses would be short-term, would not affect a substantial number of people, and are considered less than significant.

OPERATIONS-RELATED IMPACTS

Water Reclamation Plant

Odors are typically associated with the treatment of municipal wastewater. Odors are not unlike other emissions from industrial point sources; the emissions are comprised of many different compounds, many of which are associated with odors. Wastewater odors are generally the result of reduced sulfur compounds generated in the breakdown of raw sewage under reducing anaerobic conditions. These reducing conditions would primarily occur within the sewage collection system prior to sewage entrance to the SBWRP. It should be noted that the Project includes the addition of tertiary and advanced water treatment processes that do not generate odors. The Project does not involve substantial capacity increase of existing processes associated with odors (i.e., preliminary treatment, primary treatment, secondary treatment, anaerobic digestion, and solids handling). The proposed improvements would not result in the generation of new odors.

According to the existing SBWRP Waste Discharge Requirements (Order No. R8-2005-0074), the SBWRP's continued operations are conditional upon the ability of the SBWRP to operate without the discharge of objectionable odors that would constitute a public nuisance as observed at the limits of the

facility. The project would add tertiary and advanced water treatment to the secondary treatment that currently occurs at the SBWRP. The Project would not significantly increase odors beyond what is already experienced at the Project site. Impacts in this regard would be less than significant.

Conveyance Systems

Operations associated with the conveyance systems would involve routine maintenance. Odors are not anticipated to occur during operations of conveyance systems. Impacts in this regard would be less than significant.

Recharge Sites

Operations associated with the recharge sites improvements would involve routine maintenance. Recycled water would be released into the spreading grounds via an outfall pipe. Odors are not anticipated to occur during operations of the recharge sites as recycled water is highly treated and does not have a detectable odor. Impacts in this regard would be less than significant.

RIX Phased Discharge Reduction

Improvements associated with the RIX Phased Discharge Reduction component would include the following: increased water treatment capabilities; pipelines, pumps, and reservoirs needed for the conveyance system; and improvements at the Waterman Basins and East Twin Creek Spreading Grounds. Improvements, as well as operation and maintenance activities are similar to those described above for the Water Reclamation Plant. Project components associated with the RIX Phased Discharge Reduction would result in similar impacts as described above for the Water Reclamation Plant.

MITIGATION MEASURES

No mitigation is required.

Impact 4.3-5: Would implementation of the proposed Project result in an exceedance of federal de minimis levels? *Level of Significance: Less Than Significant Impact.*

CONSTRUCTION- AND OPERATIONS-RELATED IMPACTS

Pursuant to State Water Resources Control Board (SWRCB) CEQA-Plus requirements, this analysis has been structured to illustrate how the proposed Project would meet the Federal Clean Air Act (FCAA) General Conformity requirements, as well as those set forth by the SCAQMD. As identified above, the Project site is located in the South Coast Air Basin (Basin), which is designated non-attainment for ozone and $PM_{2.5}$. Thus, the proposed Project is subject to a screening level general conformity analysis. As indicated in Table 4.3-12, *Net Increase in Annual Emissions*, the proposed action would not result in net increase of emissions that would exceed applicable federal general conformity de minimis levels.

The purpose of a general conformity review is to ensure that federal actions (1) do not interfere with the emissions budgets in the SIPs; and (2) do not cause or contribute to new violations; do not increase the frequency or severity of existing violations; and (3) to ensure attainment and maintenance of the NAAQS. Because net increases in mitigated emissions attributable to the proposed Project would exceed federal de minimis levels during construction Year 1, implementation of the proposed Project would potentially conflict with the state implementation plan. As described above, Mitigation Measures AQ-1 through AQ-3 would be required to minimize construction related emissions. However, despite the

implementation of all feasible mitigation measures, construction emissions would exceed de minimis levels during Year 1. It should be noted that this exceedance from construction emissions would only occur during the first year of construction and construction emissions in subsequent years would be below de minimis thresholds. Air quality conformity and attainment are primarily influenced by long-term (operational) emissions instead of short-term construction emissions. Nonetheless, as project construction would exceed thresholds in Year 1 of construction, impacts would be significant despite the implementation of Mitigation Measures AQ-1 through AQ-3.

Table 4.3-12: Net Increase in Annual Emissions

	Annual Pollutant Emissions (tons/year)[1]				
	Ozone[2]				
Activity	**VOC[3]**	**NO_X**	**CO**	**PM_{10}**	**$PM_{2.5}$**
Construction Year 1 (Unmitigated)					
Water Reclamation Plant Improvements	0.28	2.59	1.78	0.21	0.18
Conveyance Systems – Pipelines	1.01	10.41	8.50	3.00	1.51
Conveyance Systems – Pump Stations and Reservoirs	0.53	4.96	3.46	0.45	0.32
Recharge Sites Improvements	0.49	5.12	4.42	0.67	0.44
Total Year 1 Unmitigated Construction Emissions	**2.31**	**23.08**	**18.16**	**4.33**	**2.45**
De Minimis Levels[4]	*10*	*10*	*100*	*100*	*100*
Are De Minimis Levels Exceeded?	***No***	***Yes***	***No***	***No***	***No***
Construction Year 2 (Unmitigated)					
Water Reclamation Plant Improvements	0.15	1.41	1.01	0.12	0.1
Conveyance Systems – Pipelines	1.00	10.20	8.70	2.98	1.49
Total Year 2 Unmitigated Construction Emissions	**1.15**	**11.61**	**9.71**	**3.10**	**1.59**
De Minimis Levels[4]	*10*	*10*	*100*	*100*	*100*
Are De Minimis Levels Exceeded?	***No***	***Yes***	***No***	***No***	***No***
Construction Year 1 (Mitigated)[4]					
Water Reclamation Plant Improvements	0.07	1.21	1.7	0.1	0.08
Conveyance Systems – Pipelines	0.42	6.16	8.32	1.37	0.73
Conveyance Systems – Pump Stations and Reservoirs	0.15	2.8	3.28	0.23	0.16
Recharge Sites Improvements	0.16	2.14	3.68	0.28	0.19
Total Year 1 Mitigated Construction Emissions[5]	**0.80**	**12.31**	**16.98**	**1.98**	**1.16**
De Minimis Levels[4]	*10*	*10*	*100*	*100*	*100*
Are De Minimis Levels Exceeded?	***No***	***Yes***	***No***	***No***	***No***
Construction Year 2 (Mitigated) [4]					
Water Reclamation Plant Improvements	0.04	0.7	0.98	0.06	0.05
Conveyance Systems – Pipelines	0.42	6.35	8.69	1.38	0.74
Total Year 2 Mitigated Construction Emissions[5]	**0.46**	**7.05**	**9.67**	**1.44**	**0.79**
De Minimis Levels[4]	*10*	*10*	*100*	*100*	*100*
Are De Minimis Levels Exceeded?	***No***	***No***	***No***	***No***	***No***

	Annual Pollutant Emissions (tons/year)[1]				
	Ozone[2]				
Activity	VOC[3]	NO_X	CO	PM_{10}	$PM_{2.5}$
Operations (Energy Consumption)					
Water Reclamation Plant	0.13	3.44	2.55	1.53	1.15
Conveyance System	0.12	3.24	2.40	1.44	1.08
RIX Reduction	-0.05	-1.37	-1.01	-0.46	-0.30
Total Energy Emissions	**0.20**	**5.31**	**3.94**	**2.51**	**1.93**
De Minimis Levels[4]	*10*	*10*	*100*	*100*	*100*
Are De Minimis Levels Exceeded?	***No***	***No***	***No***	***No***	***No***

Notes:
1. Construction emissions calculated with CalEEmod and operational emissions are based on emissions factors from the CalEEMod user guide and the EPA eGRID database; refer to Appendix 10.3, *Air Quality/Greenhouse Gas Emissions Data*, for assumptions used in this analysis.
2. The majority of ozone formation occurs when nitrogen oxides (NO_X) and volatile organic compounds (VOCs), react in the atmosphere in the presence of sunlight. NO_X and VOCs are called ozone precursors. Therefore, this analysis quantifies NO_X and VOCs to determine ozone impacts.
3. ROGs and VOCs are subsets of organic gases that are emitted from the incomplete combustion of hydrocarbons or other carbon-based fuels. Although they represent slightly different subsets of organic gases, they are used interchangeably for the purposes of this analysis.
4. De minimis levels are established within Title 40 of the Code of Federal Regulations, Section 93.153 (40 CFR 93.153). The Project is located within the South Coast Air Basin, which is Federally designated as extreme nonattainment for ozone and severe nonattainment for $PM_{2.5}$. The basin is Federally designated as attainment/maintenance for PM_{10}.
5. The reduction/credits for construction emission mitigations are based on mitigation included in CalEEMod and as typically required by the SCAQMD through Rule 403 and other exhaust emissions reduction measures. The mitigation includes the following: properly maintain mobile and other construction equipment; replace ground cover in disturbed areas quickly; water exposed surfaces three times daily; cover stock piles with tarps; water all haul roads three times daily; limit speeds on unpaved roads to 15 miles per hour; and use CARB certified Tier 3 engines.

MITIGATION MEASURES

AQ-1 Refer to Impact 4.3-1 above.

AQ-2 Refer to Impact 4.3-1 above.

AQ-3 Refer to Impact 4.3-1 above.

Impact 4.3-6: Would the Project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment? *Level of Significance: Less Than Significant Impact with Mitigation Incorporated.*

CONSTRUCTION- AND OPERATIONS-RELATED IMPACTS

Project construction would result in direct emissions of CO_2, CH_4, and N_2O from the operation of construction equipment. Transport of materials and construction workers to and from the Project site would also result in GHG emissions. Construction activities would be short-term in duration and would cease upon Project completion. The analysis of GHG emissions has been prepared utilizing the California Emissions Estimator Model (CalEEMod). Table 4.3-13, *Total Greenhouse Gas Emissions*, presents the estimated CO_2, N_2O, and CH_4 construction emissions of the Project. The CalEEMod outputs are contained within the Appendix 10.3, *Air Quality/Greenhouse Gas Data*. As seen in Table 4.3-1, the Project would

result in a total of 112.22MTCO_2eq/yr (amortized over 30 years consistent with SCAQMD Guidance). Total GHG emissions for all construction activities would be 3,366.58 MTCO_2eq.

Table 4.3-13: Total Greenhouse Gas Emissions

Source	CO_2 Metric Tons/yr	CH_4 Metric Tons/yr	CH_4 Metric Tons of CO_2eq[1]	N_2O Metric Tons/yr	N_2O Metric Tons of CO_2eq[1]	Total Metric Tons of CO_2eq
Direct Emissions (Construction)[2]						
Water Reclamation Plant Improvements	12.21	0.00	0.08	0.00	0.00	12.28
Conveyance Systems – Pipelines	50.81	0.01	0.33	0.00	0.00	67.38
Conveyance Systems – Pump Stations and Reservoirs	18.66	0.00	0.08	0.00	0.00	18.73
Recharge Sites Improvements	13.75	0.00	0.10	0.00	0.00	13.83
Total Direct Emissions	**111.62**	**0.02**	**0.71**	**0.00**	**0.00**	**112.22**
Indirect Emissions (Energy)						
Water Reclamation Plant[3]	6,166.31	0.28	7.09	0.06	17.48	6,190.87
Conveyance System[3]	6,861.45	0.32	7.89	0.07	19.45	6,888.78
RIX Reduction	-2,903.25	-0.13	-3.34	-0.03	-8.23	-2,914.81
Total Indirect Emissions	**10,124.51**	**0.47**	**11.64**	**0.10**	**28.70**	**10,164.84**
Total Project-Related Emissions[4]	***10,277.06 MTCO_2eq/yr***					

Notes:
1. CO_2 Equivalent values calculated using the U.S. EPA Website, *Greenhouse Gas Equivalencies Calculator*, http://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator, accessed February 2016.
2. Construction emissions are amortized over a Project lifetime of 30 years. The Project lifetime is based on the standard 30 year assumption of the South Coast Air Quality Management District (http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-(ghg)-ceqa-significance-thresholds/year-2008-2009/ghg-meeting-13/ghg-meeting-13-minutes.pdf?sfvrsn=2, accessed February 2016).
3. Energy emissions were calculated based on energy consumption from operation of anticipated new Water Reclamation Plant equipment and conveyance system pumps and Southern California Edison emissions factors from CalEEMod.
4. Total may be slightly off due to rounding.

Refer to Appendix 10.3, *Air Quality/Greenhouse Gas Data*, for detailed model input/output data.

Project operations would not result in any new sources of operational mobile source or area source GHG emissions, as the proposed facilities would be electrically operated. Vehicle trips would be nominal and only associated with maintenance and inspection activities and minor increases in employee trips associated with the expanded wastewater treatment facilities. Consequently, Project-related GHG emissions would only be from construction activities and energy consumption for equipment operations.

- Water Reclamation Plant. Energy consumption would occur during operation of the new equipment at the Water Reclamation Plant. Emissions were calculated based on Southern California Edison emissions factors from CalEEMod. At full build out, the Water Reclamation Plant would indirectly result 6,190.78 MTCO_2eq/year due to energy consumption (approximately 21,551 megawatt hours [MWh] per year). As indicated above, the Project would potentially offset its energy consumption with solar photovoltaic electricity generation. The

reduction in energy consumption is conservatively not quantified in Table 4.3-13 because it is not part of the proposed Project and design specifics are not known at this time.

- Conveyance Systems. Energy consumption would occur during operation of the conveyance system pumps. Emissions were calculated based on Southern California Edison emissions factors from CalEEMod. At full implementation, the conveyance systems would indirectly result 6,888.78 $MTCO_2eq$/year due to energy consumption (approximately 23,981 MWh per year).
- Recharge Sites. Long-term operations of the recharge sites would not generate emissions. Under the proposed Project, recycled water would discharge into the basins for groundwater recharge. As the recycled water would be pumped into the basins via the conveyance system and would naturally percolate into the groundwater basin, no operational emissions would be associated with the recharge sites. Recharge monitoring and subsequent groundwater withdraw may require new or modified wells and associated well pumps, although the GHG emission for these ancillary uses are anticipated to be nominal.
- RIX Phased Discharge Reduction. Effluent discharge from the RIX facility to the Santa Ana River would be reduced and diverted at the SBWRP. Diversion at the SBWRP would reduce the need for tertiary treatment at the RIX facility. The RIX discharge amount would be reduced from 34.3 MGD to a minimum flow of 13.4 MGD (the reduction would occur over a period of 15-20 years and be proportional to the increase in production at the water reclamation plant). Therefore, the increased treatment proposed at the SBWRP (analyzed above) would be offset by the reduction at the RIX facility. Discharge at the RIX would be reduced by 20.9 MGD, which would reduce energy consumption by approximately 10,147 MWh per year resulting in a reduction of 2,914.81 $MTCO_2eq$/year; refer to Table 4.3-13.

Total Project-Related Greenhouse Gas Emissions

As depicted in Table 4.3-7, the total amount of Project-related GHG emissions from direct and indirect sources combined would total 10,277.06 $MTCO_2eq$/yr. As a result, the proposed Project's GHG emissions would exceed the 10,000 $MTCO_2eq$/yr GHG threshold. The Project's emissions would occur from energy consumption related to treatment and conveyance would use a total of approximately 45,532 MWh per year). Reduction of the RIX discharge would offset Project energy consumption by approximately 10,147 MWh per year. The project would need to further offset (reduce) energy consumption by approximately 965 MWh per year in order to reduce GHG emissions to a less than significant level.[15] This may be achieved by limiting advanced water treatment to 13.83 MGD (reducing 15 MGD by 1.17 MGD) or by providing alternative energy on-site that generates 965 MWh per year. Therefore, Mitigation Measure GHG-1 would be required to limit advanced water treatment, require alternative energy generation on-site, or other measures to reduce GHG emissions below the 10,000 $MTCO_2eq$/yr threshold.

Implementation of Mitigation Measure GHG-1 would ensure that GHG emissions would be reduced below the recommended thresholds of significance. The SBMWD is considering a variety of means for reducing GHG emissions and/or reliance on fossil fuels. For example, the SBMWD is considering installing solar panels on a site adjacent to the SBWRP that would have the capacity to exceed the mitigation requirement (as noted above, preliminary estimates indicate that photovoltaic solar facilities on the adjacent parcel have the potential to generate approximately 5 GWh [5,000 MWh] of power per year). The adjacent parcel consists of approximately 13 acres that could be used for photovoltaic solar

[15] Based on Southern California Edison emissions factors from CalEEMod (630.8 lbs/MWh for CO_2, 0.03 lbs/MWh for CH_4 and 0.01 lbs/MWh for N_2O), a reduction in 965 MWh would result in a reduction of 277.21 $MTCO_2eq$.

panels. This could result in potential impacts to various environmental resources. Potential impacts associated with implementation of solar facilities are summarized in Table 4.3-14, *Summary of Potential Impacts Associated with Installation of Solar Energy Facilities*. As discussed in Table 4.3-14, implementation of Mitigation Measure GHG-1 would not result in significant impacts. Implementation of Mitigation Measure GHG-1 would reduce the project's overall GHG emissions to a level that is below the threshold of 10,000 $MTCO_2eq$/year and impacts would be less than significant.

Table 4.3-14: Summary of Potential Impacts Associated with Installation of Solar Energy Facilities

Affected Resource	Potential Impacts
Aesthetics	The addition of solar panels would alter the existing visual environment. New solar facilities would be located in currently undeveloped areas in close proximity to existing residential neighborhoods. However, the location of the potential solar facilities is generally buffered by surrounding roadways and vacant areas. Solar panels are typically relatively low to the ground and considering that the nearby residences are not front-facing the areas proposed for solar panels and have walls or fencing dividing properties, the solar panels would not be in the direct view of existing residences.
Agricultural Resources	The area where the solar facility is being considered generally vacant and owned by the City and not used for agriculture. Agricultural land would not be covered by solar facilities.
Air Quality	Construction of new solar facilities would result in generation of criteria air pollutants and fugitive dust from mobile and stationary construction activities. Compliance with applicable SCAQMD Rules would minimize construction emissions to the extent feasible. Operation of proposed solar facilities would have no impacts on local or regional air quality.
Greenhouse Gas Emissions	Construction of new solar facilities would result in minor GHG emissions from mobile and stationary construction activities. Operation of solar facilities would reduce energy demand and consequently GHG emissions at the SBWRP). Solar facilities would have a beneficial impact with regards to GHG emissions and climate change.
Cultural Resources	Undiscovered cultural resources potentially located in the area of the solar facilities could be affected and disturbed. However, proposed mitigation measures in Section 4.5, *Cultural and Paleontological Resources*, would ensure that these resources would be protected and preserved properly.
Geology and Soils	No geologic or soil hazards were identified for the proposed Project. Solar facilities would comply with standard engineering practices, State building code, and local regulations.
Hydrology and Water Quality	Solar facilities would not be expected to result in substantive impacts on hydrology and water quality because the existing hydrology and slope of the selected site would remain relatively intact.
Biological Resources	The SBMWD would attempt to avoid siting solar facilities in areas that could adversely affect waters of the U.S. or state, or sensitive habitats. If avoidance could not be accomplished, the SBMWD would either avoid or need to mitigate for solar facilities if they would affect waters of the United States, waters of the State, or other sensitive habitats. Solar facilities would need to consider avoidance or mitigation in areas that contain sensitive habitat. Section 4.4, *Biological Resources*, includes various mitigation measures to ensure impacts to special status species, habitat areas, and other biological resources would be protected and preserved properly. There are a limited amount of trees on the potential solar site; however, nests of other special-status bird species could be

Affected Resource	Potential Impacts
	lost as a result of the solar facilities, and would be mitigated in accordance with Mitigation Measure BIO-10. If the solar facilities would require tree removal, SBMWD would to be required to comply with the City's tree replacement ordinance.
Public Health and Safety	Solar facilities would not result in any public safety or health concerns as these facilities are free standing and do not require the use of any hazardous chemicals.
Noise	Construction of solar facilities could result in noise from heavy-duty equipment, but these facilities would be constructed during daytime hours consistent with relevant noise ordinances. No long-term noise increases would result from solar facilities.
Traffic and Transportation	Solar facilities would have no impacts on traffic and transportation, except minor construction traffic. No significant impacts are anticipated.
Utilities and Energy Use	Solar facilities would reduce energy demand from local utilities at the SBWRP by providing onsite renewable energy. Utilities would benefit from the solar facilities.

MITIGATION MEASURES

GHG-1 To reduce Project-generated GHG emissions, the SBMWD may choose any combination of the following measures, as long as they result in net emissions below 10,000 $MTCO_2eq/yr$ or the applicable significance threshold at the time of each subsequent construction phase.

- Reduce consumption of non-renewable energy. This can be accomplished by:
  - As advanced water treatment would be phased in, future GHG emissions factors (i.e., the carbon intensity from power generation) may decline due the implementation of the State's Renewable Portfolio Standards. Advanced water treatment can be limited to 13.83 MGD (reducing 15 MGD of advanced water treatment by 1.17 MGD) until it can be shown that GHG emissions from full project implementation would not exceed 10,000 $MTCO_2eq/yr$ or applicable threshold at the time of project construction;
  - Providing onsite renewable energy such as solar panels, or similar means to offset fossil fuel powered electricity generation; or
  - Purchasing GHG offsets.

Impact 4.3-7: Would the Project Conflict with an applicable plan, policy, or regulations adopted for the purpose of reducing the emissions of greenhouse gases? *Level of Significance: Less Than Significant Impact with Mitigation Incorporated.*

CONSTRUCTION- AND OPERATIONS-RELATED IMPACTS

The City of San Bernardino does not have a plan an applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions. However, the County's *Greenhouse Gas Emissions Reduction Plan* (GHG Plan) was adopted on December 6, 2011 and became effective on January 6, 2012. The GHG Plan establishes a GHG emissions reduction target for the year 2020 that is 15 percent below year 2007 emission levels. The GHG Plan is consistent with AB 32 and sets the County on a path to achieve a more substantial long-term reduction in the post-2020 period. The primary objective of the County's GHG Plan

is to reduce emissions from activities over which the County has jurisdictional and operational control. SBMWD is outside of the County's land use authority. Additionally, the County's GHG Plan is focused on land use development projects and does not include measures applicable to infrastructure projects. As such, the Project would not conflict with the GHG Plan, as the Project does not change the County's land use or generate new vehicle trips.

Other than the GHG Plan, Executive Order S-3-05, Executive Order B-30-15, and AB 32 GHG reduction goals and the AB 32 Scoping Plan and Update, there are no GHG reduction plans policies or regulations that apply to the proposed Project. Because it would not conflict with the GHG Plan, and would result in Project-related GHG emissions that are below the CEQA threshold of 10,000 $MTCO_2eq/yr$, the Project would not hinder or otherwise conflict with AB 32 or the AB 32 Scoping Plan and the updates of reducing GHG emissions to 1990 levels by 2020. The 2014 Update to the AB 32 Scoping Plan identified and described a long-term vision and near-term activities to put California on the path to its 2050 emission reductions goal. However, many factors will influence the state's ability to attain the 2050 GHG reduction goal, including changes in regulatory standards; fuel, transportation and power generation technologies; population growth and land use development patterns, and other factors that cannot presently be known. Because reaching a conclusion about the Project's effect on compliance with the 2050 target identified in Executive Order S-3-05 and AB 32 would require speculation, SBMWD is unable to determine the proposed Project's potential to result in a significant impact with regard to this goal. In all other respects, however the Project would not hinder or delay California's ability to meet the GHG reduction targets in AB 32 and the Scoping Plan, and therefore, the Project would not conflict with an adopted plan, policy, or regulation pertaining to GHGs.

As noted above, the majority of the Project's operational GHG emissions would be offset by various factors, including reduced pumping and processing at the RIX facility, reduced groundwater pumping (improved groundwater recharge and water storage options would reduce the need for pumping at deep water wells), and reduced GHG due to reduced State Water Project imports. Additionally, continued implementation of the State's Renewable Portfolio Standards would further reduce emissions from energy consumption. The SBMWD vehicle fleet is also required to comply with SCAQMD Rules 1191 (Clean On-Road Light- and Medium-Duty Public Fleet Vehicles) and 1196 (Clean On-Road Heavy-Duty Public Fleet Vehicles), which reduces GHG emissions as well as criteria pollutant emissions.

Additionally, SBMWD may utilize its property adjacent to the Water Reclamation Plant for solar photovoltaic electricity generation to offset the Project's energy consumption. As noted above, the SBMWD's property is currently vacant, already graded, and would require minimal preparation for the application of photovoltaic electricity generation[16]. Impacts associated with implementation of a solar facility are discussed in Table 4.3-14. With implementation of this solar facility or the other options provided in Mitigation Measure GHG-1, SBMWD would further support various energy conservation policies within the City's General Plan as well as the State building codes, GHG reduction targets, and renewable portfolio standard targets (also refer to the Energy Conservation analysis in Section 5.4). Mitigation Measure GHG-1 has also been incorporated to ensure that emissions do not exceed the 10,000 $MTCO_2eq/yr$ GHG threshold. With implementation of Mitigation Measure GHG-1, impacts would be less than significant.

[16] Preliminary estimates indicate that these parcels could generate 5 GWh or more of power, substantially offsetting the Project's total energy demand and associated GHG emissions.

MITIGATION MEASURES

GHG-1 Refer to Impact 4.3-6 above.

4.3.5 CUMULATIVE IMPACTS

Cumulative air quality and GHG impacts are discussed above under impact discussion 4.3-2 and 4.3-6, respectively. Planned or future projects in the area could consist of many types of development projects ranging from residential/commercial/industrial developments, to projects related to the proposed recharge project that may occur along the Santa Ana River that would include, but not be limited to, dam projects channel diversion projects, recycled water projects, and various maintenance and improvement projects along the Santa Ana River.

Concurrent construction of the proposed Project with other projects listed in Section 4.1, *Environmental Analysis*, of this EIR, would contribute to short-term, construction-related cumulative impacts. With respect to the proposed Project's construction-period air quality emissions and cumulative Basin-wide conditions, the SCAQMD has developed strategies to reduce criteria pollutant emissions outlined in the 2012 AQMP pursuant to FCAA mandates. Based on SCAQMD rules and mandates, as well as the CEQA requirement that significant impacts be mitigated to the extent feasible, these same requirements (i.e., Rule 403 compliance, the implementation of all feasible mitigation measures, and compliance with adopted Air Quality Management Plan emissions control measures) would also be imposed on construction projects throughout the Basin, which would include related projects. However, despite the implementation of Mitigation Measures AQ-1 through AQ-3, total construction impacts would not be reduced to a less than significant level. Therefore, the proposed Project would have a cumulative contribution to air emissions in the region and impacts would be cumulatively considerable in this regard. No further mitigation is available to reduce the Project's contribution to this cumulative impact.

As discussed previously, the proposed Project would not result in long-term significant air quality impacts, as emissions would not exceed the SCAQMD adopted operational thresholds. Additionally, adherence to SCAQMD rules and regulations would alleviate potential impacts related to cumulative conditions on a project-by-project basis. Emission reduction technology, strategies, and plans are constantly being developed. As a result, operations of the proposed Project would not contribute a cumulatively considerable net increase of any nonattainment criteria pollutant. Therefore, cumulative operational impacts associated with implementation of the proposed Project would be less than significant

4.3.6 SIGNIFICANT UNAVOIDABLE IMPACTS

Implementation of the proposed Project would result in a significant and unavoidable impact for the following areas:

- Regional Construction Related Emissions – Construction of the Project would exceed the SCAQMD daily emission threshold for regional NO_X after implementation of all feasible mitigation measures. Therefore, the construction of the Project would have a significant and unavoidable impact on regional air quality. Construction emissions would not exceed the SCAQMD significance threshold for ROG CO, SO_X, PM_{10}, and $PM_{2.5}$.
- Localized Construction Related Emission – Construction-related emissions would exceed the SCAQMD localized significance thresholds for PM_{10} and $PM_{2.5}$ after implementation of all

feasible mitigation measures. Therefore, construction would have a significant and unavoidable impact on localized significance air quality.

- Cumulative Construction Emissions – As described above, compliance with SCAQMD rules and implementation of Mitigation Measures AQ-1 through AQ-3 would minimize construction emissions from the proposed Project. However, despite the implementation of these mitigation measures, total construction impacts would not be reduced to a less than significant level (refer to Table 4.3-7, above). Therefore, the proposed Project would have a cumulative contribution to air emissions in the region and impacts would be cumulatively considerable in this regard.

If the Lead Agency approves the Project, the City shall be required to adopt findings of fact in accordance with Section 15091 of the CEQA Guidelines, as well as adopt a Statement of Overriding Considerations in accordance with Section 15093 of the CEQA Guidelines.

Section 4.4
Biological Resources

Section 4.4
Biological Resources

This section describes the environmental and regulatory settings of biological resources, as they pertain to implementation of the proposed Project. Information given in this section is based on information obtained from available public resources including, but not limited to, the *City of San Bernardino General Plan* (2005), *City of San Bernardino General Plan EIR* (2005), the *Clean Water Factory Project Habitat Assessment*, prepared by Michael Baker International (Baker) (2015a), the *Low Flow Study of the Santa Ana River between the Rialto Drain and the MWD Crossing (Low Flow Study)*, prepared by Michael Baker International (2015b), and available Geographical Information Systems (GIS) data and maps.

This section contains the findings of the biological studies listed above for the Clean Water Factory Project located in the City of San Bernardino in San Bernardino County, California and the Low Flow Study that provides data on potential impacts to aquatic or in-stream habitats within the Project boundaries as well as for downstream areas. The initial habitat assessment of upland habitat was conducted on June 19, June 25, and July 3, 2014, to identify sensitive habitats and/or species potentially occurring within the boundaries of the Project site or adjacent to the Project boundary that could pose a constraint to development. The Chino Basin recharge option was not evaluated as part of the Habitat Assessment due to the urbanized nature of the conveyance alignment and recharge sites themselves.

Special attention was given in the upland habitats within the Project boundary to support San Bernardino kangaroo rat (*Dipodomys merriami parvus*) (SBKR), a federally endangered species and California species of special concern; slender-horned spineflower (*Dodecahema leptoceras*), a federally and State endangered species; Santa Ana River woollystar (*Eriastrum densifolium ssp. sanctorum*), a federally and State endangered species; coastal California gnatcatcher (*Polioptila californica californica*), a federally threatened species and California species of special concern; and least Bell's vireo (*Vireo bellii pusillus*) (LBV), a federally and State endangered species. For aquatic or in-stream habitats, attention was focused on those areas known to support the federally threatened Santa Ana sucker (*Catostomus santaanae*), arroyo chub (*Gila orcutti*), and their associated habitat.

The Low Flow Study (2015b) presents the results of several technical studies completed to analyze potential operational impacts from RIX Phased Discharge Reduction on the federally threatened Santa Ana sucker and provides recommendations for a phased approach that will reduce impacts to Santa Ana sucker habitat. This study also provides recommendations for a phased approach that will occur over a 25 year period and provide opportunities to analyze initial, limited impacts and develop appropriate and meaningful avoidance and minimization measures that would offset the Project's impacts to aquatic resources. The hydrologic, sediment transport, and habitat models developed for the Project would be available and would provide reliable management tools for assessing changes prior to implementation and verification that the provided offsets to address the Project's impacts to the aquatic resources are functioning, and keeping impacts to the sucker and its habitat at a less than significant level. The City of San Bernardino is a partnering agency in the development of the Upper Santa Ana River Habitat Conservation Plan (HCP), which will be addressing the factors affecting sucker and its habitat in the Santa Ana River. The Project will be a covered activity under the HCP. It is the SBMWD's intent that its extensive efforts in developing reliable hydrologic, sediment transport, and habitat models would not only benefit the ongoing regional planning efforts by USFWS, USGS and the local agencies for developing the comprehensive conservation strategy of the HCP, but would also support the long-term management of the habitats and species in the Plan Area. The availability of these models should be a major asset to the recovery of the species.

4.4.1 AFFECTED ENVIRONMENT

ENVIRONMENTAL SETTING

The Project is located within the City of San Bernardino approximately 60 miles east of the City of Los Angeles in the upper Santa Ana River Valley Watershed. New facilities required for this Project would be primarily constructed within the SBMWD service area, above the Bunker Hill Basin, with some improvements at the RIX facility. The Project is generally located east of Interstate 215 and north of Interstate 10 in the City of San Bernardino, San Bernardino County, California (Exhibit 3.0-1, *Regional Location Map*). The Project site is located within the San Bernardino North and San Bernardino South quadrangles of the United States Geological Survey's (USGS) 7.5-minute topographic map series in an un-sectioned area of Townships 1 north and 1 south, Range 4 west (Exhibit 3.0-2, *Project Vicinity*).

The majority of the Project area includes the City's existing San Bernardino Water Reclamation Plant (SBWRP) located just north of the confluence of East Twin Creek and the Santa Ana River at 399 Chandler Place, San Bernardino, California, as well as the proposed alignments of distribution pipelines which would extend from the SBWRP along existing street and/or flood control channel rights-of-way within the City. These pipelines extend to the Waterman Basins and East Twin Creek Spreading Ground at the foothills of the San Bernardino Mountains.

The Chino Basin recharge option would convey recycled water west from the Rapid Infiltration/Extraction (RIX) Facility located at 1990 Agua Mansa Road, Colton, California, through a series of pipelines towards existing IEUA-owned recycled water distribution system/recharge facilities. As pipelines would be located within existing road rights-of-way and the transported water would recharge existing facilities, a habitat assessment of the Chino Groundwater Basin option was not deemed necessary for the EIR's programmatic analysis of this recharge option.

LOCAL CLIMATE

The region has a year-round Mediterranean climate or semi-arid climate, with warm, sunny, dry summers and cool, rainy, mild winters. Average annual precipitation ranges from 12 inches per year in the coastal plain to 18 inches per year in the inland alluvial valleys, reaching 40 inches or more in the San Bernardino Mountains. Most of the precipitation occurs between November and March in the form of rain with variable amounts of snow in the higher elevations. The climatological cycle of the region results in higher surface water flows in the spring and early summer and lower flows during the dry season. Winter and spring floods generated by storms are not uncommon in wet years. Similarly, during the dry season, infrequent summer storms can cause torrential floods in local streams. Weather conditions during the surveys generally ranged from the mid-70s to the mid-80s degrees Fahrenheit (F) with calm winds.

TOPOGRAPHY AND SOILS

Surface elevations range from approximately 975 to 1,520 feet above mean sea level (msl) with elevations gradually decreasing in a north-to-south direction. Based on the USDA Soil Survey, the facility corridor is underlain by the following soil units: Cienaba-Rock outcrop complex; Friant-Rock outcrop complex; Grangeville fine sandy loam; Grangeville fine sandy loam (saline-alkali); Hanford coarse sandy loam (2 to 9 percent); Hanford sandy loam (0 to 2 percent); Psamments, Fluvents and Frequently flooded soils; Ramona sandy loam (15 to 30 percent, eroded); Soboba stony loamy sand (2 to 9 percent); Tujunga loamy

sand (0 to 5 percent); and Tujunga gravelly loamy sand (0 to 9 percent). A small portion of the facility corridor extends into the San Bernardino National Forest and includes the Modesto-Osito families association (15 to 30 percent), Osito-Modesto families association (30 to 50 percent), and Riverwash-Soboba families association (2 to 15 percent).

HYDROLOGY OF THE SANTA ANA RIVER

The Santa Ana River begins in the San Bernardino Mountains and flows past the cities of San Bernardino and Riverside, through part of the Santa Ana Mountains then past Santa Ana to drain into the Pacific Ocean. Relatively little water flows into the river or its tributaries. Except during wet weather (and for a period of time after rain events) and releases from the Seven Oaks Dam, the Santa Ana River is an effluent-dominated waterbody. Recycled water is discharged into the Santa Ana River at both the Rialto Channel and at the RIX facility, immediately downstream of the Rialto Channel. Recycled water has been discharged from RIX into the Santa Ana River since 1996 and has maintained continuous flows in the reach of the river downstream of RIX.

An assessment of the existing hydrology of the Santa Ana River was conducted by Wildermuth Environmental Inc. (WEI) in 2013. WEI developed a gradually-varied, steady-flow, Hydrologic Engineering Centers River Analysis System (HEC-RAS) hydraulic model for a study area between the Rialto Channel and the MWD Crossing. The objective of the study was to analyze current dry-weather discharge and depth relationship along this reach of the Santa Ana River (WEI 2013). Development of the model required the acquisition of high-resolution river channel geometry and discharge data collected during normal operations at the RIX facility, as well as during a scheduled shut-down of RIX discharge into the Santa Ana River. High-resolution bathymetry data were collected using Light Detection and Ranging (LiDAR) remote sensing in October 2012. Discharge data was measured using three USGS stream gages found in the Santa Ana River between RIX and the MWD Crossing, as well as from discharge time history data from the RIX facility and City of Rialto wastewater treatment plant. A bare-earth, digital terrain model was developed from the LiDAR data and used to represent the ground surface within the study area. The channel geometry was modeled using 93 cross-sections between RIX and the MWD Crossing. In an effort to better define the channel geometry in the upper 2.1 miles of the study area—RIX downstream to 0.6 miles below Riverside Avenue—a total of 18 river channel cross-sections were surveyed by WEI in February 2013. Besides the channel geometry, the geometric data included river centerlines, flow paths, bank locations, and Manning's "n" roughness coefficient. The HEC-RAS model was calibrated for normal discharges from the RIX facility as well as at shutdown, based on flow data gathered during normal operations and the scheduled shutdown of the RIX facility, by adjusting the Manning's roughness coefficient to better match the measures site flow depth measurements. For a complete description of the model, see WEI 2013.

Baseline characteristics for applicable study reaches were determined, and are further illustrated in Table 4.4-1 below. Note that the reaches discussed in this section predominantly refer to study reaches as defined in the WEI studies, and will be differentiated from those management reaches defined by regulatory agencies (RWQCB, etc.), and will be differentiated by the use of the terms *study reaches* and *regulatory reaches*, respectively. Also see Exhibit 4.4-1 illustrating study and regulatory reaches, respectively. The upstream Study Reach 1 is approximately 2.2 miles long and is from Rialto Drain downstream to 0.6 miles downstream of Riverside Avenue. The middle Study Reach 2 is approximately 3.0 miles long and begins 0.6 miles downstream of Riverside Avenue and continues 0.63 miles past Mission Boulevard, where rising groundwater was identified. The downstream Study Reach 3 is approximately 3.5 miles long and begins 0.63 miles downstream of Mission Boulevard and continues downstream to just below the MWD Crossing.

Table 4.4-1: Baseline Depth, Wetted Width, and Velocity for Study Reaches [1]

Characteristic	Reach 1 (n = 22)[3]			Reach 2 (n = 33)			Reach 3 (n = 36)		
	Min	Max	Ave	Min	Max	Ave	Min	Max	Ave
Flow (cfs)[2]	62.5			36.7			62.5		
Depth (feet)	0.82	2.08	1.26	0.48	1.68	0.99	0.33	1.56	0.61
Wetted width (feet)	18.8	55.1	33.5	20.67	69.5	35.9	37.7	157.4	73.6
Velocity (feet per second)	1.36	2.26	1.77	0.96	2.22	1.62	0.95	2.01	1.51

cfs = cubic feet per second

Notes:
1. Note that the reaches referenced in this table will generally be referred to as Study Reaches 1, 2 and 3, and are specific to those defined in the WEI studies, and differ in geographic extent from management or regulatory reaches defined by regulatory agencies (RWQCB, etc.) for the Santa Ana River.
2. Represents Santa Ana River flow measured at the upstream end of each study reach. Flow decreases with distance downstream from RIX due to seepage until the upper end of Study Reach 3, which has a localized reliable and steady flow as a result of groundwater rise along this reach.
3. N values represent the number of transects evaluated per reach.

Source: WEI 2014.

Low Flow Studies

One of the Project's key environmental issues is the Project's potential adverse effects upon the aquatic habitats in the Santa Ana River. Recycled water is discharged into the Santa Ana River at both the Rialto Channel and at the RIX Facility, immediately downstream of the Rialto Channel. Recycled water has been discharged from RIX into the Santa Ana River since 1996 and has maintained continuous flows in this reach of the river. The reduction in discharge from the RIX facility associated with this project has the potential to affect hydrology and aquatic habitat. To address this concern, SBMWD conducted five technical studies, which are further discussed in this section:

- three technical studies to characterize the hydrology of the Santa Ana River at the Rialto Channel and the RIX facility downstream to the MWD Crossing;
- one technical study to determine the extent of Santa Ana sucker habitat in the study area and to quantify loss of habitat from flow reduction; and
- one technical study to determine the flows needed to maintain the cobble substrate in upper reaches of the study area.

4.4.2 Biological Survey Methodology

Literature Review

Prior to conducting the field visit, a literature review and records search was conducted for sensitive biological resources potentially occurring on or within the vicinity of the Project site. Previously recorded occurrences of special status plant and wildlife species and their proximity to the Project site were determined through a query of the California Department of Fish and Wildlife (CDFW) *California Natural Diversity Database* (CNDDB) Rarefind 5, the California Native Plant Society's (CNPS) *Electronic Inventory of Rare and Endangered Plants of California*, Calflora Database, collections of special-status species published by CDFW, and USFWS species listings.

Literature detailing biological resources previously observed in the vicinity of the Project site and historical land uses were reviewed to understand the extent of disturbances to the habitats on-site. Standard field guides and texts on sensitive and non-sensitive biological resources were reviewed for habitat requirements, as well as the following resources:

- United States Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS), Soil Survey;
- USFWS Critical Habitat designations for Threatened and Endangered Species; and
- USFWS Endangered Species Profiles and/or Primary Constituent Elements (PCEs) for Santa Ana sucker, San Bernardino kangaroo rat, coastal California gnatcatcher, and least Bell's vireo.

The literature review provided a baseline from which to inventory the biological resources potentially occurring on the Project site. Additional recorded occurrences of these species found on or near the Project site were derived from database queries. The CNDDB ArcGIS database was used, together with ArcGIS software, to locate the nearest occurrence and determine the distance from the Project site.

HABITAT ASSESSMENT AND FIELD INVESTIGATION

Inventories of the plant communities found within the boundaries of the survey area were conducted on June 19, June 25, and July 3, 2014. A subsequent assessment was done of the Waterman Basins and the East Twin Creek Spreading Grounds in early August 2014 to evaluate the suitability of on-site habitat for San Bernardino kangaroo rat and least Bell's vireo. The survey area included all three proposed pipeline alignments as well as large irrigated areas (e.g., parks, golf courses, the Waterman Basins, and the East Twin Creek Spreading Grounds), as accessible. The survey area is encompassed within a larger facility corridor, which includes an approximate 0.25-mile buffer around the Project-related facilities.

For all field investigations, plant communities identified on aerial photographs during the literature review were verified by walking meandering transects through the plant communities and along the boundaries between plant communities. All plant and wildlife species observed, as well as dominant plant species within each plant community, were recorded in a standardized field notebook. Observations of wildlife species included scat, trails, tracks, burrows, nests, and visual observation. In addition, site characteristics such as soil condition, topography, presence of indicator species, disturbance, hydrology, jurisdictional features, and evidence of anthropogenic influences on the site were noted.

Notes were taken during the survey of all plant and wildlife species detected, including dominant plant species, as well as the locations and general characteristics of potential jurisdictional features. Detections of wildlife species were made by scat, trails, tracks, burrows, nests, and visual and aural observation. In addition, site characteristics such as soil condition, topography, presence of indicator species, condition of the plant communities, hydrology, and evidence of human use of the site were noted. The plant communities were classified in accordance with CDFW (2003) and Holland (1986), delineated on an aerial photograph, and then digitized into GIS Arcview. The Arcview application was used to compute the area of each plant community in acres. Refer to Appendix 10.4, *Habitat Assessment*, for the specific results of the 2013, 2014, and 2015 field surveys.

SOIL SERIES ASSESSMENT

On-site and adjoining soils were researched prior to the field visit using the USDA NRCS Soil Survey for San Bernardino County, California. In addition, a review of the local geological conditions and historical aerial photographs was conducted to assess the ecological changes the Project site has undergone.

PLANT COMMUNITIES

Plant communities were mapped using 7.5-minute USGS topographic base maps and aerial photography. The plant communities within the Project site were classified according to CDFW's List of Terrestrial Natural Communities (2003) and cross-referenced to descriptions provided in Holland's Preliminary Descriptions of the Terrestrial Natural Communities of California (1986).

PLANTS

Common plant species observed during the field survey were identified by visual characteristics and morphology in the field. Unusual or less familiar plants were identified in the laboratory using taxonomic guides. Taxonomic nomenclature used in this report follows the 2012 Jepson Manual (Hickman 2012).

WILDLIFE

Wildlife species were detected and identified during the field survey by sight, calls, tracks, scat, trails, burrows, and nests. Field guides were used to assist with identification of species during surveys and included the National Geographic Field Guide to the Birds of North America (2011) for birds and Burt and Grossenheider (1980) for mammals.

4.4.3 PLANT COMMUNITIES

Vegetation mapping was primarily conducted within the Waterman Basins and the East Twin Creek Spreading Grounds, where open space and native habitat occurs. Six (6) plant communities were observed within the boundaries of the Project site during the habitat assessment: Riversidean alluvial fan sage scrub (RAFSS), southern riparian scrub, southern willow scrub, mulefat scrub, non-native grassland, and eucalyptus stand. In addition, the biologists mapped a pond and areas that were considered disturbed, developed, concrete channel, and unvegetated channel. These plant communities and other areas are described in further detail below.

RIVERSIDEAN ALLUVIAL FAN SAGE SCRUB

The RAFSS community is primarily located in the southern half of the Waterman Basins and along the banks of East Twin Creek north of East 40th Street. The bottoms of the basins, due to maintenance and flooding, no longer support native vegetation. The RAFSS community persists primarily on the slopes of the basins, with higher quality vegetation (14.3 acres) located in the southern basins and disturbed RAFSS (63.1 acres) located in the central basins. Vegetation in these RAFSS communities is primarily composed of California buckwheat (*Eriogonum fasciculatum*), California sagebrush (*Artemisia californica*), scalebroom (*Lepidospartum squamatum*), yerba santa (*Eriodictyon californicum*), Russian thistle (*Salsola tragus*), and fountaingrass (*Pennisetum setaceum*). Two of the lower basins also contained patches of eucalyptus trees (*Eucalyptus* sp.).

SOUTHERN RIPARIAN SCRUB

Two patches of southern riparian scrub totaling 3.9 acres are present within the Waterman Basins, one of which is associated with East Twin Creek. This patch of vegetation in particular is dominated by native riparian vegetation including arroyo willow (*Salix lasiolepis*), black willow (*Salix gooddinggii*), cottonwood (*Populus fremontii*), and western sycamore (*Platanus racemosa*). The westernmost, smaller patch includes numerous additional species, many of which are non-native such as jacaranda (*Jacaranda mimosifolia*), oleander (*Nerium oleander*), giant reed (*Arundo donax*), and Peruvian pepper (*Schinus molle*).

SOUTHERN WILLOW SCRUB

The southern willow scrub plant community is typically composed of young, newly established willow and cottonwood plant species that can survive the frequent physical battering and inundation from flooding. The presence of these young willows normally allows finer sediments to accumulate, with the result that additional riparian plants can establish. Willow scrub plant communities are frequently described as early successional habitats and are among the first plant communities to form on newly established point bars along rivers. A 2.0-acre patch of southern willow scrub is present in the northwestern portion of the Waterman Basins. This community is composed almost entirely of black willow, with scattered mulefat (*Baccharis salicifolia*), castor bean (*Ricinus communis*), and a few eucalyptus trees.

An assessment of riparian vegetation from the RIX facility down to the MWD Crossing found that riparian vegetation along the river is composed primarily of Southern Scrub and Southern Riparian Scrub (these two plant communities are discussed above), with a significant invasion of *Arundo donax* in various segments of the river. *Arundo donax* is a non-native aquatic plant that is considered a primary threat due to its ease of establishment, ability to alter the hydrology of the system through bank stabilization, and excessive use of water (USFWS 2012).

MULEFAT SCRUB

Mulefat scrub is a plant community typically associated with habitats that are seasonally flooded or saturated near canyon bottoms, irrigation ditches, or stream channels. Approximately 2.1 acres of mulefat scrub are located upstream of the Southern Willow Scrub in the Waterman Basins, as well as in East Twin Creek both north and south of East 40th Street. It is primarily dominated by mulefat, but also contains black willow, common sunflower (*Helianthus annuus*), and tree tobacco (*Nicotiana glauca*).

NON-NATIVE GRASSLAND

Approximately 209.7 acres of non-native grasslands are located throughout the upper Waterman Basins, in the bottoms of the lower basins, and throughout the East Twin Creek Spreading Grounds. Vegetation in this community is dominated by species such as Russian thistle, ripgut brome (*Bromus diandrus*), red brome (*Bromus madritensis*), wild oats (*Avena fatua*), tree tobacco, common sunflower, castor bean, telegraph weed (*Heterotheca grandiflora*), common horsetail (*Equisetum arvense*), and shortpod mustard (*Hirschfeldia incana*).

EUCALYPTUS STAND

Several eucalyptus stands, 14.5 acres in total area, are scattered throughout the Waterman Basins. Several small stands are located in the lower Waterman Basins, while one large grove of trees is located on the northern boundary of the basins. These areas are dominated by eucalyptus trees and generally have a layer of non-native grasses underneath. A 0.5-acre tamarisk thicket is located within the largest grove of trees.

POND

A 0.7-acre ponded area is present in the northernmost basin of the East Twin Creek Spreading Grounds. Vegetation surrounding the pond included species such as curly dock (*Rumex crispus*), common sunflower, broadleaf cattail (*Typha latifolia*), Russian thistle, rabbitsfoot grass (*Polypogon monspeliensis*), cheeseweed (*Malva parviflora*), and Mexican sprangletop (*Leptochloa uninervia*).

DISTURBED

Disturbed areas comprising 143.9 acres primarily include unpaved roads along the upper margins of the Waterman Basins and throughout the East Twin Creek Spreading Grounds. An area along East Twin Creek immediately north of East 40th Street is categorized as disturbed since it is continually mowed and kept clear of vegetation.

DEVELOPED

Developed areas refer to areas that are paved or cemented and devoid of vegetation, which primarily include paved roads for the proposed Project area. In the Waterman Basins, this also included cement drainage outlets and maintenance areas. Outside of the Waterman Basins, Alignments 2 and 3 will be located in city streets or other developed areas with some limited ornamental vegetation. The pipeline alignment necessary to connect RIX to existing Chino Basin facilities would also be located in city streets or other developed areas.

CONCRETE CHANNEL

A concrete channel, 2.6 acres in size, conveys flow through East Twin Creek in the lower portion of the East Twin Creek Spreading Grounds. This channel is unvegetated.

EARTHEN CHANNEL

A 0.9-acre earthen dirt channel with a rocky bottom is present in the northwest corner of the Waterman Basins. This channel flows into the Waterman Basins, but is cleared of vegetation.

AQUATIC HABITAT

The Santa Ana River begins in the San Bernardino Mountains and flows westerly out of the mountains to Seven Oaks Dam in the foothills of the San Bernardino Mountains. Released flows from Seven Oaks Dam continue westward with additional flows contributed by Mill Creek, City Creek, San Timoteo Creek, Warm Creek, Twin Creek, Cajon Creek and Lytle Creek before reaching Prado Dam. Water released from Prado

Dam continues westward into Orange County before reaching the Pacific Ocean. Much of the historic flows have been diverted for local use along its path. The majority of water that currently flows in the Santa Ana River during the non-rainy season now comes from effluent discharged from wastewater treatment plants. The Santa Ana River and its tributaries historically provided habitat for eight species of native fish. Only four native non-game freshwater fishes are currently found in the river: arroyo chub (*Gila orcutti*), Santa Ana speckled dace (*Rhynichthys osculus*), Santa Ana sucker (*Catostomus santaanea*), and threespine stickleback (*Gasterosteus aculeatus*). All four species have limited distributions in the river. In contrast, at least 33 non-native fishes have been introduced into the river and are currently present. During the past 50 years, urban development has encroached into the Santa Ana River watershed and displaced most of the native amphibian species including arroyo toad (*Bufo californicus*), mountain yellow-legged frog (*Rana muscosa*) and California red-legged frog (*Rana aurora*). Introduced species have been a major contributor to the decline in amphibian populations in the river. Southwestern pond turtle (Clemmys marmorata) has limited distribution in the Santa Ana River. Between the cities of San Bernardino and Riverside, the river picks up enough urban discharge and effluent to support perennial flow and productive riparian habitat dominated by willows, increasing the quality of fish habitat in the vegetated areas, supporting populations of Santa Ana sucker and arroyo chub (SAWPA 2013). The three study reaches for the Clean Water Factory occur within this area supporting dense riparian vegetation.

4.4.4 WILDLIFE SPECIES

Plant communities within the upland areas provide food sources, along with foraging, nesting and denning sites, cover, and protection from adverse weather or predation. This section provides a discussion of those wildlife species observed, expected or not expected to occur on-site. The discussion is to be used as a general reference and is limited by the season, time of day, and weather condition in which the survey was conducted. Wildlife observations were based on calls, songs, scat, tracks, burrows and actual sightings of animals. Refer below to Section 4.4.5 for a discussion on the potential for sensitive species to occur within the Project area.

AMPHIBIANS

No amphibians were detected during the East Twin Creek Spreading Grounds and Waterman Basins habitat assessment surveys, or during the inventory of aquatic and riparian habitats associated with the Santa Ana River downstream of the RIX facility. Based on the site characteristic and the regional location, amphibian species most likely to occur in basins or ponded areas adjacent to the Santa Ana River include Baja California chorus frog (*Pseudacris hypochondriaca*), western toad (*Anaxyrus boreas*), American bullfrog (*Lithobates catesbeianus*), and African clawed frog (*Xenopus laevis*).

REPTILES

The East Twin Creek Spreading Grounds and Waterman Basins have the potential to support both terrestrial and aquatic reptiles; while the terrestrial parks and dry flood control basins would provide suitable habitat for lizards and snakes. Ponded areas that may occur in association with the Santa Ana River or it's tributaries, downstream of the RIX facility would be likely to support turtles. Two lizards were detected during the surveys: common side-blotched lizard (*Uta stansburiana*) and coastal whiptail (*Aspidoscelis tigris stejnegeri*). The general Project vicinity has the potential to support a number of reptilian species including western fence lizard (*Sceloporus occidentalis*), alligator lizard (*Elgaria*

multicarinata), gopher snake (*Pituophis catenifer*), California kingsnake *(Lampropeltis getula californiae*), southern Pacific rattlesnake (*Crotalus oreganus helleri*), and red-eared slider (*Trachemys scripta elegans*).

AVIAN

The East Twin Creek Spreading Grounds and Waterman Basins and riparian habitats found along the bank of the downstream areas of the Santa Ana River support a high variety of avian species. Because of the high number of species observed, only the most abundant are listed here. Those that were observed in the greatest numbers included house finch (*Haemorhous mexicanus*), house sparrow (*Passer domesticus*), black phoebe (*Sayornis nigricans*), bushtit (*Psaltriparus minimus*), great-tailed grackle (*Quiscalus mexicanus*), mallard (*Anas platyrhynchos*), northern rough-winged swallow (*Stelgidopteryx serripennis*), domestic swan goose (*Anser cygnoides*), domestic graylag goose (*Anser anser*), and American robin (*Turdus migratorius*).

MAMMALS

The plant communities within the upstream Project areas and the riparian habitats along the Santa Ana River provide suitable habitat for a number of mammalian species acclimated to heavy disturbance or stream side habitats. However, most mammal species are nocturnal and are difficult to observe during a diurnal field visit. Two mammal species were detected during the habitat assessment surveys for the Waterman Basins and East Twin Creek Spreading Grounds, California ground squirrel (*Otospermophilus beecheyi*) and fox squirrel (*Sciurus niger*). Other common mammalian species that may occur on the Project site include coyote (*Canis latrans*), Botta's pocket gopher (*Thomomys bottae*), raccoon (*Procyon lotor*), and cottontail rabbits (*Sylvilagus audubonii*). Mammals such as bobcats (*Lynx rufus*) and mountain lions (*Felis concolor*) are likely to migrate through the general area in the Santa Ana River. No sensitive mammal species or sign were observed.

FISH

No fish were observed during the habitat assessment surveys of the upstream Project areas where pipeline routes and basins would be newly constructed or improved. Downstream areas of the Santa Ana River that will be subject to reduced flows from RIX during the operational phase provide suitable habitat for various fish species, including the federally threatened Santa Ana sucker, and the California species of special concern arroyo chub (*Gila orcuttii*).

NESTING BIRDS

The plant communities within and adjacent to the upstream Project site and downstream riparian areas have the potential to provide suitable nesting opportunities for raptors and passerines. The East Twin Creek Spreading Grounds/Waterman Basins habitat assessment was conducted during the breeding season, and one confirmed phainopepla (*Phainopepla nitens*) nest was observed with young during the 2014 Habitat Assessment. No nesting birds were identified during the various surveys of habitats along the downstream areas of the Santa Ana River.

4.4.5 SENSITIVE BIOLOGICAL RESOURCES

The CNDDB was queried for reported locations of listed and sensitive plant and wildlife species as well as sensitive natural plant communities in the San Bernardino North and San Bernardino South USGS 7.5-minute quadrangles. An additional search for aquatic and riparian species (i.e. those likely to occur on the Santa Ana River) was conducted for the Riverside West quadrangle. A search of published records of these species was conducted within these three quadrangles using the CNDDB Rarefind 5 online software. The CNPS Inventory of Rare and Endangered Plants of California supplied information regarding the distribution and habitats of vascular plants in the vicinity of the Project site. The habitat assessment was used to assess the ability of the plant communities found on-site to provide suitable habitat for relevant special-status plant and wildlife species.

The literature search identified twenty-nine (29) sensitive plant species, thirty-five (35) sensitive wildlife species, and five (5) sensitive habitats as having the potential to occur within the queried San Bernardino North, San Bernardino South, and Riverside West quadrangles for the East Twin Creek Spreading Grounds and Waterman Basins.

Sensitive plant and wildlife species were evaluated for their potential to occur within the Project boundaries based on habitat requirements, availability and quality of suitable habitat, and known distributions. Species determined to have the potential to occur within the general vicinity are presented in Table 4.4-2, *Suitable Habitats and Potentially Occurring Sensitive Plant and Wildlife Species.*

PARRY'S SPINEFLOWER

Parry's spineflower (*Chorizanthe parryi var. parryi*) is an annual herb that flowers between April and June. It is designated by the CNPS with the Rare Plant Rank 1B.1, indicating that is rare, threatened, or endangered in California and elsewhere, and is seriously endangered in California. It is endemic to California and is only known from Los Angeles, Riverside, and San Bernardino Counties. It occurs in sandy or rocky openings in chaparral, cismontane woodland, coastal scrub, and valley and foothill grassland at elevations between 131 and 5,594 feet.

There is suitable habitat for this species within the Waterman Basins, which run directly adjacent to the Project alignments and are within the Project corridor. There is a CNDDB record of this species within the Spreading Grounds from 1993 that is considered extant. Sensitive plant surveys conducted in 2015 were negative.

SANTA ANA RIVER WOOLLY STAR

Santa Ana River woolly star is a perennial which grows upright to about 3 feet and can be found in dry, sandy soils in open areas on alluvial terraces. It is known only from the Santa Ana River channel, historically from the base of the San Bernardino Mountains downstream to Anaheim. Currently, it can be found in the upper reaches of the Santa Ana River. Habitat types include both chaparral and alluvial scrub. It is a pioneer subspecies that colonizes washed sand deposits created by sporadic stream flow action. Periodic flooding, scouring, and sediment deposition is important to maintaining Santa Ana River woolly star habitat. This species can be found at elevations ranging from 299 to 2,001 feet above mean sea level and has a blooming period from April to September. The closest recorded occurrence was found near the Project site within the Santa Ana River wash (CNDDB 2014). However, no species were found on site during

sensitive plant surveys of the Project site. Woolly star is not known to occur in the riparian habitats downstream of the RIX facility.

COASTAL WHIPTAIL

The coastal whiptail, which is a subspecies of the tiger whiptail (*Aspidoscelis tigris*), ranges throughout the coastal region of southern California, where it can be found in coastal sage, chaparral, riparian, oak and pine woodland, pinyon-juniper woodland, and rocky foothill habitats. It is typically active from spring to late summer, with breeding from April to June. Juveniles hatch between August and September and may be active into the fall, after adults have already gone into brumation (a hibernation-like state).

One coastal whiptail was observed during habitat assessment of the upper basins of East Twin Creek. It is also likely to occur in these spreading grounds, the Waterman Basins, or the riparian habitats along the Santa Ana River.

ROSY BOA

The rosy boa ranges through California, Arizona, and northern Mexico. It is most often found in sage scrub, chaparral, oak and pine woodlands, pinyon-juniper woodlands, and in deserts. Although often found near water, it is not restricted to these areas. The rosy boa active period is generally from February to October, though there may be some intermittent activity during the inactive period during unusually warm days. Rosy boas have been found to utilize rodent burrows more often than any other source of cover.

There is a single 2007 CNDDB record located approximately three miles northwest of the Project site. The most suitable habitat for this species is in the Waterman Basins and in the riparian habitats along the Santa Ana River, where the mixture of intermittent moisture with sage scrub and brush presents suitable habitat for rosy boas to occur. Rosy boa has a moderate potential to occur in the Project vicinity and downstream areas of the Santa Ana River.

COAST HORNED LIZARD

The coast horned lizard is designated by the CDFW as a California species of special concern. It ranges throughout coastal California and Baja California. It is most often found in chaparral, sage scrub, oak woodland, and coniferous forest, often in sandy washes or amongst shrubby vegetation that it can use for cover. The activity period for adults typically begins in March when males emerge from brumation, ending in September when females retreat; hatchlings are born beginning in late July and will stay active until November. Horned lizards bury themselves in the sand during periods of inactivity.

There are several CNDDB records of coast horned lizards in the upstream Project vicinity and downstream areas of the Santa Ana River. This species is likely to occur in all of these habitats where the scrubby vegetation and sandy soils would fit its habitat needs best. Coast horned lizard has a moderate potential to occur in the Project vicinity.

Table 4.4-2: Suitable Habitats and Potentially Occurring Sensitive Plant and Wildlife Species

Scientific Name Common Name	Status		Habitat	Observed Onsite	Potential to Occur
Wildlife Species					
Anniella pulchra pulchra silvery legless lizard	Fed: CA:	None CSC	Occurs primarily in areas with sandy or loose loamy soils under sparse vegetation of beaches, chaparral, or pine-oak woodland; or near sycamores, oaks, or cottonwoods that grow on stream terraces. Often found under or in the close vicinity of logs, rocks, old boards, and the compacted debris of woodrat nests.	No	**Presumed absent**. There is no suitable habitat. This species requires moist soil to survive.
Aspidoscelis hyperythra orangethroat whiptail	Fed: CA:	None CSC	Semi-arid brushy areas typically with loose soil and rocks, including washes, streamsides, rocky hillsides, and coastal chaparral.	No	**Low.** There is marginal habitat.
Aspidoscelis tigris stejnegeri coastal whiptail	Fed: CA:	None CSC	Found in a variety of ecosystems, primarily hot and dry open areas with sparse foliage - chaparral, woodland, and riparian areas.	Yes	**Present.** This species was observed during the site assessment surveys.
Athene cunicularia burrowing owl	Fed: CA:	None None	Occurs in open, annual or perennial grasslands, deserts, and scrublands characterized by low-growing vegetation. Dependent upon fossorial mammals for burrows, most notable ground squirrels.	No	**Low.** There is marginal habitat.
Batrachoseps gabrieli San Gabriel slender salamander	Fed: CA:	None None	Occurs only in the San Gabriel Mountains. Often found under rocks, wood, fern fronds, and on soil at the base of talus slopes. Most active on the surface in winter and early spring.	No	**Presumed absent.** There is no suitable habitat and the Project is out of this species' known range.
Buteo swainsoni Swainson's hawk	Fed: CA:	None **THR**	Typical habitat is open desert, grassland, or cropland containing scattered, large trees or small groves. Breeds in stands with few trees in juniper-sage flats, riparian areas, and in oak savannah in the Central Valley. Forages in adjacent grassland or suitable grain or alfalfa fields or livestock pastures.	No	**Low.** There is marginal habitat. This species may occur in more open areas along the Project but generally the habitat is not suitable.
Carolella busckana Busck's gallmoth	Fed: CA:	None None	Occurs in coastal dunes and coastal scrub habitat.	No	**Low.** There is marginal habitat.

Scientific Name Common Name	Status		Habitat	Observed Onsite	Potential to Occur
Catostomus santaanae Santa Ana sucker	Fed: CA:	**THR** CSC	Occur in the watersheds draining the San Gabriel and San Bernardino Mountains of southern California. Streams that Santa Ana sucker inhabit are generally perennial streams with water ranging in depth from a few inches to several feet and with currents ranging from slight to swift. Santa Ana sucker is known to occur within the Santa Ana River.	Yes	**Present.** Suitable habitat exists in the downstream portions of the Santa Ana River that are expected to be indirectly affected during Project operation.
Chaetodipus fallax fallax northwestern San Diego pocket mouse	Fed: CA:	None CSC	Occurs in desert and coastal habitats in southern California, Mexico, and northern Baja California, from sea level to at least 1,400 meters above msl. Found in a variety of temperate habitats ranging from chaparral and grasslands to scrub forests and deserts. Requires low growing vegetation or rocky outcroppings, as well as sandy soils for burrowing.	No	**Moderate.** There is suitable habitat in the flood control basins.
Charina trivirgata rosy boa	Fed: CA:	None None	Ranges from southern California and western Arizona in the United states, southward to Baja California and western Sonora in Mexico. Species often inhabits rocky areas in coastal sage scrub, chaparral, and desert environments.	No	**Moderate.** There is suitable habitat in the Waterman Basins.
Charina umbratica southern rubber boa	Fed: CA:	None **THR**	Found in montane habitats, generally near streams and wet meadows. Burrows into soft, moist soil and takes refuge in rotting logs. Only known to occur in the San Bernardino and San Jacinto Mountains.	No	**Presumed absent.** There is no suitable habitat.
Coccyzus americanus occidentalis western yellow-billed cuckoo	Fed: CA:	**THR** **END**	Obligate riparian species with a primary habitat association of willow-cottonwood riparian forest.	No	**Presumed absent.** There is no suitable habitat. This species requires large areas of riparian habitat.

Scientific Name Common Name	Status		Habitat	Observed Onsite	Potential to Occur
Crotalus ruber red-diamond rattlesnake	Fed: CA:	None CSC	Found from the desert, through dense chaparral in the foothills (it avoids the mountains above around 4,000 feet), to warm inland mesas and valleys, and to the cool ocean shore. It is most commonly associated with heavy brush with large rocks or boulders. Dense chaparral in the foothills, cactus or boulder associated coastal sage scrub, oak and pine woodlands, and desert slope scrub associations are known to carry populations of the northern red-diamond rattlesnake; however, chamise and red shank associations may offer better structural habitat for refuges and food resources for this species than other habitats.	No	**Low.** There is marginal habitat in the Waterman Basins.
Diadophis punctatus modestus San Bernardino ringneck snake	Fed: CA:	None None	Occurs in moist areas near intermittent streams, usually in areas that are relatively rocky. Prefers to move through and take refuge in areas of herbaceous vegetation and leaf litter.	No	**Low.** There is marginal habitat around waterways but generally this species would be more likely to occur around montane habitats.
Dipodomys merriami parvus San Bernardino kangaroo rat	Fed: CA:	**END** CSC	Primarily found in Riversidean alluvial fan sage scrub and sandy loam soils, alluvial fans and flood plains, and along washes with nearby sage scrub. May occur at lower densities in Riversidean upland sage scrub, chaparral and grassland in uplands and tributaries in proximity to Riversidean alluvial fan sage scrub habitats. Tend to avoid rocky substrates and prefer sandy loam substrates for digging of shallow burrows.	No	**Moderate.** There is suitable habitat in the flood control basins.
Dipodomys stephensi Stephens' kangaroo rat	Fed: CA:	**END THR**	Occur in arid and semi-arid habitats with some grass or brush. Prefer open habitats with less than 50% protective cover. Require soft, well-drained substrate for building burrows and are typically found in areas with sandy soil.	No	**Presumed absent.** There is no suitable habitat.

Scientific Name Common Name	Status		Habitat	Observed Onsite	Potential to Occur
Eremophila alpestris actia California horned lark	Fed: CA:	None WL	Common to abundant resident in a variety of open habitats, usually where trees and large shrubs are absent. Breed in level or gently sloping shortgrass prairie, montane meadows, "bald" hills, open coastal plains, fallow grain fields, and alkali flats. In non-agricultural lands, it typically inhabits areas of short vegetation or bare ground, including shortgrass prairie, deserts, brushy flats, and alpine habitat. Within southern California, California horned larks breed primarily in open fields, (short) grasslands, and rangelands. Grasses, shrubs, forbs, rocks, litter, clods of soil, and other surface irregularities provide cover.	No	**Moderate.** There is suitable habitat. This species is often found in very disturbed grasslands or brushlands, and may also be found in city parks foraging in manicured lawns.
Euchloe hyantis andrewsi Andrew's marble butterfly	Fed: CA:	None None	Occurs in the San Bernardino Mountains between 5,000 and 6,000 feet. Found in yellow pine forests near Lake Arrowhead and Big Bear Lake. Uses Laguna Mountains jewelflower (*Streptanthus bernardinus*) and Holboell's rockcress (*Arabis holboellii* var *pinetorum*) as hostplants, with larvae feeding on mountain tansy mustard (*Descuraina incana*).	No	**Presumed absent.** There is no suitable habitat.
Eumops perotis californicus western mastiff bat	Fed: CA:	None CSC	Primarily a cliff-dwelling species, roost generally under exfoliating rock slabs. Roosts are generally high above the ground, usually allowing a clear vertical drop of at least 3 meters below the entrance for flight. In California, it is most frequently encountered in broad open areas. Its foraging habitat includes dry desert washes, flood plains, chaparral, oak woodland, open ponderosa pine forest, grassland, and agricultural areas.	No	**Low.** There is marginal habitat along the proposed routes.
Gasterosteus aculeatus santaannae Santa Ana Threespine stickleback	Fed: CA:	None None	Stream with shallow, clean, slow moving water along the edge with varying substrates. They vegetated banks that provide adequate cover to protect them from predators.	No	**Low.** There is marginal habitat within the three study reaches.

Scientific Name Common Name	Status		Habitat	Observed Onsite	Potential to Occur
Gila orcuttii arroyo chub	Fed: CA:	None CSC (THR in native Range)	Warm streams of the Los Angeles Plain, which are typically muddy torrents during the winter, and clear quiet brooks in the summer, possibly drying up in places. They are found both in slow-moving and fast-moving sections, but generally deeper than 40 cm.	No	**Present.** Suitable habitat exists in the downstream portions of the Santa Ana River that are expected to be indirectly affected during the operational phase of the Project.
Glaucomys sabrinus californicus San Bernardino Flying Squirrel	Fed: CA:	None CSC	Occurs at elevation between 5,200 and 8,500 feet in the San Bernardino and San Jacinto Mountains in woodlands dominated by black oak (*Quercus kelloggii*) and white fir (*Abies concolor*). Requires cavities for nests, as well as nearby water.	No	**Presumed absent**. There is no suitable habitat.
Lasiurus xanthinus western yellow bat	Fed: CA:	None CSC	Roosts in trees, especially palms, in valley foothill riparian, desert riparian, desert wash, and palm oasis habitats. This species forages over water and between trees.	No	**Moderate**. There is suitable habitat primarily in the Waterman Basins.
Lepus californicus bennettii San Diego black-tailed jackrabbit	Fed: CA:	None CSC	Occurs in diverse habitats, but primarily is found in arid regions supporting shortgrass habitats. Openness of open scrub habitat is preferred over dense chaparral.	No	**Low**. There is marginal habitat in the Waterman Basins.
Neotoma lepida intermedia San Diego desert woodrat	Fed: CA:	None CSC	Occurs in coastal scrub communities between San Luis Obispo and San Diego Counties. Prefers moderate to dense canopies, and especially rocky outcrops.	No	**Low**. There is marginal habitat in the Waterman Basins.
Nyctinomops femorosaccus pocketed free-tailed bat	Fed: CA:	None CSC	Often found in pinyon-juniper woodlands, desert scrub, desert succulent shrub, desert riparian, desert wash, alkali desert scrub, Joshua tree, and palm oasis.	No	**Presumed absent**. There is no suitable habitat.
Onychomys torridus ramona southern grasshopper mouse	Fed: CA:	None CSC	Inhabits prairies and the southwestern desert.	No	**Presumed absent**. There is no suitable habitat.
Perognathus longimembris brevinasus Los Angeles pocket mouse	Fed: CA:	None CSC	Occurs in lower elevation grasslands and coastal sage scrub communities in and around the Los Angeles Basin. Prefers open ground with fine sandy soils. May not dig extensive burrows, but instead will seek refuge under weeds and dead leaves instead.	No	**Moderate**. There is suitable habitat in the flood control basins.

Scientific Name Common Name	Status		Habitat	Observed Onsite	Potential to Occur
Phrynosoma blainvillii coast horned lizard	Fed: CA:	None CSC	Occurs in a wide variety of vegetation types including coastal sage scrub, annual grassland, chaparral, oak woodland, riparian woodland and coniferous forest. In inland areas, this species is restricted to areas with pockets of open microhabitat, created by disturbance (i.e. fire, floods, roads, grazing, fire breaks). The key elements of such habitats are loose, fine soils with a high sand fraction; an abundance of native ants or other insects; and open areas with limited overstory for basking and low, but relatively dense shrubs for refuge.	No	**Moderate**. There is suitable habitat in the Waterman Basins and the upper basins of East Twin Creek.
Polioptila californica californica coastal California gnatcatcher	Fed: CA:	**THR** CSC	Obligate resident of sage scrub habitats that are dominated by California sagebrush (*Artemisia californica*). This species generally occurs below 750 feet elevation in coastal regions and below 1,500 feet inland. Ranges from the Ventura County, south to San Diego County and northern Baja California and it is less common in sage scrub with a high percentage of tall shrubs. Prefers habitat with more low-growing vegetation.	No	**Low**. There is marginal habitat in the Waterman Basins.
Rana muscosa Sierra Madre yellow-legged frog	Fed: CA:	**END** **END**	Occurs in lower elevation habitats characterized by rocky streambeds and wet meadows, while higher elevation habitats include lakes, ponds, and streams. Occupy streams in narrow, rock-walled canyons. Often found along rock walls or vegetated banks and always within a few feet of the water.	No	**Presumed absent**. There is no suitable habitat.
Rhaphiomidas terminatus abdominalis Delhi Sands flower-loving fly	Fed: CA:	**END** CSC	DSF habitat is limited to areas that include Delhi fine sand, an aeolian (wind-deposited) soil type. The highest density of DSF have been found in habitat that includes a variety of plants including California buckwheat, California croton, deerweed, and telegraph weed.	No	**Presumed absent**. There is no suitable habitat.
Rhinichthys osculus ssp. 3 Santa Ana speckled dace	Fed: CA:	None CSC	Requires permanent flowing streams within summer water temperatures of 17 – 20 degrees Celsius. Inhabits shallow cobble and gravel riffles and small streams that flow through steep, rocky canyons with chaparral covered walls.	No	**Presumed absent**. There is no suitable habitat.

Scientific Name Common Name	Status		Habitat	Observed Onsite	Potential to Occur
Taxidea taxus American badger	Fed: CA:	None CSC	Primarily occupy grasslands, parklands, farms, tallgrass and shortgrass prairies, meadows, shrub-steppe communities and other treeless areas with sandy loam soils where it can dig more easily for its prey. Occasionally found in open chaparral (with less than 50% plant cover) and riparian zones.	No	**Low**. There is marginal habitat in the less-developed areas (i.e. the upper limits of the Project).
Thamnophis hammondii two-striped garter snake	Fed: CA:	None CSC	Found in or near shallow or deep permanent sources of water, often around streams that have rocky streambeds and riparian growth.	No	**Low**. There is marginal habitat. This species generally requires permanent or semi-permanent water sources but could occur in the basins during an inundation period.
Vireo bellii pusillus least Bell's vireo	Fed: CA:	**END** **END**	Primarily occupy Riverine riparian habitat that typically feature dense cover within 1 -2 meters of the ground and a dense, stratified canopy. Typically it is associated with southern willow scrub, cottonwood-willow forest, mule fat scrub, sycamore alluvial woodlands, coast live oak riparian forest, arroyo willow riparian forest, or mesquite in desert localities. It uses habitat which is limited to the immediate vicinity of water courses, 2,000 feet elevation in the interior.	No	**High**. There is a suitable patch of riparian habitat in the Waterman Basins and this species is known to occur in the Santa Ana River. A family unit was found in the river 0.5 mile from the Project site in 2013.
Plant Species					
Ambrosia monogyra singlewhorl burrobrush	Fed: CA: CNPS:	None None 2B.2	Chaparral and Sonoran desert scrub. From 33 to 1640 feet in elevation.	No	**Presumed absent**. There is no suitable habitat.
Arenaria paludicola marsh sandwort	Fed: CA: CNPS:	**END** **END** 1B.1	Occurs in freshwater marshes and swamps. From 33 to 558 feet in elevation.	No	**Presumed absent**. There is no suitable habitat and the Project site is outside of the known elevation range of this species.
Astragalus hornii var. hornii Horn's milk-vetch	Fed: CA: CNPS:	None None 1B.1	Occurs in meadows, seeps, and playas. From 197 to 2,789 feet in elevation.	No	**Presumed absent**. There is no suitable habitat.

Scientific Name Common Name	Status		Habitat	Observed Onsite	Potential to Occur
Berberis nevinii Nevin's barberry	Fed: CA: CNPS:	**END** **END** 1B.1	Occurs on steep, north-facing slopes or in low-grade sandy washes in chaparral, cismontane woodland, coastal scrub, and riparian scrub. From 951 to 5,167 feet in elevation.	No	**Presumed absent**. There is no suitable habitat.
Brodiaea filifolia thread-leaved brodiaea	Fed: CA: CNPS:	**THR** **END** 1B.1	Occurs in openings on clay soils. Found in chaparral, cismontane woodland, coastal scrub, playas, valley and foothill grassland, and vernal pools. From 82 to 3,675 feet in elevation.	No	**Low**. There is marginal habitat in the Waterman Basins. There are two CNDDB occurrences and a Critical Habitat unit just north of the basins.
Calochortus plummerae Plummer's mariposa-lily	Fed: CA: CNPS:	None None 4.2	Prefers openings in chaparral, foothill woodland, coastal sage scrub, valley and foothill grasslands, cismontane woodland, lower montane coniferous forest and yellow pine forest. Often found on dry, rocky slopes and soils and brushy areas. Can be very common after a fire. From 328 to 5,577 feet in elevation.	No	**Low**. There is marginal habitat in the Waterman Basins.
Carex comosa bristly sedge	Fed: CA: CNPS:	None None 2B.1	Found in marshes and swamps. From 0 to 2,051 feet in elevation.	No	**Presumed absent**. There is no suitable habitat.
Castilleja lasiorhyncha San Bernardino Mountains owl's-clover	Fed: CA: CNPS:	None None 1B.2	Occurs in mesic or drying sites along the edges of streams, meadows, and vernal pools. Found in meadows and seeps, pebble plains, upper montane coniferous forest, chaparral, and riparian woodland. From 4,265 to 7,841 feet in elevation.	No	**Presumed absent**. There is no suitable habitat and the Project site is outside of the known elevation range of this species.
Centromadia pungens ssp. laevis smooth tarplant	Fed: CA: CNPS:	None None 1B.1	Occurs in alkali meadow, alkali scrub, and disturbed areas within valley and foothill grassland, chenopod scrub, meadows, playas, and riparian woodland. From 3 to 2,100 feet in elevation.	No	**Low**. There is marginal habitat in the Waterman Basins and upper reaches of East Twin Creek.
Chloropyron maritimum ssp. maritimum salt marsh bird's-beak	Fed: CA: CNPS:	**END** **END** 1B.2	Upper terraces and higher edges of coastal salt marshes where tidal inundation is periodic. From 0 to 98 feet in elevation.	No	**Presumed absent**. There is no suitable habitat and the Project site is outside of the known elevation range of this species.

Scientific Name Common Name	Status		Habitat	Observed Onsite	Potential to Occur
Chorizanthe parryi var. parryi Parry's spineflower	Fed: CA: CNPS:	None None 1B.1	Occurs on sandy and/or rocky soils in chaparral, coastal sage scrub, and sandy openings within alluvial washes and margins. From 131 to 5,594 feet in elevation.	No	**Moderate**. There is suitable habitat and a 1993 occurrence of this species in the Waterman Basins.
Cuscuta obtusiflora var. glandulosa Peruvian dodder	Fed: CA: CNPS:	None None 2B.2	Occurs in freshwater marsh and swamps. From 49 to 919 feet in elevation.	No	**Presumed absent**. There is no suitable habitat.
Dodecahema leptoceras slender-horned spineflower	Fed: CA: CNPS:	**END** **END** 1B.1	Chaparral, coastal scrub (alluvial fan sage scrub). Flood deposited terraces and washes. From 656 to 2,493 feet in elevation.	No	**Low**. There is marginal habitat in the basins and spreading grounds. This species is known to occur in the general area.
Eriastrum densifolium ssp. sanctorum Santa Ana River woolly star	Fed: CA: CNPS:	**END** **END** 1B.1	Coastal scrub, chaparral in sandy soils on river floodplains or terraces fluvial deposits. From 295 to 2,001 feet in elevation.	No	**Low**. There is marginal habitat in the basins and spreading grounds. This species is known to occur in the general area.
Fimbristylis thermalis hot springs fimbristylis	Fed: CA: CNPS:	None None 2B.2	Occurs in alkaline meadows near hot springs. From 394 to 4,396 feet in elevation.	No	**Presumed absent**. There is no suitable habitat.
Galium californicum ssp. primum Alvin Meadow bedstraw	Fed: CA: CNPS:	None None 1B.2	Chaparral, lower montane coniferous forest between 4,429 and 5,577 feet in elevation.	No	**Presumed absent**. There is no suitable habitat and the Project site is outside of the known elevation range of this species.
Helianthus nuttallii ssp. parishii Los Angeles sunflower	Fed: CA: CNPS:	None None 1A	Occurs in marshes, swamps, and on damp river banks. From 33 to 5,495 feet in elevation.	No	**Presumed absent**. There is no suitable habitat.
Horkelia cuneata var. puberula mesa horkelia	Fed: CA: CNPS	None None 1B.1	Occurs on sandy or gravelly soils in chaparral, woodlands, and coastal scrub plant communities. Most often on alluvial fans. From 230 to 2,657 feet in elevation.	No	**Low**. There is marginal habitat in the basins and spreading grounds.
Imperata brevifolia California satintail	Fed: CA: CNPS:	None None 2B.1	Occurs in mesic sites, alkali seeps, and riparian areas within coastal scrub, chaparral, riparian scrub, Mojavean scrub, and alkali meadows and seeps. From 0 to 1,640 feet in elevation.	No	**Low**. There is marginal habitat in the Waterman Basins.

Scientific Name Common Name	Status		Habitat	Observed Onsite	Potential to Occur
Lepidium virginicum var. robinsonii Robinson's pepper-grass	Fed: CA: CNPS:	None None 1B.2	Dry soils on chaparral and coastal sage scrub from 3 to 2,904 feet in elevation.	No	**Low**. There is marginal habitat in the Waterman Basins.
Lycium parishii Parish's desert-thorn	Fed: CA: CNPS:	None None 2B.3	Coastal scrub and Sonoran desert scrub habitat. From 984 to 3,281 feet in elevation.	No	**Low**. There is marginal habitat but the only known records are extirpated.
Monardella pringlei Pringle's monardella	Fed: CA: CNPS:	None None 1A	Sandy hills covered in coastal sage scrub from 984 to 1,312 feet in elevation.	No	**Presumed absent**. There is no suitable habitat.
Nasturtium gambelii Gambel's water cress	Fed: CA: CNPS:	**END THR** 1B.1	Brackish marsh, freshwater marsh, swamps, and wetlands. From 16 to 1,083 feet in elevation.	No	**Presumed absent**. There is no suitable habitat.
Ribes divaricatum var. parishii Parish's gooseberry	Fed: CA: CNPS:	None None 1A	Occurs in riparian woodland, usually in willow swales. From 213 to 328 feet in elevation.	No	**Presumed absent**. There is no suitable habitat and the Project site is outside of the known elevation range of this species.
Schoenus nigricans black bog-rush	Fed: CA: CNPS:	None None 4.3	Usually found in alkaline marshes and swamps from 492 to 6,562 feet in elevation.	No	**Presumed absent**. There is no suitable habitat.
Sidalcea neomexicana Salt Spring checkerbloom	Fed: CA: CNPS:	None None 2B.2	Occurs in alkali springs and marshes within alkali playas, brackish marshes, chaparral, coastal scrub, lower montane coniferous forest, and Mojavean desert scrub. From 49 to 5,020 feet in elevation.	No	**Presumed absent**. There is no suitable habitat.
Sphenopholis obtusata prairie wedge grass	Fed: CA: CNPS:	None None 2B.2	Brackish or salt marshes and flats, in lakes or ponds, in rivers or streams, man-made or disturbed habitats, marshes, ridges or ledges, shores or rivers or lakes, woodlands. From 984 to 6,562 feet in elevation.	No	**Presumed absent**. There is no suitable habitat.
Streptanthus campestris southern jewelflower	Fed: CA: CNPS:	None None 1B.3	Occurs in open, rocky areas in chaparral, lower montane coniferous forest, and pinyon-juniper woodland. From 1,969 to 9,154 feet in elevation.	No	**Presumed absent**. There is no suitable habitat and the Project site is outside of the known elevation range of this species.

Scientific Name Common Name	Status		Habitat	Observed Onsite	Potential to Occur
Symphyotrichum defoliatum San Bernardino aster	Fed: CA: CNPS:	None None 1B.2	Grows in grasslands and disturbed areas in the San Gabriel and San Bernardino Mountains and Peninsular Range. Occurs in vernally wet sites including ditches, streams, and springs in many plant communities including meadows and seeps, marshes and swamps, coastal scrub, cismontane woodland, lower montane coniferous woodland, and grassland. From 7 to 6,693 feet in elevation.	No	**Presumed absent**. There is no suitable habitat.
CDFW Sensitive Habitat					
Riversidean Alluvial Fan Sage Scrub	CDFW Sensitive Habitat		Considered a distinct and rare plant community found primarily on alluvial fans and flood plains along the southern bases of the Transverse Ranges and portions of the Peninsular Ranges in southern California. Relatively open vegetation type is adapted to periodic flooding and erosion and is comprised of an assortment of drought-deciduous shrubs and larger evergreen woody shrubs characteristic of both coastal sage scrub and chaparral communities.	No	**Absent**.
Southern Cottonwood Willow Riparian Forest	CDFW Sensitive Habitat		Dominated by cottonwood (*Populus* ssp.) and willow (*Salix* ssp.) trees and shrubs. Considered to be an early successional stage as both species are known to germinate almost exclusively on recently deposited or exposed alluvial soils.	No	**Absent**.
Southern Riparian Scrub	CDFW Sensitive Habitat		Riparian zones dominated by small trees or shrubs, lacking taller riparian trees.	No	**Absent**.
Southern Sycamore Alder Riparian Woodland	CDFW Sensitive Habitat		Occurs below 2,000 meters in elevation, sycamore and alder often occur along seasonally-flooded banks; cottonwoods and willows are also often present. Poison oak, mugwort, elderberry and wild raspberry may be present in understory.	No	**Absent**.

Scientific Name Common Name	Status	Habitat	Observed Onsite	Potential to Occur
Southern Willow Scrub	CDFW Sensitive Habitat	Dense, broadleafed, winter-deciduous riparian thickets dominated by several willow species, with scattered emergent cottonwood and sycamore (*Platanus racemosa*). Most stands are too dense to allow much understory development. Loose, sandy or fine gravelly alluvium deposited near stream channels during flood flows.This early seral type requires repeated flooding to prevent succession to Southern Cottonwood-Sycamore Riparian Forest.	Yes	**Present**.
Southern California Arroyo Chub/Santa Ana Sucker Stream	CDFW Sensitive Habitat	Perennial streams in southern California that contain essential habitat elements for both arroyo chub and Santa Ana suckers. Arroyo chub prefer low gradient streams with sand mud substrate and warm water for spawning, while Santa Ana sucker prefer streams with a steeper gradient and flows throughout the year with a mosaic of loose sand, gravel and cobble substrates in a series of riffles, runs and pools with depths between 0.3 feet and above, with adult suckers found at an average depth of 0.7 feet. The Santa Ana River is known to support both species. The downstream portion of Study Reach 3 is designated in the CNDDB designation as a Southern California Arroyo Chub/Santa Ana Sucker Stream. Study Reaches 1 and 2 are upstream of this designation.	No	**Absent.**

U.S. Fish and Wildlife Service (USFWS) - Federal
END- Federal Endangered
THR- Federal Threatened

California Department of Fish and Wildlife (CDFW) - California
END- California Endangered
CSC- California Species of Concern
WL- Watch List
FP- California Fully Protected

California Native Plant Society (CNPS)
California Rare Plant Rank
1B Plants Rare, Threatened, or Endangered in California and Elsewhere
2B Plants Rare, Threatened, or Endangered in California, but More Common Elsewhere
4 Plants of Limited Distribution – A Watch List

Threat Ranks
0.1- Seriously threatened in California
0.2- Moderately threatened in California
0.3- Not very threatened in California

CALIFORNIA HORNED LARK

The California horned lark is designated by the CDFW as a California watch list species. While horned larks are year-round residents throughout most of the United States and Mexico and breeding residents in much of Canada, the "California" subspecies only occurs west of the coastal ranges of California and northern Baja California. Horned larks generally occur in open areas, most often in shortgrass habitats or areas characterized by other low-growing vegetation. They may be found in disturbed, ruderal areas or even on manicured lawns (e.g. city parks and baseball fields). The horned lark breeding period generally extends from mid-February to mid-August.

There is only one CNDDB record for this species in the Project vicinity, approximately 3.25 miles northwest at California State University San Bernardino, where this species is generally a rare visitor in the fall and winter. There is suitable habitat in the upstream Project areas, including in disturbed areas such as the Waterman Basins and on lawns of nearby schools, golf courses, parks, or other irrigated areas. The California horned lark has a moderate potential to occur.

YELLOW WARBLER

The yellow warbler is designated by the CDFW as a California species of special concern. This designation applies to the *brewsteri* subspecies, which occurs along the Pacific Coast from northern Baja California to south of Victoria Island in Washington. This species is a summer migrant to southern California, inhabiting riparian woodlands throughout southern California. This species typically retreats to montane habitats for breeding, although some individuals will remain in lowland areas; the Project site (i.e. the Waterman Basins) are in an edge zone between montane and lowland habitats. The yellow warbler nesting period generally extends from mid-March to early August.

There are no CNDDB records for this species in the upstream Project areas. However, multiple individuals of this species were detected in the Waterman Basins during the habitat assessment. Yellow warbler is expected to be present within the upstream Project areas and downstream areas of the Santa Ana River during the spring and summer months.

LEAST BELL'S VIREO

The LBVI is listed as endangered by both the ESA and CESA. While Bell's vireo ranges throughout the southern American Southwest, the Midwest, and Mexico, the "least" subspecies only occurs in the coastal half of southern California and into Baja California. This species occurs in a variety of riparian habitats, including riparian woodlands, riparian scrub, brushy fields, young forests, scrub oaks, coastal chaparral, and mesquite brushlands. Surface water is preferred but is not required, and in California this species shows a high tendency toward willow (*Salix* sp.) cover. LBVI breeding season typically extends from early April to the end of July.

There are several CNDDB records of this species along the Santa Ana River and within the upstream Project areas, with the closest being a 2013 record approximately 0.5 mile from the southern end of Alignment 1 (in the Santa Ana River) and within the facility corridor. There is suitable habitat for this species in the Waterman Basins, where patches of Southern Willow Scrub are present, and in the riparian habitats along the Santa Ana River. According to the San Bernardino County Flood Control District (SBCFCD), LBVI has been documented in the Waterman Basins in the past. No LBVI were detected during the habitat assessment in the upland areas but they are common along the Santa Ana River outside the Project

boundaries and in the vicinity of the RIX facility. LBVI has a high potential to occur on the Project site and in the riparian habitats along the downstream areas of the Santa Ana River. Michael Baker conducted a focused survey effort for LBVI within the Waterman Basins in June and July 2015. One male LBVI was found within the basin during a single survey; results were negative during all other surveys and no evidence of active nesting was found.

NORTHWESTERN SAN DIEGO POCKET MOUSE

The northwestern San Diego pocket mouse is designated by the CDFW as a California species of special concern. It occurs in San Diego, Riverside, San Bernardino, and Los Angeles Counties. Typical habitat includes sage scrub, sage scrub/grassland ecotones, and chaparral, often where there are gravelly or rocky substrates. The breeding season reaches its peak in spring and early summer.

There are several CNDDB records of this species in the upstream Project areas, with the closest approximately 2.2 miles northwest from 1993. There is suitable habitat for this species on the upper end of the Project site around the Waterman Basins. Northwestern San Diego pocket mouse has a moderate potential to occur in the Project vicinity.

SAN BERNARDINO KANGAROO RAT

The San Bernardino kangaroo rat (SBKR) is listed as endangered under the federal ESA and is designated by the CDFW as a California species of special concern. Its range extends between Riverside and San Bernardino Counties. It can most often be found in alluvial scrub/sage scrub habitats on gravelly and sandy soils along river and stream terraces, or on alluvial fans; its characteristic plant community is Riversidean Alluvial Fan Sage Scrub (RAFSS). Breeding typically occurs between February and October; although one brood is typical, SBKR can breed twice in one year if the food supply is abundant.

SBKR has a moderate potential to occur in the upstream Project areas, as well as downstream along the banks of the Santa Ana River. This species is known to occur in and around streambeds that support Riversidean Alluvial Fan Sage Scrub habitat subject to fluvial scouring. There are numerous CNDDB records of this species within the Lytle Creek and Santa Ana River Washes in the upstream Project areas. The closest CNDDB record of this species is on the San Bernardino International Airport (formerly Norton Air Force base) approximately 1.9 miles east of Alternative 1 and 1.2 miles east of the Project boundary. The Project site does not support undisturbed RAFSS habitats and is no longer exposed to hydrological processes needed to maintain suitable SBKR habitat. Based on the size of the burrows, it is expected that the site is inhabited by Dulzura kangaroo rat (*Dipodomys simulans*). SBKR Critical Habitat Unit 1, Santa Ana River and Wash, runs along the Santa Ana River from the Seven Oaks Dam to South E Street; it also includes portions of Mill, City, and Plunge Creeks (refer to Exhibit 4.4-2, *Critical Habitat*).

According to the SBCFCD, SBKR has been documented in the Waterman Basins in the past. A SBKR habitat suitability assessment was conducted within the Waterman Basins and East Twin Creek Spreading Grounds in August 2014. Field sign for kangaroo rat, including SBKR, were observed throughout the disturbed RAFSS plant community on the banks of the basins. Focused trapping for SBKR was conducted in August 2015 in the Waterman Basins, but were negative for this species.

WESTERN YELLOW BAT

The western yellow bat is designated by the CDFW as a California species of special concern. Its range extends through the southern portions of California, Arizona, New Mexico, and possibly Texas, as well as Mexico and Central America. It occurs in forests, but is also found in the arid southwestern U.S. in desert landscapes. In California it roosts almost exclusively in the skirts of native and ornamental palm trees and is limited in its distribution by the availability of palms. Pregnant females have been captured in the U.S. between April and June.

There are two CNDDB records of this species in the vicinity, with the closest being a 1984 record approximately 2.65 miles southwest of the East Twin Creak Spreading Grounds/Waterman Basins facility corridor. There is suitable habitat for this species wherever there are palm trees, which are scattered throughout the Project site. As such, western yellow bat has a moderate potential to occur in the Project vicinity.

LOS ANGELES POCKET MOUSE

The Los Angeles pocket mouse is designated by the CDFW as a California species of special concern. Its current range has changed little from its historic distribution, as it is still known from the Etiwanda Wash east to Cabazon and south through the San Jacinto and Temecula Valleys to Aguanga, Warner Pass, Vail, and Temecula; historically it was also known in the San Fernando Valley and may still occur in un-surveyed areas. This species occurs in low elevation grasslands, alluvial sage scrub, and coastal sage scrub. It hibernates between October and February.

There are numerous CNDDB records of this species in the upstream Project areas, with the closest being a 1993 record approximately 1.7 miles northwest of the East Twin Creak Spreading Grounds/Waterman Basins portions of the Project. There is suitable habitat for this species in downstream areas of the Santa Anal River. Los Angeles pocket mouse has a moderate potential to occur on the Project site or in downstream areas of the Santa Ana River. Surveys for SBKR in 2015 determined that this species was absent from the Project site.

SANTA ANA SUCKER

The Santa Ana sucker is listed as a federally and State of California threatened fish species. The Santa Ana sucker is a small (generally less than six inches in length), short-lived member of the sucker family. Santa Ana suckers are associated with the main stem Santa Ana River and several tributaries, and have been found from the Rialto Drain downstream to Imperial Highway in Orange County. Currently, the largest population has been identified in the area from Rialto Drain downstream to Mission Boulevard, particularly in the area near Riverside Avenue.

Santa Ana suckers can tolerate a wide variety of stream conditions, inhabiting flowing streams with varying water depths, velocities, and streambed substrates (Moyle and Yoshiyama 1992). Specific tolerance to water quality parameters have not been determined for the Santa Ana sucker; however, they are typically most abundant in unpolluted, clear water, at temperatures less than 72ºF (Moyle 2002; USFWS 2012). The continued presence of the Santa Ana sucker in the Santa Ana River suggests they can also tolerate seasonally elevated temperatures and turbidity. Optimal stream conditions include gravel and cobble substrates, which may also be mixed with sand, as well as a combination of shallow (riffles) and deep (pools and runs) habitats (SMEA 2003; USFWS 2011). In-stream or overhanging bank-side

riparian vegetation, provide shade and cover for Santa Ana suckers, but becomes less important for adults when deeper habitat is present (Moyle 2002; USFWS 2011).

Several authors indicate that the preferred substrate for Santa Ana suckers are coarse substrates (i.e., gravel and cobble) with occasional suckers found on sand or mud substrates (Moyle 2002; SMEA 2003; Thompson et al. 2010). SMEA (2003) demonstrated that both juveniles and adults select coarse substrates and may avoid sand substrate in both the Santa Ana River and the upper San Gabriel River drainage. Santa Ana suckers feed primarily on algae and detritus, with small aquatic insects occasionally consumed (Moyle 2002). The preference of gravel and cobble substrate is likely related to it being the primary substrate where algae grow (USFWS 2011).

The upstream reach (Study Reach 1), near Riverside Avenue has consistently had coarser substrates in recent years. The presence of abundant coarse substrates in the upstream portion of the study area is a relatively new phenomenon, evident post-inception of RIX discharges in 1996, as substrate characteristics were generally described as shifting sand substrates throughout this study reach during surveys in 1991 (C&A 1992). Discharge of treated effluent from the RIX facility began in 1996 and has contributed to the removal of sand, exposing the underlying coarse substrate.

Thompson et al. (2010) also evaluated the statistical relationships between environmental variables and the variability in Santa Ana sucker abundance among sites and years. The best model found a significant, positive relationship with the amount of coarse substrate and flow explaining 65% of the variability in the abundance of Santa Ana suckers (Thompson et al. 2010). Flow represents the combination of stream depth, width, and velocity, thus any of these variables could drive the relationship between flow and Santa Ana sucker abundance. Saiki et al. (2007) and Brown et al. (2005) also evaluated the relationship between environmental variables and Santa Ana sucker abundance, but the range of habitat characteristics varied among the three studies. Thompson et al. (2010) concluded based on the three studies together that the relationship between environmental variables and Santa Ana sucker abundance is parabolic, with optimal habitat conditions characterized by a mix of coarse and fine substrate, rates of river flow between approximately 18 and 106 cfs, and mean depth between 0.3 and 1.3 ft.

The Santa Ana River, like other streams in which Santa Ana suckers are found, is subject to periodic and major flooding events, which can result in reductions in all fish populations and other aquatic organisms. The sucker is adapted to withstand these events, with high reproductive rates (females can produce up to 16,000 eggs at a time), short generation times (begin spawning at age-1+ years old), and a prolonged spawning period (Greenfield et al. 1970). Greenfield et al. (1970) found that the Santa Ana sucker was able to recolonize the Santa Clara River following a severe flood in 1969 in a single breeding season from a small residual population that survived the flood event.

The U.S. Fish and Wildlife Service (USFWS) listed the Santa Ana sucker as threatened on April 12, 2000. On February 25, 2004, USFWS designated 21,129 acres of stream in Los Angeles and San Bernardino counties as Critical Habitat for the sucker, and includes the study reaches. Currently, there are two conservation programs meant to afford the sucker protection, including the Conservation Program for the Santa Ana sucker within the Santa Ana River Watershed (Santa Ana Sucker Conservation Program) and the Western Riverside County Multiple Species Habitat Conservation Program.

On December 2, 2010, the USFWS issued a revision to the Critical Habitat that added an additional 9,331 acres of streams and rivers in Los Angeles, Riverside, and San Bernardino counties. These additional upstream areas are unoccupied habitat but are an important source of coarse sediments for occupied

downstream areas. This final designation of Critical Habitat also listed seven Primary Constituent Elements (PCEs) essential to the conservation of the Santa Ana sucker. These are discussed below in more detail.

The Project's consistency with the PCEs for the Santa Ana sucker was evaluated through a combination of quantitative and qualitative measures. Quantitative relationships between Santa Ana sucker populations and several local-scale PCEs were incorporated into Physical Habitat Simulation (PHABSIM) models. The PHABSIM models developed for the 2014 low flow-habitat study (GEI 2014) are designed to incorporate all of the local-scale PCEs identified by USFWS. The models used in the 2014 study relied on habitat utilization data for Santa Ana sucker, collected by San Marino Environmental Associates. These data are collected by recording depth, velocity, and substrate information in a location occupied by Santa Ana sucker, and they are equivalent to, or more conservative than, the PCEs in terms of defining minimum values for suitable habitat. Because PHABSIM models are designed to simulate changes in local habitat variables, larger-scale PCEs that affect habitat quality, such as connectivity, water clarity, and the location of temperature refuges cannot be incorporated. Instead, the effects of changes in these large-scale factors are considered qualitatively in the EIR. It should be noted the PCEs represent minimum requirements for the persistence of the sucker. Based on the available data and planned mitigation, no PCE's would be compromised due to the Project. Monitoring prior to initiation of the Project and during the phases of the project would help ensure all PCEs are maintained.

The individual PCEs are listed below, with an explanation of how the Project would related to the PCE.

1. A functioning hydrologic system that experiences peaks and ebbs in the water volume that contain sources of water and sediment necessary for all life stages of the species.

   There are no specific studies characterizing this element other than the fact that the sucker inhabits flowing streams. The Santa Ana River provides the functioning hydrology needed by Santa Ana sucker, as evidenced by their presence in the river. The Project would continue to provide perennial flow, and flow variability would still occur as a result of periodic flooding. This is a large-scale PCE considered outside the PHABSIM model.

2. Stream channel substrate consisting of a mosaic of loose sand, gravel, cobble, and boulder substrates in a series of riffles, runs, pools and sand stream margins.

   This is consistent with the summary of substrate characteristics cited by USFWS, as well as other researchers, as occurring in the Santa Ana River. A reach-averaged measure of substrate availability is incorporated into the PHABSIM model used to measure the effects of the Project on the availability of suitable Santa Ana Sucker habitat.

3. Water depths greater than 3 cm and bottom velocities greater than 0.01 ft/s.

   The ranges for depth and velocities used by USFWS and most other researchers for the sucker are generally well above these values. These values are the bare minimum habitat requirements necessary for wetted areas in the river to be included in the "critical habitat" designation. Detailed depth preferences for adult and juvenile Santa Ana sucker were incorporated into the PHABSIM model used to track effects of the Project on the availability of suitable habitat for this species. Although the spatial resolution of the velocity data was too coarse to incorporate into the PHABSIM models, higher-resolution velocity data can be added to the models when they are available. As such, the velocity PCE can be addressed by examining the modeled velocities associated with each phase of the Project. Minimum, average, and maximum velocities for all phases are expected to meet the PCE requirements.

4. Clear or occasionally turbid water;

   This is consistent with the summary cited by USFWS, as well as other researchers, as required for the sucker and are conditions found in the Santa Ana River. The flow from the RIX is clear, and turbid conditions typically occur in the Santa Ana River only as a result of storm runoff. The Project should not affect clarity and turbidity of the Santa Ana River. This is a large-scale PCE, considered separately from the PHABSIM models, as discussed above.

5. Water temperatures less than 86 degrees Fahrenheit;

   This is consistent with the summary cited by USFWS, as well as other researchers, as required for the sucker and are conditions found in the Santa Ana River. Cooler water from the Anza Park drain, and possibly from the Project, may provide important thermal refuge for the Santa Ana sucker. Water temperatures in the RIX flows would not be affected by the Project. Potential make-up water during times of plant shutdown should also help maintain suitable temperatures. This is a large-scale PCE, considered separately from the PHABSIM models, as discussed above.

6. Instream habitat that includes a source of food (such as plankton and aquatic invertebrates), and associated aquatic emergent vegetation and adjacent riparian vegetation that provide shading, shelter during high water flows, and protective cover from predators.

   This is consistent with the summary cited by USFWS, as well as other researchers, as required for the sucker and are conditions found in the Santa Ana River. Coarse substrate availability has already been incorporated into PHABSIM models and can serve as a surrogate measure of food availability. As with other local-scale PCEs like velocity, data for the presence or absence of overhead and emergent vegetation can also be incorporated into PHABSIM models when they become available.

7. Areas within perennial stream courses that may be periodically dewatered but that serve as connective corridors between occupied or seasonally occupied habitat through which the species can move when wetted.

   This is consistent with the summary cited by USFWS, as well as other researchers, as required for the sucker and are conditions found in the Santa Ana River. Major barriers to fish movement are absent in the study reach, which is located between the La Cadena drop structure and Prado Dam. A flow study summarizing current conditions on the Santa Ana River also noted that flows were continuous/perennial between RIX and Prado Dam up until 2012. More recently, flow has become interrupted during RIX shutdowns. Plans to minimize shutdowns and provide make-up water will alleviate these conditions in the future. This is a large-scale PCE that is considered separately from the PHABSIM models, as discussed above.

The PCEs characterize the habitat features needed, at a minimum, by Santa Ana sucker. The Santa Ana River is a very dynamic hydrologic feature that provides all of these elements but not necessarily simultaneously for all reaches within the river. Several technical studies of sucker habitat in the Santa Ana River have provided additional details beyond these minimum habitat suitability criteria, particularly for depth, velocity, and substrate. The effects on Santa Ana sucker habitat of phased reduction of flows in the river were analyzed in the Clean Water Factory Low Flow Study. This study used habitat models that were developed by GEI (2014) using the more detailed habitat suitability criteria, which were consistent with or more conservative than the minimum limits defined by the PCEs. As noted later in this document, that modeling indicates that the Clean Water Factory will be protective of all of the PCEs except temperature and water clarity throughout Phase 1 and Phase 2 of the Project, with no reductions in habitat exceeding 25% for any reach or any life stage of the Santa Ana sucker. Insufficient data were available for temperature or water clarity to specifically address these PCEs.

The Santa Ana sucker population has shifted from being most abundant at the downstream sites (i.e., Highway 60 and Mission Boulevard) from 2001 through 2004 to being most abundant at the upstream Riverside Avenue site in the remaining years from 2005 through 2011 (Table 4.4-3). This trend of a shift in the population upstream becomes stronger when considering the data collected in the early 1990s pre-RIX, when suckers were virtually absent upstream of the MWD Crossing site (C&A 1992). The shift in Santa Ana sucker density from the MWD Crossing to near Riverside Avenue is likely a result of improved water quality over time and changes in available habitat in the Riverside Avenue reach compared to during the pre-RIX time period.

Table 4.4-3: Santa Ana Sucker Density (fish/mile) at 3 Monitoring Sites between 2001 and 2011

Site	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Riverside Ave	209	756	805	644	1,579	1,689	1,561	3,445	880	2,108	3,718
Highway 60	2,639	2,736	1,545	3,235	16	0	1,625	322	528	0	772
Mission Blvd	1,432	2,350	1,014	32	16	0	0	580	16	64	595
MWD Crossing	--	--	--	--	--	--	--	--	--	853	70
Average (w/ MWD)	1,427	1,947	1,121	1,304	537	563	1,062	1,449	475	724 (756)	1,695 (1,364)
Note: Two years of monitoring are included for the MWD crossing.											
Source: SMEA 2011.											

USFWS (2012) also cite work by Thompson et al. (2010) and state that surveys of gravel and cobble throughout the Santa Ana River indicate that the available suitable habitat for successful breeding and feeding are in decline. However, there is no evidence of reduced coarse substrate availability during recent times. Thompson et al. (2010) illustrate the dynamic nature of substrate in the Santa Ana River, including its relationship to Santa Ana sucker abundance; however, they do not claim a decline in coarse substrate abundance or habitat availability. As noted earlier, coarse substrate availability extended downstream of the RIX outfall for 4.2, 9.6, and 5.1 km in 2006, 2007, and 2008, respectively (Thompson et al. 2010). These data do not indicate a declining trend in coarse substrate availability, nor are declining trends in coarse substrate apparent for the three sites sampled annually by Thompson et al. (2010). Rather, these studies suggest that the there is considerable variability year-to-year in the availability of coarse substrate.

In fact, the abundance of coarser substrates in the upper reaches is a relatively new phenomenon, as shifting sand substrates were dominant throughout the study area during surveys in 1991 (C&A 1992). The presence of water near Riverside Avenue, along with coarse substrates and well-developed riparian vegetation compared to the frequently dry channel, with sand substrate and little to no riparian vegetation in this reach prior to RIX discharge would suggest that suitable Santa Ana sucker habitat has actually increased since the early 1990s.

SENSITIVE HABITAT

The CNDDB lists six sensitive habitats as having the potential to occur within the San Bernardino North and San Bernardino South USGS quadrangles: Riversidean Alluvial Fan Sage Scrub, Southern Cottonwood Willow Riparian Forest, Southern Riparian Scrub, Southern Sycamore Alder Riparian Woodland, and Southern Willow Scrub, and Southern California Arroyo Chub/Santa Ana Sucker Stream. A Southern Willow Scrub plant community was observed in the upper portion of the Waterman Basins. California Arroyo Chub/Santa Ana Sucker Stream occurs at downstream areas of the Santa Ana River; see *Exhibit 4.4-2, Critical Habitat*.

An assessment of riparian vegetation from the RIX Facility down to the MWD Crossing found that riparian vegetation along the river is composed primarily of Southern Cottonwood Willow Riparian Forest with a significant invasion of *Arundo donax* in various segments of the river. *Arundo donax* is a non-native aquatic plant that is considered a primary threat due to its ease of establishment, ability to alter the hydrology of the system through bank stabilization, and excessive use of water (USFWS 2012). The current riparian condition in the study area is relatively well developed with conditions more typical of the mixed woody vegetation (Photos 1 and 2). Precipitation is extremely variable from year to year, subjecting the riparian vegetation to drought, flooding, scouring and deposition. Flooding, although infrequent, can be severe. Storms in 1938, 1962 and 1969 tore out vast stands of woodland vegetation. The native riparian species comprising the vegetation in the upper reaches of the Santa Ana River are adapted to a regime of variable precipitation and disturbance. The riparian vegetation extends downstream along the Santa Ana River culminating in the Prado Basin as an extensive riparian woodland.

MBC (2000) classified the riparian vegetation as a transitional plant community, forming an ecotone or zone of overlap between the instream habitat and adjacent coastal sage scrub upland area bordering the river, with three separate zones: 1) an active zone closest to the stream that is most subject to disturbance from flooding, which is characterized by willow and cottonwood; 2) a border zone that is less subject to disruption but has a reliable source of water, which is characterized by larger trees of willow and cottonwood, and a well-developed understory with considerable plant diversity; and 3) an outer zone on higher terraces that are only occasionally subjected to flooding but where trees such as sycamore take advantage of the higher water tables and grow to very large size. The three zones do not occur in all study reaches, but are most representative in the half mile stretch of river bracketing the RIX Facility both upstream and downstream (MBC 2000). In areas where the river is constrained by levees, the third zone lacks native vegetation. MBC (2000) concluded that the diversion of discharge from the RIX Facility would likely result in a small decline in willow woodland vegetation. However, they also concluded that any anticipated decline in riparian habitat as the result of water diversion from RIX will likely be minor compared to the impacts due to flooding and scouring during flows following large storm events.

CRITICAL HABITAT

Critical Habitat is a designation by the USFWS pursuant to the Endangered Species Act process, and refers to specific areas within the geographical range of a species at the time it is listed that include the physical or biological features (Primary Constituent Element, or "PCE") that are essential to the survival and eventual recovery of that species. If a federal nexus exists for a project (*i.e.* federal permit or funding for a project), analyses for impacts to designated critical habitat will be included in the Section 7 consultation and maintenance of the physical and biological features (PCEs) may require special management considerations or protection be included in the Biological Opinion, regardless of whether the species is

present or not. Designated Critical Habitat for southwestern willow flycatcher (*Empidonax traillii extimus*), SBKR, and Santa Ana sucker occurs within the Project site (Exhibit 4.4-2, *Critical Habitat)*.

The **southwestern willow flycatcher Critical Habitat Santa Ana Management Unit** encompasses an area of the Santa Ana River beginning at Tippecanoe Avenue and extending southwest to the county line (70 FR 60886 61009). It also includes the last 0.67 miles of East Twin Creek prior to its confluence with the Santa Ana River; this portion of East Twin Creek is still directly adjacent to Alignment 1, and portions of both water bodies are contained within the facility corridor. The Santa Ana Management Unit includes dynamic riparian habitat (PCE 1) and also contains a variety of insects for population growth (PCE 2).

SBKR Critical Habitat Unit 1, Santa Ana River and Wash, is located within the Santa Ana River Watershed from the Seven Oaks Dam to South E Street; it also includes portions of Mill, City, and Plunge Creeks (67 FR 19812 19845). The last 1.2 miles of this unit are included within the facility corridor. Unit 1 includes sandy soils (PCE 1); alluvial vegetation (PCE 2); and river and creek channels, floodplain terraces, channels subject to fluvial processes, and upland habitat immediately adjacent to the terraces (PCEs 3 and 4). SBKR Critical Habitat is not expected to be affected by Project implementation, as it terminates south of the treatment plant, outside of Critical Habitat, at the western edge of the facility corridor and upstream of the RIX facility.

Santa Ana sucker Critical Habitat Subunit 1B, Santa Ana River, extends from South Tippecanoe Avenue within the Santa Ana River southwest to the Prado Flood Control Basin (75 FR 77962 78027). Portions of it extend into the facility corridor. Unit 1B contains sources of water and coarse sediment as well as areas that can be used for spawning and rearing of fry and juvenile fish (PCE 1); gravel, cobble, and sand substrates (PCE 2); and a riparian overstory and shallow-water refuges for cover (PCE 6). With reduction of discharge from the RIX Facility, this area will be affected by Project implementation.

Thread-leaved brodiaea Critical Habitat Unit 2, Arrowhead Hot Springs, is located approximately 0.75 mile north of the facility corridor immediately north of Arrowhead Hot Springs Lake (76 FR 6848 6925). Unit 2 is underlain by soils altered by hydrothermal activity (PCE 1B) and contains areas with a naturally, generally intact surface and subsurface soil structure that support this species as well as pollinator habitat (PCE 2). This area is not expected to be affected by Project implementation.

LBVI designated Critical Habitat, the Santa Ana River unit, is located over nine miles southwest of the East Twin Creek Spreading Grounds/Waterman Basins facility corridor, from approximately Rubidoux Avenue at the Santa Ana River to the Prado Flood Control Basin (59 FR 4845 4867). Critical Habitat was designated in 1994 and has not been updated since that time. It is expected that this area provides all the PCEs needed by LBVI, which include riparian woodland vegetation generally containing both canopy and shrub layers (particularly willow-dominated riparian woodlands with a dense understory that is maintained by periodic flooding), as well as associated upland habitats such as coastal sage scrub or chaparral.

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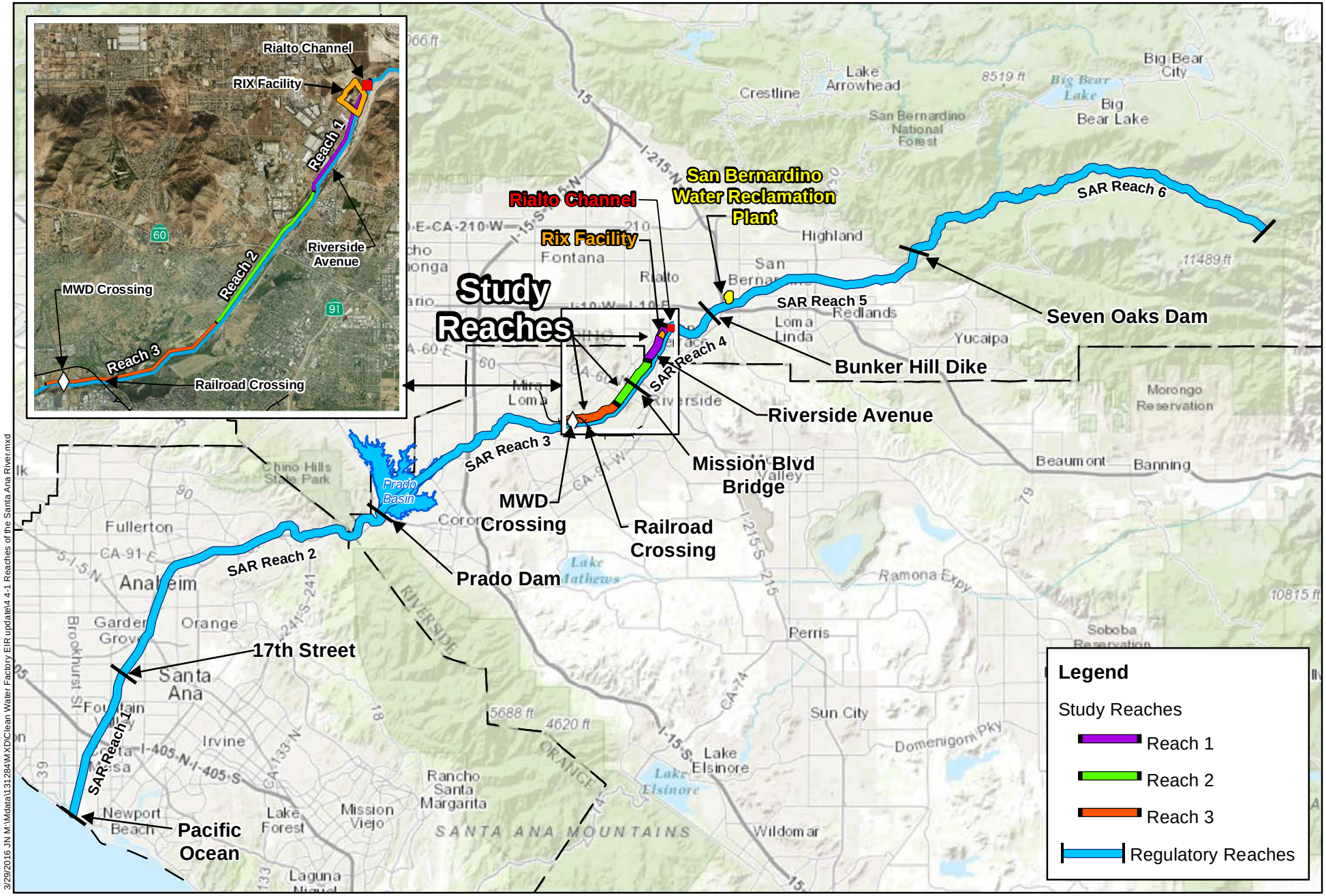

Michael Baker INTERNATIONAL

CLEAN WATER FACTORY PROJECT EIR

Reaches of the Santa Ana River

Exhibit 4.4-1

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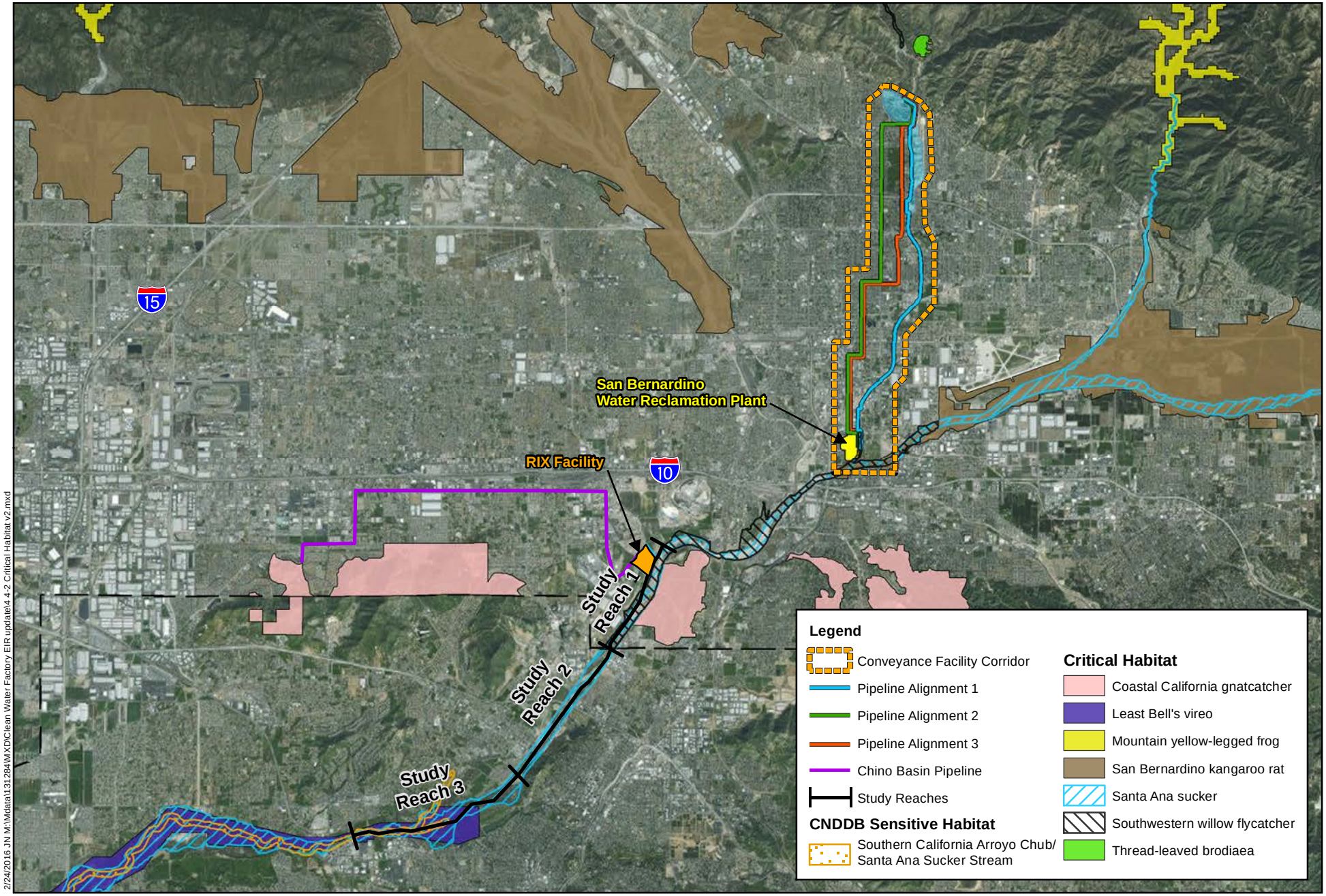

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Michael Baker INTERNATIONAL

0 1.25 2.5 5 Miles

Source: SAWPA, CDFW Critical Habitat Portal, CNDDB, ESRI World Imagery,

CLEAN WATER FACTORY PROJECT EIR

Critical Habitat

Exhibit 4.4-2

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Looking Downstream from Cross Section 2

Looking Upstream from Cross Section 10

Looking Upstream from Cross Section 14

Looking Upstream from Cross Section 25

Michael Baker INTERNATIONAL

Source: Michael Baker International, Site Photographs

CLEAN WATER FACTORY PROJECT EIR

Photographs of Santa Ana River Cross Sections

Exhibit 4.4-3

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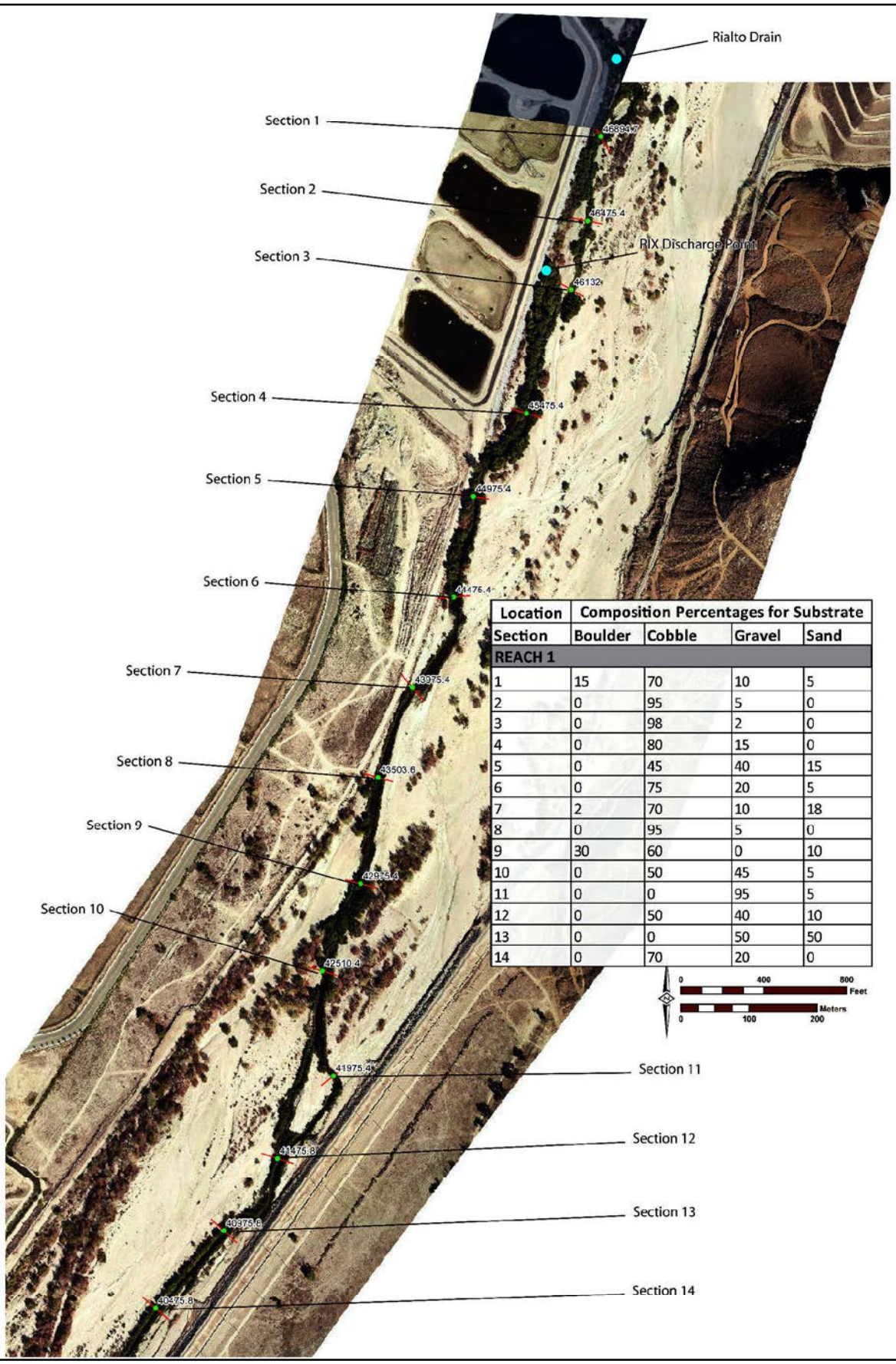

Location	Composition Percentages for Substrate			
Section	Boulder	Cobble	Gravel	Sand
REACH 1				
1	15	70	10	5
2	0	95	5	0
3	0	98	2	0
4	0	80	15	0
5	0	45	40	15
6	0	75	20	5
7	2	70	10	18
8	0	95	5	0
9	30	60	0	10
10	0	50	45	5
11	0	0	95	5
12	0	50	40	10
13	0	0	50	50
14	0	70	20	0

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CLEAN WATER FACTORY PROJECT EIR

Sediment Study Cross Section Locations and Characteristics for Study Reaches 1 and 2

Michael Baker INTERNATIONAL

Prepared By: Wildermuth Environmental Inc.

Exhibit 4.4-4

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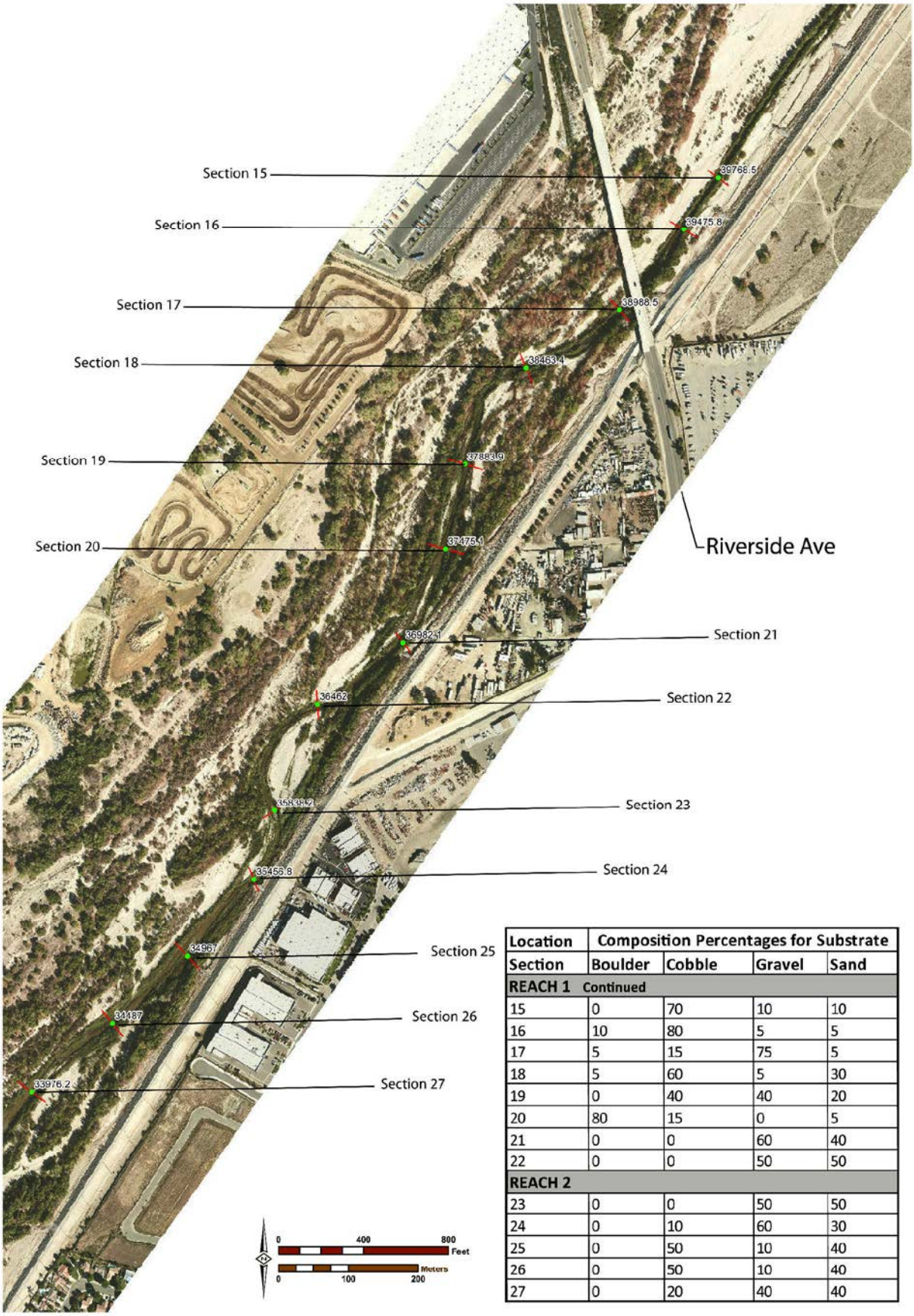

Location	Composition Percentages for Substrate			
Section	Boulder	Cobble	Gravel	Sand
REACH 1 Continued				
15	0	70	10	10
16	10	80	5	5
17	5	15	75	5
18	5	60	5	30
19	0	40	40	20
20	80	15	0	5
21	0	0	60	40
22	0	0	50	50
REACH 2				
23	0	0	50	50
24	0	10	60	30
25	0	50	10	40
26	0	50	10	40
27	0	20	40	40

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CLEAN WATER FACTORY PROJECT EIR

Sediment Study Cross Section Locations and Characteristics for Study Reaches 1 and 2

Michael Baker INTERNATIONAL

Prepared By: Wildermuth Environmental Inc.

Exhibit 4.4-5

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4.4.6 WILDLIFE CORRIDORS

Wildlife movement corridors are defined as areas that connect suitable wildlife habitat areas in a region otherwise fragmented by rugged terrain, changes in vegetation, or human disturbance. A wildlife corridor is generally represented by a linear patch of habitat that provides a connection between two core areas of the same habitat, allowing for the large-scale movement of species within their native habitats. Natural features such as canyon drainages, ridgelines, or areas with vegetation cover provide corridors for wildlife travel. Due to the extensive development of the City of San Bernardino, migratory corridors within the City are limited. The small channels running within the Project corridor may provide limited potential for migrating wildlife, particularly fish, birds, and large mammals.

South Coast Wildlands identified a regional wildlife corridor that follows the Santa Ana River between the coast and the San Bernardino Mountains. San Bernardino County's General Plan includes a map called "A Plan for Open Space and Trails for San Bernardino County," that included the above mentioned regional corridor. The riparian habitat associated with the Santa Ana River is an integral component of this wildlife corridor. The riparian habitat downstream of RIX is important to maintaining the continuity of this corridor.

4.4.7 REGULATORY FRAMEWORK

FEDERAL REGULATIONS

Federal Endangered Species Act

Federally listed threatened and endangered species and their habitats are protected under provisions of the Federal Endangered Species Act (ESA). Section 9 of the ESA prohibits "take" of threatened or endangered species. "Take" under the ESA is defined as to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." The presence of any federally threatened or endangered species that are in a Project area generally imposes severe constraints on development, particularly if development would result in "take" of the species or its habitat. Under the regulations of the ESA, the USFWS may authorize "take" when it is incidental to, but not the purpose of, an otherwise lawful act.

Under the ESA, "Critical Habitat" is also designated at the time of listing or within one year of listing. "Critical Habitat" refers to habitat or a specific geographic area that contains the elements and features that are essential for the survival and recovery of the species. In the event that a Project may result in take or in adverse effects to a species' designated Critical Habitat, the Project proponent may be required to engage in suitable mitigation. If the Project is on federal lands, will require federal permits (e.g. regulatory permits), or otherwise will have a federal lead agency, the proponent will be required to enter into Section 7 informal and/or formal consultations with the USFWS to obtain, if possible, a biological opinion allowing for incidental take of the species in question. If the Project is on private land and will not require any federal permits or funding, a proponent may choose to develop a habitat conservation plan through Section 10 of the ESA to address Project impacts and obtain an Incidental Take Permit for the species.

The proposed Project is located within adjacent to several overlapping areas that have been designated Critical Habitat. Direct or indirect adverse impacts to these areas known or presumed to support federally listed species may trigger the requirement for state and/or federal incidental take permits.

Section 404 of the Clean Water Act

Section 404 of the Clean Water Act (CWA) requires that a permit be obtained from the U.S. Army Corps of Engineers (Corps) prior to the discharge of dredged or fill materials into any "waters of the United States or wetlands." Waters of the United States are broadly defined in the Corps regulations (33 CFR 328) to include navigable waterways, their tributaries, lakes, ponds, and wetlands. Wetlands are defined as "those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that normally do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas" (Federal Register 1982). Wetlands that are not specifically exempt from Section 404 regulations (such as drainage channels excavated on dry land) are considered to be "jurisdictional wetlands." In a recent Supreme Court Case, the Court acted to limit the regulatory jurisdiction of the Corps under Section 404 of the CWA as it applies to adjacent waters (USSC 2001). Specifically, the Court ruled that waters that are non-navigable, isolated, and intrastate are not subject to the Corps jurisdiction (Guzy and Anderson 2001). The Corps is required to consult with the USFWS, Environmental Protection Agency (EPA), and State Regional Board (among other agencies) in carrying out its discretionary authority under Section 404. If jurisdictional areas cannot be avoided, a Section 404 wetlands permit would be required. The proposed Project may result in impacts to jurisdictional waters, requiring a 404 permit from the Corps and consultation with USFWS, the State Regional Board and possibly the EPA.

Section 401 of the Clean Water Act

Applicants for a federal license or permit for activities which may discharge to waters of the US must seek Water Quality Certification from the state or Indian tribe with jurisdiction.[1] Such Certification is based on a finding that the discharge will meet water quality standards and other applicable requirements. In California, Regional Water Quality Control Boards (Regional Boards) issue or deny Certification for discharges within their geographical jurisdiction. Water Quality Certification must be based on a finding that the proposed discharge will comply with water quality standards, which are defined as numeric and narrative objectives in each Regional Board's Basin Plan. Where applicable, the State Water Resources Control Board has this responsibility for projects affecting waters within the jurisdiction of multiple Regional Boards. The Regional Board's jurisdiction extends to all waters of the state and to all waters of the US, including wetlands.

Section 401 of the Clean Water Act requires that "any applicant for a federal permit for activities that involve a discharge to waters of the State, shall provide the federal permitting agency a certification from the State in which the discharge is proposed that states that the discharge will comply with the applicable provisions under the federal Clean Water Act." Therefore, before the Corps will issue a Section 404 permit, applicants must apply for and receive a Section 401 water quality certification from the Regional Board. The proposed Project may result in impacts to jurisdictional waters, requiring a Section 401 water quality certification from the Regional Board.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) (16 U.S. Government Code [USC] 703) enacts the provisions of treaties between the United States, Great Britain, Mexico, Japan, and the Soviet Union, and authorizes the protection of nesting birds that are both residents and migrants, whether or not they are considered sensitive by resource agencies. It establishes seasons and bag limits for hunted species and protects

[1] Title 33, United States Code, Section 1341; Clean Water Act Section.

migratory birds, their occupied nests, and their eggs (16 USC 703; 50 CFR 10, 21). The USFWS (in coordination with the CDFW) administers the MBTA.

STATE REGULATIONS

State Water Code

SBMWD filed a "Petition for Change for Owners of Waste Water Treatment Plants" (WW0059) with the SWRCB on April 22, 2010 (Petition revised June 7, 2010), pursuant to Water Code Section 1211 (and in accordance with Water Code Sections 461, 13500 et seq. and 13575 et seq.) to decrease current tertiary discharge from the RIX facility to the Santa Ana River from approximately 35.7 mgd (40,000 acre-feet per year) to approximately 11.9 mgd (13,300 acre-feet per year).[2] The Petition for Change proposes the "reuse of recycled water in [SBMWD's] service area and the marketing of surplus recycled water to water agencies outside the SBMWD service area."

The SWRCB administers the Petition for Change process, which includes special provisions related to potential effects on existing instream uses, including stream habitat and species. The SWRCB process is described as follows:

> "*Wastewater treatment facilities discharge treated wastewater to many stream systems in the state. To better manage resources and facilitate water use efficiency, many municipalities are designing water re-use projects. If the water re-use project will decrease the amount of water in a stream or other waterway, the owner of the wastewater treatment plant needs to file a wastewater change petition with the Division of Water Rights (Division). To approve a wastewater change petition, the State Water Resources Control Board (State Water Board) must be able to find that the proposed change will not injure other legal users of water, will not unreasonably harm instream uses, and is not contrary to the public interest. A petition is not needed for changes in the discharge or use of treated wastewater that do not result in decreasing the flow in any portion of a watercourse, or when the discharge is directly to the ocean or a bay. Also, reductions in discharge associated with reduced plant influent due to water conservation measures are not subject to the petition requirement. All petitioners must send a copy of the petition to the California Department of Fish and Wildlife. Additionally, if the proposed project has the potential to impair the water supply of other legal users of water or instream beneficial uses, the Division will require further notice of the petition. Protestants may raise concerns about protecting their water rights, or may raise public trust concerns. A protest sets forth the protestant's objections to approval of the petition. The procedures for addressing protests are set forth in tit. 23, CCR §1701.3, et seq. Evaluation of whether water is needed to serve in-basin water rights focuses on whether the discharges result from natural flows. Natural flows do not include imported or stored water."*[3]

[2] City of San Bernardino Municipal Water Department, 2010*, Petition for Change: For Owners of Waste Water Treatment Plants*, (WW0059), www.waterboards.ca.gov/waterrights/water_issues/programs/applications/petitions/2010.shtml. Accessed on March 1, 2012.

[3] State Water Resources Control Board, 2015, Wastewater Change Petition Website, www.swrcb.ca.gov/waterrights/water_issues/programs/applications/wastewaterchange/index.shtml. Accessed November 12, 2015.

California Endangered Species Act

State-listed threatened and endangered species are protected under provisions of the California Endangered Species Act (CESA). The State of California considers an endangered species one whose prospects of survival and reproduction are in immediate jeopardy. A threatened species is present in such small numbers throughout its range that it is likely to become an endangered species in the near future, in the absence of special protection or management, and a rare species is present in such small numbers throughout its range that it may become endangered if its present environment worsens. Rare species applies to California native plants.

Activities that may result in "take" of individuals (defined in CESA as to "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill") are regulated by the California Department of Fish and Wildlife (CDFW), which administers CESA. Habitat degradation or modification is not included in the definition of "take" under CESA. Nonetheless, CDFW has interpreted "take" to include the destruction of nesting, denning, or foraging habitat necessary to maintain a viable breeding population of protected species.

The CDFW has also produced a species of special concern list to serve as a species watch list. Species on this list are either of limited distribution or their habitats have been reduced substantially, such that a threat to their populations may be imminent. Species of special concern may receive special attention during environmental review, but they do not have formal statutory protection.

California Fish and Game Code

CDFW regulates not only the discharge of dredged or fill material, but all activities that alter streams and lakes and their associated habitat. The CDFW, through provisions of the California Fish and Game Code (Sections 1601-1603), is empowered to issue agreements for any alteration of a river, stream, or lake where fish or wildlife resources may be adversely affected. Streams (and rivers) are defined by the presence of a channel bed and banks, and at least an intermittent flow of water. The CDFW typically extends the limits of their jurisdiction laterally beyond the channel banks for streams that support riparian vegetation. In these situations, the outer edge of the riparian vegetation is generally used as the lateral extent of the stream and CDFW jurisdiction. CDFW regulates wetland areas only to the extent that those wetlands are a part of a river, stream, or lake as defined by CDFW. While seasonal ponds are within the CDFW definition of wetlands, they are not part of a river, stream, or lake, and may, or may not, be subject to the jurisdiction of CDFW under Sections 1601-1603 of the Fish and Game Code.

As with the MBTA, similar provisions within the California Fish and Game Code protect all native birds of prey and their nests (FGC §3503.5), and all non-game birds (other than those not listed as Fully Protected) that occur naturally in the State (§3800). Species that are California fully protected include those protected by special legislation for various reasons, such as the California condor. Species of Special Concern is an informal designation used by CDFW for some declining wildlife species that are not proposed for listing as threatened or endangered, such as the burrowing owl. This designation does not provide legal protection, but signifies that these species are recognized as sensitive by CDFW.

California Native Plant Society (CNPS) CNPS Rare or Endangered Plant Species

Vascular plants listed as rare or endangered by the CNPS (2001), but which have no designated status under State or Federal endangered species legislation, are defined as follows:

List 1B. Plants rare, threatened, or endangered in California and elsewhere.

List 2. Plants rare, threatened, or endangered in California, but more numerous elsewhere.

List 3. Plants about which more information is needed (a review list).

List 4. Plants of limited distribution (a watch list).

LOCAL REGULATIONS

Conservation Management Plan

When the U.S. Air Force initiated the process of closing Norton Air Force Base and transferring operations and ultimately ownership of the Base airport facilities to the San Bernardino International Airport Authority (SBIAA), a portion of the eastern and southeastern airport property was placed in a Conservation Management Plan (CMP) area after negotiations with the USFWS. The property encompassing the CMP is currently under the authority of the San Bernardino International Airport Authority. The CMP identifies three (3) management areas as follows: Core Management Area-1 (CMA-1), Core Management Area-2 (CMA-2), and Open Space Management Area (OSMA-1). This area would only apply to potential pipeline alternatives discussed in Section 6, *Alternatives to the Proposed Project*.

Southern California Association of Government (SCAG) Regional Comprehensive Plan and Guide (RCPG)

Goals and policies from the Growth Management and Open Space Chapters of the RCPG are applicable to the proposed Project. Focus is placed on providing for the conservation of the region's open space resources with respect to:

- Interconnections among resources;
- Future land use decisions that will either strengthen or impair the region's ability to sustain the resources; and,
- Opportunities for inter-jurisdictional planning.

The intent of the RCPG is to conserve regional open space resources in order to ensure sustainability of such resources over time. To guide this effort, open space resources are grouped into three categories: natural lands, community open space, and farmlands and rangelands.

County of San Bernardino Development Code

Chapter 82.11, Biotic Resources (BR) Overlay, of the County of San Bernardino Development Code, includes regulations pertaining to the protection and conservation of beneficial rare and endangered plants and animal resources and their habitats, which have been identified within unincorporated areas of the county. The Overlay may be applied to areas that have been identified by a County, State or federal agency as habitat for species of unique, rare, threatened or endangered plants or animals or their habitats as listed in the County General Plan. The Chapter outlines application requirements for a Project proposed within a BR Overlay, including a biotic resources report. The Santa Ana River and other streams with

riverine and riparian habitats are considered sensitive and have been included in the Biotic Resources Overlay.

City of San Bernardino General Plan

The General Plan Natural Resources and Conservation Element contains policies related to the management of natural resources. These policies are provided below.

Goal 12.1 Conserve and enhance San Bernardino's biological resources.

Policies 12.1.1 Acquire and maintain current information regarding the status and location of sensitive biological elements (species and natural communities) within the planning area, as shown on Figure NRC-1. (NR-3)

Policies12.1.2 Site and develop land uses in a manner that is sensitive to the unique characteristics of and that minimizes the impacts upon sensitive biological resources. (LU-1)

Policies 12.1.3 Require that all proposed land uses in the "Biological Resource Management Area" (BRM), Figure NRC-2, be subject to review by the Environmental Review Committee (ERC). The Santa Ana River and other streams with riverine and riparian habitats are considered sensitive and have been included in the BRM.

Policies 12.1.4 Require that development in the BRM:

a. Submit a report prepared by a qualified professional(s) that addresses the proposed Project's impact on sensitive species and habitat, especially those that are identified in State and Federal conservation programs;

b. Identify mitigation measures necessary to eliminate significant adverse impacts to sensitive biological resources;

c. Define a program for monitoring, evaluating the effectiveness of, and ensuring the adequacy of the specified mitigation measures; and

d. Discuss restoration of significant habitats.

Goal 12.2 Protect riparian corridors to provide habitat for fish and wildlife.

Policies 12.2.1 Prohibit development and grading within fifty (50) feet of riparian corridors, as identified by a qualified biologist, unless no feasible alternative exists. (LU-1)

Policies 12.2.2 Generally permit the following uses within riparian corridors:

a. Education and research, excluding buildings and other structures;

b. Passive (non mechanized) recreation;

c. Trails and scenic overlooks on public land(s);

d. Fish and wildlife management activities;

e. Necessary water supply Projects;

f. Resource consumptive uses as provided for in the Fish and Game Code and Title 14 of the California Administrative Code;

g. Flood control Projects where no other methods are available to protect the public safety;

h. Bridges and pipelines when supports are not in significant conflict with corridor resources. (LU-1)

Policies 12.2.3 Pursue voluntary open space or conservation easements to protect sensitive species or their habitats. (NR-1)

Policies 12.2.4 Development adjacent to riparian corridors shall:

a. Minimize removal of vegetation;

b. Minimize erosion, sedimentation, and runoff by appropriate protection or vegetation and landscape;

c. Provide for sufficient passage of native and anadromous fish as specified by the California Department of Fish and Game;

d. Minimize wastewater discharges and entrapment;

e. Prevent groundwater depletion or substantial interference with surface and subsurface flows; and provide for natural vegetation buffers.

Policies 12.2.5 Permit modification of the boundaries of the designated riparian corridors based on field research and aerial interpretation data as part of biological surveys.

Goal 12.3 Establish open space corridors between and to protected wildlands.

Policies 12.3.1 Identify areas and formulate recommendations for the acquisition of property, including funding, to establish a permanent corridor contiguous to the National Forest via Cable Creek and/or Devil Canyon. The City shall consult with various federal, state and local agencies and City departments prior to the adoption of any open space corridor plan.

Policies 12.3.2 Seek to acquire real property rights of open space corridor parcels identified as being suitable for acquisition. (NR-1)

Policies 12.3.3 Establish the following habitat types as high-priority for acquisition as funds are available:

a. Habitat of endangered species;

b. Alluvial scrub vegetation;

c. Riparian vegetation dominated by willow, alder, sycamore, or native oaks; and

d. Native walnut woodlands.

Policies 12.3.4 Preserve and enhance the natural characteristics of the Santa Ana River, City Creek, and Cajon Creek as habitat areas.

Policies 12.3.5 Prevent further loss of existing stands of Santa Ana River Woolly-star (*Eriastrum densifolium sanctorum*) and Slender-horned Centrostegia (*Centrostegia leptoceras*).

4.4.8 ENVIRONMENTAL IMPACTS

Significance Criteria under CEQA

The thresholds of significance for impacts are based on the environmental checklist in Appendix G of the State CEQA Guidelines, as amended, as well as CEQA-Plus requirements. Based on these criteria, impacts on biological resources would be significant if Project implementation would do any of the following:

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or US Fish and Wildlife Service? (refer to Impact Statement 4.4-1)
- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or US Fish and Wildlife Service? (refer to Impact Statement 4.4-2)
- Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means? (refer to Impact Statement 4.4-3)
- Interfere substantially with the movement of any native resident or migratory wildlife corridors, or impede on the use of native wildlife nursery sites? (refer to Impact Statement 4.4-4)
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance? (refer to Impact Statement 4.4-5)
- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan? (refer to Impact Statement 4.4-6)

Summary of Applicable Project Design Features and Existing Laws, Ordinances, and Regulations

Any direct or indirect impacts to biological resources associated with Project implementation would be mitigated in a way that would not conflict with any existing laws, ordinances, or regulations that address biological resources (refer to Section 4.4.9, *Mitigation Measures*). Additionally, several Project Design Features and/or existing laws, ordinances or regulations will serve to minimize Project impacts, including:

1) The Project proposes to utilize existing infrastructure wherever possible, including the existing SBWRP site and existing recharge basins and reuse of existing abandoned pipelines, which reduces the extent of construction-related impacts and reduces the physical area required for conversion to long-term water supply related uses;
2) The Project proposes a phased reduction of RIX discharge to maintain essential minimum flows into the Santa Ana River from RIX, which will allow maintenance of Santa Ana River vegetation and its associated habitat, to be phased and monitored through an adaptive management program;
3) The Project will generally avoid construction and staging activities within designated areas of sensitive habitat. Where the Project cannot avoid impacts to these sensitive habitats, mitigation will be implemented as described further below;
4) The siting, design and construction of above-ground facilities will avoid sensitive biological resources (other than facilities described and mitigated for below); and

5) SBMWD will continue participation in regional Santa Ana River conservation programs including the Upper Santa Ana River HCP, currently in progress, and which includes the proposed Project as a proposed "covered activity."

BASIS FOR SANTA ANA RIVER IMPACT ANALYSIS – SUMMARY OF THE LOW FLOW STUDY

One of the Project's key environmental issues, as raised in NOP comment letters and in Petition for Change protest letters, is the Project's potential adverse effects upon the Santa Ana sucker and associated Critical Habitat. Recycled water is discharged into the Santa Ana River at both the Rialto Channel and at the RIX Facility, immediately downstream of the Rialto Channel. Recycled water has been discharged from RIX into the Santa Ana River since 1996 and has maintained continuous flows in this reach of the river. The reduction in discharge from the RIX facility associated with this project has the potential to adversely affect the Santa Ana sucker habitat. To address this concern, SBMWD conducted five technical studies:

- three technical studies to characterize the hydrology of the Santa Ana River at the Rialto Channel and the RIX Facility downstream to the MWD Crossing;
- one technical study to determine the extent of Santa Ana sucker habitat in the study area and to quantify loss of habitat from flow reduction; and
- one technical study to determine the flows needed to maintain the cobble substrate in upper reaches of the study area.

These five technical studies collectively comprise the Project's low flow study and are based on over two years of agency consultation and input from stakeholders. The Low Flow Study, including the five technical studies, are incorporated by reference in this EIR and the relevant evidence and findings are described and summarized below.

- The first three studies include an analysis of historic and current dry weather discharges and depth relationship in the Santa Ana River from the Rialto Channel downstream to the MWD Crossing: *Historic Hydrologic Analysis Dry-Weather Discharge Conditions in the Santa Ana River* (WEI 2013a). Historic aerial photography was collected from several data sources for the time period 1938 to 1977 and included the stretch of the Santa Ana River from E Street in San Bernardino, CA downstream to River Road in Corona, CA. The historic photos were used to identify river wet and dry reaches, measure discharge top width, document discharges to the river and diversions from the river, and assist in identifying reaches of potential groundwater and surface water interaction.
- *Dry-Weather Discharge and Depth Analysis of the Santa Ana River from RIX to MWD Crossing* (WEI 2013b) and *In-Depth Analysis of the Santa Ana River HEC-RAS Hydraulic Modeling Results for the River Reach between RIX and the MWD Crossing* (WEI 2014). For both studies, WEI developed a gradually-varied, steady-flow, Hydrologic Engineering Centers River Analysis System (HEC-RAS) hydraulic model for the study area between the Rialto Channel and the MWD Crossing. High-resolution bathymetry data were collected using Light Detection and Ranging (LiDAR) remote sensing in October 2012. Discharge data was measured using three USGS stream gages found in the Santa Ana River between RIX and the MWD Crossing, as well as from discharge time history data from the RIX facility and City of Rialto wastewater treatment plant. Gradually-varied, steady-flow simulations were run for several different RIX discharge scenarios and provided estimates of depth, stream width, and average column velocity for 93 transects within the study area.

- *Evaluation of the Phased RIX Flow Reduction Plan on Santa Ana Suckers, Based on Predicted Changes in Physical Habitat in the Santa Ana River, from the Rialto Drain to the MWD Crossing* (GEI 2014) presents an approach consistent with the Physical Habitat Simulation (PHABSIM) model to quantitatively evaluate useable Santa Ana sucker habitat in response to different phases of flow reduction from RIX. Habitat availability and habitat utilization relationships for depth, bottom velocity, and substrate were developed for use in PHABSIM modeling for juvenile and adult suckers using data collected by San Marino Environmental Associates (SMEA 2003, 2004). A step-wise approach was used to evaluate the relative influence of depth, velocity, and substrate variables on the useable habitat.
- *Clean Water Factory Rapid Infiltration/Extraction (RIX) Low-Flow Sediment Scour and Transport Modeling in the Santa Ana River* (Michael Baker International 2015) is a sediment transport modelling study completed to evaluate whether reduced flows from RIX would continue to adequately remove sand deposited during high-deposition storm events, in order to maintain adequate sucker habitat. A coupled fluvial hydraulics/sediment scour and transport modeling approach was used to determine whether or not discharges under dry-weather conditions from the Clean Water Factory RIX Facility can scour and clear sand blankets that could potentially bury cobble substrate in the inset channel of the Santa Ana River after a significant flood event. The fluvial model used in this study was the US Army Corps HEC-RAS model while the scour model used was the US Navy Vortex Lattice Scour-Burial Model.

Historic Analysis of Dry-Weather Conditions in the Santa Ana River

Based on their historic analysis (1938-1977) of dry weather conditions for the Santa Ana River, WEI (2013a) determined that:

- Aerial photo analysis was an adequate tool for identifying river flow patterns, wet and dry reaches of the river, stream width, discharges to the river, and diversions from the river;
- The period from 1945 to 1976 was a prolonged dry period. The Santa Ana River between E Street in San Bernardino downstream to Mission Inn Avenue Bridge in Riverside was typically a narrow, shifting, and braided channel with discontinuous discharge and dry segments. The area upstream of the Rialto Channel and the RIX facility is still a narrow braided channel with discontinuous flow and dry segments. Downstream of the Rialto Channel and the RIX facility, flows have been continuous since RIX began discharging treated wastewater into the Santa Ana River in 1996;
- The Santa Ana River downstream of the Mission Inn Avenue Bridge was typically wider and a single channel that shifted but had continuous discharge due to rising groundwater and wastewater discharges;
- Upstream of the Mission Inn Avenue Bridge, the Santa Ana River stream width ranged between 0 and 180 ft; depth ranged between 0 and 2 ft with most areas below 0.5 ft, when discharge was observed in the photos;
- Downstream of the Mission Inn Avenue Bridge, the Santa Ana River stream width ranged between 0 and 240 ft; depth ranged between 0 and3 ft, with most areas below 1 ft;
- The river channel alignment was dynamic and shifted periodically during the study period; and
- The upstream limit of groundwater contribution to the river was about 0.75 mi upstream of Mission Inn Avenue Bridge and, based on groundwater elevation data, rising groundwater was identified through to River Road.

Analysis of Current Dry-Weather Conditions in the Santa Ana River

WEI's hydrologic analysis of dry-weather discharge conditions for the Santa Ana River (WEI 2013b and 2014) determined the relationship between the current dry-weather discharge and river depth along the Santa Ana River between the RIX Facility and the MWD Crossing. The two modeling studies evaluated changes from a baseline flow level of 62.5 cfs, which includes existing RIX dry weather discharge of 53.0 cfs and an additional 9.5 cfs from the Rialto wastewater treatment plant, for each of the five proposed phases for the RIX flow reduction plan; see Table 4.4-4. There were no additional discharges influencing flow rates in the river identified with the exception of storm water from periodic storms that were not included in the dry weather conditions for the model.

Table 4.4-4: Flow Volume (CFS) Model Assumptions for Each RIX Phase[1]

Source	Baseline[2]	Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
RIX	53.0	44.9	38.4	32.2	26.3	20.8
Rialto Drain	9.5					
Model SAR Input	62.5	54.4	47.9	41.7	35.8	30.3

cfs = cubic feet per second, SAR=Santa Ana River

Notes:

1. The Project assumes phased discharge reduction approach, with additional reductions in discharge occurring every five years.
2. For the model, baseline discharge was based on average RIX discharge measured on October 18-19, 2012. Average discharge was approximately 53 cfs. Annual RIX discharge has varied from 55.7 cfs in 2010 to 48.4 cfs in 2013.

Source: City of San Bernardino Municipal Water Department 2015.

The changes in flows based on these studies are presented in Tables 4.4-5, 4.4-6 and 4.4-7, providing minimum, maximum and average depth, stream width and stream velocity for each study reach for baseline flow and the five phases of RIX reduction, respectively. In addition, as additional data and parameters become available from US Geological Survey, and others, the model would be revised to make sure the hydrologic model can be used as an accurate and meaningful aquatic habitat management tool.

Santa Ana River Discharge Reduction

Simulations from the resulting model provided estimates of depth, wetted width, and average column velocity for each transect within the study area that correspond to the phased reduction scenarios as further discussed below.

Changes in Depth

Based on the modeling results, the 52% reduction in RIX discharge from the baseline Santa Ana River flow of 62.5 cfs, to the Phase 5 flow of 30 cfs, would result in a 13% reduction in the maximum depth in Santa Ana River Study Reach 1 from 2.08 to 1.82 ft; see Table 4.4-5 below. The average of all maximum depths in Study Reach 1 would be reduced 14%, from 1.26 to 1.08 ft, for the baseline to Phase 5 flow. Study Reach 1 coincides with the greatest density of Santa Ana suckers currently, which is likely related to the consistent coarse substrate present within this reach and also to the deeper habitats available in this reach compared to downstream reaches.

The greatest percent reduction in maximum depths for each flow occurred in Study Reach 2, with maximum and average of the maximum depths for Phase 5 being reduced up to 25% and 26% from baseline, respectively. In Study Reach 3, the maximum and average of the maximum depths for Phase 5

were reduced up to 13% and 20%, respectively. However, maximum depth in Reaches 2 and 3 would still exceed one foot; 1.26 feet for Reach 2 and 1.35 feet for Reach 3.

The amount of variability in the maximum depth values was similar for all three study reaches for the baseline flow and all five phases of RIX reduction, with the difference between the maximum and minimum values generally between 1.0 and 1.3 feet.

In general, overall depths decreased less than 20% at the end of Phase 5 and the maximum depths remained above 1.35 feet for Reaches 1 and 3. For Reach 2, maximum depths decreased by 25% at Phase 5, but maximum depths remained above 1.26 feet for Reach 2. The pattern of Study Reach 1 having deeper water remained consistent compared to the other two reaches, regardless of flow. In all reaches for all phases, depths would be substantially greater than the required minimum depth of 3 cm, as defined in the Primary Constituent Elements for the Santa Ana sucker.

Table 4.4-5: Modelled Depth in Feet; Percentage of Change from Baseline

Phase	Flow[1] (cfs)	Reach 1 (n = 22)[2] Min	Max	Ave	Reach 2 (n = 33) Min	Max	Ave	Reach 3 (n = 36) Min	Max	Ave
Baseline	63	0.82	2.08	1.26	0.48	1.68	0.99	0.33	1.56	0.61
Phase 1	54	0.80	2.06	1.24	0.45	1.58	0.94	0.31	1.52	0.58
Phase 2	48	0.79	2.02	1.21	0.42	1.50	0.89	0.30	1.49	0.56
Phase 3	42	0.76	1.97	1.18	0.39	1.42	0.84	0.28	1.45	0.54
Phase 4	36	0.74	1.90	1.13	0.37	1.34	0.79	0.26	1.41	0.52
Phase 5	30	0.70	1.82	1.08	0.33	1.26	0.73	0.23	1.35	0.49
Percent Change from Baseline										
Phase 1	-14	-2	-1	-2	-6	-6	-5	-6	-3	-5
Phase 2	-24	-4	-3	-4	-13	-11	-10	-9	-4	-8
Phase 3	-33	-7	-5	-6	-19	-15	-15	-15	-7	-11
Phase 4	-43	-10	-9	-10	-23	-20	-20	-21	-10	-15
Phase 5	-52	-15	-13	-14	-31	-25	-26	-30	-13	-20

cfs = cubic feet per second

Notes:
1. Represents Santa Ana River flow at the upstream end of the study reach.
2. N values represent the number of transects evaluated per reach.
3. Note that the reaches referenced in this table will generally be referred to as Study Reaches 1, 2 and 3, and are specific to those defined in the WEI studies, and differ in geographic extent from management reaches defined by regulatory agencies (RWQCB, etc.) for the Santa Ana River.

Source: GEI 2014.

Changes in Stream Width

In Phase 5, a 52% reduction in RIX discharge from the baseline Santa Ana River flow of 63 cfs to 30 cfs would result in a reduction in average wetted width, or stream width, of 5%, from 33.5 to 31.8 ft in Study Reach 1; see Table 4.5-6. In Study Reach 2 there would be a 13% reduction in Phase 5 flow, from 35.9 to 31.2. Stream widths were much greater in Study Reach 3 than in Study Reaches 1 and 2, and showed only a 7% reduction in average width, from 73.6 to 68.3 ft in Phase 5. These reductions in stream width are

much less than the corresponding percent reduction in flows, illustrating that the reduction in the amount of stream width and associated wetted habitat is not a one-to-one relationship with reduction in flows.

Overall, average stream width exhibited little change (less than 10%) through all five phases of the Project in Study Reaches 1 and 3, and through the first four phases in Study Reach 2. As with the depth data above, general stream channel characteristics are expected to change only gradually as flows decrease.

Table 4.4-6: Wetted Widths in Feet; Percentage of Change from Baseline

	Flow[1]	Reach 1 (n = 22)[2]			Reach 2 (n = 33)			Reach 3 (n = 36)		
Phase	(cfs)	Min	Max	Ave	Min	Max	Ave	Min	Max	Ave
Baseline	63	18.8	55.1	33.5	20.67	69.5	35.9	37.7	157.4	73.6
Phase 1	54	18.8	52.7	33.2	20.67	64.4	35.2	35.8	157.4	73.1
Phase 2	48	18.8	52.7	33.0	18.87	63.2	33.5	33.9	157.4	72.1
Phase 3	42	18.8	52.7	32.6	16.21	63.2	33.0	33.9	157.4	70.8
Phase 4	36	17.9	52.7	32.1	16.21	63.2	32.3	32.0	157.4	69.6
Phase 5	30	17.9	52.7	31.8	15.06	53.1	31.2	28.2	157.4	68.3
Percent Change from Baseline										
Phase 1	-14	0	-4	-1	0	-7	-2	-5	0	-1
Phase 2	-24	0	-4	-1	-9	-9	-7	-10	0	-2
Phase 3	-33	0	-4	-3	-22	-9	-8	-10	0	-4
Phase 4	-43	-5	-4	-4	-22	-9	-10	-15	0	-5
Phase 5	-52	-5	-4	-5	-27	-24	-13	-25	0	-7

cfs = cubic feet per second

Notes:
1. Represents Santa Ana River flow at the upstream end of the study reach.
2. N values represent the number of transects evaluated per reach.
3. Note that the reaches referenced in this table will generally be referred to as Study Reaches 1, 2 and 3, and are specific to those defined in the WEI studies, and differ in geographic extent from management reaches defined by regulatory agencies (RWQCB, etc.) for the Santa Ana River.

Source: GEI 2014.

Changes in Stream Velocity

Study Reach 1 had the greatest reduction in velocity from baseline for each flow reduction scenario; see Table 4.4-7. Average velocity in Study Reach 1 was reduced by 41%, from 1.77 to 1.04 ft/s for baseline to Phase 5 flows. In Study Reach 2, this reduction from baseline to Phase 5 flow, resulted in a 22% reduction in velocity from 1.62 to 1.27 ft/s, while in Study Reach 3 velocity was reduced 10% from 1.51 to 1.36 ft/s. The velocities in Phase 5 are still substantially higher than the required minimum flow of 0.01 ft/s, as defined in the Primary Constituent Elements for Santa Ana sucker. Most sucker species, including the Santa Ana sucker, show greater utilization at low velocities and decreasing utilization as velocities increased (GEI 2014).

The proposed reduction in discharges from RIX to the Santa Ana River would not substantially alter the existing drainage pattern of the river because it flows within an inset, or low flow channel, through the Project site for most, if not all, of its course downstream. As such, the drainage pattern of the Santa Ana

River would not be impacted, as it is confined by the existing channelization. Reduction in flow from the RIX facility would result in less water and, therefore, more capacity to accommodate storm flows within the River. The change in flow associated with the reduction of RIX flow would be negligible due to the large capacity of the Santa Ana River to accommodate low flows and storm flows. The Project would have a negligible impact on both flows within the Santa Ana River in regards drainage patterns. While impacts would not be significant, and mitigation is not required, Mitigation Measure BIO-7, would provide for the development and implementation of an adaptive management plan that would include hydrologic performance standards such as measurements of stream depth, stream width, and stream velocity in order to assess potential changes in flows and drainage patterns as they may relate to maintaining Santa Ana sucker habitat. This measure will ensure that changes to flow patterns, which are expected to be minimal, would be further reduced and any adverse effects that may be associated with changes in flow patterns would also be reduced.

Table 4.4-7: Modelled Velocities in Feet per Second; Percentage of Change from Baseline

	Flow[1]	Reach 1 (n = 22)[2]			Reach 2 (n = 33)			Reach 3 (n = 36)		
Phase	(cfs)	Min	Max	Ave	Min	Max	Ave	Min	Max	Ave
Baseline	63	1.36	2.26	1.77	0.96	2.22	1.62	0.95	2.01	1.51
Phase 1	54	1.20	1.99	1.57	0.87	2.00	1.53	0.94	1.96	1.46
Phase 2	48	1.13	1.79	1.42	1.04	1.92	1.48	0.93	1.91	1.43
Phase 3	42	1.01	1.61	1.28	0.95	1.80	1.41	0.96	1.90	1.40
Phase 4	36	0.90	1.44	1.16	0.90	1.70	1.33	1.00	1.87	1.37
Phase 5	30	0.79	1.37	1.04	0.79	1.67	1.27	0.98	1.80	1.36
Percent Change from Baseline										
Phase 1	-14	-12	-12	-11	-9	-10	-6	-1	-2	-3
Phase 2	-24	-17	-21	-20	8	-14	-9	-2	-5	-5
Phase 3	-33	-26	-29	-28	-1	-19	-13	1	-5	-7
Phase 4	-43	-34	-36	-34	-6	-23	-18	5	-7	-9
Phase 5	-52	-42	-39	-41	-18	-25	-22	3	-10	-10

cfs = cubic feet per second

Notes:
1. Represents Santa Ana River flow at the upstream end of the study reach.
2. N values represent the number of transects evaluated per reach.
3. Note that the reaches referenced in this table will generally be referred to as Study Reaches 1, 2 and 3, and are specific to those defined in the WEI studies, and differ in geographic extent from management reaches defined by regulatory agencies (RWQCB, etc.) for the Santa Ana River; see Exhibit 4.4-1.

Source: GEI 2014.

Modeling of Santa Ana Sucker Habitat in the Santa Ana River

Using the hydrologic data generated by WEI in their modeling of hydrologic conditions in the Santa Ana River between the Rialto Drain and the MWD Crossing (WEI 2013b and 2104), as well as habitat studies of sucker by SMEA (2003 and 2004), GEI quantified the potential impacts to sucker habitat from phased reductions in flows from RIX (GEI 2014). Habitat utilization curves based on depth and substrate were developed by GEI for use in the Physical Habitat Simulation System (PHABSIM) modeling for juvenile and adult Santa Ana suckers. PHABSIM is a component of the Instream Flow Methodology (IFIM) (Bovee 1982)

and is used for evaluating the effects of changes in flow on fish habitat availability in streams. The final step in the modeling process was to combine the Santa Ana sucker utilization curves with the modeled hydraulic data to produce the quantity of useable habitat (or weighted usable area (WUA)) for juveniles and adult sucker for the baseline flow and the five phases of RIX reduction. Tables 4.4-8 and 4.4-9 and related Figures 4.4-1 and 4.4-2 provide a summary of the modeled WUA for each phase within each study reach for adult and juvenile suckers for a combined depth and substrate model. Depth data was from WEI's hydrologic modeling. Substrate data was not modeled by WEI, but by estimating substrate as a separate constant for each study reach, substrate was incorporated into the model by GEI. The addition of substrate into the model as a constant resulted in decrease in total available habitat for all three study reaches compared to modeling depth alone. Adult sucker weighted useable habitat was greatest in Study Reach 1 and lowest in Study Reach 3 for the baseline flow and for each of the five phases of RIX reduction. The decrease downstream in suitable adult habitat is a function of deeper habitat becoming less common downstream and substrate characteristics becoming less suitable. The amount of suitable juvenile habitat was greater for all flows and study reaches compared to suitable adult habitat (see Table 4.4-9). For all three study reaches, suitable juvenile habitat decreased with decreasing flow due to associated decreases in depth.

Table 4.4-8: Adult Santa Ana sucker Weighted Usable Area (WUA) and Percent Change by RIX Phase for each Reach[1]

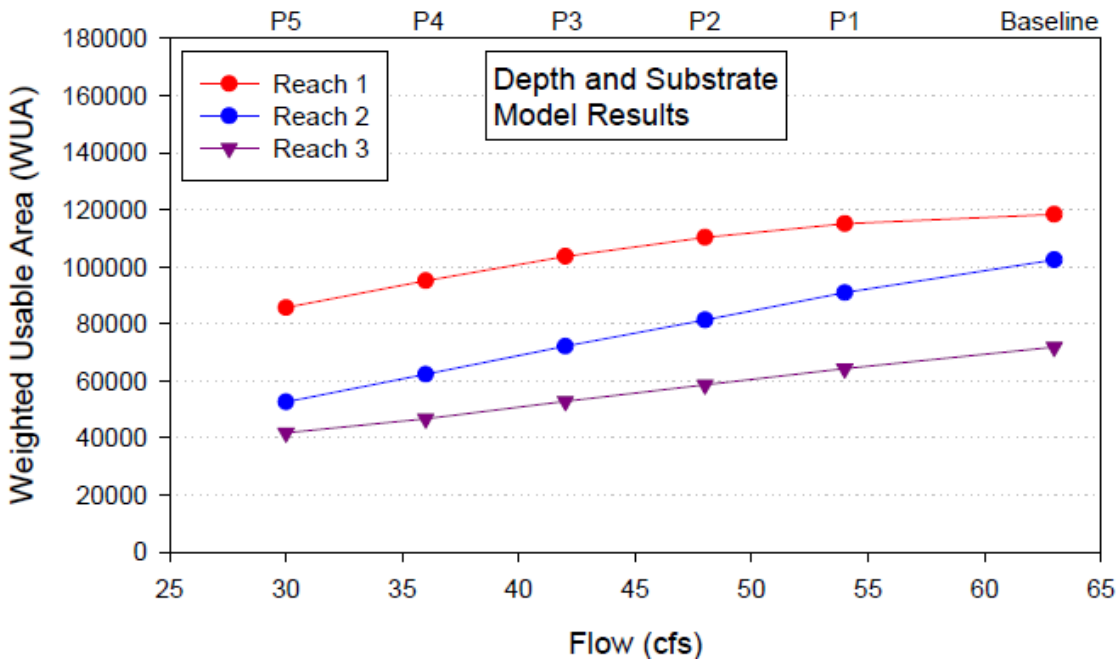
		Reach 1 (n = 22)[2]			Reach 2 (n = 33)			Reach 3 (n = 36)		
Phase	Flow[3] (cfs)	WUA (sq ft)	% change from baseline	WUA as % of total area at baseline	WUA (sq ft)	% change from baseline	WUA as % of total area at baseline	WUA (sq ft)	% change from baseline	WUA as % of total area at baseline
Baseline	63	118,449	--	32.2	102,445	--	13.6	71,931	--	4.5
Phase 1	54	115,105	-2.7	31.3	90,927	-11.2	12.1	64,307	-10.6	4.0
Phase 2	48	110,369	-6.8	30.0	81,400	-20.5	10.8	58,634	-18.5	3.6
Phase 3	42	103,682	-12.5	28.2	72,192	-29.5	9.6	52,951	-26.4	3.3
Phase 4	36	95,163	-19.7	25.9	62,352	-39.1	8.3	46,685	-35.1	2.9
Phase 5	30	85,714	-27.6	23.3	52,687	-48.6	7.0	41,697	-42.0	2.6

cfs = cubic feet per second

Notes:
1. Note that the reaches referenced in this table will generally be referred to as Study Reaches 1, 2 and 3, and are specific to those defined in the WEI studies, and differ in geographic extent from management reaches defined by regulatory agencies (RWQCB, etc.) for the Santa Ana River.
2. N values represent the number of transects evaluated per reach.
3. Represents Santa Ana River flow at the upstream end of the study reach.

Source: GEI 2014.

Figure 4.4-1: Adult Santa Ana sucker WUA by RIX Phase for each Study Reach



Notes:

Top x-axis: adult Santa Ana sucker weighted usable area (sq ft) for each reach for baseline, the five phases of RIX reduction.

Bottom x-axis: flow in the Santa Ana River at the upstream end of the study area.

Source: GEI 2014.

Table 4.4-9: Juvenile Santa Ana sucker Weighted Usable Area (WUA) and Percent Change by RIX Phase for each Reach[1]

		Reach 1 (n = 22)[2]			Reach 2 (n = 33)			Reach 3 (n = 36)		
Phase	Flow[3] (cfs)	WUA (sq ft)	% change from baseline	WUA as % of total area at baseline	WUA (sq ft)	% change from baseline	WUA as % of total area at baseline	WUA (sq ft)	% change from baseline	WUA as % of total area at baseline
Baseline	63	125,816	--	34.2	116,448	--	15.5	100,420	--	6.2
Phase 1	54	123,447	-1.9	33.6	108,175	-7.1	14.4	90,916	-9.5	5.6
Phase 2	48	120,030	-4.6	32.7	100,444	-13.7	13.4	83,059	-17.3	5.2
Phase 3	42	115,037	-8.6	31.3	91,366	-21.5	12.2	74,818	-25.5	4.6
Phase 4	36	108,462	-13.8	29.5	82,576	-29.1	11.0	66,750	-33.5	4.1
Phase 5	30	101,165	-19.6	27.5	73,079	-37.2	9.7	59,223	-41.0	3.7

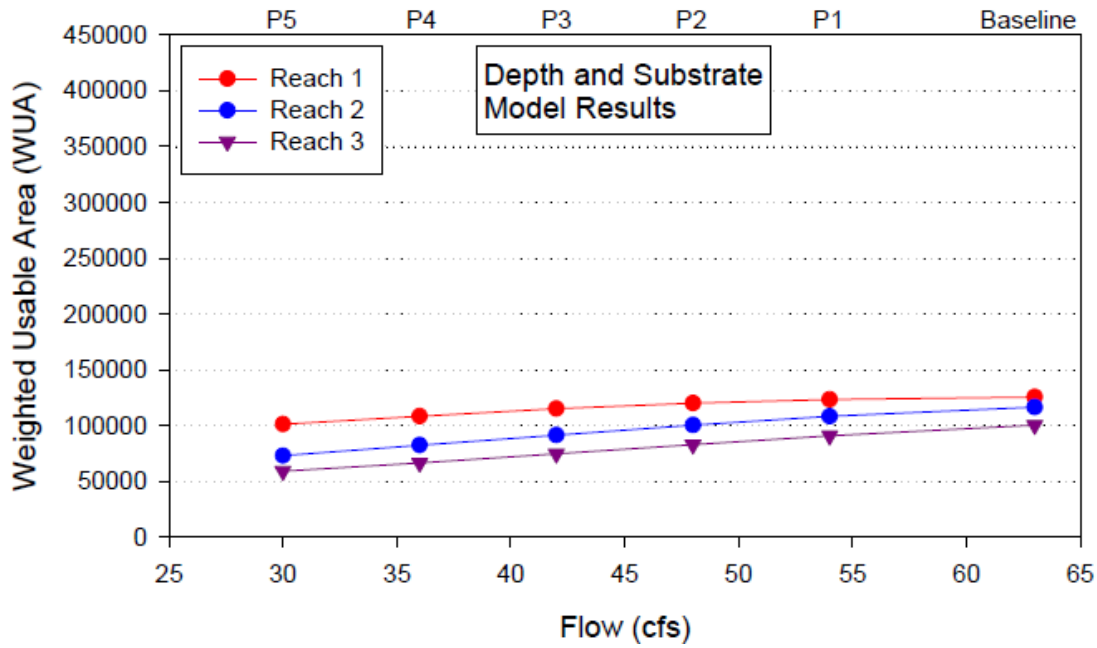
cfs = cubic feet per second

Notes:

1. Note that the reaches referenced in this table will generally be referred to as Study Reaches 1, 2 and 3, and are specific to those defined in the WEI studies, and differ in geographic extent from management reaches defined by regulatory agencies (RWQCB, etc.) for the Santa Ana River.
2. N values represent the number of transects evaluated per reach.
3. Represents Santa Ana River flow at the upstream end of the study reach.

Source: WEI 2014.

Figure 4.4-2: Juvenile Santa Ana sucker WUA by RIX Phase for each Study Reach



Notes:

Top x-axis: juvenile Santa Ana sucker weighted usable area (sq ft) for each reach for baseline, the five phases of RIX reduction.

Bottom x-axis: flow in the Santa Ana River at the upstream end of the study area.

Source: GEI 2014.

The potential for impacts to Santa Ana sucker were based on the modeled changes in hydrologic conditions and resulting changes in the amount of useable habitat. Changes in amount of useable habitat based on percent change from baseline was used as the evaluating tool. Changes less than 10% were recognized as being within the range of natural variability and thus unlikely to result in adverse effects to sucker habitat that would be measurable or of perceptible consequence to the species. Changes of less than 10 percent were described as having "no impact." Changes from 10 to 25% were characterized as potentially measureable, but not substantial, likely not outside the range of natural variability, and described as having "less than significant impact." Changes greater than 25% were considered to be measurable, substantial or potentially substantial, outside the range of natural variability, and were described as having "potentially significant impact."

The reduction in adult WUA from baseline for Study Reach 1 was 2.7%, 6.8%, 12.5%, 19.7% and 27.6% for Phases 1 through 5, respectively (Table 4.4-8). Juvenile WUA did not exceed a 10% reduction from baseline until Phase 4 (Table 4.4-9). The greater negative impact designations in the later phases are largely associated with reduction in depth which would indicate that depth is an important habitat variability in influencing sucker abundance.

For Study Reaches 2 and 3, the reduction in adult WUA from baseline exceed 10% during Phase 1 but did not exceed 25% until Phase 3. For juvenile sucker, reductions in WUA were less than 10% from baseline for Phase 1, between 10% and 25% for Phases 2 and 3, and greater than 25 % for Phases 4 and 5. For Study Reaches 2 and 3, the actual reductions would likely be less than the modeled predictions because these two study reaches were modeled based on stream depths that represent more of an average value based on the trapezoidal stream geometry used in the model, as opposed to Study Reach 1 that used

actual cross sectional data for the stream bottom channel shape from field measurements. In fact, the boundary for coarse substrate in Study Reach 2 has been measured to extend from the upper 25 % of the study reach to 100% of the study reach. And Study Reach 3 has relatively poor substrate conditions, primarily sand, with coarser substrate confined to discrete areas of scour located along stream banks and islands that provide additional depth and coarse substrate that is not accounted for in the model. Based on these actual habitat conditions, which were not reflected in the model results for these two reaches, impacts to juvenile WUA would be expected to be less than predicted in the model

Further, GEI noted that impacts designations are based on modeling a static channel, where changes in hydraulic characteristics and habitat availability are based only on reduction in flows from RIX. In reality, the Santa Ana River is a very dynamic river with winter floods capable of scouring away riparian vegetation and islands, relocating the active channel and redistributing substrate. Thus, it is likely that the channel should adapt to reduction in flows from RIX and will be periodically reset from flooding events.

GEI concluded that the modeled effects to Santa Ana sucker usable habitat shown in Tables 4.4-8 and 4.4-9 are conservative. Given the general tolerance and resiliency of sucker, as well as the predicted changes in habitat from reduced RIX flow in context of changes to the channel that occur during storm events, Project-related reductions in flow are likely to result in lower level of impacts that what was predicted by the model.

It needs to be noted that historically, Santa Ana sucker have shown a preference for populating Study Reach 3 within areas of scour associated with stream banks and margins of vegetated islands (GEI 2014). Although these habitat features are still present today, Santa Ana sucker have shifted their population upstream to Study Reach 1, which now offers the deeper habitats and coarse substrates that the sucker prefer. Based on modeling results and the interpretation of these results, it was found that Phases 1 and 2 will have a less than 10% change in available Santa Ana sucker habitat in all study reaches (GEI 2014). Potential impacts greater than 10% are not expected to occur until Phase 3 and only in Study Reaches 2 and 3, and these impacts would not occur for at least 10 years after Project implementation. It is important to note that even with the reductions in average depth in Study Reach 3 (which historically has supported Santa Ana sucker), the localized deeper areas of scour along stream banks and island edges should remain as they do now and before RIX discharge was added to the River.

The phased approach to reducing discharge provides the opportunity to design and implement a biological monitoring and adaptive management approach for effectively managing the stream environment through the various phases of flow reduction from the RIX Facility. The expectation is that with the acquisition of additional data during monitoring and refinement of the habitat model, the predicted impacts will be further reduced for each of the study reaches. Continued monitoring and model refinement to better reflect actual site conditions will ensure that any trend in adverse conditions/impacts can be noted early and adaptive management measures developed and implemented early in response to the identified issue. Trends that will need to be monitored include: the actual reduction in average depths; the continued availability of deeper pools within each study reach; the continued availability of coarse substrate throughout Study Reach 1 and along areas of scour in Study Reaches 2 and 3; loss of wetted width greater than 10% for any one study reach; loss and/or other changes in riparian habitat; and changes in Santa Ana sucker population distribution.

Low Flow Sediment Scour and Transport for the Santa Ana River

Bottom substrate or sediment is an integral component of suitable Santa Ana sucker habitat. Concern was raised that the reduced flows from RIX would hinder the hydrologic processes of sediment transport and

scour needed to maintain the coarser substrate in sucker habitat. Michael Baker International (2015) developed a low-flow sediment scour and transport model to answer the question of whether the phased reduction in flows from RIX would hinder the removal of episodic sandy deposition that occurs during storm events. Specifically, would the reduced flows from RIX still be able to scour the sandy patches off the cobble substrate and flush the scoured sands downstream following periodic storm events and in what timeframes.

The baseline conditions of the model were created to reflect the type and amount of substrate recorded during a 2015 survey (Michael Baker 2015). See Exhibit 4.4-3 photographs of baseline conditions and Exhibits 4.4-4 and 4.4-5 of 27 cross sections (approximately 500 feet apart) for the study reaches. Using these data, the following modeling goals were established for Study Reaches 1 and 2:

Study Reach 1: RIX to 0.6 miles downstream of Riverside Avenue

- Station 46132 to 42975: 100% cobble/gravel exposure
- Station 42975 to 40475 95% cobble/gravel exposure with 5% sand
- Station 40475 to 36462 75 % cobble/gravel exposure with 25% sand
- Station 36462 to 32586 50% cobble/gravel exposure with 50% sand

Study Reach 2: 0.6 miles downstream of Riverside Avenue to 0.6 miles downstream of Mission Inn Avenue

- Station 32586 to 18976 50% cobble/gravel exposure with 50% sand

The model was run for 10 different stream flow rates normalized to the Riverside Avenue Bridge site: Q = 0 mgd, Q = 4.8 mgd, Q = 6.1 mgd, Q = 19.5 mgd, Q = 23.6 mgd, Q = 26.9 mgd, Q = 29 mgd, Q = 35.1 mgd, Q = 40.4 mgd and Q = 64 mgd. For each of these flow rates, the model was run until the modeling goals were achieved for cobble/gravel exposures in Study Reach 1 and Study Reach 2 as described above. A detailed analysis of the results from the modeling is present in Appendix E, Figures 9-17. The modeling shows that scour and the resulting exposure of cobble/gravel substrate is not uniform following burial of a post-storm blanket. There are regions of scour hot spots where cobble and gravel will be exposed very rapidly, resulting in areas that will provide immediate available, post-storm suitable substrate for Santa Ana sucker.

Figure 4.4-3, shows the simulated scour history of the sand blanket over cobble/gravel riffles in the combined Study Reach 1 and Study Reach 2 sections of the Santa Ana River as a function of sustained discharge rates in the inset channel. Scour and transport does not occur uniformly over time. Rather, it begins at a slow rate but, as larger cobble is exposed, vortex shedding and scour is created in the wake of the exposed cobbles and scour and transport rates increase quickly. The process continues to accelerate over time until most of the cobble in the given area is exposed. A review of Table 4.4-10, shows that scour exposes cobble/gravel back to baseline levels throughout Study Reach 1 in 5.8 days when insert channel flow rates are equivalent to the 2014 RIX discharge average of Q = 29 mgd.

Figure 4.4-3: Simulated Scour in Study Reaches 1 and 2 Based on Flow Rate

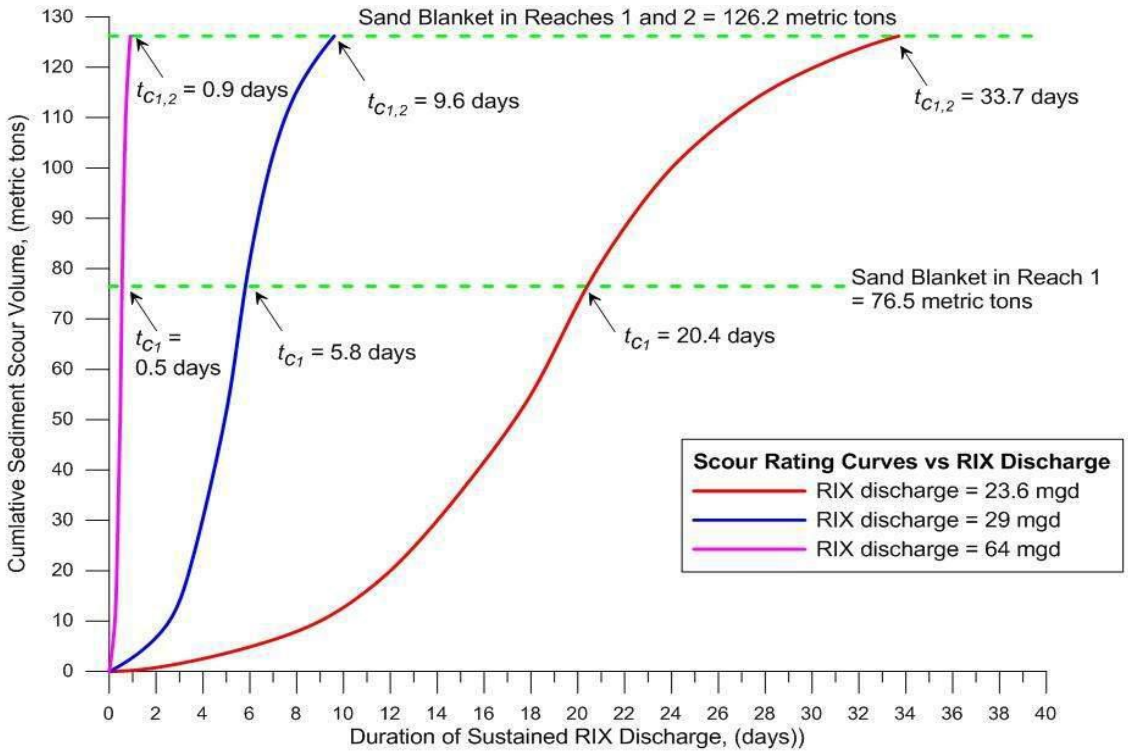


Figure 19: Simulated scour history of sand blanket over gravel/cobble riffles in the combined Reach-1 and Reach-2 sections of the Santa Ana River as a function of flow rates in the inset channel.

Notes:

Simulated scour history of sand blanket over gravel/cobble riffles in the combined Study Reaches 1 and 2 cross sections, as a function of flow rates in the inset channel.

Source: Michael Baker International 2015.

Table 4.4-10: Sediment Transport and Scour based on Stream Flow

Inset Channel Flow Rate[1]	Sediment Transport Rate (metric tons/day)		Duration to Scour Goal (days)	
	Initial	Average	76.5 tons of sand	126.2 tons of sand
23.6	0.46	3.75	20.4	33.7
29	4.96	13.2	5.8	9.6
64	86.5	42	0.5	0.9

Notes:

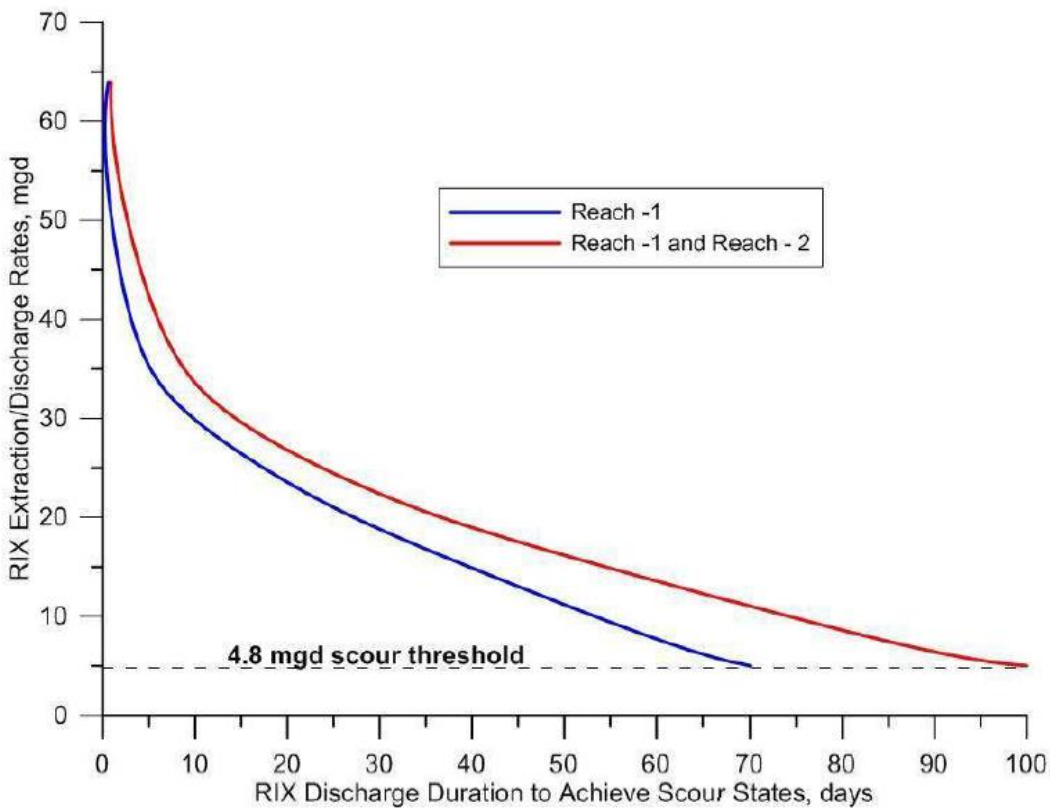
1. At Riverside Avenue Bridge

Source: Michael Baker International 2015.

For Study Reaches 1 and 2 combined, the cobble/gravel becomes exposed back to baseline levels in 9.6 days. However, the scour and transportation rates are highly non-linear and can be increased dramatically to achieve scour goals in Study Reach 1 and 2 in less than a day at flow rates approaching the maximum permitted discharge rate of Q = 64 mgd. Extrapolating the data for the three rates to all ten flow rates, a

graphic was created, Figure 4.4-4 which shows continuous projections of discharge duration needed to clear post-flood sand coverage from the cobble/gravel bed. From these results, it was concluded that the minimum threshold for achieving sand scour in the inset channel occurs at a discharge rate of Q = 4.8 mgd. It was also determined that the restoration of the 2015 baseline conditions of the river following a rare, high-deposition, flood event are within the operating capabilities of RIX even at normal daily flows or discharge rates. However, modeling has also shown that scouring can be greatly accelerated by releasing high flow pulses following a storm event. The high pulse will cause scour to begin immediately in several "hot spots" with the scour process continuing to accelerate over time until the sand layer has been removed (Michael Baker 2015). This expectation is further enhanced by the fact that coverage of the cobble bed by sand is a wet-weather occurrence, when percolation losses of stream flow are expected to be minimal along Study Reach 1.

Figure 4.4-4: RIX Discharge Duration to Achieve Scour Goals and Restore Baseline Cobble in Reaches 1 and 2



Notes:

Scour goal is based on removal of 76.5 metric tons of sand blanket from Study Reach 1 and a total of 126.2 metric tons of sand from the combined sections of Study Reaches 1 and 2.

Source: Michael Baker International 2015.

Impact 4.4-1: Habitat Modification. Would the project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or US Fish and Wildlife Service? *Level of significance: Less than Significant Impact with Mitigation Incorporated.*

Species determined to have the potential to occur within the general vicinity are presented in Table 4.4--2, *Sensitive Habitats and Potentially Occurring Sensitive Plant and Wildlife Species*. The following analysis is restricted to those species that, based on habitat requirements and known distribution, are expected to have a moderate or higher potential to occur.

Listed and Special-Status Plant Species

Based on the 2014 habitat assessment and focused surveys, there are no federally or State listed plant species known or expected to occur within the facility corridor of the East Twin Creek Spreading Grounds and Waterman Basins study area. All federally or State listed plants are presumed absent or are expected to have a low potential to occur.

Only one special-status plant species was identified during a CNDDB and CNPS search as having moderate or higher potential to occur: Parry's spineflower. Parry's spineflower was found within the Waterman Basins in 1993; due to ongoing maintenance activities, only marginal habitat occurs in the Waterman Basins and East Twin Creek Spreading Grounds, with the best habitat being in the lower basins where vegetation is less disturbed. This species was not observed during a habitat assessment in 2014 or during focused sensitive plant surveys conducted in the Waterman Basins in 2015, and is presumed to not be present on the project site. Therefore, there would be no direct impacts to special-status plant species would occur.

Construction activity could result in the spread of fugitive dust throughout the construction area or of non-native weed seeds via clothing, tires, or vehicle undercarriages. The spread of weed seeds could indirectly impact sensitive plant species over time. In addition, vehicle travel and pedestrian foot traffic within the Project boundaries could result in the trampling of plant species. Excavation and fill for the pipeline could cause changes to soil compaction levels, potentially changing the microhabitat that plants depend upon and changing plant compositions. Mitigation Measure BIO-1 would require the implementation of a Worker Environmental Awareness Program to educate construction workers of the area's environmental concerns and conditions. Mitigation Measure BIO-2 would prevent the spread of non-native weed seeds. Impacts to sensitive plant species would be less than significant.

MITIGATION MEASURES

BIO-1 **Worker Awareness.** A Worker Environmental Awareness Program (WEAP) shall be implemented to educate all construction personnel of the area's environmental concerns and conditions, including special-status species, and relevant environmental protection measures. The WEAP will constitute the conveyance of environmental concerns and appropriate work practices, including spill prevention, emergency response measures, protection of sensitive resources, and proper implementation of Best Management Practices, to all construction and maintenance personnel. All new workers that arrive after construction has started shall be trained under the WEAP within two days' time.

BIO-2 **Weed Control.** Prior to construction, all heavy equipment that will be left on-site in laydown yards shall be washed offsite and cleaned of all potential non-native weed seeds. Worker trucks shall be washed daily if they will be driven off road or shall otherwise be left parked in laydown yards or on existing roads during construction.

As discussed above, Mitigation Measures BIO-1 and BIO-2 would reduce Project impacts to sensitive and special status plant species to a less than significant level.

Listed Wildlife Species

This Project is likely to result in both direct construction impacts and indirect operational impacts, with some listed wildlife species only indirectly affected. The species below are distinguished between those that could be directly or indirectly affected by the Project and those that would only be indirectly affected by the post-construction operations phase of the Project.

The following species could be directly affected by construction-related activity. Direct impacts would be expected as a result of construction activity, i.e. activity related to heavy equipment, Project personnel, or the building of new facilities. Some of these impacts may extend into the operational phase of the Project (e.g., construction-related habitat loss) or may only occur indirectly after construction (e.g. operations-related habitat loss), but the potential for most direct impacts (e.g., temporary displacement due to noise) would otherwise begin at the time of construction and end when construction is complete.

San Bernardino Kangaroo Rat

Based on trapping efforts conducted in August 2015 in the Waterman Basins, SBKR is determined to currently be absent from the Project site and no direct impacts would be expected to occur. However, SBKR may reestablish in the Project site in the future, particularly in the Waterman Basins. If SBKR are determined to be present at a future point, the Project could eventually result in decreased habitat from the increase in flooding. If present in either the Waterman Basins or East Twin Creek Spreading Grounds, SBKR burrows could be flooded and individual SBKR lost. SBKR individuals could also be displaced by the regular influx of water. Mitigation Measure BIO-3 would require pre-construction small mammal trapping within the Waterman Basins and East Twin Creek Spreading Grounds and, if SBKR are found, that SBMWD consult with USFWS for an incidental take permit.

Mitigation Measures BIO-4 would require all work areas to be visibly flagged and staked prior to construction. Mitigation Measure BIO-1 would require the implementation of a WEAP to educate construction personnel of the area's environmental concerns and conditions.

MITIGATION MEASURES

BIO-3 **Small mammal trapping.** SBMWD shall conduct a pre-construction small mammal trapping study of the Waterman Basins and East Twin Creek Spreading Grounds in order to determine the presence/absence of San Bernardino kangaroo rat or other special status wildlife species. If San Bernardino kangaroo rat or any other special status wildlife species are found within the Basins and Spreading Grounds, ground disturbing activities will not occur within these areas until SBMWD consults with US Fish and Wildlife Service and/or California Department of Fish and Wildlife and determines if avoidance measures are possible or if an incidental take permit is required before construction can resume within the Waterman Basins and/or the Spreading Grounds. SBMWD will comply with all permit conditions imposed on the Project as a result of consultation.

BIO-4 **Flagging.** Following any preconstruction surveys required, all work areas and access routes will be visibly flagged or staked prior to construction, careful to avoid any identified special status plant or wildlife species. All construction activities will be limited to the designated work areas and access routes except with prior authorization from US Fish and Wildlife Service and/or California Department of Fish and Wildlife.

BIO-1 Refer to mitigation measure within this section above.

With implementation of measures BIO-1, BIO-3, and BIO-4, Project impacts to SBKR would be less than significant.

Least Bell's Vireo (LBVI)

LBVI was not observed during the habitat assessments. However, San Bernardino County Flood Control District (SBCFCD) has documented LBVI in the Waterman Basins. This species is also known to occur within the riparian habitat along the Santa Ana River and its tributaries. The CNDDB shows a 2013 sighting of a family unit within the facility corridor, just upstream of the confluence of the Santa Ana River and East Twin Creek. This record is approximately 0.4 mile east of the SBWRP but is approximately 5.5 and 6.6 miles south of the East Twin Creek Spreading Grounds and Waterman Basins, respectively. The closest CNDDB record to the Waterman Basins is a 2008 sighting of two males outside of the facility corridor in Badger Canyon approximately 2.25 and 3.1 miles northwest of the Waterman Basins and East Twin Creek Spreading Grounds, respectively. LBVI designated Critical Habitat, the Santa Ana River unit, is located over 9 miles southwest of the facility corridor (59 FR 4845 4867). Focused surveys by Michael Baker within the Waterman Basins in summer 2015 identified one male LBVI on-site. This individual was detected during one survey, and no other indications of LBVI presence or of nesting were found during the remainder of the focused survey effort.

This species was documented at the southern end of the facility corridor in 2013 within suitable habitat in the Santa Ana River. In addition to habitat in the Santa Ana River, there is also a small patch of Southern Willow Scrub that provides suitable habitat for LBVI in the Waterman Basins; LBVI has previously been documented in these basins. If LBVI are found to be breeding in the Project's construction footprint, there could be direct effects from the construction activities and/or from vegetation removal. Impacts would include displacement, disruption of breeding/nesting activities, and mortality. Mitigation Measure BIO-5 would ensure that any necessary construction near this vireo habitat would be timed to be outside of the season in which LBVI is present; LBVI are generally present from mid-March to mid-September, and within the broader avian breeding season identified in BIO-5. If it would not be possible to avoid construction within the avian breeding season, Mitigation Measure BIO-5 would require pre-construction nesting bird clearance surveys, and nest protection, and Mitigation Measure BIO-6 would require protocol surveys for LBVI where suitable habitat is near work areas.

Mitigation Measure BIO-4 would require all work areas to be visibly flagged and staked prior to construction. Mitigation Measure BIO-1 would require the implementation of a WEAP to educate construction personnel of the area's environmental concerns and conditions.

MITIGATION MEASURES

BIO-1 Refer to mitigation measure within this section above.

BIO-4 Refer to mitigation measure within this section above.

BIO-5 **Construct outside avian breeding season.** Where feasible, construction should occur outside of the avian breeding season (generally January 1 – August 30). If construction occurs during the avian breeding season, a qualified biologist shall conduct a preconstruction nesting bird clearance survey in all work areas and all areas within 500 feet of the general construction zone. This shall occur no more than one week prior to construction. Active nests shall be given an avoidance buffer, typically 300 feet for non-listed, non-raptor species, and 500 feet for listed and raptor species. This buffer shall remain in place until the young fledge or the nest otherwise becomes inactive, and may be reduced with approval from with US Fish and Wildlife Service and/or California Department of Fish and Wildlife.

BIO-6 **Least Bell's vireo (LBVI) surveys.** If construction is scheduled to occur during the avian breeding season, a qualified biologist shall perform protocol nesting bird surveys for LBVI in suitable habitat prior to the start of construction. Protocol surveys shall last for the entire survey period of eight surveys between April 10 and July 31 unless LBVI is observed prior to survey completion or the surveys are otherwise concluded by US Fish and Wildlife Service (USFWS) and/or California Department of Fish and Wildlife (CDFW). Survey results shall be reported to the SBMWD, USFWS, and CDFW. If this species is found during surveys, appropriate nest protection measures for listed species as described in BIO-5 shall be incorporated.

Implementation of Mitigation Measures BIO-1, BIO-4, BIO-5, and BIO-6, would reduce Project impacts to less than significant.

Listed Species that May be Indirectly Affected

The following listed species may be indirectly affected by Project-related operational activities, primarily reduced discharges into the Santa Ana River downstream of the Project site. These impacts would not occur until after construction is complete and the Project is in the implementation phase, and could continue to occur indefinitely as long as the Project is in operation.

San Bernardino Kangaroo Rat

SBKR was not observed during Project-related habitat assessments (2015a and 2015b). This species is known to occur in and around streambeds covered in Riversidean Alluvial Fan Sage Scrub that experience fluvial scouring. There is marginal habitat for this species in the upper portion of the Project footprint but impacts are not likely to occur. According to the SBCFCD, SBKR has been documented in the Waterman Basins. SBKR Critical Habitat Unit 1, Santa Ana River and Wash, runs along the Santa Ana River. Trapping was conducted in the Waterman Basins in August 2015 and no SBKR were found.

This species is known to occur in the general area, particularly in and around the Lytle Creek Wash and the Santa Ana River. It has also been previously documented in the Waterman Basins. Construction is designed to avoid areas of known SBKR occurrences by staying primarily in urban and/or developed areas. Marginal habitat for this species is located in the upper portion of the site in the Waterman Basins and East Twin Creek Spreading Grounds. SBKR has a moderate potential to occur within the Project footprint, although it is currently presumed to be absent based on the trapping that was conducted in August 2015.

If present in the future in either the Waterman Basins and/or East Twin Creek Spreading Grounds, kangaroo rat burrows could be flooded and/or rats could be displaced by the regular influx of water. Indirect effects to SBKR could potentially occur in downstream of the RIX Facility, if reduced flows decrease the amount of SBKR habitat adjacent to the Santa Ana River in downstream areas.

Mitigation Measure BIO-3 will require annual inspection for SBKR, and coordination with the USFWS if SBKR is present. Mitigation Measure BIO-4 would require all work areas to be visibly flagged and staked prior to construction. Mitigation Measure BIO-1 would require the implementation of a WEAP to educate construction personnel of the area's environmental concerns and conditions.

MITIGATION MEASURES

BIO-1 Refer to mitigation measure within this section above.

BIO-3 Refer to mitigation measure within this section above.

BIO-4 Refer to mitigation measure within this section above.

Mitigation Measures BIO-1, BIO-3 and BIO-4 would mitigate impacts to SBKR to a less than significant level.

Santa Ana Sucker

Based on annual monitoring of Santa Ana sucker populations within the Santa Ana River by San Marino Environmental Associates (SMEA 2010), this species is present in several known locations in an 8.7-mile length of the Santa Ana River between the Rialto Drain and the MWD Crossing (GEI 2014). It is currently most common in the upper portions of this stretch (near the Rialto Drain downstream to Riverside Avenue), where deeper water and gravelly substrates are more conducive to its habitat needs. Santa Ana sucker Critical Habitat Subunit 1B, Santa Ana River, extends from South Tippecanoe Avenue within the Santa Ana River southwest to the Prado Flood Control Basin (75 FR 77962 78027); refer to Exhibit 4.4-2, *Critical Habitat.*

While direct impacts to Santa Ana sucker are not expected during construction, indirect operational impacts may occur in the Santa Ana River as a result of reduced discharges from the RIX facility into the Santa Ana River. Potential indirect impacts that may occur from reduced flow as a result of the Project include the long-term loss of in-stream habitats due to reduced water availability, reduction of exposed gravel beds due to reduced water velocity and associated sand transport, increased water temperature, increased stress, reduced fitness, reduced survivorship of eggs, and loss and/or degradation of riparian habitat along the Santa Ana River due to a reduction in water. Hydrologic modeling by Wildermuth Environmental, Inc., habitat modeling conducted by GEI Consultants, Inc. (GEI), and sediment transport modeling by Michael Baker have been conducted to assess potential impacts of Santa Ana River low flow conditions on Santa Ana sucker habitat. The findings of these studies are discussed above but can be found in more detail in Appendix 10.5, *Low Flow Study*. The Low Flow Study determined that the phased RIX discharge reduction could result in the loss of up to 10% of Santa Ana sucker habitat in Study Reach 1 at the end of Phase 3, which would not occur until 15 years after Project implementation. The majority of sucker now occur in Study Reach 1. The loss of Santa Ana sucker habitat in Study Reach 2 is expected to be 7% at the end of Phase 1, five years after the start of flow reduction, and 13.7% at the end of Phase 2, ten years after Project initiation. In Study Reach 2, loss of sucker habitat is modeled at 9.5% for Phase 1, and 17.3% for Phase 2.

While the Santa Ana River is recognized as a highly dynamic and widely fluctuating riverine system, a historic analysis from 1938 to 1977 shows the Santa Ana River was different in hydrological characteristics between the reaches upstream and downstream of Mission Inn Blvd. Continuous discharge was identified downstream of Mission Inn Blvd., and the river was typically wider, with a single channel that shifted, compared to the narrower, shifting, and often braided channel upstream of Mission Inn Blvd. Depths

upstream of Mission Blvd. ranged between 0 and 2 feet with most depths less than 0.5 ft. Depths downstream of Mission Blvd. ranged between 0 to 3 feet with most depths less than 1 ft. Overall, the Santa Ana River was dry more often, narrower, and shallower upstream of Mission Inn Blvd. than downstream of Mission Blvd between 1938 and 1977 (WEI 2013). Despite periodic and extended drought, the water levels in the river, fish habitat and riparian habitats have exhibited variable conditions indicating a dynamic equilibrium over time, which is common in these types of systems.

When RIX began operating in 1996, the Santa Ana River upstream of Mission Inn Blvd. began receiving up to 62.5 mgd of treated effluent that changed the historic hydrologic conditions in the river. These perennial flows have resulted in the presence of a robust riparian canopy, along with increased flows and sand transport that has exposed gravel and cobble substrate in Study Reaches 1 and 2. The reaches upstream of Mission Inn Blvd. are still a narrower, shifting, and often braided channel, but now have deeper water with coarse substrate. Despite the fact that habitat conditions can vary substantially from year to year due to the dynamic nature of the river and climate, fish and other species living within this harsh and dynamic environment are able to adapt to these changes in the river and their habitat. Santa Ana sucker have been found to possess such adaptive characteristic.

Given the dynamic nature of the Santa Ana River riverine environment, a reduction in depth, width or available habitat of 10% or less is within the expected levels of natural variation and would not be expected to result in measurable adverse impacts to the Santa Ana sucker. The gradual changes that would occur under the Project are expected to be within the natural range of variability, and would not be expected to reduce the available sucker habitat to an extent that it could not sustain the existing population of sucker.

Further, as demonstrated by the Low Flow Study, in no phases would the Project substantially reduce or eliminate any of PCEs identified by USFWS. Within the affected reaches of the river, the Project would maintain a functioning hydrologic system that experiences peaks and ebbs in the water volume that contain sources of water and sediment necessary for all life stages of the species; maintain essential stream channel substrate; maintain clear or occasionally turbid water; would not cause water temperatures to rise above 86 degrees Fahrenheit; would maintain instream habitat that includes a source of food (such as plankton and aquatic invertebrates), and associated aquatic emergent vegetation and adjacent riparian vegetation that provide shading, shelter during high water flows, and protective cover from predators; and maintain connective corridors between occupied or seasonally occupied habitat through which the species can move when wetted.

Operating within the habitat parameters defined in the Low Flow Study will avoid adverse effects to the Santa Ana sucker and its associated habitat. SBMWD will avoid adverse effects from reductions in depth, width or available habitat greater than 10% by developing and implementing an Adaptive Management Plan (AMP). Implementation of a robust AMP will ensure that impacts of flow-related habitat reduction that exceed 10%, which are potentially greater than the range of natural variation, are less than significant. Adaptive management is a recognized method for “learning by doing” when there is uncertainty in the response of an ecosystem, here the in-stream and riparian habitats associated with the Santa Ana River, to a proposed action. The phased reduction in discharge of treated wastewater from the RIX facility will be carefully monitored and managed to ensure that all potential responses are assessed, monitored and corrected, if needed, during each and every phase of the Project. Having a robust and well-managed adaptive management plan in place can be used to effectively create a regional solution for managing the Santa Ana River ecosystem and the numerous sensitive species it supports.

Mitigation Measure BIO-7 requires that SBMWD prepare and implement an AMP for the Project's potential operational impacts to the Santa Ana sucker. In addition, the Project will require Section 7 consultation with the USFWS in conjunction with Clean Water Act permitting (Section 404). The consultation process will serve to confirm the management approach with respect to Santa Ana sucker and include additional mitigation, if necessary, to ensure that Project operations will not have a substantial adverse effect on Santa Ana sucker. The requirement that SBMWD engage in consultation under the ESA is confirmed in Mitigation Measure BIO-8.

MITIGATION MEASURES

BIO-7 **Adaptive Management Plan.** Prior to any Project-related reduction in RIX discharge that will result in greater than a 10% reduction in available Santa Ana sucker habitat in any study reach, as predicted by the Low Flow Study performed for this EIR, the San Bernardino Municipal Water Department (SBMWD) shall develop and implement an adaptive management program (AMP) for relevant reaches of the Santa Ana River, the adjacent riparian habitats, the Santa Ana sucker and its aquatic habitat. The AMP is intended to monitor and protect the Santa Ana River, its in-stream habitats and the adjacent additional riparian habitat and, by extension, protect the species that inhabit these two habitat types. The primary goal of the AMP will be to monitor the response of these two habitats to the Project and, implement adaptive management measures, as required, to correct changes that could result in adverse effects to Santa Ana suckers or their habitat. The plan will monitor current and future biologic and hydrologic conditions, as well as track the success of habitat improvements with the goal of improving habitat conditions in the river by gathering and documenting baseline data during the first year of AMP implementation. Conditions to be monitored include river depths and widths, flow rates, interaction of groundwater and its contribution to river flows, substrate, and suitable sucker habitat.

The AMP will include a rigorous hydrologic and biological monitoring program for the upper reaches of the Santa Ana River that will track Project-related changes in hydrologic conditions, including interactions with groundwater contributions, and available sucker habitat and compare those changes against the observed changes in the distribution and population densities of Santa Ana sucker in the river. As part of developing final AMP, SBMWD will work with USFWS to identify key habitat features for each life stage and determine how to monitor these features. The correlation and analysis of the changes in hydrology against sucker habitat characteristic and population variations will provide the foundation for the AMP and will contribute to the broader regional strategy for Santa Ana sucker conservation and recovery, as well as establishing/adjusting long-term management goals for the Santa Ana River and its aquatic and riparian habitats in a comprehensive manner.

Specifically, the AMP will be designed to monitor river hydrology, document annual changes in hydrology, aquatic and riparian habitats, as well as changes in Santa Ana sucker distribution, population densities, and to respond to any documented Project-related change that exceeds the expected baseline range of variability developed for the riverine environment, suitable sucker habitat and riparian habitat, so that the Project does not result in adverse effects to Santa Ana suckers or their habitat. An acceptable range of variability for physical and biological conditions will be developed in consultation with the USFWS, to protect the Santa Ana River, its associated habitats and sensitive plant and wildlife species. Any variation that falls outside of the adopted acceptable range will require assessment and implementation of necessary corrective action. Responses to variations may include but are not limited to:

- Increase discharge rate.
- Increase available sucker habitat through microhabitat enhancements to increase scour in the streambed such as boulder seeding, variation in flow rates, including the use of high pulses of discharge to accelerate scouring, as well as the creation of deep pools or refuge areas.
- Provide supplemental water to provide local thermal refuge when water temperatures exceed 85 degrees.
- Provide exotic weed management for decline in the function of native riparian plant communities.
- Provide supplemental water to maintain or enhance the aerial extent and health of riparian habitat with the Study Reaches, as well as further downstream to Prado Basin.

The AMP shall include the following:

- Baseline conditions for flows, river depths, stream width, location of riparian vegetation and species;
    - Baseline information on Santa Ana Sucker populations will provide a description of the current range of variability in fish densities and a description of how that density relates to factors such as flow, average annual temperature, and the extent of coarse substrate.
- Identification of current areas where cooler water provides thermal refuge from high summer temperatures;
- Monitoring protocols, including schedule and annual report requirements;
    - Monitoring protocols will be developed using standard methods. If possible, these protocols should be consistent enough with existing collection/monitoring protocols to provide data continuity.
- Ecological performance standards, based on the best available science and including specifications for:
    - Hydrologic performance standards, including but not limited to: changes in river depth, stream width, percent cobble and/or sand; clearing sand between the RIX facility and Riverside Avenue following storm events;
    - Biological performance standards, including but not limited to: changes in adult and juvenile habitat within the three study reaches; shifts in sucker population within the study reaches; changes in population size by study reach; changes in extent of riparian habitat; changes in extent of each riparian plant community type;
- Corrective measures if performance standards are not met;
- Responsible parties for monitoring and preparing reports;
- Responsible parties for receiving and reviewing reports and for verifying success or prescribing implementation or corrective actions.

The AMP will remain in effect for as long as the RIX discharge, as a result of the Project, remains at or below 38.4 cfs, or until no longer necessary as documented by lack of adverse impacts to Santa Ana sucker, as determined by applicable regulatory agencies.

BIO-8 The SBMWD shall work through the USACE to initiate consultation with USFWS under Section 7 consultation of the federal endangered species act (ESA) regarding the loss and adverse modification of Critical Habitats for southwestern willow flycatcher and Santa Ana sucker as required under the Federal Endangered Species Act. Regulatory requirements associated with the Section 7 Consultation will address impacts to federally listed species that may be harmed during the operational phase of the Project, including the Santa Ana sucker and least Bell's vireo, including any additional mitigation deemed necessary by the USFWS to ensure that Project impacts are not significant. SBMWD shall implement all conditions imposed on the Project as a result of consultation under the ESA.

Implementation of Mitigation Measures BIO-7 and BIO-8 would reduce impacts to Santa Ana sucker to less than significant.

Least Bell's Vireo/Southwestern Willow Flycatcher

The phased reduction in flows from RIX would result in loss to wetted width in the Santa Ana River (less than 5% for Reaches 1 and 3 for all five phases and up to 13% through Phase 5 for Reach 2). This change is within the range of natural variation, and thus is expected to have a less than significant effect on the riparian plant community. However, any identified impact on the riparian habitats along the Santa Ana River could have an impact on the avian species that forage and nest within these riparian habitats, in particular, least Bell's vireo and southwestern willow flycatcher.

Mitigation Measures BIO-4, BIO-6, BIO-7, BIO-9, BIO-10, and BIO-11 would mitigate impacts to least Bell's vireo and southwestern willow flycatcher to a less than significant level.

MITIGATION MEASURES

BIO-4 Refer to mitigation measure within this section above.

BIO-6 Refer to mitigation measure within this section above.

BIO-7 Refer to mitigation measure within this section above.

BIO-9 In areas adjacent to riparian habitat, particularly during avian nesting season, construction noise shall not exceed 65 decibels, as measured at the boundary of the riparian habitat.

BIO-10 Night-time construction within 500 feet of sensitive species habitat shall be avoided.

BIO-11 In areas within 100 feet of riparian habitat, Best Management Practices shall be implemented during both construction and operational phases. These should include, but are not limited to, sedimentation control, erosion control, spill prevention and cleanup, and hazardous materials.

Mitigation Measures BIO-4, BIO-6, BIO-7, BIO-9, BIO-10, and BIO-11 would reduce impacts to least Bell's vireo and southwestern willow flycatcher to less than significant.

Arroyo Chub

Although focused arroyo chub surveys have not been conducted yet for this Project, according to CNDDB records, this species is present in the Santa Ana River downstream of the Project site, with the closest record being a 1998 sighting of multiple individuals approximately three miles south, near the downstream end of Study Reach 3. The areas immediately downstream of the Project site are not expected to provide substantial habitat for arroyo chub which prefers sandier substrate then the heavy

gravel and cobble substrate found between the RIX facility and Riverside Avenue. The arroyo is most likely to occur further downstream of the RIX facility below Riverside Avenue where there are sandier substrates, though individuals of the fish species have been observed closer to the RIX facility.

Indirect impacts to arroyo chub would result if the Project operations result in reduced water flow to the Santa Ana River and adversely affect arroyo chub habitat.

However, with implementation of the AMP, as required by mitigation measure BIO-7, the Project would not substantially reduce or eliminate habitat for the arroyo chub. Within the affected reaches of the river, the Project would maintain a functioning hydrologic system that experiences peaks and ebbs in the water volume that contain sources of water and sediment necessary for all life stages of the arroyo chub including sandy channel substrate; clear or occasionally turbid water; cooler water temperatures, and associated aquatic emergent vegetation and adjacent riparian vegetation.

Mitigation Measure BIO-7 would require that SBMWD prepares and implements an adaptive management plan for the Project's potential operational impacts to the Santa Ana sucker, which will also result in protection of arroyo chub habitat. In addition, Mitigation Measure BIO-8 would require Section 7 consultation with the USFWS in conjunction with Clean Water Act permitting (Section 404). Consultation will ensure that this management approach for Santa Ana sucker will avoid substantial adverse effect on Santa Ana sucker, which in turn will ensure that arroyo chub are not adversely affected.

MITIGATION MEASURES

BIO-7 Refer to mitigation measure within this section above.

BIO-8 Refer to mitigation measure within this section above.

Implementation of mitigation measures BIO-7 and BIO-8 would reduce impacts to arroyo chub to less than significant.

Non-Listed Special-Status Wildlife Species

Only one non-listed special-status wildlife species was observed during the habitat assessment conducted for the EIR: yellow warbler. In addition, based on a CNDDB search, six additional non-listed special-status wildlife species were determined to have a moderate or higher potential to occur within the Project site: northwestern San Diego pocket mouse, rosy boa, California horned lark, western yellow bat, Los Angeles pocket mouse, and coast horned lizard. Project-related surveys for these species have not yet been conducted. All six of these additional species are known to occur in the general vicinity of the Project based on available CNDDB records.

Direct impacts could occur to animals within the Waterman Basins and East Twin Creek Spreading Grounds, particularly terrestrial wildlife. Construction near trees may result in disturbance to nesting birds or roosting bats, potentially resulting in increased stress or nest failure. In extreme situations, excessive disturbance may cause individual animals to leave the area, temporarily or permanently. Both of the pocket mice dig burrows in the sand for shelter, while rosy boas may use subterranean burrows but often will use existing surface shelter for cover. Similarly, horned lizards bury themselves in the sand and are generally on the surface or immediately below it while buried. While, direct construction-related impacts to special-status wildlife species could occur, impacts would be discrete and limited to the specific construction footprint. As a result, impacts are expected to limited in extent and the intensity of any impact is expected to be minor during construction.

In addition, Mitigation Measure BIO-5 would either require avoiding construction during avian nesting season or require preconstruction surveys, and nest protection actions, thereby reducing impacts to avian species to less than significant. Mitigation Measure BIO-9 would ensure that all construction occurs between dawn and dusk, to avoid disturbance to nocturnal wildlife. Mitigation Measure BIO-10 would require the minimization of construction-related noise in areas adjacent to riparian habitat in order to avoid or reduce impacts to wildlife. Mitigation Measure BIO-11 would require that Best Management Practices are incorporated in areas 100-feet from riparian habitat to avoid or minimize impacts related to sedimentation control, erosion control, spill prevention and cleanup, and hazardous materials. Therefore, direct impacts would not have a substantial adverse effect on sensitive species.

Small mammals and reptiles could potentially be directly impacted or displaced due to Project-related flooding associated with operation of recharge facilities. The recharge ponds are established facilities that have been routinely flooded, generally precluding small mammal and reptile populations from becoming established. Although these species may forage in the recharge ponds, they are not expected to nest in in the ponds and, therefore, the increased use of the ponds for recharge would have a less than significant impact on these species.

MITIGATION MEASURES

BIO-9 Refer to mitigation measure within this section above.

BIO-10 Refer to mitigation measure within this section above.

BIO-11 Refer to mitigation measure within this section above.

Mitigation Measures BIO-9, BIO-10, and BIO-11 would reduce impacts to non-listed special status wildlife to less than significant.

Impact 4.4-2: Riparian Habitat and Other Sensitive Natural Communities. Would the Project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or US Fish and Wildlife Service? *Level of Significance: Less Than Significant Impact with Mitigation Incorporated.*

The facility corridor contains several intermittent creeks, including East Twin Creek, City Creek, and Warm Creek, as well as the Santa Ana River, which runs within the southern end of the corridor. There are no wetlands within the East Twin Creek Spreading Grounds and Waterman Basins facility corridor, and no plants characterized as obligate-wetland species were observed. Direct impacts are anticipated to be minimal for riparian and jurisdictional waters, including wetland habitats.

Direct construction impacts to riparian habitat are not expected to occur, as summarized above. Potential indirect operational impacts could occur as a result of Project implementation, particularly to riparian habitat along the Santa Ana River. However, due to the phased flow reduction characteristic of the Project, habitat loss along the river from reduction in discharge will be negligible for the first three phases or 15 years. The Project would eventually result in a reduction in tertiary discharge to the Santa Ana River of approximately 35 cubic feet per second or 23.8 million gallons per day (mgd). This could result in loss and/or degradation of riparian habitat, particularly in drought years. A reduction in habitat and vegetation would also have negative effects on riparian wildlife, including fish, amphibians, birds, and even some mammals.

In the dry season, plants can become stressed more easily during low water conditions. While phreatophytic (vegetation that draws water from both above and below the surface) and more drought-tolerant vegetation like Fremont's cottonwood, willows (*Salix* sp.), and mulefat may persist longer under drier conditions, shallow-rooted and streamside vegetation would be expected to be more susceptible to general reductions in water levels. Additionally, nutrient-cycling organic litter decomposition that is normally aided by downstream water movement may be reduced by low surface flows. As the reduction in flow would be phased over time, some degree of plant and wildlife adaption to change in conditions would also be expected. Regional efforts to monitor and manage riparian habitat along the Santa Ana River are currently being developed. The Inland Empire Utilities Agency (IEUA) is in the process of implementing biological monitoring and adaptive management program for Prado Basin for ensuring that riparian habitats in the basin, as well as the upstream riparian areas, are not affected by groundwater pumping. Mitigation Measure BIO-7 will seek to coordinate results gathered by IEUA with the SBMWD's long-term monitoring efforts for riparian habitats in Study Reaches 1 through 3, as well as any required adaptive management measures needed to address potential impacts to Santa Ana sucker habitats in the Santa Ana River. Mitigation Measure BIO-8 would require Section 7 consultation with the USFWS in conjunction with Clean Water Act permitting (Section 404).

Mitigation Measure BIO-12 would require SBMWD to consult with the U.S. Army Corps of Engineers, CDFW, USFWS, and the Regional Board regarding potential indirect impacts to state and federal waters, and determine required mitigation once final Project design is available. In addition, Mitigation Measure BIO-13 would require that excavated material be either removed, or safeguarded to prevent erosion and transport of material into riparian areas.

MITIGATION MEASURES

BIO-7 Refer to mitigation measure within this section above.

BIO-8 Refer to mitigation measure within this section above.

BIO-12 SBMWD shall consult with the US Army Corps of Engineers, California Department of Fish and Wildlife, the US Fish and Wildlife Service, and the Regional Water Quality Control Board regarding anticipated impacts to waters of the State and waters of the U.S. and determine the regulatory requirements that must be addressed in the permits from each of these agencies in order to avoid substantial adverse impacts to riparian habitat or other sensitive natural communities. SBMWD will implement all permit conditions.

BIO-13 **Excavated Fill.** All excavated material shall be removed from the Project site and disposed of properly or reused elsewhere. If left on-site, the material shall be moved into an area where it will not wash or erode into any riparian areas and shall be suitably covered or watered to reduce the potential for dust during high winds or rain events.

Mitigation Measures BIO-7, BIO-8, BIO-12 and BIO-13 would reduce the Project impacts to riparian habitat to a less than significant level.

Impact 4.4-3: Wetlands. Would the Project have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means? *Level of Significance: No Impact.*

There are no wetlands associated with the Project sites, therefore, the Project would not have any impacts on federally protected wetlands, as defined by Section 404 of the Clean Water Act. Impacts to jurisdictional waters are addressed in the preceding discussion above.

Impact 4.4-4: Wildlife Corridors. Would the Project interfere substantially with the movement of any native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites? *Level of Significance: Less Than Significant Impact with Mitigation Incorporated.*

The pipeline facility corridor is not expected to function as a migratory corridor. However, the Santa Ana River, just outside the Project area, provides migration and movement opportunities for fish, birds, and mammals.

The Santa Ana River would be avoided and is not expected to have any direct construction impacts during the construction of the East Twin Creek Spreading Grounds and Waterman Basins facility corridor. Therefore, no direct construction impacts to migration corridors are expected from Project implementation. Reduction in discharge from the RIX Facility may result in minor indirect operational impacts to wildlife corridors on the Santa Ana River through the loss of wetted width, including the potential loss of riparian vegetation. Refer to Impact 4.4-1 regarding the Project's potential impacts to Santa Ana sucker habitat and its associated mitigation measures. Movement of birds and mammals is thus unlikely to be significantly affected by reductions in riparian vegetation that would otherwise be used for cover.

Mitigation Measure BIO-4 would require that all work areas are visibly flagged or staked prior to construction. Mitigation Measure BIO-1 would require the Project to implement a WEAP (Worker Environmental Awareness Program) to educate all construction personnel of the area's environmental concerns and conditions. Mitigation Measure BIO-7 would require the implementation of an adaptive management plan for post construction operations. Mitigation Measure BIO-12 would require the SBMWD to consult with the Corps, CDFW, USFWS, and Regional Board regarding potential impacts to develop mitigation once final Project design is available. These measures would further reduce potential adverse impacts to wildlife corridors or nursery sites.

MITIGATION MEASURES

BIO-1 Refer to Impact 4.4-1 above

BIO-4 Refer to Impact 4.4-1 above.

BIO-7 Refer to Impact 4.4-1 above.

BIO-12 Refer to Impact 4.4-2 above.

Implementation of Mitigation Measures BIO-1, BIO-4, BIO-7, and BIO-12 would ensure that the Project's impacts to wildlife corridors and nursery sites are less than significant.

Impact 4.4-5: Policies and Ordinances. Would the Project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance? *Level of Significance: Less Than Significant Impact.*

The proposed Project could conflict with local policies and ordinances, including the San Bernardino County Development Code and the City of San Bernardino General Plan. Depending on the types of trees that may need to be removed for construction (if applicable), SBMWD may be required to obtain a tree removal permit under Sections 88.01.050, 88.01.070, and/or 88.01.080 of the San Bernardino County Development Code. The Project may conflict with Policy 12.2.1 of the City of San Bernardino General Plan, which prohibits any development or grading within 50 feet of riparian corridors. SBMWD may be required to obtain a permit as a "necessary water supply Project" under Policy 12.2.2, which states what types of uses are allowed within riparian corridors in exception to Policy 12.2.1. Obtaining any required permits under local policies and ordinances would ensure that no impacts would occur and no mitigation is necessary.

Impact 4.4-6: Conservation Planning. Would the Project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan? *Level of Significance: Less Than Significant Impact.*

The proposed East Twin Creek Spreading Grounds and Waterman Basins study areas would not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state Habitat Conservation Plan. There are currently no approved Habitat Conservation Plans that pertain to these Project sites. As previously noted, the Project is included within the list of proposed "Covered Activities" within the proposed Upper Santa Ana River HCP, currently in process (refer to http://www.uppersarhcp.com/). Impacts would be less than significant.

4.4.9 CUMULATIVE IMPACTS

An evaluation of whether an impact on biological resources would be cumulatively considerable must consider both the resource itself and how that resource fits into the larger regional or local context. Cumulatively considerable impacts are those that, along with impacts from other past, present and planned Projects, substantially diminish or result in the loss of an important biological resource, or those that would conflict with local, State, and/or federal resource conservation plans, goals, or regulations. Impacts can be locally adverse but not cumulatively considerable because, although they would result in an adverse alteration of existing conditions, they would not substantially diminish or result in the permanent loss of an important resource on a population- or region-wide basis.

The *City of San Bernardino General Plan EIR* and *County of San Bernardino General Plan EIR* address the cumulative impact of overall City and regional buildout. However, perhaps the most sensitive resource relative to potential Project-related cumulative impacts is the Santa Ana sucker and Santa Ana River riparian habitat in general. This cumulative impact section, therefore, focuses on potential cumulative impacts to the Santa Ana River and Santa Ana sucker habitat downstream of RIX.

There are numerous projects contemplated within the Upper Santa Ana River watershed (refer to the list of cumulative projects in Section 4.0). The City of Riverside's proposed Riverside North Aquifer Storage and Recovery Project (RNASR Project), is located upstream of the RIX discharge and has been suggested

as cumulatively contributing to Santa Ana sucker impacts together with the Project. The RNASR Project is located approximately 3 miles upstream of the RIX Facility, in the southern portion of the City of Colton where it directly abuts the Santa Ana River. The RNASR Project proposes the installation of a rubber dam composed of a series of adjoining bladders that span the width of the Santa Ana River to facilitate recharge of the Riverside and Colton groundwater basins. However, the proposed RNASR Project has no additive effects that, when considered with the CWF proposal, would substantially diminish habitat or result in the loss of an important biological resource downstream. Additionally, the two proposed projects have different operational profiles, and therefore, do not result in similar cumulative impacts to biological resources. The Clean Water Factory Project would permanently reduce base flows in perennial reaches of the Santa Ana River while the RNASR Project would divert a particular volume of storm flows that may not reach sensitive species at the CWF site regardless, approximately 3 miles downstream.

In addition, SBMWD recognizes that other water agencies are considering projects that, if approved, could also reduce flows to the Santa Ana River along the study reaches. However, as summarized in the Table 4.4-4, this EIR analyzes what is considered as the cumulative worst-case condition for potential future wastewater treatment plant discharge reductions in the study reaches.

For instance, Valley District's proposed Sterling Natural Resource Center (SNRC) would provide tertiary treatment to wastewater generated within East Valley Water District's (EVWD) service area, modify EVWD's wastewater collection facilities, and construct treated water conveyance systems to beneficially use treated water in the upper Santa Ana River watershed. Currently, EVWD conveys wastewater to SBWRP for conveyance to RIX, where it is discharged to the Santa Ana River. If approved and constructed, the SNRC would treat wastewater further upstream and reuse it for other beneficial uses that may reduce flows to the Santa Ana River.[4] The SNRC proposes to initially treat up to 9.28 cfs (6 MGD) associated with existing wastewater volumes presently treated at SBWRP and discharged to the SAR via RIX, and up to 15.4 cfs (10 MGD) with consideration of wastewater increases from future growth and development. The flows that are diverted from the Santa Ana River as a result of the SNRC would reduce the amount of discharge from the RIX Facility that would be associated with the Project (i.e., Project-related RIX discharges would be reduced by an amount corresponding to SNRC-related discharge reductions). The SNRC has been approved by Valley District but requires multiple future approvals, including permission from the State Water Resources Control Board; Valley District has not yet filed a Petition for Change to authorize the SNRC. The City of Rialto has filed a Petition for Change to reduce its current wastewater treatment plant discharge, proposing a 100% reduction to zero discharge. If both the SNRC and the Rialto Petition for Change are approved in full[5], the net reduction of flows could be as much as 24.0 cfs (15.5 MGD). This flow reduction would not be in addition to proposed Project discharge reductions, but would reduce the amount of RIX discharge reduction available to SBMWD. Given the regulatory constraints and importance of downstream habitat, it is considered unlikely that greater than the modeled Phase 5 flow reductions would receive necessary regulatory agency permitting, and this therefore represents the worst-case discharge reduction to the Study Reaches from RIX, SNRC and the Rialto wastewater treatment plant.

As determined by the *Low Flow Study of the Santa Ana River between the Rialto Drain and the MWD Crossing* (Michael Baker 2015), Project-specific adverse impacts to Santa Ana sucker that would occur during the final two phases of reduction would be mitigated through the implementation of an adaptive management plan (Mitigation Measure BIO-7). The proposed Project's phased reduction in discharge of

[4] The SNRC includes provisions for the delivery of water to the Santa Ana River when needed for environmental benefits.
[5] SWRCB Petition number WW0079; notice dated June 18, 2015.

treated wastewater from the RIX facility can and will be carefully monitored and managed to ensure that all potential responses are assessed, monitored and corrected, if needed, during each and every phase of the Project. Additionally, the RNASR Project EIR determined that project would have no effect on base flows in the perennial section of the River which currently provides habitat for Santa Ana sucker and other base flow dependent resources. As such, it is not anticipated that these two projects in combination would contribute to a cumulative biological impact on sensitive aquatic or riparian habitats or the species that inhabit these two habitat types.

On a broad scale, the natural resources within the Upper Santa Ana River may be adversely affected by a variety of other factors, collectively adding to the potential for significant cumulative impacts. These factors include the potential for reduced storm flows due to continuing or future drought conditions, as well as additional Santa Ana River storm flow diversions beyond those listed in the Upper Santa Ana River HCP. The overall amount of water entering the system will likely decline over time as local agencies seek more aggressive and creative means to capture, recharge and reuse local run off and treated wastewater as a long term planning tool in response to drought conditions and growing populations. Two large conservation efforts are underway within the Santa Ana River and its adjacent floodplain: 1) the Upper Santa Ana River Wash Plan and HCP; and 2) the Upper Santa Ana River HCP. San Bernardino Municipal Water Department is a member of the second HCP and the proposed Project is a "covered" Project under Plan (as is the RNASR Project). The Upper Santa Ana River HCP is developing ways to improve current conditions for sensitive species in the River while meeting the water supply needs of the upper Santa Ana River watershed. The HCP plans to use water strategically for multiple benefits (habitat, groundwater recharge) throughout the system. Planning is underway for restoration activities that will offset the potential impacts of groundwater supply and other regional Projects included in the HCP although the Plan is in early stages and no environmental documents have been produced, to date.

Additionally, the Santa Ana Sucker Conservation Team, formed in 1998, of which SBMWD is a member, seeks to "determine the reasons for the decline of the Santa Ana sucker in the Santa Ana Watershed and devise strategies for the recovery of the species." Under the direction of the Conservation Team, scientists have gathered data on population size, distribution, and habitat requirements of the sucker since 2001. The on-going monitoring proposed as part of the Project's adaptive management plan would contribute to the Team's efforts.

Without full implementation of the above-mentioned HCPs and other conservation programs aimed at providing long-term comprehensive protection for biological resources and in-stream and riparian habitats found within the Santa Ana River and wash habitats, the incremental impact of other projects listed in this section may significantly impact biological resources. If unregulated, the incremental effects would likely be cumulatively considerable and thus significant. However, it is expected that all projects with adverse impacts in the Santa Ana River will meet obligations to address those impacts with the both the state and federal wildlife agencies during the regulatory process. It is also expected that acquisition of permits from the applicable regulatory agency will require appropriate measures to offset incremental and cumulative impacts to sensitive species and habitat in the watershed. Given the current and continuing status of the Santa Ana sucker as threatened under the federal ESA, and as a result of past and existing projects, cumulative impacts to the Santa Ana sucker and its habitats are considered significant.

Since the Project would potentially reduce flows within the Santa Ana River beyond a level of natural variability, the Project's contribution to significant impacts may be cumulatively considerable. However, mitigation is proposed to reduce the Project's contribution. As previously mentioned, the Project would

require the implementation of an Adaptive Management Plan that would be implemented in response to potential adverse conditions resulting from flow reductions (see Mitigation Measure BIO-7 herein).

In addition, as a compensatory mitigation measure to offset potential Project-related cumulatively considerable biological resource impacts on the study reaches of the Santa Ana River immediately downstream of the RIX discharge location, the Project would implement upgrades to reduce the impact of RIX shutdowns. Presently, during shutdowns, no water is released from RIX, resulting in reduced flows on the Santa Ana River. Most recently due to prolonged drought conditions and associated substantial reduction in river base flow during dry seasons, the periodic RIX shutdown has contributed to discontinuous river flow, which may cause stranding of some Santa Ana suckers and other Santa Ana River fish species.[6] SBMWD has committed to various RIX enhancements at the request of USFWS. This EIR, as noted in BIO-14 below, commits SBMWD to the implementation and ongoing funding of these and other measures noted below. SBMWD has committed to the following measures to minimize potential adverse effects associated with periodic temporary RIX shutdowns:

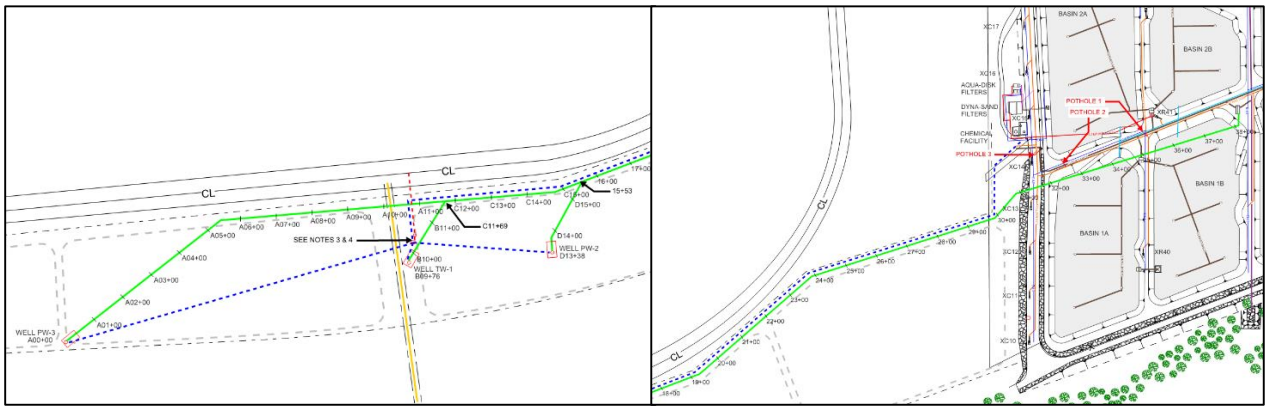
Measure 1 - **Accelerating the RIX UV System Rehabilitation Project, from a 5-year Capital Improvement Program (CIP) project, to a single-year CIP project, as soon as possible**. Rehabilitating the RIX UV system will substantially reduce the frequency of RIX shutdowns needed to comply with regulatory requirements for water quality. The SBMWD Board of Water Commissioners has secured funding and awarded the design and construction contract for this project, with an anticipated completion date of May 27, 2017. As part of the Clean Water Factory cumulative Mitigation Measure BIO-14, SBMWD further affirms its commitment to long-term funding and maintenance of RIX enhancements. In addition to the UV system rehabilitation, the SBMWD is investigating programming improvements to the UV control system to improve efficiency and reduce the frequency of automated shutdowns.

Measure 2 – **Expansion and Retrofit of RIX Test Wells into Production Wells (RIX Well Retrofit Project).** SBMWD is planning to retrofit and expand its existing test wells to convert them to production wells in order to provide a supplemental water source to the Santa Ana River, as needed, during shutdowns. The RIX Well Retrofit Project consists of equipping three previously-developed test wells located on the RIX Expansion Site (RIXES), as production wells. The Project will also include installation of connecting piping to the existing outfall diversion structure and connecting the pumps to the RIX supervisory control and data acquisition (SCADA) system so that its operation is interlocked with the RIX operations (triggered to commence at the initiation of a RIX shutdown). This project will provide part of a long-term solution to the viability of the Santa Ana sucker, for the benefit of the USFWS' Habitat Conservation Plan (HCP). The SBMWD is currently preparing a Conceptual Design Report, indicating the supplemental supply wells could be on-line by summer 2018 (subject to obtaining applicable regulatory agency approvals). Figures 4.4-5 and 6 identify the location of the connection between the test wells and the RIX basins, and illustrate the conceptual alignment option C (in green).

[6] There are two types of shut downs that occur at the RIX facility. Planned maintenance shutdowns occur approximately twice a year for 4 to 6 hours and are scheduled during non-spawning periods of the Santa Ana sucker. Unplanned or automated shutdowns are triggered when there is some indication in the system that treatment standards would not be met, such as flow volumes being too high for effective treatment, insufficient UV treatment, high turbidity, etc. In such cases, the system is designed to shut down so as not result in the release of water not meeting treatment goals. The shutdown frequency is highly variable. Automated shutdowns from 1998 through 2014 have ranged annually from 15 in 2007 to 111 in 2001, with an average of 46 shutdowns per year, and a mean frequency of 35 (SBMWD 2016). The increases have not increased over time, but rather vary markedly from year to year.

Figure 4.4-5: Location of Proposed Test Well Connection to RIX

Figure 4.4-6: Conceptual Alignment Option C in Green



SBMWD has developed this supplemental water supply concept to minimize potential adverse effects of this mitigation, by converting existing test wells into production wells with relatively nominal appurtenant improvements. However, the test well conversion, conveyance line, appurtenant improvements, and associated periodic groundwater pumping (only when supplemental water is needed during infrequent temporary RIX shutdowns), will require various permits and approvals from other agencies, including electrical supply from the City of Colton and Regional Water Quality Control Board approval of the supplemental water discharge into the Santa Ana River. Confirmation of the extent of groundwater rights may also be necessary. The supplemental water supply mitigation will have relatively nominal environmental impacts, mainly associated with temporary construction-related effects of well equipping, conveyance line construction, and groundwater withdrawals. This mitigation project will comply with applicable mitigation measures identified for the Project, including focused surveys for sensitive species and mitigation of any significant impacts pursuant to applicable local, state and federal regulatory agency requirements.

As part of the Clean Water Factory EIR cumulative Mitigation Measure BIO-14, SBMWD is committed to pursue this supplemental water project to minimize adverse effects of periodic RIX shutdowns. However, since conversion of these test wells into periodic supplemental water supply production wells requires review and approval by other agencies, outside the control of SBMWD, this measure cannot be guaranteed. Other supplemental water supply options are being evaluated as part of the SNRC project and the broader HCP efforts underway.

Measure 3 - **Contracting with the Riverside-Corona Resource Conservation District (RCRCD) to collect and relocate suckers during scheduled shutdowns**. SBMWD has entered into a contract with the RCRCD to provide as-needed assistance during scheduled RIX shutdowns for sucker monitoring and relocation services for stranded fish. As part of the Clean Water Factory EIR cumulative Mitigation Measure BIO-14, SBMWD commits to the continued funding and cooperation with RCRCD, and regulatory agencies, in minimizing adverse effects of temporary RIX shutdowns, specifically including the utilization of RCRCD for sucker monitoring and relocation during shutdowns.

Mitigation Measure BIO-14 incorporates measures 1 and 3, above, and would be expected to reduce the number and effect of these incidents, and benefit the Santa Ana sucker and other river species dependent on continuous water flow. BIO-14 provides mitigation to address existing adverse effects within the study area (immediately downstream of the RIX discharge), and also addresses Project-related and cumulative impacts to the Santa Ana sucker and other base-flow dependent species and habitat. With implementation of Mitigation Measures BIO-7 and 14, the Project's cumulatively considerable impacts to the Santa Ana sucker and its habitat would be mitigated to a less than cumulatively considerable level.

MITIGATION MEASURES

BIO-7 Refer to Impact 4.4-1 above

BIO-14 Prior to initiating Project-related RIX discharge reductions, SBMWD will rehabilitate the RIX facility and implement improvements that will minimize automated shutdowns and provide for more reliable facility operation, in the form of the RIX UV System Rehabilitation Project.

In the event that a shutdown is needed, and to the extent feasible, scheduled shutdowns will take place in conjunction with events that would continue to provide flow to the Santa Ana River (e.g. during or following a precipitation event or a scheduled water release).

For scheduled shutdowns required during periods of low-flow within the Santa Ana River, SBMWD will facilitate, in conjunction with the US Fish and Wildlife Service, for a qualified team (such as the Riverside-Corona Resource Conservation District) to provide temporary on-site capture of Santa Ana sucker until flows have recovered and the fish can be released.

The above measures alone, taken together with the Adaptive Management Plan, other EIR mitigation measures and Project Design Features noted herein, as well as ongoing SBMWD commitment and participation in the HCP, are considered adequate to mitigate the Project's contribution to cumulative biological resource impacts to less than significant levels.

As an additional effort to further reduce existing adverse effects upon the Santa Ana sucker and other base-flow dependent species and habitat, for both existing conditions and future cumulative conditions, SBMWD will pursue developing a periodic temporary supplemental water supply to provide supplemental

water during planned RIX shutdowns, such as the RIX Well Retrofit Project noted above in the discussion of Measure 2.

4.4.10 SIGNIFICANT UNAVOIDABLE IMPACTS

No unavoidable significant impacts to biological resources have been identified.

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Section 4.5
Cultural and Paleontological Resources

Section 4.5
Cultural and Paleontological Resources

This section describes the environmental and regulatory settings of cultural resources, as they pertain to implementation of the proposed Project. Information given in this section is based on cultural resource information obtained from available public resources including, but not limited to, the *County of San Bernardino General Plan* (2007); *City of San Bernardino General Plan EIR* (2005); the *Identification and Evaluation of Historic Properties* report (January 13, 2015), prepared by CRM TECH; and the *Paleontological Resources Assessment Report* (January 13, 2015), prepared by CRM TECH. The *Identification and Evaluation of Historic Properties* Report and the *Paleontological Resources Assessment Report* are included in Appendix 10.6 and Appendix 10.7 of this EIR, respectively.

The following definitions are common terms used to discuss the regulatory requirements and treatment of cultural resources:

- *Cultural resources* is the term used to describe several different types of properties: prehistoric and historical archaeological sites; architectural properties such as buildings, bridges, and infrastructure; and resources of importance to Native Americans.
- *Historic properties* is a term defined by the National Historic Preservation Act (NHPA) as any prehistoric or historic district, site, building, structure, or object included on, or eligible for inclusion on, the National Register of Historic Places (NRHP), including artifacts, records, and material remains related to such property.
- *Historical resource* is a California Environmental Quality Act (CEQA) term that includes buildings, sites, structures, objects, or districts, each of which may have historical, prehistoric, architectural, archaeological, cultural, or scientific importance and is eligible for listing or is listed in the California Register of Historical Resources (CRHR).
- *Paleontological resource* is defined as including fossilized remains of vertebrate and invertebrate organisms, fossil tracks and trackways, and plant fossils. A unique paleontological site would include a known area of fossil-bearing rock strata.

It should be noted that the minor improvements that would occur at the RIX Facility and the Chino Basin Pipeline were not analyzed as part the Paleontological Resources or Cultural Resources Reports (CRM Tech, 2015). These activities would involve existing facilities and would be located in developed/disturbed sites and along existing road rights-of-way. Therefore, these components are not anticipated to significantly impact cultural or paleontological resources. In addition, improvements at the RIX Facility are not anticipated to result in the inadvertent discovery of cultural or paleontological resources as the site has already been surveyed as part of the RIX Facility's environmental review process.[1] Further, activities related to the construction and operation of the RIX Facility and Chino Basin Pipeline would be subject to the same mitigation, policies, and ordinances as prescribed to the other facilities proposed under the Project (refer to 4.5.2, *Regulatory Framework* and the 4.5.3, *Environmental Impacts* below).

[1] Santa Ana Watershed Project Authority, *Final Environmental Impact Report for the Proposed Regional Tertiary Treatment System for San Bernardino and Colton*, Prepared by URS Consultants, Inc, March 1989, and Santa Ana Watershed Project Authority, *Final Supplemental Environmental Impact Report for the Proposed Regional Tertiary Treatment System for San Bernardino and Colton*, Prepared by URS Consultants, Inc, October 1992.

4.5.1 AFFECTED ENVIRONMENT

GEOLOGIC SETTING

The Project site soils have been mapped on multiple occasions. The most recent mapping, conducted in 2003, indicates that the surface exposures in the Project site were mapped as Qya3 and Qya5, or young alluvial valley deposits, and Qyf3, Qyf4, and Qyf5, young alluvial fan deposits dating to the Holocene Epoch, which are overlain and incised in some areas by Qw, recent wash alluvium. Holocene sediments such as these have a low potential to contain fossil resources. In 2004, the area was mapped as mostly Qa, or alluvium of Holocene age, with some areas of Qg, which is identified as alluvium of presently active stream and river channels.[2]

EXISTING SETTING

The Area of Potential Effects (APE) for cultural resources was delineated as part of the 2015 *Identification and Evaluation of Historic Properties conducted* for the proposed Project; refer to Exhibit 4.5-1, *Area of Potential Effects (Southerly Portion)* and Exhibit 4.5-2, *Area of Potential Effects (Northerly Portion)*. The proposed Project consists of the three existing water facilities, seven potential pump station and storage reservoir sites, and underground pipeline alignments within the rights-of-way of various roads and flood channels. The entire Area of Potential Effects extends approximately 6.5 miles north-south and 1.5 miles east-west across portions of the Rancho Muscupiabe and Rancho San Bernardino land grants lying within T1N R4W and T1S R4W, San Bernardino Baseline and Meridian.

The Project site is situated in the San Bernardino Valley, a broad inland valley extending from the southern base of the San Bernardino and San Gabriel Mountains on the north to the Santa Ana Mountains and the Jurupa Hills on the south. The current natural environment of the region is characterized by a temperate Mediterranean climate, with average temperatures of 75° F and recorded temperatures over 100° F in recent years. Rainfall is typically less than 20 inches annually.

Elevations incline gradually from south to north, and range between approximately 990 feet and 1,500 feet above mean sea level. The pipeline alignments would traverse amid residential neighborhoods, commercial corridors, and areas of light industry, while the pump station/reservoir sites consist of open areas in parks or other vacant, city-owned lots. As would be expected in an urbanized setting, the ground surface throughout the Project area has been completely altered from its natural state, with the vast majority occupied by the existing water facilities or covered by road pavement and landscaping plants.

PREHISTORIC SETTING

The proposed Project area lies in the homeland of the Serrano Indians, whose traditional territory is centered at the San Bernardino Mountains but also includes the southern rim of the Mojave Desert and most of the San Bernardino Valley. The basic written sources on Serrano culture are Kroeber (1925), Strong (1929), and Bean and Smith (1978). The following ethnographic discussion of the Serrano people is based on these sources.

Prior to European contact, the Serranos were primarily gatherers and hunters, and occasional fishers, who settled mostly on elevated terraces, hills, and finger ridges near where flowing water emerged from the mountains. They were loosely organized into exogamous clans, which were led by hereditary heads, and

[2] CRM TECH, *Paleontological Resources Assessment Report,* page 9 to 10, January 2015.

the clans in turn were affiliated with one of two exogamous moieties. The exact nature of the clans, their structure, function, and number are not known, except that each clan was the largest autonomous political and landholding unit, the core of which was the patrilineage.

Historic Setting

Although contact with Europeans may have occurred as early as 1771 or 1772, Spanish influence on Serrano lifeways was negligible until the 1810s, when a mission *asistencia* was established on the edge of Serrano territory. Between then and the end of the mission era in 1834, most of the Serranos in the San Bernardino Mountains were removed to the nearby missions.

The San Bernardino Valley was claimed by Spain in the late 18th century. For nearly four decades afterwards, however, the arid inland valley received little attention from the European colonizers, who concentrated their efforts along the Pacific coast. Following the establishment of Mission San Gabriel in 1771, the San Bernardino Valley became a part of the mission's vast land holdings. The name "San Bernardino" was bestowed on the region at least by 1819, when an *asistencia* and an associated mission rancho, both bearing that name, were established at the eastern end of the valley.

Mexico gained independence from Spain in 1821 and the new authorities in Alta California began secularization of the mission system in 1834. During the next 12 years, mission lands throughout Alta California were surrendered to the Mexican government and subsequently granted to various prominent citizens of the province. In 1842, the former mission rancho of San Bernardino was granted to the Lugos, a prominent Los Angeles family, who were engaged in cattle raising on the more than 35,000-acre domain. The Rancho Muscupiabe land grant, some 30,000 acres in size, was awarded in 1843 to Michael C. White, a naturalized Englishman, but was abandoned a few months later. After the American annexation of Alta California in 1848, the Lugos sold the rancho in 1851 to a group of Mormon settlers sent by church leaders in Utah. The group promptly established a fortified settlement and named it Fort San Bernardino.

The early growth of the Mormon colony was promising. It became the county seat of the newly created San Bernardino County in 1853, and incorporated as a city the next year. In 1857, however, half of the population was recalled to Utah by Mormon leaders, and the budding town was dis-incorporated. In the 1880s, spurred by the selection of San Bernardino as the Atchison, Topeka and Santa Fe Railway's regional headquarters, the rise of the profitable citrus industry, and a general land boom that swept through much of southern California, San Bernardino gradually recovered and reincorporated in 1886, embarking on a period of steady growth that lasted well into the 20th century.

Wartime economics further boosted the growth of San Bernardino when a U.S. Army Air Corps pilot training base was established in the southeastern portion of the city in 1941. Renamed Norton Air Force Base in 1950, over the next 45 years this major military installation proved to be an important driving force in the local economy. However, in 1994 the base was officially closed, and its 2,400-acre site was transferred to local civilian authorities for redevelopment in 1999, ultimately becoming today's San Bernardino International Airport.

The original town site of San Bernardino, as recorded in 1854, was bounded by present-day Tenth Street, Sierra Way, Rialto Avenue, and I Street. By 1907, the urbanized area of the city had expanded to 16th Street on the north, Waterman Avenue on the east, Mill Street on the south, and beyond Mount Vernon Avenue on the west. The Project site extends across a large area both in the original town site and on outlying lands to its north, east, and south, and thus reflects the results of urban growth in San Bernardino throughout the post-1850 period, leading up to the present time.

Historic maps show that in the 1850s the Mormon stockade known as Fort San Bernardino, situated approximately a quarter-mile west of Arrowhead Avenue, was the only notable man-made feature in the vicinity of the Project site. After the national railroad systems reached the region to usher in the land boom of the 1880s, most of the area around the Project site began to exhibit a cultural landscape typical of rural southern California at the time, characterized by a regular grid of roads lined by scattered buildings, while concentrated blocks of buildings were clustered in the downtown area of San Bernardino. Much of the area was presumably devoted to agriculture, including citrus cultivation, particularly in the less populated eastern outskirts of the city, where a tangle of irrigation canals and ditches were dug.

In 1938, a catastrophic flood across southern California changed the course of the Santa Ana River and the geography around the Project site, especially near the present-day Water Reclamation Plant location, which was under cultivation as agricultural fields at the time. In the wake of the flood, the East Twin Creek Wash was channelized from the spreading grounds to the Santa Ana River, merging into the latter near the plant site. A smaller version of the plant was first constructed at this location around 1959, then expanded in 1969.

Following the end of WWII, the area around the Project site, like the rest of San Bernardino and southern California in general, entered a period of rapid urbanization (USGS 1954; Historic Aerials 1959). The drastic changes in land use has greatly altered the formerly agrarian landscape of the area, and in all likelihood obliterated most of the cultural remains from the prehistoric or early historic periods, such as the 19th century irrigation canals.

ARCHAEOLOGICAL AND HISTORICAL RECORDS SEARCH

A search for archeological and historical records was completed by the Archeological Information Center (AIC), San Bernardino County Museum on March 17 and March 23, 2015. The electronic AIC database was checked for previously identified historical/archeological resources near the Project site, and existing cultural resources reports pertaining to the vicinity. Previously identified resources include properties designated as California Historical Landmarks, Points of Historical Interest, or San Bernardino County Landmarks, as well as those listed in the National Register of Historic Places, the California Register of Historical Resources, or the California Historical Resources Inventory. Refer to Table 4.5-1, *Archeological and Historic Resources with 0.25-Mile Radius of the Project Site*. As part of the research procedures, a geomorphic analysis was completed to assess the potential for deposition and preservation of subsurface cultural deposits from the prehistoric period in the Project area. Sources consulted for this purpose included topographic and geologic maps published by the U.S. Geological Survey (USGS) and soils report in the vicinity of the Subject site. Findings from these sources were used to develop a geomorphologic history and address geoarchaeological sensitivity of the Project site.

Historical background research for this study was conducted on the basis of published literature in local history and historic maps of the San Bernardino area. Among the maps consulted for this study were U.S. General Land Office (GLO) land survey plat maps dated 1876 to 1878 and USGS topographic maps dated 1901 to 1954. These maps are collected at the Science Library of the University of California, Riverside, and the California Desert District of the U.S. Bureau of Land Management, located in Moreno Valley.

Table 4.5-1: Archaeological and Historic Resources within a 0.25-Mile Radius of the Project Site

Site No.	Description	Distance from Project Site
36-002794	Mortars and metates	within 0.25-mile
36-004130	Home of Eternity Cemetery of Congregation Emmanuel, ca. 1861	within 0.25-mile
39-004186	Atwood Adobe	within 0.25-mile
36-005544	Martin Adobe	within 0.25-mile
36-006544	North Fork Ditch	partially on-site
36-006796	Cemetery	within 0.25-mile
36-006847	Atchison, Topeka and Santa Fe Railway's Kite-Shaped Track, built in 1887-1888	partially on-site
36-007049/ 36-012189	State Route 18	partially on-site
36-010399	Site of San Bernardino Chinatown	within 0.25-mile
36-010400	Residence, ca. 1894-1914	within 0.25-mile
36-010820	San Bernardino, Arrowhead and Waterman Railroad/Harlem Motor Road	partially on-site
36-012986	Craftsman-style Residence, ca. 1921-1922	within 0.25-mile
36-013922	Les Carlson's Service Building, ca. 1920s	within 0.25-mile
36-015497	San Bernardino Baseline/Baseline Street	partially on-site
36-017664	Pioneer Memorial Cemetery	within 0.25-mile
36-017668	Single-family residence	within 0.25-mile
36-017723	1850s Mormon Flour Mill site	within 0.25-mile
36-017732	West Twin Creek Water Company flume	within 0.25-mile
36-017733	Old Courthouse Site	within 0.25-mile
36-017760	Craftsman Style Residence, ca. 1918	within 0.25-mile
36-017797	Cox-Bradley Adobe	within 0.25-mile
36-017818	National Orange Show and Events Center, 1923-1955	within 0.25-mile
36-020302	Single-family residence	within 0.25-mile
36-020411	Adobe structure	within 0.25-mile
36-020673	Refuse scatter	within 0.25-mile
36-020803	Single-family residence	within 0.25-mile
36-020825	Waterman Used Cars and Trucks (commercial building)	within 0.25-mile
36-023371	Federal-style commercial building, ca. 1954	within 0.25-mile
36-023399	Waterman Gardens	within 0.25-mile
36-026928	Structural Foundations	within 0.25-mile
36-026988	Keller-Graham Ranch	within 0.25-mile
36-027694	Modern-style government office building, ca. 1968	within 0.25-mile
36-060211	Isolate: mortar	within 0.25-mile
36-060212	Isolate: metate	within 0.25-mile

Site No.	Description	Distance from Project Site
P1071-19H	West Twin Creek Ditch	partially on-site
P1071-09H	Jefferson Hunt House	within 0.25-mile
P1074-89H	Rice Thorn Ditch	within 0.25-mile
P1074-90H	Johnson Swamp Ditch	within 0.25-mile
P1074-92H	Davis Mill Ditch	partially on-site
P1074-93H	Daley Ditch	within 0.25-mile
P1074-94H	Logsdon, Ferrel and Brooks Ditch, ca. 1880	within 0.25-mile
P1074-94H	Waterman Ditch, ca. 1852	within 0.25-mile
P1074-96H	Heap Springs Ditch, ca. 1887	partially on-site
PSBR-30H	Stout's Dam Ditch, ca. 1857	partially on-site

CULTURAL RESOURCES IDENTIFIED

According to AIC records, nine historical/archeological sites (including four "pending" sites) were identified as lying partially within the Project site. Among these sites are the Atchinson, Topeka and Santa Fe Kite-Shaped Track (36-006847), the San Bernardino, Arrowhead and Waterman Railroad/Harlem Motor Road (36-010820), State Route 18 (36-007049/36-012189) San Bernardino Baseline/Baseline Street (36-015497), North Fork Ditch (36-006544), Stout's Dam Ditch (pending PSBR-30H), West Twin Creek Ditch (pending P1071-19H), Heap Springs Ditch (pending P1074-96H) and Johnson Swamp Ditch (pending P1074-90H).

During the field survey, no evidence of any cultural resources of prehistoric origin was found within or adjacent to the Project site. As stated previously, the Project site and the surrounding area have been greatly disturbed by flooding and construction/maintenance activities in the past, making it unlikely for any cultural remains from the prehistoric or early historic period to remain intact within the Project site.

Among these nine sites, site 36-010820, the circa 1888 San Bernardino, Arrowhead and Waterman Railroad/Harlem Motor Road, is known to have been removed some time prior to the 1950s. No physical evidence or remains were observed of any of the five ditches at their historical locations, including North Fork Ditch (36-006544), West Twin Creek Ditch (P1071-19H), Davis Mill Ditch (pending site P1074-92H), Heap Springs Ditch (pending site P1074-96H), and Stout Dam Ditch (pending site PSBR-30H).

Site 36-006847, representing the Atchison, Topeka and Santa Fe (now the Burlington Northern Santa Fe) Railway's Kite-Shaped Track, was previously determined not to constitute a "historic property" or a "historical resource" due to the lack of historic integrity. Field observations indicate that one of the two segments of the railroad line across the Project site has been removed while the other, still in working condition today, does not retain sufficient historical characteristics to relate to its period of significance, namely the 1880s-1910s.

Site 36-007049/36-012189, namely State Route 18, is known to date to the early 20th century. Similarly to the surviving segments of the Atchison, Topeka and Santa Fe Railway, the segment of the highway within the Project site, which coincides with Waterman Avenue, is essentially modern in appearance due to repeated upgrading and constant maintenance over the years, and exhibits no particular historical character.

Site 36-015497, the San Bernardino Baseline/Baseline Street, has been designated by the State of California as a Point of Historical Interest (CPHI-SBr-12), and thus meets the definition of a "historical

resource" under CEQA and potentially that of a "historic property" under Section 106. However, the historic value of the site is largely symbolic in nature, and is derived from a conceptual line across the landscape instead of any physical features of present-day Baseline Street, a working component of the modern transportation infrastructure.

Additionally, eight sites were found on properties located along the proposed pipeline routes. Among these sites are the Camouflage House (P1071-17H), the Les Carlson Service Building (36-013922), a 1954 federal style commercial building (36-023371), the Waterman Gardens apartment complex (36-02399), the Mormon Flour Mill (36-017723), the National Orange Show and Events Center (36-017818), the Home of Eternity Cemetery of Congregation Emmanuel (36-004130) and Pioneer Memorial Cemetery (36-017664). It should be noted that none of these sites are located immediately adjacent to the Project site.

PALEONTOLOGICAL RESOURCES IDENTIFIED

The record search service for this study was provided by the San Bernardino County Museum in Redlands and the Natural History Museum of Los Angeles County in Los Angeles. The records search results were used to identify any known paleontological localities within the Project site or the general vicinity. In addition to the records searches, a literature search was conducted using materials in the CRM TECH library, including unpublished reports produced during surveys of other properties in the area and the personal library of CRM TECH geologist/paleontologist Harry M. Quinn, California Professional Geologist #3477.

The Natural History Museum of Los Angeles County and the San Bernardino County Museum report no known paleontological localities within one mile of the Project site, with the closest recorded vertebrate fossil specimen recorded approximately 25 miles to the southwest. According to the museums, surface soils within the Project site consist of Quaternary alluvium that is not paleontologically sensitive. Both museums note that these sediments may overlie older Pleistocene alluvium in the subsurface that, if present and depending on its lithology, may have a high potential to contain significant fossil vertebrate remains. According to the San Bernardino County Museum, excavations that do not reach beyond 15 feet in depth are unlikely to encounter these older sediments.

On December 26, 2014, CRM TECH performed the paleontological field survey. In light of the extensively disturbed land and reduced paleontological sensitivity of the pipeline routes, the linear portion of the Project site was surveyed at a reconnaissance level by driving along the alignments and visually inspecting the surrounding ground surface for any indications of potential paleontological resources. The potential pump station and storage reservoir sites were surveyed at an intensive level by walking parallel transects spaced ten meters apart. Using these methods, the entire Project site was systematically examined to determine soil types, to verify geological formations and to look for any indications of paleontological remains. Visibility of the native ground surface was poor (0% to 10%) in most of the Project site due to the presence of sod, vegetation and pavement, but was occasionally good (70 to 80%) in the absence of such ground covers.

The field survey did not identify any potential paleontological resources. The Project site was inspected for any surficial evidence of fossilized faunal or floral remains, but none was found. The ground surface in nearly the entire Project site is extensively disturbed. Most of it lies within paved roadways, where the subsurface soils typically consist of highly disturbed fill dirty to the depth of five to six feet, and the rest of the Project site has been impacted by development. These past disturbances inevitably reduce the sensitivity of the surface soils and shallow subsurface sediments for intact potentially significant paleontological remains.

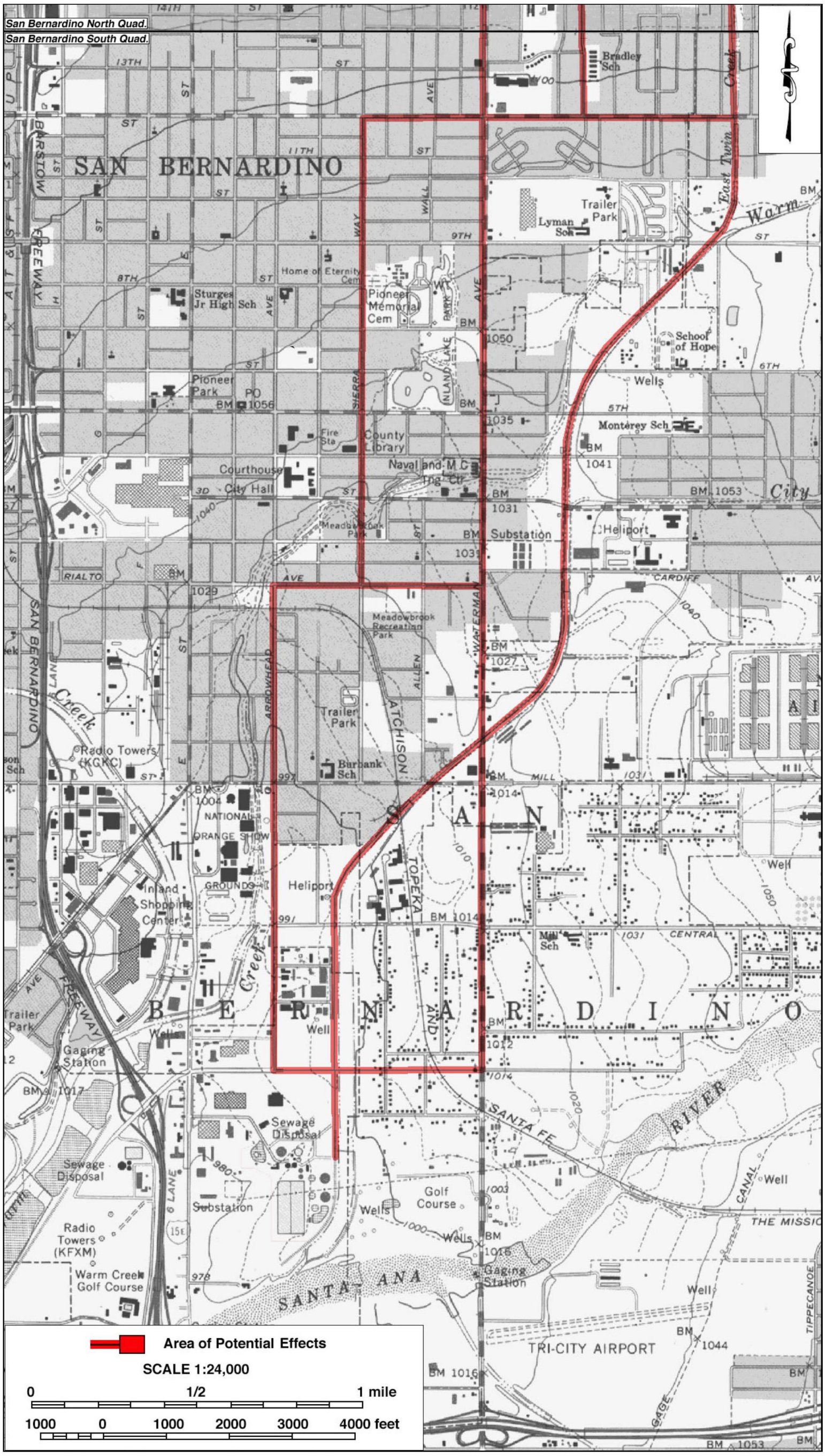
NATIVE AMERICAN CONSULTATION

In response to CRM TECH's inquiry, the Native American Heritage Commission reports in a letter dated December 11, 2014 that the sacred lands record search identified no Native American cultural resources within the Project site, but recommends that local Native American groups be contacted for further information. For that purpose, the commission provided a list of potential contacts in the region (see Appendix 10.6).

Upon receiving the NAHC's response, CRM TECH requested consultation with all eleven individuals on the referral list and the organizations they represent. In addition, as referred by tribal government staff, Anna Hoover, Cultural Analyst for the Pechanga Band of Luiseño Indians, was also contacted. Written requests for consultation were sent to the tribal representatives on December 23, 2014, and follow up telephone solicitations were carried out on January 5 – 8, 2015. Three written responses and one verbal response were received.

In emails dated December 23 and 31, 2014, respectively, Ms. Hoover and Denisa Torres, Cultural Resources Manager for the Morongo Band of Mission Indians, indicate that the Project site is outside their tribes' traditional territory, and thus they wish to defer to other tribes in closer proximity to this location. When reached by telephone on January 5, 2015, Goldie Walker, Chairperson of the Serrano Nation of Mission Indians, requested to be notified if any cultural resources were found during the undertaking.

In an email dated January 8, 2015, Daniel McCarthy, Director of Cultural Resources Management for the San Manuel Band of Mission Indians, states that the tribe is aware of cultural resources in the vicinity of the Project site. Given the sensitivity of the location, Mr. McCarthy stresses that the Project site should be carefully examined for cultural resources. If any cultural resources are identified during the fieldwork, the tribe wishes to be notified to provide further input about their cultural sensitivity.



Note: Refer to Draft EIR text for discussion of the Chino Basin Pipeline and minor improvements at the RIX Facility.

Michael Baker INTERNATIONAL

0 800 1,600 3,200 Feet

Source: ESRI World Imagery

CLEAN WATER FACTORY PROJECT EIR

Area of Potential Effects (Southerly Portion)

Exhibit 4.5-1

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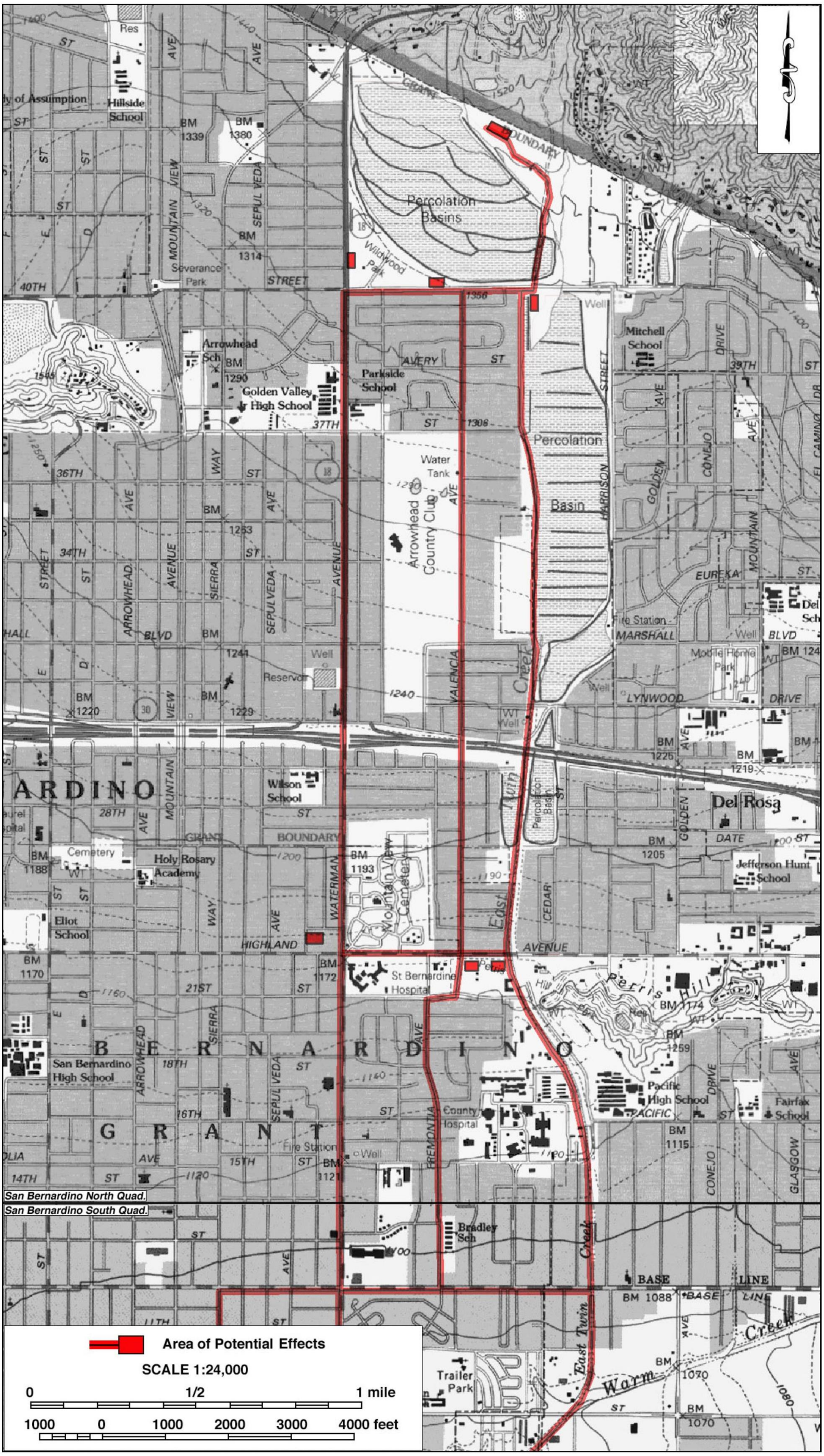

Note: Refer to Draft EIR text for discussion of the Chino Basin Pipeline and minor improvements at the RIX Facility.

Source: CRM Tech

Michael Baker INTERNATIONAL

0 800 1,600 3,200 Feet

Source: ESRI World Imagery

CLEAN WATER FACTORY PROJECT EIR

Area of Potential Effects (Northerly Portion)

Exhibit 4.5-2

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4.5.2 REGULATORY FRAMEWORK

FEDERAL

Section 106 of the National Historical Preservation Act (NHPA) of 1966

Federal regulations for cultural resources are governed primarily by Section 106 of the NHPA of 1966. Section 106 of the NHPA requires federal agencies to take into account the effects of their undertakings on historic properties and affords the Advisory Council on Historic Preservation a reasonable opportunity to comment on such undertakings. The Council's implementing regulations, "Protection of Historic Properties," are found in 36 Code of Federal Regulations (CFR) Section 800. The goal of the Section 106 review process is to offer a measure of protection to sites, which are determined eligible for listing on the National Register of Historic Places (NRHP). The criteria for determining NRHP eligibility are found in 36 CFR 60. Amendments to the Act (1986 and 1992) and subsequent revisions to the implementing regulations have, among other things, strengthened the provisions for Native American consultation and participation in the Section 106 review process. Federal agencies must follow federal regulations and other public or private sector entities must follow the same regulations if the proposed project requires a federal permit or if it uses federal money. In this proposed Project, SBMWD is the lead agency under CEQA and potential funding sources include the State Revolving Funds Loan Program which is administered by the State Water Resources Control Board. Permits would be required from the U.S. Army Corps of Engineers.

National Register of Historic Places

The National Register of Historic Places (NRHP) is "an authoritative guide to be used by federal, State, and local governments, private groups, and citizens to identify the Nation's cultural resources and to indicate what properties should be considered for protection from destruction or impairment." However, the Federal regulations explicitly provide that a listing of private property on the NRHP "does not prohibit under federal law or regulation any actions which may otherwise be taken by the property owner with respect to the property."

"Historic properties," as defined by the Advisory Council on Historic Preservation, include any "prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the NRHP maintained by the Secretary of the Interior" (36 CFR Section 800.16(I)). Eligibility for inclusion in the NRHP is determined by applying the following criteria, developed by the National Park Service in accordance with the NHPA:

The quality of significance in American history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association and:

A) that are associated with events that have made a significant contribution to the broad patterns of our history; or

B) that are associated with the lives of persons significant in our past; or

C) that embody distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

D) that have yielded, or may be likely to yield, information important in prehistory or history (36 CFR 60.4).

STATE

California historic preservation regulations affecting the proposed Project include the statutes and guidelines contained in CEQA (Public Resources Code [PRC] Section 20183.2 and Sections 21084.1 and 15064.5 of CEQA Guidelines). CEQA requires lead agencies to carefully consider the potential effects of a project on historical resources. An "historical resource" includes, but is not limited to, any object, building, structure, site, area, place, record or manuscript, which is historically or archaeologically significant (PRC Section 5020.1). Section 15064.5 of the CEQA Guidelines specifies criteria for evaluating the significance or importance of cultural resources, including:

- The resource is associated with events that have made a contribution to the broad patterns of California history;
- The resource is associated with the lives of important persons from our past;
- The resource embodies the distinctive characteristics of a type, period, region or method of construction, or represents the work of an important individual or possesses high artistic values; or
- The resource has yielded, or may be likely to yield, important information in prehistory or history.

Advice on procedures to identify such resources, evaluate their importance and estimate potential effects is given in several agency publications such as the series produced by the Governor's Office of Planning and Research (OPR). The technical advice series produced by OPR strongly recommends that Native American concerns and the concerns of other interested persons and corporate entities, including, but not limited to, museums, historical commissions, associates and societies be solicited as part of the process of cultural resources inventory. In addition, California law protects Native American burials, skeletal remains and associated grave goods regardless of the antiquity and provides for the sensitive treatment and disposition of those remains.

Senate Bill 18

In order to aid in the protection of traditional tribal cultural places ("cultural places") through local land use planning, Senate Bill (SB) 18, effective September 2004, requires local government to notify and consult with California Native American tribes when the local government is considering adoption or amendment of a general or specific plan.

California Register of Historical Resources (CRHR)

In 1992, the Governor signed Assembly Bill (AB) 2881 into law, establishing the CRHR. The CRHR is an authoritative guide in California used by State and local agencies, private groups, and citizens to identify the State's historical resources and to indicate what properties are to be protected, to the extent prudent and feasible, from substantial adverse change. The criteria for eligibility for the CRHR are based upon NRHP criteria. Certain resources are determined by the statute to be included on the CRHR, including California properties formally determined eligible for, or listed in, the NRHP, State Landmarks, and State Points of Interest.

The State Office of Historic Preservation (OHP) has broad authority under federal and State law for the implementation of historic preservation programs in the State of California. The State Historic Preservation Officer (SHPO) makes determinations of eligibility for listing on the NRHP and the CRHR.

The appropriate standard for evaluating "substantial adverse effect" is defined in PRC Sections 5020.1(q) and 21084.1. Substantial adverse change means demolition, destruction, relocation, or alteration such

that the significance of an historical resource would be impaired. Such impairment of significance would be an adverse impact on the environment.

Cultural resources consist of buildings, structures, objects, or archeological sites. Each of these entities may have historic, architectural, archaeological, cultural, or scientific importance. Under CEQA Guidelines, a significant impact would result if the significance of a cultural resource would be changed by proposed Project area activities. Activities that could potentially result in a significant impact consist of demolition, replacement, substantial alteration, and relocation of the resource. The significance of a resource is required to be determined prior to analysis of the level of significance of proposed project activities. The steps required to be implemented to determine significance in order to comply with CEQA Guidelines are:

- Identify cultural resources;
- Evaluate the significance of the cultural resources based on established thresholds of significance;
- Evaluate the effects of a proposed project on all cultural resources; and
- Develop and implement measures to mitigate the effects of the proposed project on significant cultural resources.

Sections 6253, 6254, and 6254.10 of the California Code authorize State agencies to exclude archaeological site information from public disclosure under the Public Records Act. In addition, the California Public Records Act (CPRA; Government Code [GC] Section 6250 et. seq.) and California's open meeting laws (The Brown Act, GC Section 54950 et. seq.) protect the confidentiality of Native American cultural place information. The CPRA (as amended, 2005) contains two exemptions that aid in the protection of records relating to Native American cultural places by permitting any state or local agency to deny a CPRA request and withhold from public disclosure:

- "records of Native American graves, cemeteries, and sacred places and records of Native American places, features, and objects described in Section 5097.9 and Section 5097.993 of the Public Resources Code maintained by, or in the possession of, the Native American Heritage Commission, another state agency, or a local agency" (GC Section 6254(r)); and
- "records that relate to archaeological site information and reports maintained by, or in the possession of, the Department of Parks and Recreation, the State Historical Resources Commission, the State Lands Commission, another state agency, or a local agency, including the records that the agency obtains through a consultation process between a California Native American tribe and a state or local agency" (GC Section 6254.10).

Likewise, the Information Centers of the California Historical Resources Information System (CHRIS) maintained by the OHP prohibit public dissemination of records and site location information. In compliance with these requirements, and those of the Code of Ethics of the Society for California Archaeology and the Register of Professional Archaeologists, the locations of cultural resources are considered restricted information with highly restricted distribution and are not publicly accessible.

Any proposed project site located on non-federal land in California is also required to comply with State laws pertaining to the inadvertent discovery of Native American human remains.

California Health and Safety Code Sections 7050.5, 7051, and 7054

California Health and Safety Code Sections 7050.5, 7051, and 7054 collectively address the illegality of interference with human burial remains as well as the disposition of Native American burials in archaeological sites. The law protects such remains from disturbance, vandalism, or inadvertent destruction, and establishes procedures to be implemented if Native American skeletal remains are

discovered during construction of a proposed project, including the treatment of remains prior to, during, and after evaluation, and reburial procedures.

LOCAL

City of San Bernardino General Plan

The Historical and Archaeological Resources Element of the General Plan includes concepts and guidelines to manage, preserve, and utilize cultural resources. The following goals, policies, and programs are applicable to the proposed Project:

Goal 11.5 Protect and enhance our archaeological resources.

Policy 11.5.1 Complete an inventory of areas of archaeological sensitivity in the planning area. Prior to public distribution, Native American tribes should be consulted to address any issues of confidentiality.

Policy 11.5.2 Develop mitigation measures for projects located in archaeologically sensitive areas to protect such locations, remove artifacts, and retain them for educational display. Native American tribes should be consulted to determine the disposition of any Native American artifacts discovered.

Policy 11.5.3 Seek to educate the general public about San Bernardino's archaeological heritage through written brochures, maps, and reference materials.

4.5.3 ENVIRONMENTAL IMPACTS

SIGNIFICANCE CRITERIA UNDER CEQA

Appendix G of the *CEQA Guidelines* contains the Initial Study Checklist form, which includes questions relating to cultural resources. The issues presented in the Initial Study Checklist have been utilized as Thresholds of Significance in this Section. Accordingly, a project may create a significant environmental impact if one or more of the following occurs:

a) Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5; (refer to Impact Statement 4.5-1)

b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5; (refer to Impact Statement 4.5-2)

c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature; (refer to Impact Statement 4.5-3)

d) Disturb any human remains, including those interred outside of formal cemeteries. (refer to Impact Statement 4.5-4)

SUMMARY OF APPLICABLE PROJECT DESIGN FEATURES AND EXISTING LAWS, ORDINANCES, AND REGULATIONS

Potential impacts to cultural resources associated with the proposed Project would occur primarily during the construction phase, primarily at the SBWRP and along the conveyance system routes, and would be

temporary in nature. Permanent above-ground structures would not result in significant cultural resource impacts. In fact, several Project Design Features will serve to minimize Project impacts, as follows:

1) The Project proposes to utilize existing infrastructure wherever possible, including the existing SBWRP site and existing recharge basins and reuse of existing abandoned pipelines, which reduces the extent of construction-related impacts and reduces the physical area required for conversion to long-term water supply relates uses;
2) The Project proposes to maintain essential minimum flows into the Santa Ana River from RIX, which will allow maintenance of Santa Ana River vegetation and its associated value to local Native American tribes;
3) The Project creates a long-term sustainable water supply for SBMWD and potential partners, a portion of which will be utilized for landscape irrigation, further contributing to the long-term aesthetic quality of the City and environs.

Impact 4.5-1: Would the proposed Project cause a substantial adverse change in the significance of a historical resource as defined in §15064.5? *Level of Significance: No Impact.*

CONSTRUCTION- AND OPERATIONS-RELATED IMPACTS

Water Reclamation Plant, Conveyance Systems, Recharge Site, RIX Phased Discharge Reduction

As noted in the Identification and Evaluation of Historic Properties report a number of buildings and other built-environment features that appeared to date to the historic period were observed along the pipeline routes, including the seven buildings and features identified in AIC records. None of these are located within or immediately adjacent to the Project site APE, and thus none would be affected, either directly or indirectly, by the proposed improvements associated with the Project; therefore, no impacts to these sites would occur.

The nine historical sites identified as lying partially within the Project APE (36-006544 North Fork Ditch; 36-006847 Atchison, Topeka and Santa Fe Railway's Kite-Shaped Track; 36-007049/36-012189 State Route 18; 36-010820 San Bernardino, Arrowhead and Waterman Railroad/Harlem Motor Road 36-015497 San Bernardino Baseline/Baseline Street; P1071-19H West Twin Creek Ditch; P1074-92H Davis Mill Ditch; P1074-96H Heap Springs Ditch; and PSBR-30H Stout's Dam Ditch), all of them linear features from the historic period, were evaluated as part of the historic properties report. For a detailed description of each site, please refer to Appendix 10.6 of this EIR for the Identification and Evaluation of Historic Properties report prepared by CRM TECH.

As noted previously under the existing conditions, site 36-010820, the circa 1888 San Bernardino, Arrowhead and Waterman Railroad/Harlem Motor Road, is known to have been removed some time prior to the 1950s. Five other sites, 36-006544, P1071-19H, P1074-92H, P1074-96H, and PSBR-30H, represent the courses of mid-19th century irrigation lines that have long since been abandoned and evidently demolished by later developments. The courses of these ditches across the Project APE were established solely on the basis of historical maps and other documentation, and not from tangible features of the landscape. During the present survey, no physical remains were observed of any of the five ditches, nor of the San Bernardino, Arrowhead and Waterman Railroad/Harlem Motor Road, within or adjacent to the Project APE. Therefore, the five early irrigation ditches and the San Bernardino, Arrowhead and Waterman Railroad/Harlem Motor Road were not evaluated further. No impacts to these sites would occur.

The three remaining sites, 36-006847 (the Atchison, Topeka and Santa Fe Railway's Kite-Shaped Track), 36-007049/36-012189 (State Route 18), and 36-015497 (the San Bernardino Baseline, as embodied by Baseline Street), were evaluated as potential "historic properties" or "historical resources" that may be affected by implementation of the Project.

Site 36-006847 (Santa Fe Railway/Kite-Shaped Track) - The Atchison, Topeka and Santa Fe Railway's Kite-Shaped Track, previously recorded as Site 36-006847 was once an important part of a major railroad system that helped transform southern California and a nationally renowned tourist attraction showcasing the region's distinguished "citrus culture." As such, it played an important role not only in the economic development but also in the social and cultural life of southern California, especially the Inland Empire area, during the late 19th and early 20th centuries. Due to the lack of sufficient integrity, however, the site was previously determined not to qualify as a "historic property" or a "historical resource."

Field observations during the field survey indicated that one of the two segments of the railroad line across the Project APE has been removed while the other, still in working condition today, does not retain sufficient historical characteristics to relate to its period of significance, namely the 1880s-1910s, as a result of more than a century of upgrading and maintenance work. None of the physical components of the site, such as the rails and the signal system in existence along the southern segment, contributes to the potential significance of the site. Therefore, the report concurred with the previous determination, and concluded that neither of the two segments of Site 36-006847 across the Project APE constitutes a "historic property" or a "historical resource." Therefore, implementation of the Project would not alter the historic aspects of the site's existence.

Site 36-007049/36-012189 (State Route 18) - State Route 18 is known to date to the early 20th century. Within the Project APE, it is represented by Waterman Avenue, a busy local thoroughfare. Similarly to the surviving segments of the Atchison, Topeka and Santa Fe Railway, Waterman Avenue at this location is essentially modern in appearance due to repeated upgrading and constant maintenance over the years, and exhibits no particular historical character. As such, it does not retain sufficient historic integrity to relate to its period of origin or the historic period in general. Like the majority of historic-period roadways that remain in use today, it is not considered a potential candidate for the National Register or the California Register due to the lack of integrity, and does not qualify as a "historic property" or a "historical resource." Therefore, implementation of the Project would not alter the historic aspects of the site's existence.

Site 36-015497 (San Bernardino Baseline) - Established in 1853 as the basis for all land surveys and titles in southern California, the San Bernardino Baseline, represented by Baseline Street across the Project APE, has been designated a California Point of Historical Interest because of its far-reaching influence in the early settlement and subsequent development of the region. The historic value of the site, however, is largely symbolic in nature and is derived from a conceptual line across the landscape instead of any physical features of present-day Baseline Street, another working component of the modern transportation infrastructure. The current appearance and characteristics of Baseline Street do not contribute to the significance or integrity of the site, and thus implementation of the Project would not alter the historic aspects of the site's existence. Therefore, pursuant to 36 CFR 800.16(i) and Calif. PRC §5020.1(q), the proposed Project will not have an effect on the significance or integrity of Site 36-015497.

Section 106 of the National Historic Preservation Act mandates that federal agencies take into account the effects of their undertakings on historic properties and seek ways to avoid, minimize, or mitigate any adverse effects on such properties (36 CFR 800.1(a)). Similarly, CEQA establishes that "a project that may cause a substantial adverse change in the significance of a historical resource is a project that may have a significant effect on the environment" (PRC §21084.1). "Substantial adverse change," according to PRC

§5020.1(q), "means demolition, destruction, relocation, or alteration such that the significance of an historical resource would be impaired."

Among the nine historic-period linear sites previously identified within the Project APE, 36-006544, 36-010820, P1071-19H, P1074-92H, P1074-96H, and PSBR-30H are no longer in existence, 36-006847 and 36-007049/36-012189 do not appear to meet the statutory definition of "historic properties" or "historical resources," and implementation of the proposed improvements will not have any effect on Site 36-015497. No other potential "historic properties" or "historical resources" were encountered throughout the course of this study, and the vertical extent of the Project APE appears to be relatively low in sensitivity for subsurface deposits of potentially significant archaeological remains.

Based on these findings, and pursuant to 36 CFR 800.4(d)(1) and Calif. PRC §21084.1, CRM TECH concluded that no historic properties or historical resources, as defined by Section 106 and CEQA, will be affected by implementation of the proposed Project. No impact is identified, and no further cultural resources investigation is required for the Project APE.

As noted above, the minor improvement activities that would occur at the RIX Facility and along the Chino Basin Pipeline are not anticipated to cause a substantial adverse change in the significance of a historical resource as these activities would occur within existing facilities and road rights-of-way and would be subject to the same prescribed policies and ordinances as the other facilities proposed under the Project (refer to 4.5.2, *Regulatory Framework*). Further, improvements at the RIX Facility are not anticipated to result in the inadvertent discovery of historical resources as the site has already been surveyed as part of the RIX Facility's previous environmental review process. [3]

MITIGATION MEASURES

No mitigation is required.

Impact 4.5-2: Would the Project cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5? *Level of Significance: Less than Significant Impact with Mitigation Incorporated.*

CONSTRUCTION- AND OPERATIONS-RELATED IMPACTS

Water Reclamation Plant, Conveyance/Storage, Recharge Sites, Direct Use Customers, RIX Phased Discharge Reduction

The Project site and the surrounding area have been greatly disturbed by construction and maintenance activities in the past, making it unlikely for any cultural remains from the prehistoric or early historic period to survive intact within the Project site. The records review indicated that very few prehistoric sites have been found near the Project site or across the level valley floor, while in contrast numerous prehistoric sites have been recorded in the foothills and on elevated terraces further to the north, close to but outside the seasonal drainages emanating from the San Bernardino Mountains. During the field survey, no evidence of any cultural resources of prehistoric origin was found within or adjacent to the Project site.

Most of the Project site lies within paved roadways, where the subsurface soils typically consist of highly disturbed fill dirt to the depth of five to six feet, and the rest of the Project site has also been impacted by

[3] Santa Ana Watershed Project Authority, *Final Environmental Impact Report for the Proposed Regional Tertiary Treatment System for San Bernardino and Colton*, Prepared by URS Consultants, Inc, March 1989, and Santa Ana Watershed Project Authority, *Final Supplemental Environmental Impact Report for the Proposed Regional Tertiary Treatment System for San Bernardino and Colton*, Prepared by URS Consultants, Inc, October 1992.

past urban development. The proposed Project is therefore considered to have a low potential to encounter any intact, potentially significant subsurface archaeological deposits of prehistoric origin. However, if previously unknown buried cultural materials are discovered during grading and/or other earth-moving operations associated with the proposed improvements, damage to such resources could be considered potentially significant under CEQA. Mitigation Measure CUL-1 would require the cessation of construction activities in the event that an archaeological resource is found so that a qualified archaeologist can appropriately retrieve any artifacts encountered. Implementation of Mitigation Measure CUL-1 would reduce potentially significant impacts to previously undiscovered subsurface resources to less than significant levels

MITIGATION MEASURES

CUL-1 If construction activities uncover potential archaeological resources, construction will be immediately halted within 50 feet of the find and a qualified archaeologist contracted to assess the resource. The qualified archaeologist will minimally document any isolates and clearly non-significant deposits in the field and grading shall proceed when the archaeologist is done. For any significant artifact deposits, the qualified archeologist will complete full data recovery consistent with the following professional archaeological collection methods:

a) The qualified archaeologist will catalogue and analyze recovered artifacts.

b) The qualified archaeologist will complete a report describing the methods and results of the monitoring and data recovery.

c) The qualified archaeologist will facilitate curation of artifacts to current professional repository standards at an appropriate curatorial facility, or the collection may be repatriated to the appropriate tribe.

Impact 4.5-3: Would the Project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature? *Level of Significance: Less than Significant Impact with Mitigation Incorporated*.

CONSTRUCTION- AND OPERATIONS-RELATED IMPACTS

Water Reclamation Plant, Conveyance Systems, Recharge Sites, RIX Phased Discharge Reduction

As noted above, the field survey conducted by CRM TECH on December 26, 2014 produced negative results for potential paleontological resources. The APE was closely inspected for any surficial evidence of fossilized faunal or floral remains, but none were identified. The ground surface in the Project site has been extensively disturbed. Most of it lies within paved roadways, where the subsurface soils typically consist of highly disturbed fill dirt to the depth of five to six feet, and the rest of the Project site has also been impacted by urban development and existing water treatment facilities. These past disturbances inevitably reduce the sensitivity of the surface soils and shallow subsurface sediments for intact, potentially significant paleontological remains.

However, the younger surface sediments may rest directly on top of older Pleistocene age alluvium that has a high paleontologic potential. While no fossil localities were reported in the Project site or within a one-mile radius, the subsurface lithology that may be present at this location has produced significant fossils of extinct Ice Age animals and plants in other portions of the Inland Empire. The older Pleistocene-age sediments are not expected to be present in sediments above 10-15 feet in depth. Given its limited

potential for deep-reaching ground disturbance, which overall is not expected to exceed seven feet in depth, the proposed Project would not likely encounter any paleontologically sensitive sediments. If any trenching, excavations, or other earth-moving operations reach beyond the depth of 10 feet, previously unknown paleontological resources have the potential to be present. Activities that could result in damage to previously unknown paleontological resources would be considered significant. Mitigation Measure CUL-2 would require a qualified paleontologist to monitor construction activities if excavation activities include digging deeper than 10 feet below the ground surface. Implementation of Mitigation Measure CUL-2 would reduce potentially significant impacts to less than significant.

The minor improvement activities that would occur at the RIX Facility and the development of the Chino Basin Pipeline are not anticipated to directly or indirectly destroy a unique paleontological resource or a unique geological feature as these activities would occur within existing built-out facilities and road rights-of-way and would be subject to the same prescribed policies and ordinances as other the other facilities proposed under the Project (refer to 4.5.2, *Regulatory Framework*). Further, improvements at the RIX Facility are not anticipated to result in the inadvertent discovery of paleontological resources as the site has already been surveyed during the RIX Facility's initial environmental review process. However, if activities for the Chino Basin Pipeline alignment include excavation activities greater than 10 feet below the ground surface, Mitigation Measure CUL-2 would be implemented in order to reduce potentially significant impacts to paleontological resources to a less than significant level.

MITIGATION MEASURES

CUL-2 If excavation activities include digging deeper than 10 feet below the ground surface, a qualified paleontologist will be contracted to monitor construction activities. If construction activities uncover potential paleontological (fossil) resources, construction will be temporarily halted within 50 feet of the find until the significance of the resources is determined by a qualified paleontologist. The paleontological monitor will be equipped to salvage fossils as they are unearthed to avoid construction delays, and to remove samples of sediments which are likely to contain the remains of small fossil invertebrates and vertebrates.

Paleontological monitors will have stop-work authority to temporarily halt or divert equipment to allow removal of abundant or large specimens. The paleontologist will identify and permanently preserve all recovered specimens and facilitate curation into an established, accredited, professional museum repository with permanent retrievable storage. The paleontologist will have a written repository agreement prior to the initiation of recovery activities. The qualified paleontologist will complete a report describing the methods and results of the monitoring and data recovery program that will be submitted to the SBMWD.

Impact 4.5-4: Would the Project disturb any human remains, including those interred outside of formal cemeteries? *Level of Significance: Less than Significant Impact with Mitigation Incorporated*.

CONSTRUCTION- AND OPERATIONS-RELATED IMPACTS

Water Reclamation Plant, Conveyance Systems, Recharge Sites, RIX Phased Discharge Reduction

Based on the records search and site assessment conducted by CRM TECH, the Project site and vicinity do not include a formal cemetery or any archaeological resources that might contain interred human remains. No evidence of human remains were observed within the Project site. However, potential

impacts to subsurface human remains resulting from construction of the proposed Project may occur during excavation and grading. This could result in potentially significant impacts to currently unknown remains. Implementation of Mitigation Measure CUL-3 would reduce potentially significant impacts to a less than significant level. Mitigation Measure CUL-3 would require that the NAHC is contacted by the Coroner if the remains are deemed to be Native American and prehistoric, so that a "Most Likely Descendant" can be designated.

Activities that would occur at the RIX Facility and the Chino Basin Pipeline are not anticipated to disturb human remains as these activities would occur within existing built-out landscapes including road rights-of-way and would be subject to the same prescribed policies and ordinances as other the other facilities proposed under the Project (refer to 4.5.2, *Regulatory Framework*). Further, improvements at the RIX Facility are not anticipated to result in the inadvertent discovery of paleontological resources as the site has already been surveyed as part of the RIX Facility's initial environmental review process.[4] However, as potential impacts to subsurface human remains may inadvertently occur during excavation activities, Mitigation Measure CUL-3 would be implemented in order to reduce potentially significant impacts to human remains to a less than significant level.

MITIGATION MEASURES

CUL-3 In the event of the discovery or recognition of any human remains in any location other than a dedicated cemetery, the following steps shall be taken:

- There shall be no further excavation or disturbance within 50 feet of the uncovered human remains until the project contractor contacts San Bernardino County Coroner to determine if the remains are prehistoric and that no investigation of the cause of death is required. If the coroner determines the remains to be Native American, the coroner shall contact the Native American Heritage Commission within 24 hours, and the Native American Heritage Commission shall identify the person or persons it believes to be the most likely descendent from the deceased Native American. The project contractor and landowner will follow procedures from California Health and Safety Code Sections 7050.5, 7051, and 7054, and Public Resources Code Section 5097.98 for handling of Native American remains and grave goods.

4.5.4 CUMULATIVE IMPACTS

The cumulative total of all related project development in the City of San Bernardino and surrounding jurisdictions creates the potential for additional impacts to historical, archaeological, paleontological resources, and/or human remains. The Project site and vicinity is urbanized and heavily disturbed. CRM TECH noted that, although the area is historic in nature, the years of disturbance resulted in potentially historic sites not retaining sufficient historical integrity to relate to its period of origin or the historical period in general. There was also no evidence of any archaeological resources of prehistoric origin found within or adjacent to the Project site and the proposed Project is therefore considered to have a low potential to encounter such resources. Also, if previously unknown archaeological resources are uncovered during grading and construction activities, potential adverse impacts would be mitigated by

[4] Santa Ana Watershed Project Authority, *Final Environmental Impact Report for the Proposed Regional Tertiary Treatment System for San Bernardino and Colton*, Prepared by URS Consultants, Inc, March 1989, and Santa Ana Watershed Project Authority, *Final Supplemental Environmental Impact Report for the Proposed Regional Tertiary Treatment System for San Bernardino and Colton*, Prepared by URS Consultants, Inc, October 1992.

Mitigation Measure CUL-2, which provides for the evaluation, salvage, treatment and disposition of such resources. Since it is unlikely that archaeological resources would be encountered and, if encountered, would be adequately mitigated, impacts on archaeological resources would be less than significant on both a cumulative and project-specific basis.

The proposed Project would not result in a cumulatively significant impact on paleontological resources with the implementation of Mitigation Measure CUL-3. Mitigation Measures CUL-1, CUL-2, and CUL-3 would effectively restore the value of significant resources if recovered.

4.5.5 SIGNIFICANT UNAVOIDABLE IMPACTS

No significant unavoidable impacts related to cultural resources have been identified with implementation of Mitigation Measures CUL-1, CUL-2, and CUL-3.

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Section 4.6
Hazards and Hazardous Materials

Section 4.6
Hazards and Hazardous Materials

This section describes the environmental and regulatory settings of hazards and hazardous materials, as they pertain to Project implementation. This section also identifies the Project's potential impacts, and mitigation measures that would reduce those impacts to less than significant levels, as needed.

Information presented in this section is based on hazards and hazardous materials information obtained from available public resources including, but not limited to, the *City of San Bernardino General Plan* (2005), *City of San Bernardino General Plan EIR* (2005), California Environmental Protection Agency's (CalEPA's) Cortese List, California Department of Toxic Substances Control's (DTSC's) EnviroStor database, State Water Resources Control Board's (SWRCB's) GeoTracker database, and available Geographical Information Systems (GIS) data and maps.

For purposes of this section, the term "hazardous materials" refers to both hazardous substances and hazardous wastes. "Hazardous materials" are defined as "a substance or material that…is capable of posing an unreasonable risk to health, safety, and property when transported in commerce" (49 CFR 171.8). Section 25501 of the California Health and Safety Code defines hazardous materials as follows:

> *Hazardous material means any material that, because of its quantity, concentration, or physical, or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment if released into the workplace or the environment. Hazardous materials include, but are not limited to, hazardous substances, hazardous waste, and any material which a handler or the administering agency has a reasonable basis for believing that it would be injurious to the health and safety of persons or harmful to the environment if released into the workplace or the environment.*

In Section 25141(b) of the Health and Safety Code, wastes are defined as hazardous if:

> *…because of their quantity, concentration, or physical, chemical, or infectious characteristics, [they may either] cause, or significantly contribute to an increase in mortality or an increase in serious illness[, or] pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, disposed of, or otherwise managed.*

4.6.1 AFFECTED ENVIRONMENT

EXISTING HAZARDOUS MATERIALS CONDITIONS

The Project area encompasses the existing Waterman Basins and East Twin Creek Spreading Grounds, existing paved streets and/or flood control channel rights-of-way (ROWs) along the proposed conveyance system alignments, the existing San Bernardino Water Reclamation Plant (SBWRP), the Rapid Infiltration and Extraction (RIX) Facility and a potential IEUA-owned basin along the Chino Basin Pipeline alignment.

The Hazardous Waste and Substances Sites ("Cortese") List is a planning tool used by the State, local agencies and developers to comply with the California Environmental Quality Act requirements by providing information about the location of hazardous materials release sites. Government Code Section 65962.5 requires the California Environmental Protection Agency (CalEPA) to develop an updated Cortese List on an annual basis.

According to the CalEPA, the SBWRP is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5. However, there are multiple Cortese listed hazardous materials sites immediately adjacent to the Project area, particularly along the proposed Alternative Alignments of the conveyance pipelines. Refer to Table 4.6-1, *Known Hazardous Contamination Sites Within 0.5 Miles of the Project Area*.

The only portion of the Project area where hazardous materials are present is at the existing SBWRP. The plant handles, stores, and transports hazardous materials as needed for water treatment purposes. As such soil, soil gas[1], and/or groundwater contamination is present within the Project area's southern portion.

Project storage facilities and pump stations, planned for the conveyance system, would be located within parcels adjacent to the proposed conveyance system. The proposed locations consist of park land (Wildwood Park and Perris Hill Park) or vacant land. None of the potential pump stations or storage sites are located within the vicinity of a site with reported releases, as outlined below.

The Project would involve increasing treated water delivery to direct use customers, like parks and golf parks. Potential recycled water users have been identified on Exhibit 3.0-4, *Recycled Water Conveyance System Alternatives (Southerly Portion)* and Exhibit 3.0-5, *Recycled Water Conveyance System Alternatives (Northerly Portion)*, and are not located on parcels with reported hazardous material releases.

A railroad line crosses all of the conveyance system alignments in the Project area. These areas may contain petroleum product concentrations and lead concentrations, which are derived from drippings from rail vehicles and flaked paint, respectively. Wooden railroad ties may contain preservatives (i.e., creosote), some of which may contain hazardous constituents. Railroad right-of-way areas may include other hazardous materials such as metals, total petroleum hydrocarbons (TPH), related compounds (i.e., fuel-related volatile organic compounds) and persistent organochlorine pesticides (i.e., toxaphene, dieldrin, chlordane, and dichlorodiphenyltrichloroethane (DDT). Track switch locations often have elevated levels of petroleum hydrocarbons. Inorganic and organic herbicides, along with diesel fuel, may have been used for vegetation control.

Proposed conveyance systems would also encroach onto Caltrans right-of-way along I-210. Until the mid-1980s, gasoline and other fuels contained lead, a toxic metal. As each car or truck traveled highways and roads, tiny particles of lead were released in the exhaust and settled on the soils next to the road. Most of the time, lead tends not to move very far or fast in the environment. Historically, the I-210 has involved a high number of vehicles, which could present an aerially-deposited lead (ADL) concern to bare soils in the freeway right-of-way. The Project would install conveyance systems within existing paved roadway and would not involve existing exposed soils, thus minimizing concerns for hazards and hazardous materials.

Areas of Known Hazardous Materials Contamination

A search of the EnviroStor database, maintained by the California Department of Toxic Substances Control, and the GeoTracker database, maintained by the State Water Resources Control Board, identified the following sites within 0.5-mile of the Project Area. The facility name, location, and current status for each site are provided below in Table 4.6-1, *Known Hazardous Contamination Sites within 0.5-Mile of the Project Area*.

[1] Soil gas is defined as the gases found in the air space between soil components.

Table 4.6-1: Known Hazardous Contamination Sites Within 0.5-Mile of the Project Area

Facility/Site Name	Address	City	Project Type[1]	Status[2]
EnviroStor				
Bunker Hill Groundwater Basin	92401, 92404, 92405, 92407, and 92411	San Bernardino	Federal Superfund site	Federal Superfund site
Geotracker				
San Bernardino Brine Facility (Closed)	399 Chandler Place	San Bernardino	Land Disposal Site	Closed with Monitoring as of November 21, 2013
Newmark Groundwater Contamination	Bunker Hill Ground Water Basin	San Bernardino	Federal Superfund site	Federal Superfund site
Norton Air Force Base	2,208 acres	San Bernardino	Federal Superfund site	Federal Superfund site
Archer – JC LLC (Abandoned Station) (T0607100623)	208 Waterman Ave North	San Bernardino	LUST – Cleanup Site	Open – Site Assessment
Bonadiman-McCain Inc (T10000001488)	280 S. Lena Road	San Bernardino,	LUST – Cleanup Site	Open – Remediation
Gas Plus (T0607199156)	1266 E Street South	San Bernardino	LUST – Cleanup Site	Open – Remediation
Mobil #18-HPH(T0607100339)	520 Orange Show Road	San Bernardino	LUST – Cleanup Site	Open – Remediation
G&M Oil Co. Station #47 T0607100339	501 Inland Center Drive	San Bernardino	LUST -Cleanup Site	Open – Remediation
Source: EnviroStor 2015; GeoTracker 2015 LUST=Leaking Underground Storage Tanks				

The sites identified above are described in more detail below, as the contamination plume impacts the Project area due to the proximity and classification as Federal Superfund Sites, which indicates higher degree of contamination.

San Bernardino Brine Facility

This facility is located in the Project area, at the SBWRP facility site. This on-site facility has reported the presence of brine ponds. In order to ensure groundwater quality underlying the lined brine ponds, periodic groundwater monitoring occurs. This facility has not reported a release of hazardous materials to the soil, soil gas, surface water, or groundwater.

Bunker Hill Groundwater Basin

This Bunker Hill Groundwater Basin includes areas with groundwater contamination in the following zip codes: 92401, 92404, 92405, 92407, and 92411. There are levels of TCE and PCE in domestic water wells above the State health-based action level for drinking water. TCE was a degreaser used in large quantities for commercial, industrial and aerospace applications in the area; PCE is a similar degreaser and dry cleaning compound that was also commonly used by local businesses. In November 1986, DTSC made an Imminent and Substantial Endangerment Determination of the area and entered into an agreement with the City of San Bernardino to design and construct three treatment systems in an effort to slow migration

of underground contaminants. The three systems are on line, treating up to 30 million gallons of groundwater per day.

Newmark Groundwater Contamination

The site is listed as a Federal Superfund site. The contamination at this site dates back to the early 1980s when four SBMWD wells were closed due to PCE and TCE contamination, among other halogenated organic chemicals. In 1986, DTSC contracted with SBMWD to construct, operate, and maintain four treatment systems.[2] The systems were intended to treat water pumped for public supply and were not intended to treat or contain the contaminant plume.

The 14 municipal wells that were retired from service due to this contamination served 25 percent of the City's total population, with additional wells also threatened. The San Bernardino wells supply 80,000 people in the cities of San Bernardino and Loma Linda, and the loss of any additional wells could leave some areas without water. The municipal supply wells for Riverside also lie directly down-gradient from the contamination plume.

In August 1993, the Federal Environmental Protection Agency (EPA) issued an Interim Record of Decision, which identified methods that the EPA would use to contain and clean up the Newmark Operable Unit (OU) groundwater contamination. Methods included limitation of additional contamination, and removal of contaminants, among others. Clean up activities are ongoing at this site.

San Bernardino International Airport (formerly known as the Norton Air Force Base)

This site is listed as a Federal Superfund site. The San Bernardino International Airport covers approximately 2,036 acres in San Bernardino County, California. Past hazardous waste management practices may have contributed to existing contamination problems throughout the base. The practices include burial of drums and other unspecified materials; disposal of waste oils, solvents, and paint residues into landfills, unlined pits, ponds, and drying beds; storage in leaking underground tanks; and spills of AVGAS, oils, solvents, PCBs, and acidic plating solutions. Additionally, unknown quantities of spent solvents were disposed of in several base landfills.

In November 1986, RWQCB issued a Cleanup and Abatement Order requiring Norton to clean up the Industrial Waste Water Treatment Plant Sludge Drying Beds. Phase II-Stage 2 of the IRP was completed in December 1986. It focused on characterization of the contamination at 18 on-base areas. More than 22 areas have been identified to date.

Schools

The Project's conveyance systems and recharge basins are located within one-quarter mile of multiple schools, including Burbank, Anderson, Monterey, Abraham Lincoln, Parkside, and E. Neal Roberts Elementary School, Golden Valley Middle School, and Clare Cherry School. There are no schools located within the vicinity of SBWRP and RIX facilities.

Airport and Aircraft Hazards

Public airports are required to maintain airport land use compatibility plans to promote compatibility between airports and surrounding land uses (within an established influence area). The San Bernardino International Airport (SBIA) is approximately two miles away from the Project area. A Comprehensive Land Use Plan (CLUP) and Airport Master Plan have yet to be adopted for the SBIA.

[2] Environmental Protection Agency. *Newmark Groundwater Contamination Superfund Site 2nd Five-Year Review*. Dated September 27, 2013.

Wildland Fire Hazard Areas

The northern portion of the Project area is located in a Very High Fire Hazard Severity Zone as identified in the CAL FIRE Fire Hazard Severity Zone map.[3] Further, the northern portion is also located in the City of San Bernardino identified foothill fire zones, as outlined in the San Bernardino General Plan.[4]

4.6.2 REGULATORY SETTING

FEDERAL

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) provides a federal "Superfund" to clean uncontrolled or abandoned hazardous waste sites as well as accidents, spills, and other emergency releases of pollutants and contaminants into the environment. Through CERCLA, the EPA identifies parties responsible for any release and ensures their participation in the cleanup.

The EPA is authorized to implement CERCLA in all 50 states and in US territories, though Superfund site identification, monitoring, and response activities are coordinated through the state environmental protection or waste management agencies. The Superfund Amendments and Reauthorization Act of 1986 reauthorized CERCLA to continue cleanup activities around the country and included several site-specific amendments, definition clarifications, and technical requirements (EPA 2015).

Superfund Amendments and Reauthorization Act

The Superfund Amendments and Reauthorization Act pertain primarily to emergency management of accidental releases. It requires formation of State and local emergency planning committees, which are responsible for collecting material handling and transportation data for use as a basis for planning. Chemical inventory data is made available to the community at large under the "right-to-know" provision of the law. In addition, SARA also requires annual reporting of continuous emissions and accidental releases of specified compounds. Annual submissions are compiled into a nationwide Toxics Release Inventory (TRI).

Hazardous Materials Transportation Act

The federal hazardous materials (hazmat) transportation law is the basic statute regulating hazardous materials transportation in the United States. Section 5101 of the federal hazmat law states that the purpose of the law is to protect against the risks to life, property, and the environment that are inherent in the transportation of hazardous material in intrastate, interstate, and foreign commerce.

The Hazardous Materials Regulations are administered by the Pipeline and Hazardous Material Safety Administration (PHMSA) and implement the federal hazmat law. The Hazardous Materials Regulations govern the transportation of hazardous materials via highway, rail, vessel, and air by addressing hazardous materials classification, packaging, hazard communication, emergency response information, and training. They also issue procedural regulations, including provisions on registration and public sector training and planning grants (49 CFR Parts 105, 106, 107, and 110). The PHMSA issues the Hazardous Materials Regulations (PHMSA 2015).

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[3] CAL FIRE. (2008, October 29). "Very High Fire Hazard Severity Zones: San Bernardino". http://www.fire.ca.gov/fire_prevention/fire_prevention_wildland_zones.php. Accessed on December 15, 2014.

[4] City of San Bernardino. General Plan Safety Element, page 10-43.

The Federal Motor Carrier Safety Administration issues regulations concerning highway routing of hazardous materials, hazardous materials endorsements for a commercial driver's license, highway hazardous material safety permits, and financial responsibility requirements for motor carriers of hazardous materials.

Resource Conservation and Recovery Act (RCRA)

The Resource Conservation and Recovery Act (RCRA) gives the EPA the authority to control hazardous waste from "cradle to grave," including the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA also sets forth a framework for the management of nonhazardous solid wastes.

The federal Hazardous and Solid Waste Amendments are the 1984 amendments to the RCRA that focus on waste minimization and phasing out land disposal of hazardous waste as well as corrective action for releases. Some of the other mandates of this law include increased enforcement authority for the EPA, more stringent hazardous waste management standards, and a comprehensive underground storage tank program (EPA 2015).

Occupational and Safety Health Act (29 USC Section 651 et seq.)

The Occupational and Safety Health Act is intended to ensure worker and workplace safety by requiring that employers provide their workers a place of employment free from recognized hazards to safety and health, such as exposure to toxic chemicals, excessive noise levels, mechanical dangers, heat or cold stress, or unsanitary conditions. The Occupational Safety and Health Administration (OSHA) is a division of the US Department of Labor that oversees the administration of the act and enforces standards in all 50 states.

STATE

California Hazardous Waste Control Law

The Hazardous Waste Control Law (HWCL) (California Health and Safety Code, Division 20, Chapter 6.5, Article 2, Section 25100, et seq.) is the primary hazardous waste statute in the State of California. The HWCL implements RCRA as a "cradle-to-grave" waste management system in the State of California. HWCL specifies that generators have the primary duty to determine whether their wastes are hazardous and to ensure their proper management. The HWCL also establishes criteria for the reuse and recycling of hazardous wastes used or reused as raw materials. The HWCL exceeds federal requirements by mandating source reduction planning, and a much broader requirement for permitting facilities that treat hazardous waste. It also regulates a number of types of wastes and waste management activities that are not covered by federal law with RCRA.

California Code of Regulations (CCR), Titles 22 and 26

A variety of CCR Titles address regulations and requirements for generators of hazardous waste. Title 22 contains the detailed compliance requirements for hazardous waste generators, transporters and facilities for treatment, storage and disposal. Because California is a fully authorized State according to RCRA, most RCRA regulations (i.e., 40 CFR 260, *et seq*.) have been duplicated and integrated into Title 22.

The transportation of hazardous waste by truck (or rail) is regulated by USDOT through National Safety Standards. These safety standards are also included in the California Administrative Code, Environmental Health Division. The California Health Services Department regulates hazardous waste haulers only. The California Highway Patrol has jurisdiction over transportation-related hazardous waste incidents on public roads. The County Fire Department also responds to incidents for control and cleanup purposes.

Unified Program

The Unified Program consolidates, coordinates, and makes consistent the administrative requirements, permits, inspections, and enforcement activities of the following six environmental and emergency response programs (CalEPA 2015):

- The Hazardous Waste Generator program and Hazardous Waste Onsite Treatment activities
- The Aboveground Storage Tank program Spill Prevention Control and Countermeasure Plan requirements
- The Underground Storage Tank program
- The Hazardous Materials Release Response Plans and Inventory program
- California Accidental Release Prevention program
- The Hazardous Materials Management Plans and the Hazardous Materials Inventory Statement requirements

The Secretary of CalEPA is directly responsible for coordinating the administration of the Unified Program. The Unified Program requires all counties to apply to the CalEPA Secretary for the certification of a local unified program agency. Qualified cities are also permitted to apply for certification.

The state agencies responsible for these programs set standards, while local governments implement the standards. CalEPA oversees implementation of the Unified Program as a whole, and the local Certified Unified Program Agency (CUPA) is required to consolidate, coordinate, and make consistent the administrative requirements, permits, fee structures, and inspection and enforcement activities for the six program elements. Most CUPAs have been established as a function of a local environmental health or fire department. The Hazardous Materials Division of the San Bernardino County Fire Department is the CUPA for the County of San Bernardino.

Senate Bill 1307

In 1993, the California Department of Health Services (CDHS) (now California Department of Public Health [CDPH]) submitted to the Legislature the report entitled, "Drinking Water into the 21st Century: Safe Drinking Water Plan for California" (1993 Plan). In 1996, the California Legislature enacted Senate Bill (SB) 1307 (Chapter 755, Statutes of 1996). SB 1307 amended Health and Safety (H&S) Code Section 116355 to require a periodic update of the original Plan. The issues that were to be addressed were essentially the same as those included in the 1993 Plan.

In 2012, California became the first state to enact a Human Right to Water law, Assembly Bill 685 (Chapter 524, Statutes of 2012). Public policy continues to be focused on the right of every human being to have safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitation. Water supply, contaminants, costs of treatment and distribution systems, the number and nature of small PWSs, especially in disadvantaged communities, and many other factors will continue to challenge progress in addressing the Human Right to Water. The SWRCB is committed to actively pursuing initiatives to address the Human Right to Water, beginning with the state's residents who are served by PWS but who do not receive safe drinking water.

Regulation of Drinking Water

Until July 2014, the regulation of drinking water was primarily the responsibility of CDPH. This responsibility has now been transferred to the SWRCB (Division of Drinking Water), which receives most of its statutory authority from the California Health and Safety Code. However, the regulation of water

supply, water quality, and the various types of water systems that serve drinking water remains fragmented in California. There are several state agencies that have a role in regulating certain types of PWS, including PWS formation, design, construction, and how they operate, including the rates that they can charge their customers. Along with the regulation of drinking water, the SWRCB and the RWQCB are responsible for protecting the waters of the state, including drinking water sources, both surface water and groundwater supplies.

The Department of Pesticide Regulation is responsible for ensuring that pesticides do not pollute groundwater. In addition to the SWRCB's role in ensuring that drinking water standards are protective of public health, the Office of Environmental Health Hazard Assessment (OEHHA) is responsible for providing the SWRCB with health-based risk assessments for contaminants (these assessments are used to develop primary drinking water standards). The principal federal agency involved in drinking water regulation is the EPA. EPA is responsible for implementing federal drinking water law, setting national drinking water requirements, and overseeing the SWRCB's enforcement of the federal law.

Local agencies also have a role in drinking water regulation both through direct oversight of certain PWS and through activities that affect a PWS service area. Local county health departments can be delegated the authority to regulate small PWS serving less than 200 service connections. In addition to other functions, Local Agency Formation Commissions oversee the expansion of service areas of public agencies that are PWS and can review to determine if an agency is providing municipal services in a satisfactory manner, including the delivery of safe drinking water.

California Government Code Section 65302.5

Each planning agency shall prepare and the legislative body of each county and city shall adopt a comprehensive, long-term general plan for the physical development of the county or city, and of any land outside its boundaries which in the planning agency's judgment bears relation to its planning. The State Board of Forestry and Fire Protection is required by the Government Code (GC) Section 65302.5 to review and make recommendations on the fire safety element of general plan updates. The review and recommendations apply to general plans with State Responsibility Areas (SRA) as defined in the Public Resources Code Section 4125 and areas designated as Very High Fire Hazard Severity Zones (VHFHSZ) by Government Code Sections 51175 - 51179.

Public Resources Code (PRC) Section 4290-4299

This section requires minimum statewide fire safety standards pertaining to: (a) road standards for fire equipment access; (b) standards for signs identifying streets, roads, and buildings; (c) minimum private water supply reserves for emergency fire use; and (d) fuel breaks and greenbelts. With certain exceptions, all new construction after July 1, 1991, in potential wildland fire areas is required to meet the statewide standards. The State requirements, however, do not supersede more restrictive local regulations.

As defined by CAL FIRE, wildland areas may contain substantial forest fire risks and hazards. These areas are also called State Responsibility Areas (SRAs). They consist of lands exclusive of cities, and federal lands regardless of ownership. The primary financial responsibility for preventing and suppressing fires belongs to the State. However, it is not the State's responsibility to provide fire protection services to any building or structure located within the wildlands unless CAL FIRE has entered into a cooperative agreement with a local agency for those purposes pursuant to PRC, Section 4142. Wildland areas require disclosure for real estate transactions, and owners of properties in wildland areas are subject to the maintenance requirements of PRC Section 4291.

Every fifth year beginning July 1, 1991, CAL FIRE must provide maps identifying the boundaries of lands classified as SRAs to the San Bernardino County assessor. CAL FIRE is also required to notify San Bernardino

County of any changes to SRAs within the County resulting from periodic boundary modifications approved by CAL FIRE.

California Government Code Section 51178

This section specifies that the Director of CAL FIRE, in cooperation with local fire authorities, shall identify areas that are Very High Fire Hazard Severity Zones (VHFHSZ) in Local Responsibility Areas (LRAs), based on consistent state-wide criteria and the expected severity of fire hazard. According to Government Code Section 51178, a local agency may, at its discretion, exclude from the requirements of Section 51182 an area within its jurisdiction that has been identified as a VHFHSZ, if it provides substantial evidence in the record that the requirements of Section 51182 are not necessary for effective fire protection within the area. Alternatively, local agencies like San Bernardino County may include areas not identified as VHFHSZ by CAL FIRE, following a finding supported by substantial evidence in the record that the requirements of Section 51182 are necessary for effective fire protection within the new area. According to Section 51182, such changes made by a local agency shall be final and shall not be rebuttable by CAL FIRE.

LOCAL

City of San Bernardino General Plan

The Safety Element of the *City of San Bernardino General Plan* includes goals and policies that are relevant to the Proposed Project as follows:

Goal 10.1 Protect the environment, public health, safety, and welfare from hazardous wastes.

Policy 10.1.1 Employ effective emergency preparedness and emergency response strategies to minimize the impacts from hazardous materials emergencies, such as spills or contamination.

Policy 10.1.2 Ensure the protection of surface and groundwater quality, land resources, air quality, and environmentally sensitive areas through safe transportation of waste through the City and comprehensive planning of hazardous materials, wastes, and sites.

Policy 10.1.4 Continue to support the role that the Fire and the Police Departments play in the on-site identification of hazardous wastes and emergency response to hazardous waste accidents in cooperation with the County Department of Environmental Health Services.

Goal 10.2 Promote proper operations of hazardous waste facilities are enforced.

Policy 10.2.1 Require the proper handling, treatment, movement, and disposal of hazardous materials and hazardous waste.

Policy 10.2.2 Encourage businesses to utilize practices and technologies that will reduce the generation of hazardous wastes at the source.

Policy 10.2.3 Implement federal, state, and local regulations for the disposal, handling, and storage of hazardous materials.

Policy 10.2.4 Work with the Department of Environmental Health Services to promote waste minimization, recycling, and use of best available technology in City businesses.

Policy 10.2.5 Participate in the process of selecting routes that are the most acceptable for the safe transportation of hazardous waste material within the City limits. Streets with high

concentrations of people, such as the downtown, or with sensitive facilities, such as schools and parks, should be avoided to the maximum extent possible.

Goal 10.4 Minimize the threat of surface and subsurface water contamination and promote restoration of healthful groundwater resources.

Policy 10.4.1 Promote integrated inter-agency review and participation in water resource evaluation and mitigation programs.

Policy 10.4.2 Protect surface water and groundwater from contamination.

Policy 10.4.3 Eliminate or remediate old sources of water contamination generated by hazardous materials and uses.

Policy 10.4.4 Develop programs and incentives for prevention of groundwater contamination and cleanup of known contaminated sites.

Goal 10.11 Protect people and property from urban and wildland fire hazards.

Policy 10.11.1 Continue to conduct long-range fire safety planning efforts to minimize urban and wildland fires, including enforcement of stringent building, fire, subdivision and other Municipal Code standards, improved infrastructure, and mutual aid agreements with other public agencies and the private sector.

Policy 10.11.2 Work with the U.S. Forest Service and private landowners to ensure that buildings are constructed, sites are developed, and vegetation and natural areas are managed to minimize wildfire risks in the foothill areas of the City.

Policy 10.11.3 Require that development in the High Fire Hazard Area, as designated on the Fire Hazards Areas Map (Figure S-8) be subject to the provisions of the Hillside Management Overlay District (HMOD) and the Foothill Fire Zones Overlay.

Policy 10.11.5 Continue to require that all new construction and the replacement of 50 percent and greater of the roofs of existing structures use fire retardant materials.

Policy 10.12.1 Maintain a functional City emergency response plan that addresses all hazards.

Policy 10.12.4 Prevent serious damage and injuries through effective hazard mitigation.

4.6.3 ENVIRONMENTAL IMPACTS

SIGNIFICANCE CRITERIA UNDER CEQA

Appendix G of the State *CEQA Guidelines* contains the Initial Study Checklist form, which includes questions related to hazards and hazardous materials. The issues presented in the Initial Study Checklist have been utilized as Thresholds of Significance in this Section. Accordingly, a project may create a significant environmental impact if one or more of the following occurs:

a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials; (refer to Impact Statement 4.6-1).

b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment; (refer to Impact Statement 4.6-2).

c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school; (refer to Impact Statement 4.6-3).

d) Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, create a significant hazard to the public or the environment; (refer to Impact Statement 4.6-4).

e) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan; (refer to Impact Statement 4.6-5).

f) Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands; (refer to Impact Statement 4.6-6).

g) For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, result in a safety hazard for people residing or working in the project area; (refer to Impact Statement (refer to Impact Statement 4.6-7).

h) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area; impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan; (refer to Impact Statement 4.6-8).

METHODS AND ASSUMPTIONS

The information in this section is based primarily on information collected from GeoTracker and EnviroStor. A database search was performed to identify federal, state, and local records of hazardous materials activities within a 0.5-mile of the project site which may impact conditions on-site. The following impact analysis is based on hazardous release site data provided by the DTSC and SWRCB, consultation with applicable local, state, and federal agencies, including the City of San Bernardino, and review of the City of San Bernardino and County of San Bernardino Emergency Plan. The impact analysis focuses on whether hazard impacts would have a significant effect on the physical environment and/or the health and safety of the public.

Summary of Applicable Project Design Features and Existing Laws, Ordinances, and Regulations

Several Project Design Features would serve to minimize Project impacts, as follows:

1) The Project proposes to utilize existing infrastructure wherever possible, including the existing SBWRP site and existing recharge basins and reuse of existing abandoned pipelines, which reduces the extent of construction-related impacts and reduces the physical area required for conversion to long-term water supply relates uses;

2) SBWRP operations are regulated by an extensive array of local, state and federal public health and safety regulations which serve to avoid the potential for significant operations-related impacts relative to the WRP.

3) The Project proposes the update of the SBMWD Operations and Maintenance Manual (O & M Manual), which outlines operations and maintenance protocols for employees for all of SBMWD facilities. This O&M Manual shall include a description of all necessary preventative (fail safe) and

contingency (response and cleanup) plans for controlling accidental discharges and for minimizing the effect of such an event.

General Construction and Operational Impacts to Hazards and Hazardous Materials

The following discussion identifies the Project's general construction, operation, and maintenance activities. All actual Project components, including their location and construction duration and techniques, are described in Section 3.0, *Project Description*. This information is used as a basis for the significance determinations identified for each Hazards and Hazardous Materials threshold of significance.

General Construction Activities

Project construction at all Project sites would require general construction activities including grading, excavating, trenching, pipe installation, placement of backfill, and asphalt patching. Construction would also include construction of reservoirs, pump stations, and other limited structural improvements. These activities would disturb soils and potentially groundwater. Pipeline installation would employ jack and bore and horizontal drilling techniques as needed. Project construction would involve the use of various products that could contain materials classified as hazardous, including solvents, adhesives, cements, paints, cleaning agents, and degreasers.

Construction activities would employ the use of heavy construction equipment like tunnel boring machines, cranes, compactors and earth movers. The machinery would require refueling and would utilize potential hazardous materials, such as gasoline.

The majority of construction activities would occur within existing public rights-of-way or easements within roadways or other developed areas. Depending on the Conveyance Scenario selected, there would be temporary construction that would occur along the East Twin Creek Spreading Grounds (within maintenance access areas) and along the east and northeast edges of the Waterman Basins. Grading and construction for these areas would be conducted in a manner that avoids sensitive habitat areas or other identified sensitive biological resources.

Most Project construction would take place during dry weather; if groundwater is encountered during construction, dewatering activities would be necessary. Dewatering would involve sediment removal and treatment of discharge to minimize pollutants.

General Project Operation and Maintenance Activities

A detailed description of operation and maintenance activities at each Project component is presented in Section 3.4, *Project Operation and Maintenance*. Project operation activities that would impact hazards and hazardous materials mainly involve water treatment activities and associated chemical use. For example, Project operation would involve the storage and use of chemicals at the SBWRP facility associated with proposed water treatment improvements.

Maintenance and operations of the conveyance system and other Project components would include periodic, scheduled inspections and the replacement of any equipment that have reaches the end of their lifetime or failed during use. Operation and maintenance activities at recharge sites would also include removal of fine sediment that has accumulated in the bottom of the basins, and maintenance of erosion control measures. Such activities may use hazardous materials like oils and fuels. These materials would be used in limited quantities.

During maintenance operations, when replacement of parts is needed, chemicals associated with treatment improvements would be used and if necessary stored onsite. Other materials to be stored onsite would include oil, grease, coolant, and lubricant for pumping and other power equipment. These

materials would be stored in above-ground containers with secondary containment in accordance with federal, state, and local requirements. Preventative (fail safe) and contingency (response and cleanup) plans, which are currently implemented, and help to control accidental discharges, would be updated as needed and required by law.

Impact 4.6-1: Would the Project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials? *Level of Significance: Less Than Significant Impact.*

There are several Project components, as discussed below, that would require the transportation, use or disposal of hazardous materials in both the construction and the operation phases of the Project. The transport, use, and disposal of these materials could pose a potential hazard to the public and the environment. The Project area is surrounded by residential development along the conveyance water system alignment; therefore, there is an increased exposure potential for the public to be exposed to hazardous materials being transported via trucks on surrounding highways and roadways. State law prohibits the transportation of more than 5 gallons or 50 pounds of hazardous waste without a hazardous materials transportation license. Therefore, it is anticipated that the transport of hazardous materials in the Project area would typically occur in small quantities, and would not result in significant hazards. If transportation of large quantities would be necessary for construction and operation, SBMWD or its operators would be required to apply for the necessary permits.

The transport, use, and storage of hazardous materials would be required to comply with all applicable local, state, and federal regulations during construction and operation activities as described in Section 4.6.2, *Regulatory Setting*. The Resource Conservation and Recovery Act (RCRA) gives the EPA the authority to control the generation, transportation, treatment, storage, and disposal of hazardous waste. The US Department of Transportation governs the transportation of hazardous materials. The Federal Motor Carrier Safety Administration issues regulations concerning highway routing of hazardous materials, hazardous materials endorsements for a commercial driver's license, highway hazardous material safety permits, and financial responsibility requirements for motor carriers of hazardous materials. Further, any handling of hazardous materials would be required to comply with an approved SWPPP. These measures would minimize potential upset from transport of hazardous materials.

CONSTRUCTION IMPACTS

Project construction would require the handling and transport of hazardous materials. Project construction at the SWBRP facility would take place within the confines of the existing plant, and transport would be necessary to and from the site. Conveyance system construction would take place in existing rights-of-way, in areas that are surrounded by urban development. Further, construction at the identified Recharge Sites would also take place within existing water storage facilities.

Because construction activities would comply with all applicable federal, state and local regulations as they relate to transport of hazardous materials, no unusual quantities or types of materials are expected, and construct activities would be of relatively short duration, the Project would have a less than significant hazardous materials impact due to construction.

OPERATION AND MAINTENANCE IMPACTS

As noted above, Project implementation would involve the transport of chemicals for Project operations at the SBWRP and the RIX facilities. The hazardous materials would be those typically associated with proposed water treatment operations. Maintenance operations at different Project elements would also

involve the transport of hazardous materials including oils, solvents, gasoline, and other necessary products in limited amounts.

Chemicals that would be transported during Project operation and maintenance are not considered acutely hazardous by the USEPA (40 CFR Part 355 Section 302 and 304). To provide for the safe handling, storage, use, and transport of hazardous materials associated with wastewater treatment operations and maintenance, the Project would comply with the Standard Guidelines adopted by the Federal Occupational Safety and Health Administration (Hazardous Waste Operations and Emergency Response Standard, Title 29 Code of Federal Regulations (CFR) Part 1910.120), as well as the DTSC as required.

Transportation, storage, use, and disposal of hazardous materials and wastes for operation and maintenance activities would comply with all regulations, guidelines, and standards contained within the County's Hazardous Materials Management Plan and applicable permitting procedures required by all federal, State, and local agencies associated with hazardous materials and waste issues. In California, both the Department of Health Services (DHS) and the SWRCB have authority to regulate activities of water recycling plants. The California Fire Code requires conformance to the proper storage and use of hazardous materials and containment of storage areas and secondary containment of chemical lines to contain spills. Conformance would be monitored by the appropriate regulatory agency through facility inspections and annual reporting mechanisms throughout the operational life of the facility. Compliance with existing regulations and on-going monitoring of the Project's operations would reduce potential impacts associated with the routine use, handling, transport, and storage of hazardous materials.

Though implementation of the Project may increase hazardous chemical use, hazardous materials transported to and from the Project site, and the generation of hazardous chemical wastes, these activities would take place under the SBWRP's current Waste Discharge Requirements (WRD) (Order No. R8-2012-0051) and National Pollutant Discharge Elimination System (No. CA0105392). This order permits the use, transport, and disposal of specified hazardous materials. These requirements include measures for the proper disposal of collected screenings, biosolids and other solids removed from liquid wastes.

While Project operation would entail the routine transport of hazardous materials, the Department would be required to meet adhere to all federal, state, and local hazardous materials handling laws, and compliance would be required in order to maintain the permits necessary to operate the Department's water treatment facilities. Furthermore, as noted in the Project Design Features, the Department would be required to update its O&M Manual with changes resulting from the proposed improvements to the SBWRP treatment facilities. Adherence to current regulatory standards and updates to the existing O & M Manual to reflect the addition of new Project facilities would reduce impacts related to the use, transport, and/or disposal of hazardous materials during Project operation and maintenance to a level of less than significant.

MITIGATION MEASURES

No mitigation is required.

Impact 4.6-2: Would the Project create a significant hazard to the public or environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment? *Level of Significance: Less Than Significant Impact with Mitigation Incorporated.*

The Project area is located in the vicinity of sites that are listed on the Cortese List for containing groundwater and soil contaminants. Construction activities would involve grading and soil removal in

areas that are undergoing cleanup procedures. As such, the Project could create potential hazards due to the accidental release of hazardous materials into the environment.

CONSTRUCTION IMPACTS

Project construction activities could result in the disturbance of existing contaminated soil, soil gas, and/or groundwater at the SBWRP, which is a site identified as containing hazardous materials. Existing contaminated groundwater may be present in portions of the basin as a result of surrounding Superfund Sites, and could be found at the recharge sites or the conveyance system Project area. However, due to the depth of contaminated groundwater at greater than 100 feet below ground surface, contaminated soil gas and groundwater are not anticipated to be encountered as part of Project construction.

Hazardous materials in contaminated soil could be released through wind-blow transport or storm water runoff and could result in exposure to sensitive receptors, such as workers or surrounding residential and commercial development during Project construction. Shallow pipeline excavations are proposed predominantly along existing roadways or flood control facilities, and are not expected to encounter hazardous materials contaminants in soil. However, the Project could lead to exposure of workers and the public to hazardous materials in excavated soil or groundwater due to presently unknown contamination. Mitigation Measure HAZ-1 requires that the Project contractor has a contingency plan for the sampling and analysis of any potentially harmful substances encountered during construction. Furthermore, Mitigation Measure Haz-2 requires that a Phase II Site Assessment is completed in areas of the Project site that consist of bare soil located within the ROW of frequently traveled roadways. With implementation of Mitigation Measure HAZ-1 and HAZ-2, Project impacts due to potentially unknown hazardous materials would be reduced to less than significant level.

Although most contaminated sites located near the Project area would not pose a threat of exposure due to Project construction (based on location, reported groundwater flow direction, and distance from proposed ground disturbance), one site would potentially impact soil, soil gas and groundwater at the Project Site: Archer – JC LLC (Abandoned Station) (T0607100623). This regulatory property has the potential to impact groundwater and/or soil gas underlying Alternative Alignment 1, and Project impacts could be significant. Mitigation Measure HAZ-3 requires that the Project applicant (or his/her designee) to retain a Phase II/Site Characterization Specialist to confirm whether the reported release at this site presents a concern to worker safety during Project construction activities or site disturbance activities within 528 feet[5] of the property boundaries for 208 Waterman Avenue North, San Bernardino, California. If the Phase II/Site Characterization Specialist (Specialist) identifies that a hazardous condition could potentially be present, the Specialist would prepare a Worker Safety Plan to be implemented during construction. SBMWD will review and approve the plan prior to site disturbance activities, and it would be implemented upon that approval. With implementation of Mitigation Measure HAZ-3, Project impacts in this regard would be reduced to a less than significant level.

Project construction would also cross an existing railroad right-of-way. Because of the potential for contaminated soil to be exposed at the railroad during Project construction, this impact would be significant and Mitigation Measure HAZ-4 would be required. Mitigation Measure HAZ-4 would also require that a qualified Phase II/Site Characterization Specialist conduct sampling to determine whether

[5] This distance is based on research conducted as part of the ASTM International (ASTM) E 2600-10 Standard Guide for Vapor Encroachment Screening on Property Involved in Real Estate Transactions. Based on this information, 90 percent of plumes from petroleum product releases occur within 528 feet or less, including vapors emanating from these plumes. Thus, in the absence of specific plume data, a distance of 528 feet is used as a conservative estimate for contamination plume distance during construction.

contamination exists within the areas of proposed disturbance for any aspect of the Project that would disturb exposed soils within railroad rights-of-way. The Specialist would prepare a Worker Safety Plan (to be approved by SBMWD) if a hazardous condition is identified. With implementation of Mitigation Measure HAZ-4, Project impacts would be reduced to a less than significant level.

OPERATION AND MAINTENANCE IMPACTS

Project operation and maintenance would require the handling of hazardous substances as described above in Impact 4.6-1. Hazardous materials involved in water purification systems would be present at both the SBWRP and the RIX Facility sites. Currently, the SBWRP treats approximately 22 MGD of wastewater to a secondary treatment standard, although the facility has the capacity to support up to 33 MGD of wastewater. Project implementation would provide tertiary/advanced treatment to the existing facility to support the Project. As part of the Project, recycled water would be retained underground in the aquifer for a minimum two-month period before it is extracted (pumped out, down-gradient) as a drinking water supply. The Project would follow all applicable federal, State and local regulations for direct irrigation use and indirect potable reuse of the Project's proposed advanced treated wastewater (refer to Section 4.7, *Hydrology and Water Quality* for additional discussion regarding water quality).

Maintenance activities would require the handling of hazardous materials that could be released into the environment. Since the Project would require the handling and storage of hazardous materials, which could be released accidentally, the Project could have a significant impact. As such, Mitigation Measure HAZ-5 is required, which requires the Project contractor to coordinate the preparation for disposal of all hazardous waste with the San Bernardino County Fire Department or the appropriate local Certified Unified Program Agency (CUPA). Coordination with the appropriate CUPA would effectively reduce impacts related to the accidental release of hazardous materials to a less than significant level.

Because all hazardous materials would be used in relatively small quantities and Project operations and maintenance would be in compliance with federal, State and local regulations, and with implementation of Mitigation Measure HAZ-5, all Project impacts would be reduced to a less than significant level for operation and maintenance.

MITIGATION MEASURES

HAZ-1 The Project contract specifications shall require that, in the event evidence of potential soil contamination such as soil discoloration, noxious odors, debris, or buried storage containers, is encountered during construction, the contractor shall have a contingency plan for sampling and analysis of potentially hazardous substances. The contingency plan shall specify all stop work procedures and the required handling, storage, and disposal methods, particular to the types and concentrations of chemicals identified in the soil. Any site investigations or remediation shall comply with applicable laws, and the Project contractor shall coordinate with the appropriate regulatory agencies.

HAZ-2 Prior to site disturbance activities, a Phase II/Site Characterization Specialist shall conduct sampling within bare soils in roadway right-of-way for highly traveled roadways located on-site in order to determine whether or not contamination exists from aerially deposited lead. Results of the sampling would indicate actions necessary, if any, to be taken during site disturbance activities.

HAZ-3 Prior to site disturbance activities within 528 feet of the property boundaries for 208 Waterman Avenue North, San Bernardino, California, SBMWD shall retain a Phase II/Site

Characterization Specialist to confirm whether the reported to be implemented during construction. SBWMD shall review and approve the plan prior to site disturbance activities, and it shall be implemented upon that approval.

HAZ-4 For work that would disturb exposed soils within railroad rights-of-way, a qualified Phase II/Site Characterization Specialist, retained by SBMWD, shall conduct sampling to determine whether contamination exists within the areas of proposed disturbance. Should a hazardous condition for construction workers be potentially present, the Phase II/Site Characterization Specialist shall prepare a Worker Safety Plan, in accordance with City, County, California Division of Occupational Safety and Health, and U.S. Environmental Protection Agency requirements, to be implemented during construction. SBMWD shall review and approve the plan prior to site disturbance activities, and it shall be implemented upon that approval.

HAZ-5 The Project contractor shall coordinate the preparation for disposal of all hazardous waste with the San Bernardino County Fire Department or the appropriate local Certified Unified Program Agency (CUPA). The Project contractor shall follow the provisions of California Code of Regulations, Title 8, Section 5163 through 5167 for General Industry Safety Orders to protect the action area from being contaminated by the accidental release of any hazardous materials and/or wastes.

Impact 4.6-3: Would the Project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school? *Level of Significance: Less than Significant Impact with Mitigation Incorporated.*

Numerous schools are located within one-quarter mile of the Project's conveyance pipelines and recharge sites, including Burbank, Anderson, Monterey, Abraham Lincoln, Parkside, and E. Neal Roberts Elementary School, Golden Valley Middle School, and Clare Cherry School. There are no schools located near the SBWRP plant and the RIX Facility. Therefore, the discussion below does not include these two Project elements, as there would be no impacts within one-quarter mile of a school.

CONSTRUCTION IMPACTS

While use of typical hazardous construction materials within the proposed construction boundaries would be limited and typical for this type of construction, there is a potential for release of hazardous materials during construction, as discussed in Impact 4.6-1 and Impact 4.6-2. Exposure to contaminated materials is considered a potentially significant impact as it could expose sensitive receptors near schools to hazardous materials. As such, Mitigation Measures HAZ-1, and HAZ-3 would be required. Mitigation Measure HAZ-1 requires that the Project contractor has a contingency plan for the sampling and analysis of any potentially harmful substances encountered during construction. Mitigation Measure HAZ-3 requires that the Project applicant (or his/her designee) retains a Phase II/Site Characterization Specialist to confirm whether the reported release at this site presents a concern to worker safety during Project construction activities or site disturbance activities within 528 feet of the property boundaries for 208 Waterman Avenue North, San Bernardino, California. If the Phase II/Site Characterization Specialist (Specialist) identify that a hazardous condition could potentially be present, the Specialist would prepare a Worker Safety Plan to be implemented during construction. SBMWD would review and approve the plan prior to site disturbance activities, and it would be implemented upon that approval. Implementation of these mitigation measures along with adherence to all applicable federal, State and local regulations would reduce Project impacts to a less than significant level.

OPERATIONS AND MAINTENANCE IMPACTS

Operation and maintenance activities would require the handling and storage of hazardous materials. At the conveyance and storage sites such handling and storage would take place within a quarter mile of existing school. As discussed under Impact 4.6-1 and Impact 4.6-2, all handling and storage of hazardous materials would take place in small quantities and would follow all applicable federal, state and local regulation. Therefore, Project impacts would be less than significant.

MITIGATION MEASURES

HAZ-1 See Impact 4.6-2 above.

HAZ-3 See Impact 4.6-2 above.

Impact 4.6-4: Would the Project be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, create a significant hazard to the public or the environment? *Level of Significance: Less than Significant Impact with Mitigation Incorporated.*

CONSTRUCTION IMPACTS

A records search for hazardous material sites compiled pursuant to Government Code Section 65962.5 was conducted specifically for the Project site (refer to Table 4.6-1, *Known Hazardous Contamination Sites Within 0.5-Mile of the Project Area*). The only portion of the Project area where hazardous materials are present is in the now closed San Bernardino Brine Facility, which is located at the existing SBWRP. This on-site facility has reported the presence of brine ponds, which were required for the Brine Facility operation. In order to ensure groundwater quality underlying the lined brine ponds is not impacted, periodic groundwater monitoring occurs. To date, this facility has not reported a release of hazardous materials into the soil, surface water, or groundwater.

Beyond the closed Brine Facility, the SBWRP handles, stores, and transports hazardous materials as needed for water treatment purposes. As such soil, soil gas, and/or groundwater contamination is present within the Project area's southern portion.

Furthermore, the records search also identified hazardous materials sites adjacent to areas reserved for the proposed conveyance system alignments and groundwater recharge basins, including, but not limited to, the Bunker Hill Groundwater Basin, Newmark Groundwater Contamination, and the San Bernardino International Airport, as well as several leaking underground storage tank sites. For a full description of these sites, refer to Table 4.6-1, *Known Hazardous Contamination Sites Within 0.5-Mile of the Project Area*.

While properties in the vicinity of the Project site were identified as potential sources of hazardous materials and/or contaminants, these properties represent a low risk of exposing workers and/or the general public with implementation of standard federal, State and local regulations as well as implementation of Mitigation Measures HAZ-1 and HAZ-6. Mitigation Measure HAZ-1 requires that the Project contractor has a contingency plan for the sampling and analysis of any potentially harmful substances encountered during construction. Mitigation Measure HAZ-6 would ensure that in the event of the accidental discovery of Unknown Storage Tanks (USTs), the USTs are removed by a licensed and experienced UST removal contractor using protocol consistent with applicable state or county

requirements. With implementation of these mitigation measures, less than significant impacts are expected.

OPERATION AND MAINTENANCE IMPACTS

Project maintenance and operation activities would require the routine handling of hazardous materials, and may include periodic, scheduled inspections and the replacement of any equipment that have reaches the end of their lifetime or failed during use. If replacement of parts is needed, impacts would be similar to the construction impacts described above. However, these activities would occur within the same alignment or site location and are not anticipated to produce new significant hazard to the public or the environment. Thus, less than significant impacts are anticipated in this regard.

MITIGATION MEASURES

HAZ-1 See Impact 4.6-2 above.

HAZ-6 If unknown Underground Storage Tanks (USTs) are discovered during construction, the UST, associated piping, and impacted soil shall be removed by a licensed and experienced UST removal contractor. The UST and contaminated soil shall be removed in compliance with applicable county and state requirements governing UST removal.

Impact 4.6-5: Would the Project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan? ***Level of Significance: Less than Significant Impact with Mitigation Incorporated.***

The Project area currently provides adequate ingress and egress, street width, turning radius, fire hydrants and adequate fire flow at all Project sites. All Project areas disturbed during Project construction would be returned to their original condition, and adequate emergency access would continue. Emergency access would be sustained at SBWRP and RIX facilities, as well as the recharge basins. Therefore, the discussion below does not include these two Project elements, as there would be no impacts regarding emergency response plans or emergency evacuation plans.

CONSTRUCTION IMPACTS

Conveyance system construction could entail street closures or could partially block streets within the construction zone for various periods of time. In these Project areas, emergency access could be temporarily impaired during construction activities. As such, Mitigation Measure HAZ-6 would be required. Mitigation Measure HAZ-6 requires the SBMWD Project contractor to inform the San Bernardino City Fire Department of approximate locations of work activities and ingress and egress points in and out of the construction site to provide adequate access and communications protocols for emergency response vehicles during each of the proposed construction phases. In addition, refer to TRA-1, which requires a Traffic Management Plan to provide adequate access during construction. With implementation of Mitigation Measures TRA-1 and HAZ-7, Project impacts would be lessened to a less than significant level.

OPERATION AND MAINTENANCE IMPACTS

The SBWRP's Operations and Maintenance Manual contains emergency response procedures for hazardous situations, and the County of San Bernardino implements an Operational Area Emergency

Operations Plan (EOP) that identifies hazards, response roles and responsibilities, and other key activities of government during a disaster. Project operation and maintenance activities would not impair implementation of the County's EOP, or any other local emergency management plans. The Project would also adhere to any locally CUPA imposed requirements regarding emergency response and clean up procedures.

During future conveyance system maintenance, street closure may be necessary to allow for adequate access. As such, the Project could have a significant impact on emergency access during conveyance system maintenance. With implementation of Mitigation Measures TRA-1 and HAZ-7, Project impacts would be less than significant.

MITIGATION MEASURES

HAZ-7 The SBMWD Project contractor shall inform the San Bernardino City Fire Department of approximate locations of work activities and ingress and egress points in and out of the construction site and coordinate with the Fire Department to provide adequate access and communications protocols for emergency response vehicles during each of the proposed construction phases.

TRA-1 Refer to Section 4.11, *Transportation and Circulation*.

Impact 4.6-6: Would the Project expose people or structures to significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences were intermixed with wildlands? *Level of Significance: Less than Significant Impact with Mitigation Incorporated.*

The northerly portion of the Project site is located within a State Very High Fire Hazard Severity Zone (VHFHSZ) according to CAL FIRE. According to the San Bernardino General Plan, the Project area intersects within all three foothill fire zones: A-Extreme Hazard, B-High Hazard, and C-Moderate Hazard. The SBWRP, located in the southern portion of the Project area, is located outside of the fire hazard zones. Therefore, the discussion below does not include the SBWRP, as there would be no impacts regarding wildland fires.

CONSTRUCTION IMPACTS

Construction activities in the northern Project area could expose people and equipment to increased risk of wildland fires. Construction equipment and activities could send sparks, which could ignite fires in areas where urbanized and wildlands are intermixed.

For Project components within a *Fire Hazard Area* as defined by Chapter 19.15 of the City of San Bernardino Municipal Code, appropriate fire prevention standards would be incorporated. Requirements would include such measures as fire-resistant landscaping, compaction of fill, plantings on cut/fill slopes, and implementation of street/access road requirements. For Project components within a *Fire Hazard Severity Zone*, Project design and construction shall include fire-prevention measures, as applicable pursuant to Chapter 49 of the California Fire Code. Measures would include fire-prevention measures, such as vegetation management plans, wildfire protection building construction, and/or maintenance of defensible space.

Due to the close interrelation between urbanized areas and wildland fires in the northern Project area, the Project could have a significant impact on wildland fires due to construction activities. As such, Mitigation Measure HAZ-8 would be required. Mitigation Measure HAZ-8 requires that construction equipment that includes a spark arrestor shall be equipped with a spark arrestor in good working order,

all vehicles and crews working at the Project site(s) shall have access to functional fire extinguishers at all times, and that construction crews are required to have a spotter during welding activities to look out for potentially dangerous situations, including accidental sparks. With implementation of Mitigation Measure HAZ-8, Project impacts would be reduced to a less than significant level in regards to wildland fires.

OPERATION IMPACTS

With the exception of the pump stations and storage tanks, conveyance system improvements would be installed below ground. As

(i.e., a well-functioning spark arrestor, adequate access to fire extinguishers such, operation of these facilities would not expose people or structures to an increased risk involving wildland fires. Operation and maintenance activities at pump stations and storage tanks, as well as recharge facilities, located within the Fire Hazard Areas would comply with Chapter 19.15 of the City of San Bernardino Municipal Code and any other state applicable regulations, such as California Fire Code Chapter 49.

Even with adherence to state and local regulations, due to the close interrelation between urbanized areas and wildland fires in the northern most Project area, the Project would have the potential for a significant impact on wildland fires due to operation and maintenance activities. As such, Mitigation Measure HAZ-8 would be required. Mitigation Measure HAZ-8 would require the implementation of several fire prevention measures during construction activities, and use of a spotter during welding activities). With implementation of Mitigation Measure HAZ-8 Project impacts would be reduced to a less than significant level in regards to Project operation and maintenance activities and wildland fires.

MITIGATION MEASURES

HAZ-8 During Project construction, all staging areas, welding areas, or areas slated for development using spark-producing equipment shall be cleared of dried vegetation or other material that could ignite. Any construction equipment that includes a spark arrestor shall be equipped with a spark arrestor in good working order. All vehicles and crews working at the Project site(s) shall have access to functional fire extinguishers at all times. In addition, construction crews shall be required to have a spotter during welding activities to look out for potentially dangerous situations, including accidental sparks.

Impact 4.6-7: Would the Project be located within an Airport Land Use Plan, or where such a plan has not been adopted, within two miles of a public airport, such that the Project would result in a safety hazard for people residing or working in the Project area? *Level of Significance: Less than Significant Impact.*

The San Bernardino International Airport (SBIA) is within two miles of the Project site and Conveyance System Alignments. A Comprehensive Land Use Plan (CLUP) and Airport Master Plan have yet to be adopted for the SBIA. The Project is related to water transport and reclamation, and would not affect aircraft or the airspace within the Project area. Thus, a less than significant impact would occur.

MITIGATION MEASURES

No mitigation is required.

Impact 4.6-8: For a Project within the vicinity of a private airstrip, would the Project result in a safety hazard for people residing or working in the Project area? *Level of Significance: No Impact.*

The Project area is not located within the vicinity of a private airstrip, and thus the Project would not result in a safety hazard for people residing or working in the Project area. Thus, no impacts would result in this regard.

MITIGATION MEASURES

No mitigation is required.

4.6.4 CUMULATIVE IMPACTS

Project implementation, when taken in consideration with other projects proposed in the Project vicinity and other water and wastewater infrastructure projects, would result in an increase in risk of exposure (human and the environmental) to hazardous materials, including through excavation, spills, or releases. As identified above, implementation of mitigation measures listed above would reduce Project impacts to a less than significant level. As such, the Project's contribution to the potential for disturbance of hazardous materials would not be cumulatively considerable.

The Project contractor(s) would be required to conform to all applicable hazardous materials and hazardous waste standards, permit conditions, and regulations during its construction phase. Hazardous materials used, or hazardous waste generated, during the operational phase of the Project would not be quantitatively significant and would also be required to comply with these standards, permit conditions, and regulation. Accordingly, the proposed Project's contribution would not be cumulatively considerable.

Project implementation would increase the number of structures located in urban-wildland interface areas and, therefore, the number of structures vulnerable to the effects of wildfire. These structures would not be inhabited and would be used for water conveyance purposes. Nonetheless, records of historical wildfires in California indicate that structure losses, loss of human life, and injury related to wildfire increase as development encroaches on or adjacent to wildland areas. The Project would be one of many existing and/or planned developments within the City of San Bernardino and adjacent unincorporated areas that would built in the vicinity of fire-vulnerable wildlands. However, the Project would implement current State and local codes and regulations regarding creation of defensible space, creation, and maintenance of vegetation management plans, and landscape requirements designed to significantly improve the ability of structures to survive wildfire.

The recent history of fire risk at the urban wildland interface demonstrates the effectiveness of these measures in protecting structures and lives. Accordingly, with adherence to existing and future laws, ordinances, and regulations and implementation of the mitigation measures required above, the risk posed by new construction in UWI areas would be reduced to less than cumulatively considerable.

4.6.5 SIGNIFICANT UNAVOIDABLE IMPACTS

There are no significant unavoidable impacts identified with regards to hazards and hazardous materials. All potentially significant impacts are mitigated to less than significant levels with adherence to current federal, State, and local regulations as well as implementation of Mitigation Measures HAZ-1 through HAZ-7, as well as TRA-1.

Section 4.7
Hydrology and Water Quality

Section 4.7
Hydrology and Water Quality

This section describes the environmental and regulatory settings of hydrology, flooding, and water quality, as they pertain to implementation of the proposed Project, and evaluates the Project's potential impacts to these resources.

Information given in this section is based on hydrology and water quality information obtained from available references including, but not limited to: the *City of San Bernardino General Plan* (2005); *City of San Bernardino General Plan* EIR (2005); the *San Bernardino Valley Regional Urban Water Management Plan* (2010), *Upper Santa Ana River Watershed Integrated Regional Water Management Plan* (2015); *Clean Water Factory Project Recycled/Advanced Water Conveyance System Engineering Analysis,* prepared by RBF and Black & Veatch (July 2012); *Evaluation of the Phased RIX Flow Reduction Plan on Santa Ana Suckers, Based on Predicted Changes in Physical Habitat in the Santa Ana River, from the Rialto Drain to the MWD Crossing,* prepared by GEI Consultants (July 2014); *Historic hydrologic analysis of dry weather discharge conditions in the Santa Ana River*, prepared by Wildermuth Environmental, Inc. (WEI) (May 2013); *Dry-weather discharge and depth analysis of the Santa Ana River from RIX to MWD Crossing*, prepared by WEI (May 2014); *In-depth analysis of the Santa Ana River HEC-RAS hydraulic modeling results for the river reach between RIX and the MWD Crossing*, prepared by WEI (March 2014); and available Geographical Information Systems (GIS) data and maps.

4.7.1 AFFECTED ENVIRONMENT

ENVIRONMENTAL SETTING

Project Location

The Project area is located in the City of San Bernardino, approximately 60 miles east of Los Angeles and approximately 110 miles north of San Diego, in the southwest portion of San Bernardino County along the foothills of the San Bernardino Mountains. The City of San Bernardino lies within the Santa Ana River Basin (Region 8) of the Regional Water Quality Control Board. Region 8 extends from the San Bernardino and San Gabriel Mountains in the north and east to Newport Bay along the coast. Of the nine total Regional Water Quality Control Boards in California, the Santa Ana River Basin is geographically the smallest region, at 2,800 square miles.

The Project area overlies a sloping alluvial plain interrupted with bedrock outcrops and hills. The topographic elevation ranges from about 2,100 feet above mean sea level (ft-msl) at the foothills of the San Bernardino Mountains to about 1,000 ft-msl near the SBWRP. The climate of the Santa Ana Region is classified as Mediterranean: generally dry in the summer with mild, wet winters. The average annual rainfall in the region is about fifteen inches, most of it occurring between November and March. The majority of the area would be desert were it not for imported water.

Watershed

The Santa Ana River Watershed is a group of connected inland basins and open coastal basins drained by surface streams generally flowing southwestward toward the Pacific Ocean. The watershed drains a 2,650 square-mile area, which is home to over 6 million people and includes parts of the major population centers of Orange, Riverside, and San Bernardino Counties, as well as a small area of Los Angeles County. The Santa Ana River flows over 100 miles and drains the largest coastal stream system in southern

California. It discharges into the Pacific Ocean at the City of Huntington Beach. The total length of the Santa Ana River and its major tributaries is about 700 miles.

Santa Ana River

The Santa Ana River has a number of tributaries in the vicinity of San Bernardino that contribute flow to the main stem of the river including Lytle Creek, East Twin Creek, East Warm Creek and San Timoteo Creek.

The main stem of the Santa Ana River is divided into six regulatory reaches. Each reach is generally a hydrologic and water quality unit described as follows:

- **Reach 6** includes the river upstream of Seven Oaks Dam. Flows consist largely of snowmelt and storm runoff.
- **Reach 5** extends from Seven Oaks Dam to San Bernardino, to the San Jacinto Fault (Bunker Hill Dike), which marks the downstream edge of the Bunker Hill groundwater basin. Most of this reach tends to be dry, except as a result of storm flows, and the channel is largely operated as a flood control facility. The extreme lower end of this reach includes rising water and intermittently, San Timoteo Creek flows.
- **Reach 4** includes the river from the Bunker Hill Dike down to Mission Boulevard Bridge in Riverside. That bridge marks the upstream limit of rising water induced by the flow constriction in the Riverside Narrows. Until about 1985, most water in the reach percolated to the local groundwater leaving the lower part of the reach dry. However, flows in the lower end of this reach may now intermittently contain rising groundwater, RIX and Rialto discharge, and flows from San Timoteo Creek.
- **Reach 3** includes the river from Mission Bridge to Prado Dam. In the Narrows, rising water feeds several small tributaries (Sunnyslope Channel, Tequesquite Arroyo, and Anza Park Drain) which are important breeding and nursery areas for the native fish. Temescal, Chino, and Mill/Cucamonga Creeks in Prado Basin are also important river tributaries.
- **Reach 2** carries all the upstream flows down through Santa Ana Canyon to Orange County where as much of the water as possible is recharged into the Orange County groundwater basin. The downstream end of the forebay/recharge area and, therefore, the ordinary limit of surface flows, is at 17th Street in Santa Ana.
- **Reach 1** is a normally dry flood control facility, presently being expanded and improved even further as a part of the US Army Corps of Engineers' Santa Ana River Project This reach extends from 17th Street to the tidal prism at the ocean.

The Project Area is generally located within Regulatory Reaches 4 and 5 of the Santa Ana River. The City of San Bernardino Wastewater Treatment Plant currently periodically discharges to Regulatory Reach 5 of the Santa Ana River at the confluence with East Twin Creek (34° 04' 14" N, 117° 17' 13" W). The river passes under several major highways and railroads in this area, and parts of the river bottom are lined with concrete. West Warm Creek, fully improved by the United States Army Corp of Engineers (USACE) for flood control, also joins the river in this area.

SURFACE WATER QUALITY

Nonpoint Source Pollutants

According to the EPA, nonpoint source pollution generally results from land runoff precipitation, atmospheric deposition, drainage, seepage, or hydraulic modification. Unlike pollution from industrial and

sewage treatment plants, nonpoint source (NPS) pollution comes from many diffuse sources. NPS pollution is caused by rainfall or snowmelt moving over and through the ground. As the runoff moves, it picks up and caries away natural and human made pollutants, finally depositing them into lakes, river, wetlands, coastal waters, and groundwater. Table 4.7-1, *Nonpoint Source Pollutants Definitions*, describes the most commonly encountered NPS and their characteristics.

Table 4.7-1: Nonpoint Source Pollutants Definitions

Nonpoint Source Pollutant	Characteristics
Sediment	Sediment is the major pollutant by volume in surface water and is made up of tiny soil particles that are washed or blown into surface waters. Suspended soil particles can cause the water to look cloudy or turbid. The fine sediment particles also act as a vehicle to transport other pollutants including nutrients, trace metals, and hydrocarbons. Construction sites are typically the largest source of sediment for urban areas under development.
Nutrients	Nutrients are a major concern for surface water quality. Phosphorous and nitrogen are two types of nutrients that are of special concern because they can cause algal blooms and excessive vegetative growth. Of the two, phosphorus is usually the limiting nutrient that controls the growth of algae in lakes. The orthophosphorous form of phosphorus is readily available for plant growth. The ammonium form of nitrogen can also have severe effects on surface water quality. The ammonium is converted to nitrate and nitrite forms of nitrogen in a process called nitrification. This process consumes large amounts of oxygen, which can impair the dissolved oxygen levels in water. The nitrate form of nitrogen is very soluble and is found naturally at low levels in water. When nitrogen fertilizer is applied to lawns or other areas in excess of plant needs, nitrates can leach below the root zone, eventually reaching ground water. Orthophosphate from auto emissions also contributes phosphorus in areas with heavy automobile traffic. As a general rule nutrient export is greatest from development sites with the most impervious areas. Other problems resulting from excess nutrients are 1) surface algal scums, 2) water discolorations, 3) odors, 4) toxic releases, and 5) overgrowth of plants. Common measures for nutrients are total nitrogen, organic nitrogen, total Kjeldahl nitrogen (TKN), nitrate, ammonia, total phosphate, and total organic carbon (TOC).
Trace Metals	Trace metals are a concern because of their toxic effects on aquatic life and their potential to contaminate drinking water supplies. The most common trace metals found in urban runoff are lead, zinc, and copper. A large fraction of the trace metals in urban runoff are attached to sediment and this effectively reduces the level which is immediately available for biological uptake and subsequent bioaccumulation. Metals associated with the sediment settle out rapidly and accumulate in the soils. Also, urban runoff events typically occur over a shorter duration, which reduces the amount of exposure that could be toxic to the aquatic environment. The toxicity of trace metals in runoff varies with the hardness of the receiving water. As total hardness of the water increases, the threshold concentration levels for adverse effects increases.
Oxygen-Demanding Substances	Aquatic life is dependent on the dissolved oxygen (DO) in the water and when organic matter is consumed by microorganisms then DO is consumed in the process. A rainfall event can deposit large quantities of oxygen demanding

Table 4.7-1, continued

Nonpoint Source Pollutant	Characteristics
	substance in lakes and streams. The biochemical oxygen demand of typical urban runoff is on the same order of magnitude as the effluent from an effective secondary wastewater treatment plant. A problem from low DO results when the rate of oxygen-demanding material exceeds the rate of replenishment. Oxygen demand is estimated by direct measure of DO and indirect measures such as biochemical oxygen demand (BOD), chemical oxygen demand (COD), oils and greases, and total organic carbon (TOC).
Bacteria	Bacteria levels in undiluted urban runoff exceed public health standards for water contact recreation almost without exception. Studies have found that total coliform counts exceeded EPA water quality criteria at almost every site and almost every time it rained. The coliform bacteria that are detected may not be a health risk themselves, but are often associated with human pathogens.
Oil and Grease	Oil and grease contain a wide variety of hydrocarbons some of which could be toxic to aquatic life in low concentrations. These materials initially float on water and create the familiar rainbow-colored film. Hydrocarbons have a strong affinity for sediment and quickly become adsorbed into it. The major source of hydrocarbons in urban runoff is from leakage of crankcase oil and other lubricating agents from automobiles. Hydrocarbon levels are highest in the runoff from parking lots, roads, and service stations. Residential land uses generate less hydrocarbons export.
Other Toxic Chemicals	Priority pollutants are generally related to hazardous wastes or toxic chemicals and can be sometimes detected in storm water. Priority pollutant scans have been conducted in previous studies of urban runoff, which evaluated the presence of over 120 toxic chemicals and compounds. The scans rarely revealed toxins that exceeded the current safety criteria. The urban runoff scans were primarily conducted in suburban areas not expected to have many sources of toxic pollutants (with the possible exception of illegally disposed or applied household hazardous wastes). Measures of priority pollutants in storm water include: 1) phthalate (plasticizer compound), 2) phenols and creosols (wood preservatives), 3) pesticides and herbicides, 4) oils and greases, and 5) metals.

Physical Characteristics of Surface Water Quality

The quantity of a material in the environment and its specific characteristics determine the amount of the pollutant present in surface runoff. In an urban environment, the quantity of pollutants in the environment is a function of the intensity of the land uses. For example, higher levels of automobile traffic create a higher prevalence of a number of related pollutants, such as lead and hydrocarbons. A material that is considered a pollutant, such as a fertilizer, is a function of the quantity of the material and the manner in which it is applied to the environment. For instance, applying fertilizer in quantities beyond the needed quantity, allows for the potential contamination of surface or ground water sources.

Evaluating the condition of water, through water quality testing and monitoring, allows for the comparison of the constituents in the water to an established water quality standard. Water quality standards are the foundation of the water quality based control program mandated by the federal Clean Water Act and State Porter-Cologne Water Quality Control Act. The standards form the legal basis for controls on the amount of pollution entering waters from sources such as industrial facilities, wastewater treatment plants and storm sewers. Standards are also the technical basis for reducing runoff from rural and urban areas. A standard can consist of either numeric or narrative limits for a specific physical or

chemical parameter. Ultimately, a water quality standard is developed to help protect and maintain water quality necessary to meet and maintain designated or assigned uses, such as swimming, recreation, public water supply, and/or aquatic life.

Table 4.7-2, *Water Quality Indicators*, provided below outlines a number of the physical, chemical, or biological characteristics that are taken into consideration when evaluating the surface water quality.

Table 4.7-2: Water Quality Indicators

Water Quality Indicator	Definitions
Dissolved Oxygen	Dissolved oxygen in the water has a pronounced effect on aquatic organisms and the chemical reactions that occur. It is one of the most important biological water quality characteristics in the aquatic environment. The dissolved oxygen concentration of a water body is determined by the solubility of oxygen, which is inversely related to water temperature, pressure, and biological activity. Dissolved oxygen is a transient property that can fluctuate rapidly in time and space. Dissolved oxygen is an indicator of overall water quality at a particular point and time of sampling. The decomposition of organic debris in water is a slow process and the resulting changes in oxygen status respond slowly also. The oxygen demand is an indication of the pollutant load and includes measurements of biochemical oxygen demand or chemical oxygen demand.
Biochemical Oxygen Demand (BOD)	The biochemical oxygen demand (BOD) is an index of the oxygen-demanding properties of the biodegradable material in the water. Samples are taken from the field and incubated in the laboratory at 20°C, after which the residual dissolved oxygen is measured. The BOD value commonly referenced is the standard 5-day values. These values are useful in assessing stream pollution loads and for comparison purposes.
Chemical Oxygen Demand	The chemical oxygen demand (COD) is a measure of the pollutant loading in terms of complete chemical oxidation using strong oxidizing agents. It can be determined quickly because it does not rely on bacteriological actions as with BOD. COD does not necessarily provide a good index of oxygen demanding properties in natural waters.
Total Dissolved Solids (TDS)	TDS concentration is determined by evaporation of a filtered sample to obtain residue whose weight is divided by the sample volume. The TDS of natural waters varies widely. There are several reasons why TDS is an important indicator of water quality. Dissolved solids affect the ionic bonding strength related to other pollutants such as metals in the water. TDS are also a major determinant of aquatic habitat. TDS affects saturation concentration of dissolved oxygen and influences the ability of a water body to assimilate wastes. Eutrophication rates depend on total dissolved solids.
pH	The pH of water is the negative log, base 10, of the hydrogen ion (H+) activity. A pH of 7 is neutral; a pH greater than 7 indicates alkaline water; a pH less than 7 represents acidic water. In natural water, carbon dioxide reactions are some of the most important in establishing pH. The pH at any one time is an indication of the balance of chemical equilibrium in water and affects the availability of certain chemicals or nutrients in water for uptake by plants. The pH of water directly affects fish and other aquatic life and generally toxic limits are pH values less than 4.8 and greater than 9.2.
Alkalinity	Alkalinity represents the capacity of water to neutralize acid. Alkalinity is also linked to pH and is caused by the presence of carbonate, bicarbonate, and hydroxide,

Table 4.7-2, continued

Water Quality Indicator	Definitions
	which are formed when carbon dioxide is dissolved. A high alkalinity is associated with a high pH and excessive solids. Most streams have alkalinities less than 200 milligrams per liter (mg/L) and ranges of alkalinity of 100-200 mg/L seem to support well-diversified aquatic life.
Specific Conductance	The specific conductivity of water, or its ability to conduct an electric current, is related to the total dissolved ionic solids. Long term monitoring of project waters can develop a relationship between specific conductivity and TDS. Its measurement is quick and inexpensive and can be used to approximate TDS. Specific conductivities in excess of 2,000 µohms/cm indicate a TDS level too high for most freshwater fish.
Turbidity	The clarity of water is an important indicator of water quality that relates to the ability of photosynthetic light to penetrate. Turbidity is an indicator of the property of water that causes light to become scattered or absorbed. Suspended clays and other organic particles cause turbidity. It can be used as an indicator of certain water quality constituents such as predicting the sediment concentrations.
Nitrogen (N)	Sources of nitrogen in storm water are from the additions of organic matter to water bodies or chemical additions. Ammonia and nitrate are important nutrients for the growth of algae and other plants. Nitrogen occurs in many forms. Organic Nitrogen breaks down into ammonia, which eventually becomes oxidized to nitrate-nitrogen, a form available for plants. High concentrations of nitrate-nitrogen (N/N) in water can stimulate growth of algae and other aquatic plants, but if phosphorus (P) is present, only about 0.30 mg/l of nitrate-nitrogen is needed for algal blooms. Some fish life can be affected when nitrate-nitrogen exceeds 4.2 mg/l. There are a number of ways to measure the various forms of aquatic nitrogen. Typical measurements of nitrogen include Kjeldahl nitrogen (organic nitrogen plus ammonia); ammonia; nitrite plus nitrate; nitrite; and nitrogen in plants. The principal water quality criteria for nitrogen focus on nitrate and ammonia.
Phosphorus (P)	Phosphorus is an important component of organic matter. In many water bodies, phosphorus is the limiting nutrient that prevents additional biological activity from occurring. The origin of this constituent in urban storm water discharge is generally from fertilizers and other industrial products. Orthophosphate is soluble and is considered to be the only biologically available form of phosphorus. Since phosphorus strongly associates with solid particles and is a significant part of organic material, sediments influence concentration in water and are an important component of the phosphorus cycle in streams. The primary methods of measurement include detecting orthophosphate and total phosphorus.

The *Water Quality Control Plan for the Santa Ana River Basin* (Basin Plan), adopted by the Regional Water Quality Control Board, establishes water quality standards and water quality objectives for each reach of the river.

The following beneficial uses for this reach are described in the Basin Plan:

- Municipal and Domestic Supply (MUN) waters are used for community, military, municipal or individual water supply systems. These uses may include, but are not limited to, drinking water supply.

- Agricultural Supply (AGR) waters are used for farming, horticulture or ranching. These uses may include, but are not limited to, irrigation, stock watering, and support of vegetation for range grazing.
- Groundwater Recharge (GWR) waters are used for natural or artificial recharge of groundwater for purposes that may include, but are not limited to, future extraction, maintaining water quality or halting saltwater intrusion into freshwater aquifers.
- Hydropower Generation (POW) waters are used for hydroelectric power generation.
- Water Contact Recreation (REC 1*)[1] waters are used for recreational activities involving body contact with water where ingestion of water is reasonably possible. These uses may include, but are not limited to, swimming, wading, water-skiing, skin and scuba diving, surfing, whitewater activities, fishing and use of natural hot springs.
- Non-contact Water Recreation (REC 2*) waters are used for recreational activities involving proximity to water, but not normally involving body contact with water where ingestion of water would be reasonably possible. These uses may include, but are not limited to, picnicking, sunbathing, hiking, beachcombing, camping, boating, tidepool and marine life study, hunting, sightseeing` and aesthetic enjoyment in conjunction with the above activities.
- Warm Freshwater Habitat (WARM) waters support warm water ecosystems that may include, but are not limited to, preservation and enhancement of aquatic habitats, vegetation, fish and wildlife, including invertebrates.
- Wildlife Habitat (WILD) waters support wildlife habitats that may include, but are not limited to, the preservation and enhancement of vegetation and prey species used by waterfowl and other wildlife.
- Rare, Threatened or Endangered Species (RARE) waters support the habitats necessary for the survival and successful maintenance of plant or animal species designated under state or federal law as rare, threatened or endangered.

During the late summer months, when there is the least inflow of high-quality rainfall water, the baseflow of the Santa Ana River may be comprised almost entirely of discharges from wastewater treatment plants. Although these treatment plants are required to meet State treatment standards, the baseflow is high in TDS, nitrogen, and other constituents at times.

Impaired Water Bodies[2]

Clean Water Act section 303(d) requires states to identify waters that do not meet, or are not expected to meet by the next listing cycle, applicable water quality standards after the application of certain technology-based controls and schedule such waters for development of Total Maximum Daily Loads (TMDLs). The Section 303(d) Listing Policy is enacted and implemented by State and Regional Water Quality Control Boards. The respective water boards assess water quality data for California's waters every

[1] The REC 1 and REC 2 beneficial use of designations assigned to surface waterbodies in this Region should not be construed as encouraging recreational activities. In some cases, such as Lake Matthews and certain reaches of the Santa Ana River, access to the waterbodies is prohibited because of potentially hazardous conditions and/or because of the need to protect other uses, such as municipal supply or sensitive wildlife habitat. Where REC 1 or REC 2 is indicated as a beneficial use in Table 3-1 in the 1995 Water Quality Control Plan for the Santa Ana River Basin (Region 8) Chapter 3, *Beneficial Uses*, the designations are intended to indicate that the uses exist or that the water quality of the waterbody could support recreational uses.

[2] State Water Resources Board. Impaired Water Bodies. 2010. http://www.waterboards.ca.gov/santaana/water_issues/programs/tmdl/index.shtml. Accessed January 20, 2015.

two years to determine if they contain pollutants at levels that exceed protective water quality criteria and standards.

For water bodies placed on the 303(d) List of Water Quality Limited Segments, states are required to develop TMDLs for the pollutant(s) that are causing the water body to test higher than the 303(d) standards. Once a water body is placed on the 303(d) List of Water Quality Limited Segments, it remains on the list until a TMDL is adopted and the water quality standards are attained or there are sufficient data to demonstrate that water quality standards have been met and delisting can take place. The Santa Ana Region's Approved 303(d) Lists of Water Quality Limited Segments were updated in 2010 and was approved by the U.S. Environmental Protection Agency (EPA) on October 11, 2011. Table 4.7-3, *Santa Ana Region's Approved 303(d) List of Water Quality Limited Segments*, provides a list of segments within the Santa Ana River identified as impaired. Nonpoint Source discharges remain the most significant source of pollutants in many of the waters of the Santa Ana River.

Table 4.7-3: Santa Ana Region's Approved 303(d) List of Water Quality Limited Segments

Water Segment Name	Water Type	Pollutant/Potential Source	Estimated Area Assessed	First Year Listed	TMDL Requirement Status*	Date**
Santa Ana River Reach 6	River/Stream	Cadmium/Unknown Copper/Unknown Lead/Unknown	27 miles	2010	5A	2021
Santa Ana River Reach 2	River/Stream	Indicator Bacteria/Unknown	20 miles	2010	5A	2021
Santa Ana River Reach 3	River/Stream	Copper/Unknown-(wet season only) Lead/Unknown	26 miles	2010	5A	2021
		Pathogens/Dairies		1994	5B	2007
Santa Ana River Reach 4	River/Stream	Pathogens/Nonpoint Source	14 miles	1994	5A	2019

Source: State Water Resources Board – Santa Ana Region. 2010.
http://www.waterboards.ca.gov/santaana/water_issues/programs/tmdl/docs/303d/2010_303d.pdf
Notes:
Category 5 criteria: 1) A water segment where standards are not met and a TMDL is required, but not yet completed, for at least one of the pollutants being listed for this segment.
* TMDL requirement status definitions for listed pollutants are: A= TMDL still required, B= being addressed by USEPA approved TMDL, C= being addressed by action other than a TMDL
** Dates relate to the TMDL requirement status, so a date for A= TMDL scheduled completion date, B= Date USEPA approved TMDL, and C= Completion date for action other than a TMDL

As noted in Table 4.7-3, Reach 5 is not listed as an impaired segment of water on the 303(d) list; however, Reach 3 and Reach 4 are listed. Reach 4 receives baseflow from Reach 5, and Reach 3 receives baseflow from Reach 4 as well as water treatment facilities, tributaries, and rising groundwater. Reach 4 is listed as being impaired by pathogens from a non-point source and salinity/TDS/chlorides from an unknown source. Based on the 2010 303(d) list, the board is developing a TMDL to address pathogens and salinity. It is anticipated that these TMDL's will be adopted in 2019. Further, Reach 3 is listed as being impaired by

copper, lead, and pathogens. Reach 6 of the Santa Ana River was added to the list due to the copper, lead, and cadmium concentrations and Reach 2 of the Santa Ana River was added because of indicator bacteria.

GROUNDWATER

Groundwater Basins

The California Department of Water Resources (DWR) Bulletin 118 series is a collection, summary, and evaluation of groundwater data. Bulletin 118 identifies two subbasins located within the San Bernardino Municipal Water Department service area.

Bunker Hill Subbasin

The Bunker Hill Subbasin is 89,600 acres or 120 square miles. This subbasin is bounded by San Gabriel Mountains, San Bernardino Mountains, and Crafton Hills. The Subbasin is bounded to the south by the Banning fault, to the east by the Redlands fault, to the north by the San Andreas Fault, and to the southwest by the San Jacinto Fault. The Santa Ana River, Mill Creek, and Lytle Creek are the main tributary streams in the subbasin.

Recharge to the Bunker Hill Subbasin historically has resulted from infiltration of runoff from the San Gabriel and San Bernardino Mountains. The Santa Ana River, Mill Creek, and Lytle Creek contribute more than 60 percent of the total recharge to the groundwater system. Lesser contributors include Cajon Creek, San Timoteo Creek, and most of the creeks flowing southward out of the San Bernardino Mountains. The subbasin is also replenished by deep percolation from precipitation and resulting runoff, percolation from delivered water, and water spread in streambeds and spreading grounds.

Rialto-Colton Subbasin

The Rialto-Colton Subbasin is 30,100 acres or 47 square miles. The Rialto-Colton Subbasin underlies a portion of the upper Santa Ana Valley in southwestern San Bernardino County and northwestern Riverside County. This subbasin is bounded by the San Gabriel Mountains on the north, the San Jacinto fault on the east, the Box Spring Mountains on the south, and the Rialto-Colton fault on the west. Lytle Creek drains this part of the valley southeastward to its confluence with the Santa Ana River in the southern part of the subbasin.

The principal recharge areas for the Rialto-Colton Subbasin are Lytle Creek in the northwestern part of the subbasin, Reche Canyon in the southeastern part, and the Santa Ana River in the south-central part. Lesser amounts of recharge are provided by percolation of precipitation to the valley floor, underflow, and irrigation and septic returns.

Groundwater Quality

Groundwater quality varies among the Region's groundwater basins, particularly in the Upper Santa Ana River subbasins due to geology and faulting patterns that influence recharge points, and from anthropogenic sources of contamination.

San Bernardino Basin Area

Groundwater in the San Bernardino Basin Area (SBBA) is generally a calcium-bicarbonate type, containing equal amounts (on an equivalent basis) of sodium and calcium in water near the land surface and an

increasing predominance of sodium in water from deeper parts of the valley-fill aquifer. A total dissolved (TDS) range of 150 to 550 mg/L, with an average of 324 mg/L, is found in public supply wells[3].

The SBBA is affected by five major groundwater contaminant plumes. Plumes in the basin include:

- the Crafton-Redlands plume, with trichloroethylene (TCE) and lower levels of perchloroethylene (PCE), debromochloropropane (DBCP) and perchlorate;
- the Norton Air Force Base TCE and PCE plume, stretching 2.5 miles from its source and contaminating 100,000 AF of groundwater;
- the Muscoy and Newmark plumes near the Shandon Hills, which are Superfund sites with TCE and PCE; and
- the Santa Fe plume with PCE, TCE, and 1,2 dichloroethylene (1,2-DCE) contamination.

Within the City of San Bernardino, the Newmark plume and the Muscoy plume consist primarily of PCE. The plumes have impacted water supply wells within the City of San Bernardino. Under the federal Superfund Program, the U.S. EPA has implemented cleanup of these plumes, including use of groundwater extraction and treatment using granulated activated carbon. The treated water is then used to supplement the City of San Bernardino's potable water supply.

Rialto-Colton Subbasin

In public supply well samples in the Rialto-Colton Subbasin, the average TDS is 264 mg/L, with a range of 163 to 634 mg/L (IRWMP 2015). Other source samples show an average TDS of 230 mg/L and a range of 201 to 291 mg/L. Generally, this is a lower TDS range than the groundwater contained in the Bunker Hill Subbasin, where TDS levels from ranged as high as 1,000 mg/L along the Santa Ana River. The EPA has a Secondary Standard of a maximum of 500 mg/L within drinking water supplies. Table 4.7-4, *Contaminants in Rialto-Colton Subbasin Wells*, lists the known groundwater contaminants within the Rialto-Colton subbasin (and the City of San Bernardino) including those above a maximum contaminant level (MCL).

Table 4.7-4: Contaminants in Rialto-Colton Subbasin Wells

Constituent	No. Wells Sampled	No. Wells with a Concentration Above an MCL
Inorganics (primary)	38	0
Radiological	40	0
Nitrates	38	2
Pesticides	40	0
VOCs and SOCs	40	3
Inorganics (secondary)	38	3
Perchlorate	38	7[1]

Source: Integrated Regional Water Management Plan - Upper Santa Ana River Watershed, 2015.
Notes:
[1] No MCL has been established for Perchlorate. But "action level" is 4 ug/L

[3] Upper Santa Ana Watershed Integrated Regional Water Management Plan (IRWMP), Page 2-42

More than 143 source water wells in Riverside and San Bernardino Counties now exceed the 4 ppb of perchlorate contamination. In the Valley District service area, the City of Rialto, the City of Colton, West Valley, and Fontana Water Company have shut down or restricted the use of 20 wells due to perchlorate contamination in the Rialto-Colton Subbasin, where concentrations reach above 4 ppb.[4]

FLOOD HAZARDS

100-Year Flood

Flood Insurance Rate Maps (FIRMs) are prepared by the Federal Emergency Management Agency (FEMA), periodically updated and refined. These maps contain the official delineation of flood insurance zones and base flood elevation lines. One key data point mapped by FEMA is the 100-year floodplain, which is a storm event that has a 1% chance of occurring annually. Within the Project area, specifically along the Santa Ana River, the 100-year storm flow would be confined to storm channels, debris basins, and between levees with a few minor exceptions. A few isolated areas, including the Baseline Street and Sterling Avenue area, Mountain View Avenue and Electric Avenue area, and south of Redlands Boulevard, east of Hunts Lane, are identified as low areas within the 100-year floodplain and may experience potential flooding. The immediate vicinity of the Santa Ana River and East Twin Creek, as well as the Waterman Basins and the East Twin Creeks Spreading Grounds are within the mapped 100-year flood plain.

Dam Inundation

The Seven Oaks Dam, located along the Santa Ana River approximately 13 miles upstream from the SBWRP, is a single purpose flood control project constructed by the USACE. The dam is of earth and rock filled construction, is 550 feet in height and 2,600 feet wide. The Dam operates in tandem with Prado Dam, located approximately 26 miles downstream from the SBWRP, to provide flood protection to the region. During the early part of each flood season, runoff is stored behind the Seven Oaks Dam in order to build a debris pool to protect the outlet works. Small releases are made on a continual basis in order to maintain the downstream water supply. The dam is designed to provide 350-year flood protection and withstand an earthquake of 8-plus magnitude.

During flood conditions, the Seven Oaks Dam creates a lake 500 feet deep extending three miles upstream into the canyon. The mapped inundation zone for the Seven Oaks Dam anticipates impacts to the southeastern portion of the City of San Bernardino. This flooding would potentially inundate portions of the conveyance system and the Water Reclamation Plant.[5]

4.7.2 REGULATORY SETTING

FEDERAL

Federal Emergency Management Agency

The FEMA is tasked with responding to, planning for, recovering from and mitigating natural and man-made disasters. FEMA is responsible for coordinating the federal response to floods, earthquakes, hurricanes, and other natural or man-made disasters along with providing disaster assistance to States, communities and individuals. The Federal Insurance and Mitigation Administration (FIMA) within FEMA is

[4] Upper Santa Ana Watershed Integrated Regional Water Management Plan (IRWMP), Page 2-46.
[5] *City of San Bernardino General Plan Environmental Impact Report*, Figure 5.7-2

responsible for administering the National Flood Insurance Program (NFIP) and administering programs that provide assistance for mitigating future damages from natural hazards.

The NFIP is a federal program enabling property owners in participating communities to purchase insurance as a protection against flood losses in exchange for State and community floodplain management regulations that reduce future flood damages. Participation in the NFIP is based on an agreement between communities and the federal government. If a community adopts and enforces a floodplain management ordinance to reduce future flood risk to new construction in floodplains, the federal government will make flood insurance available within the community as a financial protection against flood losses. This insurance is designed to provide an insurance alternative to disaster assistance to reduce the escalating costs of repairing damage to buildings and their contents caused by floods.

Clean Water Act

The Federal Clean Water Act (CWA) was enacted with the primary purpose of restoring and maintaining the chemical, physical, and biological integrity of the Nation's waters. The EPA has delegated responsibility for implementation of portions of the CWA to the State Water Resources Control Board (SWRCB) and local Regional Water Quality Control Boards (RWQCB) for water quality control planning and control programs, such as the National Pollutant Discharge Elimination System (NPDES) Program. The Project area is located in the Santa Ana RWQCB (Region 8) jurisdiction.

Clean Water Act Section 303(d) – Total Maximum Daily Loads

When designated beneficial uses of a particular receiving water body are being compromised by water quality, CWA Section 303(d) requires identifying and listing that water body as "impaired." As noted in the Surface Water Quality section above, once a water body has been deemed impaired, a TMDL must be developed for the impairing pollutant(s). A TMDL is an estimate of the total load of pollutants from point, non-point, and natural sources that a water body may receive without exceeding applicable water quality standards (with a "factor of safety" included). Once established, the TMDL allocates the loads among current and future pollutant sources to the water body.

California Toxics Rule

The California Toxics Rule (CTR) is a federal regulation issued by the Environmental Protection Agency providing water quality criteria for potentially toxic constituents in receiving waters with human health or aquatic life designated uses in the State of California. CTR criteria are applicable to the receiving water body and therefore must be calculated based upon the probable hardness values of the receiving waters for evaluation of acute (and chronic) toxicity criteria. At higher hardness values (increased solids) for the receiving water, copper, lead, and zinc are more likely to be complexed (bound) with these solids components in the water column (more solids results in greater potential for metals to be bound with receiving water particles). This in turn reduces the bioavailability and resulting potential toxicity of these metals.

Due to the intermittent nature of stormwater runoff, especially in Southern California, the acute criteria are considered to be more applicable to stormwater conditions than chronic criteria and therefore are used in assessing impacts. Acute criteria represent the highest concentration of a pollutant to which aquatic life can be exposed for a short period of time without deleterious effects; chronic criteria equal the highest concentration to which aquatic life can be exposed for an extended period of time (four days) without deleterious effects.

STATE

Clean Water Act

Responsibility for the protection of water quality in California rests with the SWRCB and the nine RWQCBs. The SWRCB establishes statewide policies and regulations for the implementation of water quality control programs mandated by federal and State water quality statutes and regulations. The RWQCBs develop and implement Water Quality Control Plans (Basin Plans) that consider regional beneficial uses, water quality characteristics, and water quality problems. The City of San Bernardino is located within the jurisdiction of the Santa Ana RWQCB. The Santa Ana RWQCB implements a number of federal and State laws, the most important of which are the State Porter-Cologne Water Quality Control Act and the federal CWA.

Porter-Cologne Water Quality Control Act

The Porter–Cologne Water Quality Control Act directs each RWQCB to develop a Basin Plan for all areas within its region. The Basin Plan is the basis for each RWQCB's regulatory programs. The proposed Project site is located within the purview of the Santa Ana RWQCB (Region 8), and must comply with applicable elements of the region's Basin Plan, as well as the Porter-Cologne Water Quality Control Act, and the federal CWA.

National Pollutant Discharge Elimination System

The National Pollutant Discharge Elimination System (NPDES) permit system was established in the CWA to regulate both point source discharges (a municipal or industrial discharge at a specific location or pipe) and non-point source discharges (diffuse runoff of water from adjacent land uses) to surface waters of the United States. As defined in the federal regulations, non-point sources are generally exempt from federal NPDES permit program requirements, with two exceptions: (1) non-point source discharges caused by general construction activities of over one acre; and (2) stormwater discharges in municipal stormwater systems either as part of a combined system or as a separate system in which runoff is carried through a developed conveyance system to specific discharge locations.

Point Source Discharges - For point source discharges, each NPDES permit contains limits on allowable concentrations and mass emissions of pollutants contained in the discharge through the establishment of Waste Discharge Requirements.

Non-point Source Discharges Caused by General Construction and Operational Activities - One of the primary objectives of the regulations for non-point source discharges is the reduction of pollutants in urban stormwater discharge through the use of structural and non-structural Best Management Practices (BMPs). The Environmental Protection Agency (EPA) implemented the NPDES stormwater program in two phases. Phase I addressed large dischargers and construction activities that affect five acres or greater, while Phase II, which was implemented in 1999, addressed smaller dischargers and construction activities that affect one or more acres. Phase I Municipal Separate Storm Sewer Systems (MS4s) are covered by individual permits and Phase II MS4s are covered by a general permit. Regulated MS4s are required to develop and implement a stormwater management program to reduce contamination of stormwater runoff and prohibit illicit discharges. The regulations require that storm water and non-storm water runoff associated with a construction activity, which discharges either directly to surface waters or indirectly through MS4s, must be regulated by an NPDES permit. An MS4 is a conveyance system, or multiple conveyance systems, that transport polluted stormwater runoff, which is often untreated, into local water bodies. The NPDES permit requirements prevent harmful pollutants from being washed or dumped into MS4s.

Typical construction BMPs include, but are not necessarily limited to the following:

- Scheduling or limiting activities to certain times of year;
- Prohibiting certain construction practices;
- Implementing equipment maintenance schedules and procedures; implementing a monitoring program;
- Other management practices to prevent or reduce pollution, such as using temporary mulching, seeding, or other suitable stabilization measures to protect uncovered soils;
- Storing materials and equipment to ensure that spills or leaks do not enter the storm drain system or surface waters;
- Developing and implementing a spill prevention and cleanup plan;
- Installing traps, filters, or other devices at drop inlets to prevent contaminants from entering storm drains; and
- Using barriers, such as straw bales or plastic, to minimize the amount of uncontrolled runoff that could enter drains or surface water.

Typical operation BMPs include, but are not necessarily limited to the following:

- Controlling roadway and parking lot contaminants by installing oil and grease separators at storm drain inlets;
- Cleaning parking lots on a regular basis;
- Incorporating peak-flow reduction and infiltration features (such as grass swales, infiltration trenches, and grass filter strips) into landscaping; and,
- Implementing educational programs.

The RWQCB administers the NPDES permit program regulating storm water from construction activities for projects greater than one acre in size. The main compliance requirement of the NPDES permits is the development and implementation of a Storm Water Pollution Prevention Plan (SWPPP). The purpose of a SWPPP is to identify potential on-site pollutants, identify and implement appropriate storm water pollution prevention measures to reduce or eliminate discharge of pollutants to surface water from storm water and non-storm water discharges.

Stormwater BMPs to be implemented during construction and grading, as well as post-construction BMPs, will be outlined in the SWPPP prepared for the proposed Project. SBMWD will be required to obtain coverage under the General NPDES Permit for construction activities prior to site disturbance, and will need to meet San Bernardino County's requirements for new development specified in its municipal permit from the RWQCB. Examples of construction BMPs include: detention basins for capture and containment of sediments, use of silt fencing, sandbags, gravel bags, or straw bales to control runoff and identification of emergency procedures in case of hazardous materials spills.

Clean Water Act Section 401 – Water Quality Certification

In addition to the issuance of NPDES permits or waste discharge requirements, the RWQCB acts to protect the quality of surface waters through water quality certification as specified in Section 401 of the Clean Water Act (33 USC 466 et seq.). Section 401 requires that any person applying for a federal permit or license which may result in a discharge of pollutants into waters of the United States must obtain a state

water quality certification that the activity complies with all applicable water quality standards, limitations, and restrictions. Subject to certain limitations, license or permit may be issued by a federal agency until certification required by Section 401 has been granted. Further, no license or permit may be issued if certification has been denied. CWA Section 404 permits and authorizations are subject to Section 401 certification by the RWQCBs.

State Water Resources Control Board

The SWRCB allocates and coordinates water resources to the State's nine regional water quality control boards in order to preserve, enhance, and restore the quality of California's water resources. The SWRCB implements plans and policies for the use of recycled water in groundwater recharge and direct use applications, including issuance of General Waste Discharge Requirements for Recycled Water (General Permit) for all Title 22 applications for direct use. The SWRCB includes the Division of Drinking Water.[6]

Division of Drinking Water

The SWRCB Division of Drinking Water (DDW) is responsible for regulating public drinking water systems. The DDW is composed of three branches: the Program Management Branch, Southern California Field Operations Branch, and Northern California Field Operations Branch. The Program Management Branch includes the Environmental Laboratory Accreditation Program Section, the Data Data/Toxicology Office, and the Technical Operations Section. The Southern California Field Operating Branch would perform a field operating inspection, issue the Project's operating permit, and review the Project's plans and operating specifications in order to evaluate the Project's use of recycled treated wastewater.

Division of Water Rights

The SBMWD filed a "Petition for Change for Owners of Waste Water Treatment Plants" with the SWRCB in April of 2010 (Petition revised June 7, 2010), to decrease tertiary discharge from the RIX Facility into the Santa Ana River from 55.2 cfs to 18.4 cfs. The Petition proposes to use the diverted water for reuse within the SBMWD service area, as well as by agencies outside of the SBMWD service area. The change associated with the Petition would include a new "purpose of use" and "place of use" for the SBMWD RIX water. For further information on the Petition, refer to the Appendix 10.2, *Project Documents*.

LOCAL

Santa Ana Regional Water Quality Control Board

The Santa Ana RWQCB is responsible for implementing and overseeing SWRCB policies and regulations at a local level. The Santa Ana RWQCB implements a Water Quality Control Plan (Basin Plan) that protects regional surface water and groundwater quality. The Santa Ana RWQCB sets local standards and issues permits to enforce waste discharge requirements. It is anticipated that the Project would apply for a SWRCB General Order permit in lieu of individual permits issued by the Santa Ana RWQCB.

Integrated Regional Water Management in the Upper Santa Ana River Watershed Region

The Upper Santa Ana River Watershed (USARW) has a long-standing history of collaboration by water resource management agencies (East Valley Water District, Riverside Highland Water Company, City of San Bernardino, West Valley Water District, Crafton Water Company, Bear Valley Mutual Water Company, San Bernardino Valley Water Conservation District, San Bernardino Valley Municipal Water District,

[6] On July 1, 2014, the California Department of Public Health Drinking Water Program was absorbed by the SWRCB and renamed the Division of Drinking Water to include water reclamation and direct use.

Yucaipa Valley Water District, City of Redlands, Fontana Union Water Company, Meeks and Daley Water Company, City of Riverside, and City of Colton) to manage the watershed's unique water supply, water quality, flood, and habitat challenges. In 2005, this collaboration allowed the agencies to successfully form the USARW Integrated Regional Water Management Region (IRWM Region or Region) and develop an integrated plan for managing water resources in the Region. The USARW Integrated Regional Water Management Plan (IRWMP) is the result of this effort. The 2014 IRWMP serves as an update to the IRWMP developed in 2007, and incorporates new information describing the Region, updates goals and objectives, re-evaluates strategies, and develops a process for future implementation of the IRWMP.

Stemming from this effort, the agencies in the Region created the Basin Technical Advisory Committee (BTAC) to facilitate implementation of the IRWMP. Development of the BTAC has strengthened dialogue and cooperation between agencies and has improved regional planning. The BTAC, which serves as the Regional Water Management Group, is open to all agencies and stakeholders who desire to participate in the IRWM Region's planning and management efforts.

Western Judgment of 1969

The Bunker Hill Basin is mainly recharged from runoff from the San Bernardino and has a storage capacity of approximately 5,976,000 acre-feet, and has a "safe yield" of approximately 232,100 acre-feet per year,[7] as determined by the 1969 Western Judgment, based on verified extractions. The Bunker Hill Basin, as well as the Western Judgment requires a five-member Watermaster Committee, which includes one member from both the San Bernardino Valley Municipal Water District and Western Municipal Water District. The Western Judgment requires the Watermaster Committee to determine the extractions occurring within the Basin, the annual safe yield of the Basin, as well as a number of other aspects of the Basin. Once baseline figures were determined, the Basin was then regulated by the Watermaster. Under the Western Judgment, the Watermaster is responsible for monitoring annual pumping from the basin annually and ensuring that the annual pumping yield is safe.

County of San Bernardino General Plan

The Circulation and Infrastructure Element of the General Plan includes strategies to support the production of a water resource infrastructure system consistent with the overall vision specified by the County. The following goals, policies, and programs are applicable to the proposed Project:

Goal CI 11 The County will coordinate and cooperate with governmental agencies at all levels to ensure safe, reliable, and high quality water supply for all residents and ensure prevention of surface and ground water pollution.

Policy CI 11.1 Apply Federal and State water quality standards for surface and groundwater and wastewater discharge requirements in the review of development proposals that relate to type, location and size of the proposed project to safeguard public health.

Policy CI 11.12 Prior to approval of new development, ensure that adequate and reliable water supplies and conveyance systems will be available to support the development, consistent with coordination between land use planning and water system planning.

Goal CI 13 The County will minimize impacts to stormwater quality in a manner that contributes to improvement of water quality and enhances environmental quality.

[7] Riverside Public Utilities, 2010 Urban Water Management Plan, Adopted July 2011, pg. 4-4.

Policy CI 13.1 Utilize site design, source control, and treatment control best management practices (BMP's) on applicable projects, to achieve compliance with the County Municipal Stormwater NPDES Permit.

Policy CI 13.2 Promote the implementation of low impact design principles to help control the quantity and improve the quality of urban runoff. These principles include:

a. Minimize changes in hydrology and pollutant loading; ensure that post development runoff rates and velocities from a site do not adversely impact downstream erosion, and stream habitat; minimize the quantity of stormwater directed to impermeable surfaces; and maximize percolation of stormwater into the ground where appropriate.

b. Limit disturbance of natural water bodies and drainage systems; conserve natural areas; protect slopes and channels;

c. Preserve wetlands, riparian corridors, and buffer zones; establish reasonable limits on the clearing of vegetation from the project site;

d. Establish development guidelines for areas particularly susceptible to erosion and sediment loss;

e. Require incorporation of structural and non-structural BMPs to mitigate projected increases in pollutant loads and flows.

City of San Bernardino General Plan

Water and Wastewater

The following goals and policies from the *Utilities Element* (Chapter 9) of the *City of San Bernardino General Plan* related to water and wastewater services are applicable:

Goal 9.1 Provide a system of wastewater collection and treatment facilities that will adequately convey and treat wastewater generated by existing and future development in the City's service area.

Goal 9.2 Ensure that all wastewater collection and treatment facilities are operated to maximize public safety.

Policy 9.2.1 Provide for the monitoring of toxic or potentially toxic businesses to prevent contamination of water and wastewater.

Policy 9.2.2 Require, when necessary, pre-treatment of wastewater from industrial sources prior to treatment at the Water Reclamation Facility.

Goal 9.4 Provide appropriate storm drain and flood control facilities where necessary.

Policy 9.4.1 Ensure that adequate storm drain and flood control facilities are provided in a timely manner to protect life and property from flood hazards.

Policy 9.4.2 Upgrade and expand storm drain and flood control facilities to eliminate deficiencies and protect existing and new development.

Policy 9.4.3 Maintain existing storm drain and flood control facilities.

Policy 9.4.4 Require that adequate storm drain and flood control facilities be in place prior to the issuance of certificates of occupancy. Where construction of master planned facilities

is not feasible, the Mayor and Common Council may permit the construction of interim facilities sufficient to protect present and short-term future needs. (LU-1)

Policy 9.4.5 Implement flood control improvements that maintain the integrity of significant riparian and other environmental habitats.

Policy 9.4.6 Minimize the disturbance of natural water bodies and natural drainage systems. (LU-1)

Policy 9.4.7 Develop San Bernardino's flood control system for multipurpose uses, whenever practical and financially feasible.

Policy 9.4.8 Minimize the amount of impervious surfaces in conjunction with new development. (LU-1)

Policy 9.4.9 Develop and implement policies for adopting Sustainable Stormwater Management approaches that rely on infiltration of stormwater into soils over detention basins or channels. Sustainable Stormwater Management techniques include use of pervious pavements, garden roofs, and bioswales to treat stormwater, and reusing stormwater for non-potable water uses such as landscape irrigation and toilet/urinal flushing. (LU-1)

Policy 9.4.10 Ensure compliance with the Federal Clean Water Act requirements for National Pollutant Discharge Elimination System (NPDES) permits, including requiring the development of Water Quality Management Plans, Erosion and Sediment Control Plans, and Storm Water Pollution Prevention Plans for all qualifying public and private development and significant redevelopment in the City. (LU-1)

Policy 9.4.11 Implement an urban runoff reduction program consistent with regional and federal requirements, which includes requiring and encouraging the following examples of Best Management Practices (BMPs) in all developments:

- Increase permeable areas, utilize pervious materials, install filtration controls (including grass lined swales and gravel beds), and divert flow to these permeable areas to allow more percolation of runoff into the ground;
- Replanting and hydroseeding of native vegetation to reduce slope erosion, filter runoff, and provide habitat;
- Use of porous pavement systems with an underlying stone reservoir in parking areas;
- Use natural drainage, detention ponds, or infiltration pits to collect and filter runoff;
- Prevent rainfall from entering material and waste storage areas and pollution-laden surfaces; and
- Require new development and significant redevelopment to utilize site preparation, grading, and other BMPs that provide erosion and sediment control to prevent construction-related contaminants from leaving the site and polluting waterways. (LU-1)

Surface and Subsurface Groundwater Contamination

The following goals and policies from the *Safety Element* (Chapter 10) of the *City of San Bernardino General Plan are* related to surface and subsurface groundwater contamination:

Goal 10.4 Minimize the threat of surface and subsurface water contamination and promote restoration of healthful groundwater resources.

Policy 10.4.1 Promote integrated inter-agency review and participation in water resource evaluation and mitigation programs.

Policy 10.4.2 Protect surface water and groundwater from contamination.

Policy 10.4.3 Eliminate or remediate old sources of water contamination generated by hazardous materials and uses.

Policy 10.4.4 Develop programs and incentives for prevention of groundwater contamination and clean-up of known contaminated sites.

Goal 10.5 Reduce urban run-off from new and existing Development.

Policy 10.5.1 Ensure compliance with the Federal Clean Water Act requirements for National Pollutant Discharge Elimination System (NPDES) permits, including developing and requiring the development of Water Quality Management Plans for all new development and significant redevelopment in the City. (LU-1)

Policy 10.5.2 Continue to implement an urban runoff reduction program consistent with regional and federal requirements, which includes requiring and encouraging the following:

- Increase permeable areas to allow more percolation of runoff into the ground;
- Use natural drainage, detention ponds or infiltration pits to collect runoff;
- Divert and catch runoff using swales, berms, green strip filters, gravel beds and French drains;
- Install rain gutters and orient them towards permeable surfaces;
- Construct property grades to divert flow to permeable areas;
- Use subsurface areas for storm runoff either for reuse or to enable release of runoff at predetermined times or rates to minimize peak discharge into storm drains;
- Use porous materials, wherever possible, for construction of driveways, walkways and parking lots; and
- Divert runoff away from material and waste storage areas and pollution-laden surfaces such as parking lots. (LU-1)

Policy 10.5.3 Cooperate with surrounding jurisdictions and the County to provide adequate storm drainage facilities.

Policy 10.5.4 Require new development and significant redevelopment to utilize site preparation, grading and foundation designs that provide erosion control to prevent sedimentation and contamination of waterways. (LU-1)

Policy 10.5.5 Ensure compliance with the requirements for Storm Water Pollution Prevention Plans or Water Quality Management Plans for all new development or construction activities.

Policy 10.5.6 Coordinate with appropriate federal, state, and local resource agencies on development projects and construction activities affecting waterways and drainages.

Flooding

The following goals and policies from the *Safety Element* (Chapter 10) of the *City of San Bernardino General Plan are* related to flood hazards:

Goal 10.6 Protect the lives and properties of residents and visitors of the City from flood hazards.

Policy 10.6.1 Maintain flood control systems and restrict development to minimize hazards due to flooding.

Policy 10.6.2 Use natural watercourses as the City's primary flood control channels whenever feasible.

Policy 10.6.3 Keep natural drainage courses free of obstructions.

Policy 10.6.4 Evaluate all development proposals located in areas that are subject to flooding to minimize the exposure of life and property to potential flood risks.

Policy 10.6.5 Prohibit land use development and/or the construction of any structure intended for human occupancy within the 100-year flood plain as mapped by the Federal Emergency Management Agency (FEMA) unless adequate mitigation is provided against flood hazards.

Policy 10.6.6 Encourage new development to utilize and enhance existing natural streams, as feasible.

Policy 10.6.7 Utilize flood control methods that are consistent with Regional Water Quality Control Board Policies and Best Management Practices (BMPs).

Policy 10.6.8 Review development proposals for projects within the City's Sphere of Influence and encourage the County to disapprove any project that cannot be protected with an adequate storm drain system.

Policy 10.6.9 Ensure major drains in developed areas have a pipeline capacity to comply with the Flood Control District's Comprehensive Storm Drain Plans for development of the City's storm drain system.

Policy 10.6.10 Design local drains in foothill areas to convey 25-year storm flows where downstream systems are lacking and street systems are not present.

Policy 10.6.11 Design major drains in foothill to convey 100-year flows within a pipe or channel areas where downstream systems are lacking and street systems are not present.

Policy 10.6.12 Develop a process to study flooding issues and create appropriate regulations. This could include the creation of "alluvial districts," local quasi-government entities designed to inform homeowners of flood risks as well as advise the floodplain land use decisions of the City.

Water Conservation

The following goals and policies from the *Conservation Element* (Chapter 13) of the *City of San Bernardino General Plan are* related to the planned management, preservation, and wise utilization of water:

Goal 13.2 Manage and protect the quality of the City's surface waters and ground water basins.

Policy 13.2.1 Coordinate and monitor the City's water conservation efforts on an annual basis and modify or expand them as necessary to ensure their effectiveness. (EWC-1)

Policy 13.2.2 Require that development not degrade surface or groundwater, especially in watersheds, or areas with high groundwater tables or highly permeable soils. (LU-1)

Policy 13.2.3 Consider the establishment of incentives, funding programs, or a rebate program for projects that implement water conservation measures, such as replacing aging, leaking, and/or inefficient plumbing with more efficient, water-saving plumbing. (EWC-1)

Policy 13.2.4 Require the use of reclaimed water for landscape irrigation and other non-contact uses for industrial projects, golf courses, and freeways. (LU-1)

Policy 13.2.5 Mitigate degradation of the groundwater basins that may have already occurred by existing commercial, industrial, and other uses.

Policy 13.2.6 Require the replacement of existing septic systems with connections to a sanitation collection and treatment system as a condition of reconstruction or reuse. (LU-1)

Policy 13.2.7 Require that new development incorporate improvements to channel storm runoff to public storm drainage systems and prevent discharge of pollutants into the groundwater basins and waterways. (LU-1)

Policy 13.2.8 Require that Best Management Practices (BMPs) are implemented for each project to control the discharge of point source and non-point source pollutants both during construction and for the life of the projects to protect the City's water quality. (LU-1)

Policy 13.2.9 Require that new construction on a site that is at least one acre comply with the General Permit for Discharges of Storm Water Associated with Construction Activity (Construction General Permit 99-08-DWQ)). (LU-1)

Policy 13.2.10 Require that development in the City's watersheds incorporate adequate landscape and groundcover to prevent slope erosion and significant sedimentation of canyon drainages. (LU-1)

Policy 13.2.11 Continue to inform the public about water conservation, techniques and available water conservation programs they can utilize.

4.7.3 ENVIRONMENTAL IMPACTS

Project construction and operation would impact hydrology, flooding and water quality. These potential impacts include changes in water quality, drainage patterns, flooding, groundwater recharge, as well as others.

SIGNIFICANCE CRITERIA UNDER CEQA

The thresholds of significance for impacts are based on the environmental checklist in Appendix G of the State CEQA Guidelines, as amended. Based on these criteria, impacts would be significant if Project implementation would do any of the following:

- Violate any water quality standards or waste discharge requirements (Refer to Impact Statement 4.7-1);
- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted) (Refer to Impact Statement 4.7-2);
- Substantially alter the existing drainage pattern of the site or area including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site (Refer to Impact Statement 4.7-3);
- Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff (Refer to Impact Statement 4.7-4)
- Otherwise substantially degrade water quality (Refer to Section 7.0, *Effects Found Not to be Significant*);
- Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map (Refer to Impact Statement 4.7-5);
- Place within a 100-year flood hazard area structures which would impede or redirect flood flows (Refer to Impact Statement 4.7-6);
- Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam (Refer to Impact Statement 4.7-7); and,
- Result in inundation by seiche, tsunami, or mudflow (Refer to Impact Statement 4.7-8).

CONSTRUCTION AND OPERATIONAL IMPACTS TO HYDROLOGY AND WATER QUALITY

The following discussion identifies the potential construction and operational impacts that implementation of each Project component would have to Hydrology and Water Quality. This discussion is used as a basis for the significance determinations identified for each Hydrology, Flooding, and Water Quality impact area.

Summary of Applicable Project Design Features and Existing Laws, Ordinances, and Regulations

Several Project Design Features will serve to minimize the Project's impacts to hydrology and water quality, as follows:

- The Project proposes to utilize existing infrastructure wherever possible, including the SBWRP site and existing recharge basins and reuse of existing abandoned pipelines, which reduces the extent of construction and operational impacts relative to the Project;

- Pipelines that would be constructed as a part of the Project would be generally contained within existing roadways, which would reduce impacts to hydrology as a result of construction;
- The reduction of flow from the RIX facility would be completed in a phased manner to minimize impacts to the hydrology of the Santa Ana River;
- During operation, pumping to the recharge basins would be reduced or eliminated during storm events to retain the flood control capacity of the Recharge Basins, as stipulated in an Operations Agreement to be developed between the City and the SBCFCD;
- When necessary, alternative techniques such as Jack and Bore and Horizontal Directional Drilling would be used to reduce impacts where conveyance facilities cross creeks and streams;
- Construction activities associated with the proposed Project would avoid periods of wet weather to reduce potential construction-related impacts to hydrology and water quality;
- The Project would be subject to standard NPDES permit requirements, including BMPs designed to avoid or reduce impacts to hydrology and water quality; and
- The Project would be required to demonstrate compliance with Indirect Potable Reuse and Direct Use standards.

RIX Phased Discharge Reduction

The RIX tertiary treatment facility is located approximately four miles southwest of the SBWRP along the Santa Ana River. The discharge from the RIX facility into the Santa Ana River would be gradually reduced over a period of 15 to 20 years, to minimize impacts to the River's hydrology. As noted in Table 3.0-1, *Summary of Project Components* in the Project Description, discharge into the Santa Ana River would be reduced from 53.0 cfs to 20.8 cfs. SBMWD recognizes that other water agencies are considering projects that, if approved, could also reduce flows to the Santa Ana River along the Study Reaches. However, for the reasons stated below, the volume of discharge reduction proposed by the Clean Water Factory Project and analyzed in this EIR is considered to represent the cumulative worst-case condition for potential future wastewater treatment plant discharge reductions in the Study Reaches, inclusive of other Projects.

Construction

The Project proposes limited construction activities within the RIX facility including the potential installation of a disinfection system, as well as storage and pumping facilities. The construction of these facilities would only be necessary if the Chino Basin facilities were used for recharge. In the event that supplies are not distributed to the Chino Basin, the primary change in the RIX facility would be the reduction of discharge operations at the existing facility using a phased approach (discussed in the operations section below). The Project would not require the construction of any additional treatment changes or facilities at RIX other than gradually reducing the amount of secondary effluent it receives from the SBWRP. Minor disturbance would occur as a result of implementation of Mitigation Measure BIO-14, which would require SBMWD to implement improvements to the RIX Facility to minimize automated shutdowns, and provide for more reliable facility operation, and also possibly convert certain test wells into production wells to provide a supplemental water source during shutdowns. As discussed in Section 4.4.9, the mitigation project would comply with applicable mitigation measures identified for the Project, which would avoid significant effects to hydrology or water quality associated with Project activity at the RIX facility.

Operation

The RIX Phased Discharge Reduction would reduce the flow of effluent discharged from the facility into the Santa Ana River from 53.0 cfs to 20.8 cfs. The reduction in discharge has implications for the potential impacts to species within the River. Refer to Section 4.4, *Biological Resources*, for a full analysis of impacts to the species within the Santa Ana River as a result of the reduction of the RIX discharge. The reduction of discharge from the RIX facility, as outlined in Table 4.7-5, *Proposed RIX Discharge Phased Reduction Scenarios*, below, would have impacts to the hydrology of the Santa Ana River in proximity to the outfall due to the reduced flow leaving the facility. The later phases of the discharge reduction would alter the depth, width and velocity of flow at the Santa Ana River proximal to the outfall. However, the RIX Phased Discharge Reduction would have no impact on the River's natural hydrology and would be implemented in a phased approach in order to minimize any potential hydrological effects that would occur otherwise. A detailed discussion of the potential hydrological impacts related to the phased RIX discharge reduction is discussed below.

Table 4.7-5: Proposed RIX Discharge Phased Reduction Scenarios

Source	Baseline[2]	Phase 1	Phase 2	Phase 3	Phase 4	Phase 5	Zero[3]
DIX	53.0	44.9	38.4	32.2	26.3	20.8	0
Rialto Drain	9.5						
Model SAR Input	62.5	54.4	47.9	41.7	35.8	30.3	9.5

cfs = cubic feet per second, SAR=Santa Ana River

Notes:

1. The Project assumes phased discharge reduction approach, with additional reductions in discharge occurring every five years.
2. For the model, baseline discharge was based on average RIX discharge measured on October 18-19, 2012. Average discharge was approximately 53 cfs. Annual RIX discharge has varied from 55.7 cfs in 2010 to 48.4 cfs in 2013.
3. The Zero scenario assumes a RIX shutdown, for instance for maintenance, in which case all discharge would come from the Rialto Drain, and a total flow volume of 9.5 cfs is used as a model assumption.

Source: City of San Bernardino Municipal Water Department 2015.

Water Reclamation Plant

The existing SBWRP is located in an urban area, surrounded by the San Bernardino Golf Course, light industrial uses, vacant parcels and the Santa Ana River. The SBWRP is specifically located north of the confluence of the East Twin Creeks and the Santa Ana River. Improvements to the SBWRP would occur within the existing site, and would include the construction of additional water treatment facilities in order to meet treatment requirements for direct reuse and groundwater replenishment. Five water treatment options are under consideration for the SBWRP; including conventional tertiary treatment (Option A1), Micro/Nano-filtration (MF/NF) Advanced Treatment (Option A2), MF/NF Reverse Osmosis (RO) Advanced Treatment (Option A3), MF/RO Advanced Treatment (Option A4), and Combined Conventional Treatment and MF/RO Advanced Treatment (Option A5).

Construction

Improvements to the SBWRP would require construction activities related to the installation of the new water treatment facilities in order to meet the water quality standards for groundwater injection and/or direct use applications and water storage/pumping. To incorporate one, or a combination of, the proposed water treatment technologies, existing physical facilities of the SBWRP will be modified and

additional facilities would need to be constructed. Construction activities would occur within the existing SBWRP and would avoid periods of wet weather, thereby avoiding impacts to hydrology or water quality.

Operation

Operation of the SBWRP improvements would occur within the existing SBWRP site. Once operating, the Project would allow the SBWRP to improve recovery of product water and increase product water available for recharge. SBWRP operations would not directly impact hydrology or water quality. The pumping and recharge of the water treated at the facility will impact hydrology, and is addressed below.

Conveyance and Storage

The conveyance systems proposed for the Project would occur within urbanized areas of the City of San Bernardino, predominantly within the existing roadway and other disturbed areas. If the Chino Basin groundwater recharge option is selected, conveyance systems would include alternate alignments that would traverse alternate jurisdictional boundaries (refer to Exhibit 3.0-6, *Conveyance System Alternatives (East-West Pipelines)*. The conveyance pipelines for the Chino Basin would be predominantly installed within existing roadway and/or public rights–of-way.

Construction

Pipelines would be constructed from the SBWRP north to the Waterman Basins and East Twin Creek Spreading Grounds. In addition, pipelines may also be constructed from RIX west to the Chino Basin. Pipelines would be installed underground and installation would generally occur within existing roadways and/or public rights-of-way. Construction would occur in linear segments, and impacts would be temporary in nature.

Compliance with the San Bernardino Municipal Code and NPDES permit requirements would reduce impacts to hydrology and water quality across all construction areas in order to reduce impacts to water quality and drainage.

Construction of the pump stations and storage reservoirs would occur on properties adjacent to the conveyance pipeline alignments and up to approximately one and one-half acres in size. This would require limited grading with construction of underground piping to connect with proposed pipelines and structural foundation. The pump station and storage tank sites would be fitted with curbs, gutters, and other necessary drainage features. Project-related construction will be localized to the booster pump/reservoir sites and, due to the relatively small size of the sites that would house these facilities and the implementation of appropriate construction BMPs, would not have a significant impact to hydrology and water quality.

Operation

Maintenance and operations of the conveyance and storage facilities would include periodic, scheduled inspections and the replacement of any equipment that have reached the end of their lifetime or failed during use. If maintenance of facilities were needed, impacts would be similar or reduced relative to construction impacts described above, and would be typical of municipal utility maintenance operations. Therefore, operations and maintenance activities of the conveyance system are not anticipated to result in significant impacts related to hydrology and water quality.

Direct Use Customers

Direct use customers (i.e., parks, golf course and other irrigation users) would be located within the SBMWD service area near the chosen conveyance alignment.

Construction

Distribution lines would be installed within existing street rights-of-way to connect customers to the conveyance pipelines where necessary and on an as-needed basis. However, construction would be temporary in nature and would occur within existing street rights-of-way. Compliance with the San Bernardino Municipal Code and existing NPDES permit requirements would ensure that there would not be significant impacts related to hydrology and water quality.

Operation

Maintenance and operations of the direct use customers would include periodic inspections and replacement of any equipment that have reached the end of its lifetime or failed during use. If maintenance of facilities were needed, impacts would be similar to the construction impacts described above. Direct use applications would avoid operation activities in periods of wet weather in order to minimize impacts to local hydrology and water quality. As infrastructure necessary for direct use customers would be located below the ground within public rights-of-way, there would be no significant impacts related to hydrology and water quality. Direct use applications would be required to meet the water quality objectives of the SWRCB Division of Drinking Water and the Santa Ana RWQCB. Compliance with these State and regional water quality objectives would ensure the direct use component of the Project has no significant impacts to hydrology and water quality.

Recharge Basins

Waterman and East Twin Creek Basins

Recharge site improvements would occur within the existing Waterman Basins and East Twin Creek Spreading Grounds or, in the case of the proposed monitoring wells, between the recharge sites and nearby potable wells.

The Waterman Basins are used as an active spreading area, approximately 70 acres in size. The principal drainage course for this area is Waterman Canyon Creek. Water moves from north to south through the facility via spillways and outlet pipes. The spreading grounds capture storm water runoff, and serve as an overflow for the Waterman Basins.

The principal drainage course for this area is East Twin Creek. Stormwater in Waterman Canyon Creek that is not captured at the Waterman Basins discharges into the East Twin Creek Spreading Grounds.

The following site improvements would be implemented at the Waterman Basins and East Twin Creek Spreading Grounds:

a. At the Waterman Basins, required improvements include rehabilitating or replacing the outlet valves from each cell (i.e., sub-basin), adding level transmitters to each cell and telemetry, performing weed abatement, and adding erosion control near the outlet of the recharge distribution pipeline.

b. At the East Twin Creek Spreading Grounds, required improvements include repairing the internal berms between cells, adding a turnout on the Foothill Pipeline (i.e., a 72-inch diameter imported water transmission pipeline located on the northerly boundary of the Spreading Grounds), adding level transmitters to each cell and telemetry, performing weed abatement and adding erosion control near the outlet of the recharge distribution pipeline.

Construction

Construction activities associated with recharge site improvements would occur within the existing Waterman Basins and East Twin Creek Spreading Grounds or, in the case of the proposed monitoring wells, between the recharge sites and nearby potable wells. This would include construction activities similar to those described for the conveyance systems, and would require excavation and/or grading of soils for construction of proposed outlet works and erosion control.

Construction would occur within the existing facilities and public rights-of-way, and existing requirements associated with the NPDES Construction General Permit program designed to avoid impacts to water quality would apply; therefore, construction of the recharge site improvements would not have a significant impacts to hydrology or water quality.

Operation

Similar to the conveyance systems, maintenance and operations of the recharge facilities would include periodic, scheduled inspections, the replacement of any equipment that has reached the end of its lifetime or failed during use, the removal of fine sediment that has accumulated in the bottom of the basins, and maintenance of erosion control. These activities would occur within the basins themselves and would not result in significant impacts to hydrology or water quality. The discharge of product water into the basins may reduce the percolation rate of water during storm events, due to the consistent presence of water and saturation of the basins, but this reduced percolation rate will have negligible impact on the hydrology within and surrounding the basins. The recharge facilities would be required to meet water quality objectives implemented by the SWRCB Division of Drinking Water. The Division of Drinking Water would ultimately approve or deny the proposed Project and its engineering report. Recharge at the Waterman and East Twin Creek Basins would also need to demonstrate compliance with an SBCFCD Operations Agreement, including avoiding recharge during wet weather conditions. Compliance with the SBCFCD Operations Agreement would ensure that recharge would not significantly impact regional hydrology and water quality objectives.

Chino Basin

The Chino Basin spans several jurisdictional boundaries, including the Cities of Pomona, Montclair, Upland, Rancho Cucamonga, Fontana, Chino, and Eastvale, unincorporated areas of San Bernardino and Riverside Counties, in addition to San Bernardino County-owned land. The Chino Basin is located west of the SBWRP.

Construction

Construction activities would be similar to those proposed for the Waterman Basins and East Twin Creek Spreading Grounds options. Additionally, construction would occur within the existing facilities and public rights-of-way; therefore, construction of any necessary recharge site improvements would not have a significant impact to hydrology or water quality. As noted in the discussion above, additional facilities may need to be added to the basins in order facilitate recharge within the basins. However, the installation of the additional facilities will be temporary and no impacts are anticipated to occur in regards to hydrology or water quality, particularly with adherence to existing NPDES requirements under the Construction General Permit.

Operation

Maintenance and operational activities associated with the Chino Basin recharge option would be similar to those proposed for the Waterman Basin and East Twin Creek Spreading Grounds option, above.

Maintenance and operational activities at the Chino Basin would also be required to demonstrate compliance with the water quality objectives mandated by the SWRCB Division of Drinking Water and the Project's SBCFCD Operations Agreement. Refer to the discussion above.

Impact 4.7-1: Would the Project violate Water Quality Standards or Waste Discharge Requirements? Implementation of the proposed Project may violate water quality standards or waste discharge requirements. *Level of Significance: Less than Significant Impact with Mitigation Incorporated.*

CONSTRUCTION-RELATED IMPACTS

Construction of the proposed Project, specifically the Water Reclamation Plant, Conveyance and Storage Facilities, and the improvements to the recharge basins, could impact surface water quality. The Project site is located within both Reach 4 and Reach 5 of the Santa Ana River. Reach 5 is not a 303(d) listed reach of the Santa Ana River. However, as noted above, Reach 4 receives base flow from Reach 5 and further downstream Reach 3 receives base flow from Reach 4. Reach 4 is listed on the 2010 303(d) list of impaired water bodies by the California State Water Resources Control Board as being impaired by Pathogens from a non-point source and salinity/TDS/chlorides from an unknown source.

Due to earth moving and other construction activities required by the Project, there could be limited, temporary impacts to water quality during Project construction. Construction of all Project components would generate typical pollutants including nutrients, heavy metals, pesticides and herbicides, toxic chemicals related to construction and cleaning, waste materials including wash water, paints, concrete, food containers, and sanitary wastes, fuel, and lubricants. In addition to earth moving activities, like grading and excavation, dewatering may be necessary to install the conveyance system and associated pipelines. As described above, the groundwater level could be high in certain Project areas and depending on the time of construction, dewatering operations may be required in order to complete project construction. The dewatering process would include sediment removal and treatment of water prior to discharge in order to minimize impacts to storm water quality. Table 4.7-6, *Typical Construction Activity Pollutants*, lists the typical construction activity pollutants.

Table 4.7-6: Typical Construction Activity Pollutants

Construction Practices	Sediment	Nutrients	Trace Metals	Pesticides	Oil, Grease, Fuels	Other Toxic Chemicals	Misc. Wastes
Dewatering Operations	X					x	
Paving Operations	X			x	x	x	x
Structure Construction			X			x	x
Material Delivery and Storage	X	x	X	x	x	x	
Material Use		x	X	x	x	x	
Solid Waste	X	x					x
Concrete Waste							x
Sanitary/Septic Waste							x
Vehicle/Equipment Fueling						x	x

Construction Practices	Sediment	Nutrients	Trace Metals	Pesticides	Oil, Grease, Fuels	Other Toxic Chemicals	Misc. Wastes
Vehicle/Equipment Management						x	x
Vehicle/Equipment Maintenance						x	x

While there is the potential for these limited impacts to occur, the San Bernardino Municipal Code and the NPDES program require all future development of one acre or more to manage stormwater from construction sites in a manner that would reduce impacts to water quality (i.e., through implementation of Best Management Practices identified in the SWPPP). To ensure impacts are further reduced, the Project would implement Mitigation Measures HWQ-1, which would require SBMWD to prepare and submit a Notice of Intent (NOI) to comply with the Construction General Permit 2009 to the California State Water Resources Board, and HWQ-2, which would require the City to prepare a Storm Water Pollution Prevention Plan (SWPPP) for the construction activities onsite. Furthermore, HWQ-1 would require the preparation of an Erosion Control Plan for any site under 1 acre (which are not subject to the Construction General Permit 2009 requirement). Mitigation Measures HWQ-1 and HWQ-2 would reduce potential construction impacts to water quality to less than significant.

OPERATIONS-RELATED IMPACTS

The Project proposes both direct use and indirect potable reuse of the product water. For direct use, secondary treated water at the SBWRP would be treated to the tertiary level using conventional filtration and disinfection processes, including chlorination or ultraviolet (UV) light treatment, and then delivered to recycled water customers for non-potable uses including irrigation at local recreational facilities and other uses within the SBWRP. Water used for non-potable, direct reuse would be subject to the regulations set forth by DDW Title 22 recycled water standards, which ensure~~s~~ strict water quality requirements are met for all direct non-potable reuse applications. Furthermore, the Project proposes the use of advanced treatment processes, and the use of product water for indirect potable reuse. Through these processes, SBMWD would send advanced treated product water to the recharge basins for percolation into the groundwater basins. Indirect potable reuse is also subject to the Title 22 Standards to ensure that strict treatment requirements are met. These regulations include required treatment thresholds, buffering distance between the recharge area and groundwater wells, as well as a required groundwater retention time before water can be pumped for potable use after it is recharged.

DDW requires disinfected water to meet thresholds for key pollutants including pathogens, nitrogen, chemicals, as well as other pollutants. Further, treated water must be analyzed for both Giardia and Cryptosporidium concentrations, which directly determines the required horizontal and vertical buffering required for groundwater wells, as well as the required retention time for the recharged water before it can be pumped from the groundwater basin. Retention time is determined on a case-by-case basis, and can vary from two months to upwards of 10 months. DDW requires groundwater modeling analysis in order to determine retention time and buffering requirements for new Indirect Potable Reuse Projects.

Advanced treatment processes, beyond tertiary treatment, would include various combinations of methods, including Membrane Bioreactor (MBR), Micro Filtration/Ultrafiltration (MF/UF), Nano Filtration (NF), Reverse Osmosis (RO), and Advanced Oxidation Process (AOP). The advanced treated water would then be delivered to the recharge basins for groundwater recharge, and ultimately indirect potable reuse.

Groundwater recharge is proposed at the existing Waterman Recharge Basins and East Twin Creek Spreading Grounds, as well as the Chino basins.

Current DDW Groundwater Replenishment Reuse regulations allow surface application of advanced treated water for groundwater replenishment without defined dilution. Prior draft regulations required 50 percent advanced treated water to 50 percent dilution water, but operating facilities have increased up to 75 percent advanced treated water or higher. Under these new regulations, the Project would be able to achieve an ultimate groundwater recharge capacity of 22.0 cfs of advanced treated water without dilution.

Current DDW Groundwater Replenishment Reuse regulations allow surface application of tertiary treated water for groundwater replenishment with substantial dilution (20 percent tertiary to 80 percent dilution water). The use of diluted tertiary water would allow the Project to discharge an additional 7.7 cfs for recharge. The dilution water, which would be State Water Project water or Advanced Treated Water, would be blended with the recycled water at the SBWRP prior to conveyance to the recharge basins, or would be blended during the recharge process at the basins.

The Project's addition of 3.1 cfs of recycled product water for direct use customers and 7.7 cfs of recycled product water for groundwater recharge combined with advanced treated water and SWP dilution would meet the water quality objectives of the groundwater basins (both Bunker Hill-B Management Zone and Bunker Hill A-Management Zone) as regulated by the RWQCB and the Bunker Hill Groundwater Basin stakeholders. The objectives for the Bunker Hill-A basin are 310 mg/l for TDS and 2.7 mg/l for nitrate, while the objectives for Bunker Hill-B basin are 330 mg/l for TDS and 7.3 mg/l for nitrate. Bunker Hill A Management Zone does not have assimilative capacity, while Bunker Hill B Management Zone does have assimilative capacity. The assimilative capacity of a basin is the ability of the basin to receive groundwater recharge water that contains greater levels of a water constituent (TDS and nitrate) than the specified basin objective because the current constituent concentrations in the basin are below the basin objectives. The Santa Ana River RWQCB may permit groundwater recharge at concentrations higher than the basin objectives if capacity to absorb the excess constituents within the basin exists. As currently designed, the Project would produce blended product water for recharge that would have a combined TDS of 233 mg/l and Nitrate of 2.45 mg/l, which is well below the basin objectives.[8]

Groundwater recharge flows may need to be diverted at the SBWRP to the RIX facility and Santa Ana River during storm events. During large storm events where the flow in the Santa Ana River is greater than a 20 to 1 ratio, as compared to the SBWRP discharge rate, the RWQCB allows discharge at the SBWRP of secondary effluent to the Santa Ana River without tertiary and/or advanced treatment.

Therefore, due to the treatment methods that will be utilized by the Project and regulatory requirements that ensure the Project will meet the required water quality standards, operation of the proposed Project would not result in significant impacts to water quality or wastewater discharge requirements. The Project would comply with existing regulations and permitted actions, and would be required to implement Mitigation Measures HWQ-1 and HWQ-2, which would require SBMWD to prepare and submit a NOI to comply with the Construction General Permit 2009 to the California State Water Resources Board and to prepare and implement a SWPPP. Furthermore, this mitigation would require sites smaller than 1 acre (which are not subject to a Construction General Permit) to develop an erosion control plan to ensure mitigation of erosion impacts. Impacts would be less than significant impact with mitigation.

[8] *Clean Water Factory Project Recycled/Advanced Water Conveyance System Engineering Analysis Summary Report,* RBF Consulting/Black and Veatch, July 2012, Page 1-4

MITIGATION MEASURES

HWQ-1 To reduce potential construction water quality impacts to less than significant, SBMWD shall prepare and submit a Notice of Intent (NOI) to comply with the Construction General Permit 2009 to the California State Water Resources Board. As applicable, SBMWD shall obtain a permit from the Santa Ana Regional Water Quality Control Board for any dewatering activities and comply with all permit conditions. Alternately, SBMWD may request to be placed under individual NPDES permits or be regulated under the City's NPDES management program rather than the general permit.

If the disturbed areas are less than 1-acre, SBMWD shall prepare an erosion control plan based on accepted industry practices designed to avoid erosion and impacts to water quality.

HWQ-2 Prior to issuance of a grading permit, SBMWD shall prepare a Storm Water Pollution Prevention Plan (SWPPP) for the construction activities onsite and comply with all plan provisions. A copy of the SWPPP shall be available and implemented at the construction site at all times. The SWPPP shall outline the source control and/or treatment control BMPs that will avoid or mitigate runoff pollutants at the construction site.

Impact 4.7-2: Would the Project substantially deplete groundwater supplies or interfere substantially with groundwater recharge. *Level of Significance: Less than Significant Impact*.

CONSTRUCTION- AND OPERATIONS-RELATED IMPACTS

As noted previously, the intent of the proposed Project is to reduce SBMWD's dependence on imported water and establish a reliable, sustainable source of potable water; reduce the need for State Water Project (SWP) water to replenish local groundwater basins by providing an alternate source of recycled, Title 22 treated water; and maximize the availability of recycled water to local users.

The proposed Project components include treatment improvements to the existing SBWRP and an addition of up to 7.7 cfs of tertiary filtration/disinfection facilities to the SBWRP to provide a source of Title 22 water to parks, golf course and other irrigation users within the SBMWD service area. The Project would also add up to 23.2 cfs of advanced wastewater treatment to the SBWRP to provide a source of clean water for groundwater replenishment. The conveyance system would convey the recycled water to the Waterman Basins, the East Twin Creek Spreading Grounds, and potentially the Chino Basin, for surface spreading, and to "target opportunity" customers for direct use applications near, or adjacent to, the conveyance alignment.

The RIX Phased Discharge Reduction component would reduce up to approximately 34.0 cfs of treated wastewater discharges into the Santa Ana River via the RIX facility. The 34.0 cfs of treated wastewater discharge diverted from the Santa Ana River would be conveyed to recycled water customers through the conveyance system to be beneficially used for direct reuse or conveyed to the recharge facilities for groundwater recharge.

The Project would result in the potential future connection of the RIX facility to the Chino Basin and the Inland Empire Utility Agency's (IEUA) non-potable system. Refer to page 4.7-15 for a discussion of the Western Judgment. Recycled water in excess of SBMWD needs would be conveyed to the IEUA service area to be used to meet non-potable direct uses and for groundwater recharge in the Chino Basin. Water provided for direct reuse would reduce existing demands on groundwater resources by providing a substitute supply. The amount of potential supplemental water from converted test wells contemplated

under Mitigation Measure BIO-14 would be minor in relation to the total amount of groundwater recharge provided by the Project. The Project's recharge of a substantial amount of treated water for reuse would result in a beneficial impact to groundwater recharge and supplies, and reduce depletion with the direct use of recycled water for irrigation and other users, as well as increased recharge in the basins. As such, impacts would be less than significant.

MITIGATION MEASURES

No mitigation is required.

Impact 4.7-3: Would the Project substantially alter the existing drainage pattern of the site or area including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site? *Level of Significance: Less than Significant Impact with Mitigation Incorporated*.

CONSTRUCTION RELATED IMPACTS

Streams and rivers that may be affected by the proposed Project include Waterman Canyon Creek, East Twin Creek, and the Santa Ana River. The Project proposes to use the existing Waterman Basins (an existing off-creek conservation facility connected to the Waterman Canyon Creek) and East Twin Creek Spreading Grounds (a flow-through facility on East Twin Creek) for reuse of recycled water. Discharging recycled water would alter the quantity and flow of water in these facilities. As such, site improvements would be needed at the outlet structures. To prevent erosion during operations, the Project proposes repairing the internal berms between cells, rehabilitating or replacing the outlet valves from each cell (i.e., sub-basin), installing level transmitters to each cell and telemetry, and adding erosion control near the outlet of the recharge distribution pipeline.

Conveyance pipelines and SBWRP improvements would be generally located within the City's existing street rights-of-way and the SBWRP, respectively. Thus, these Project components are not anticipated to alter drainage patterns or significantly impact erosion or siltation during operations.

The conveyance pipeline alignments may require crossing local drainages. Improvements to the conveyance pipelines would not result in significant impacts on hydrology or drainage patterns. Further, construction within the SBWRP and recharge sites improvements and associated piping will result in a minimal change in the percent impervious material, because the majority of the infrastructure would be underground, and located within existing uses. The Project would implement standard design and construction measures and appropriate water quality measures to ensure proper surface drainage and to minimize potential effects on water quality. As such, the Project would not substantially alter the existing drainage pattern of the site or area or substantially increase the rate or amount of surface runoff in a manner that would result in flooding. Impacts would be less than significant, and no mitigation measures are required.

OPERATIONS RELATED IMPACTS

Santa Ana River Discharge Reduction

In order to best understand the impact of the phased RIX discharge reduction, a number of studies were completed and ultimately synthesized in Appendix 10.5, *Low Flow Study of the Santa Ana River between the Rialto Drain and the MWD Crossing*. Baseline characteristics for applicable study reaches were

determined at a flow rate of 63 cfs, and are further illustrated in Table 4.4-1 of the Biological Resources section. Note that the reaches discussed in this section predominantly refer to study reaches as define the WEI studies, and will be differentiated from those management reaches defined by regulatory agencies (RWQCB, etc.) described previously in this section, and will be differentiated by the use of the terms study reaches and regulatory reaches, respectively. Refer to Figure 4.4-1: *Reaches of the Santa Ana River* for an illustration of the Santa Ana River reaches and study reaches.

One of these reports, prepared by GEI Consultants, Inc., titled *Evaluation of the Phased RIX Flow Reduction Plan on Santa Ana Suckers, Based on Predicted Changes in Physical Habitat in the Santa Ana River*, addressed potential impacts from the Rialto Drain to the MWD Crossing resulting from the phased discharge reduction. The preparation of the report included collecting river channel geometry from LiDAR (a type of laser scanning technology which measures distance) and field surveys, stream gage data at three sites and the USGS stream gage station at the MWD Crossing, and discharge data from RIX and the City of Rialto's WWTP. This data was used to conduct a hydraulic analysis of the Santa Ana River from RIX to the MWD Crossing for the various RIX reduction phases (discussed about) using the Hydrologic Engineering Centers River Analysis System (HEC-RAS) hydraulic model. The results of the HEC-RAS model was used by GEI to characterize the potential impacts to the Santa Ana sucker habitat within each GEI-defined river reach. The resulting data includes "average maximum" and "maximum" measurements. The "average maximum" is the average of the maximum measurements from each of the transects taken within the respective reach of the Santa Ana River, while the "maximum" measurement is the maximum measurement taken across all transects within the respective reach of the river. Refer to Appendix 10.5 for further information.

Changes in Depth

Based on the modeling results, the 52% reduction in RIX discharge from the baseline Santa Ana River flow of 63 cubic feet per second (cfs) to the Phase 5 flow of 30 cfs would result in a 13% reduction in the maximum depth in Santa Ana River Study Reach 1 from 2.08 to 1.82 feet (ft). The average of all maximum depths in Study Reach 1 would be reduced 14%, from 1.26 to 1.08 ft, for the baseline to Phase 5 flow. Study Reach 1 coincides with the greatest density of Santa Ana suckers currently, which is likely related to the consistent coarse substrate present within this reach and also to the deeper habitats available in this reach compared to downstream reaches. Adult Santa Ana suckers are bottom feeding fish and as such they occur in the deeper portions of the river and generally prefer depths beginning at 0.6 feet. Determining maximum depth allows for the analysis of suitable minimum habitat requirements within a reach. Further, average maximum depth illustrates the extent of habitat.

The percent reductions in maximum depth with decreasing flow were greater in Study Reaches 2 and 3 than in Study Reach 1. The greatest percent reduction in maximum depths for each flow occurred in Study Reach 2, with maximum and average of the maximum depths for Phase 5 being reduced up to 25% and 26% from baseline, respectively. In Study Reach 3, the maximum and average of the maximum depths for Phase 5 were reduced up to 13% and 20%, respectively.

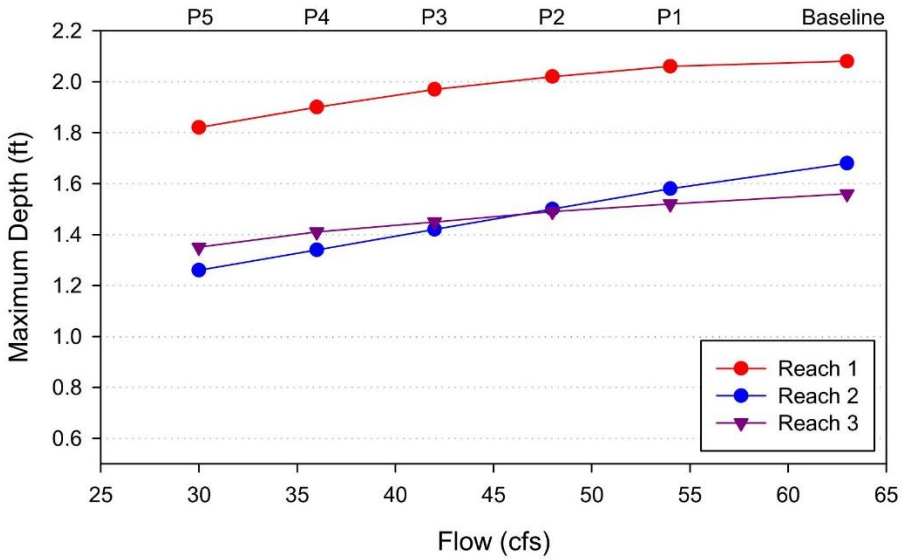
The rate of decrease in maximum depth as a result of reducing flow was similar within Study Reach 1 and Study Reach 3 of the Santa Ana River. However, the rate of decrease was greater within Study Reach 2. The maximum depth was greater in Study Reach 2 than in Study Reach 3 for the baseline conditions as well as the, Phase 1, and Phase 2 scenarios. However, the maximum depth in Study Reach 2 is less than the depth in Study Reach 3 for the later phases of decreased discharge and less than in Study Reach 3 for the lower flows.

Although the maximum depths were similar between Study Reaches 2 and 3 and switched in magnitude with reductions in flow, the average maximum depth of all transects was substantially lower in Study Reach 3 than in Study Reach 2 for all flow scenarios, and both were substantially lower than the average maximum depths in Study Reach 1 (Refer to Figure 4.7-1, *Maximum Stream Depth by Reach and Phase*).

The amount of variability in the maximum depth values was similar for all three reaches for the baseline flow and all five phases of RIX reduction, with the difference between the maximum and minimum values generally between 1.0 and 1.3 feet.

In general, overall depths showed minor decreases as a result of the first three phases in Study Reaches 1 and 3, with somewhat greater changes in Study Reach 2. Reductions in depth in Study Reach 3 were intermediate between the reductions in Study Reaches 1 and 2. The pattern of Study Reach 1 having deeper water remained consistent compared to the other two reaches, regardless of flow.

Figure 4.7-1: Maximum Stream Depth by Reach and Phase (Source: GEI Consultants, 2014)



Changes in Stream Width

The 52% reduction in RIX discharge from the baseline Santa Ana River flow of 63 cfs to the Phase 5 flow of 30 cfs would result in a reduction in average wetted width of 5%, from 33.5 to 31.8 ft in Study Reach 1. Wetted widths were similar in Study Reach 2 and a 13% reduction from 35.9 to 31.2 ft would occur, from baseline to Phase 5 flow. Wetted widths were naturally greater in Study Reach 3 than in Study Reaches 1 and 2, therefore a 7% reduction in wetted width from 73.6 to 68.3 ft occurred for baseline to Phase 5 flow, in comparison to the 13% reduction in Study Reaches 1 and 2. These reductions in wetted width are much less than the corresponding percent reduction in flow, illustrating that the reduction in the amount of wetted habitat is not a one-to-one relationship with reduction in flow.

Overall, average stream width exhibited little change through all five phases of the Project in Study Reaches 1 and 3, and through the first four phases in Study Reach 2. As with the depth data above, general stream channel characteristics are expected to change only gradually as flows decrease.

Changes in Stream Velocity

Study Reach 1 had the greatest reduction in velocity from baseline for each flow reduction scenario. Average velocity in Study Reach 1 was reduced by 41%, from 1.77 to 1.04 ft/s for baseline to Phase 5

flows. In Study Reach 2, this reduction from baseline to Phase 5 flow, resulted in a 22% reduction in velocity from 1.62 to 1.27 ft/s, while in Study Reach 3 velocity was reduced 10% from 1.51 to 1.36 ft/s.

Overall, in Study Reach 1 reductions in flow from baseline through Phase 5~~,~~ resulted in more moderate reductions in depth and width than in Study Reaches 2 and 3, as illustrated by the smaller percent changes from baseline for depth and width. Accordingly, the reductions in velocity with decreasing flow were greater in Study Reach 1 than in Study Reaches 2 and 3.

The proposed reduction in discharges from RIX to the Santa Ana River would not substantially alter the existing drainage pattern of the Santa Ana River because it flows within an inset, or low flow channel, through the Project site for much of the study area. As such, the footprint of the Santa Ana River would not be impacted as it is confined by the existing channelization. Reduction in flow from the RIX facility would result in less water and, therefore, more capacity to accommodate storm flows within the River, and thereby not contribute to the potential for flooding. The change in flow associated with the reduction of RIX effluent would be negligible due to the large capacity of the Santa Ana River to accommodate low flows and storm flows. The Project would have a negligible impact on flows within the Santa Ana River in regards to drainage patterns. While impacts would not be significant, and mitigation is not required, Mitigation Measure BIO-7, would provide for the development and implementation of an adaptive management plan that would include hydrologic performance standards such as measurements of stream depth, stream width, and stream velocity in order to assess potential changes in flows and drainage patterns as they may relate to maintaining Santa Ana sucker habitat. This measure will ensure that changes to flow patterns, which are expected to be minimal, would be further reduced.

Furthermore, the Project will be required to comply with the USACE and RWQCB construction and operational requirements related to erosion and siltation within the Santa Ana River as they are stipulated under the current operating permits for the RIX Facility. Reducing the RIX discharge may reduce discharge-related erosion caused by the release of water into the Santa Ana River, although following a storm event the reduced discharge may also reduce the RIX discharge's beneficial effects of sediment removal, at the discharge point and/or downstream of the RIX Facility (discussed further below and extensively in Section 4.4, *Biological Resources*). Stormwater discharges associated with construction activity where clearing, grading, and excavation result in soil disturbance would be required to comply with the provisions of a NPDES permit, and develop and implement an effective SWPPP.

The reduction in discharge also has implications for the potential impacts to the Federally-endangered Santa Ana sucker, due to changes in the depth and flow characteristics of the Santa Ana River resulting from reduced discharge. SBWMD proposes an Adaptive Management Plan as part of the required Biological Assessment and regulatory permitting for the Project (refer to Mitigation Measure BIO-7), to ensure that Project operations avoid or minimize potential impacts to the Santa Ana River and associated sensitive habitat and species. Potential impacts to the Santa Ana sucker and other biological resources are discussed and evaluated in detail in Section 4.4, *Biological Resources*. With the implementation of Mitigation Measure BIO-7, impacts would be less than significant.

MITIGATION MEASURES

BIO-7 Refer to Section 4.4, *Biological Resources*.

Impact 4.7-4: Would the Project create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff? *Level of Significance: Less Than Significant Impact*.

CONSTRUCTION- AND OPERATIONS-RELATED IMPACTS

NPDES permit requirements and SWPP requirements will ensure that Project construction does not result in substantial sources of polluted runoff. The Waterman Basins, East Twin Creek Spreading Grounds, and Chino Basin, (Recharge Basins) will continue to function as flood control facilities with Project implementation. Recycled water and advanced treated water used for groundwater recharge may be limited prior to and during storm events. Groundwater recharge flows would be diverted at the SBWRP to the RIX facility and Santa Ana River during storm events. During large storm events where the flow in the Santa Ana River is greater than a 20 to 1 ratio as compared to the SBWRP discharge rate, the RWQCB allows discharge at the SBWRP of secondary effluent to the Santa Ana River without tertiary and/or advanced treatment. Therefore, the Project will not create or contribute runoff that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial sources of polluted runoff. A less than significant impact would occur.

MITIGATION MEASURES

No mitigation is required.

Impact 4.7-5: Would the Project Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map? *Level of Significance: No Impact*.

CONSTRUCTION- AND OPERATIONS-RELATED IMPACTS

Water Reclamation Plant, Conveyance Systems, Recharge Sites, RIX Phased Discharge Reduction

As shown on Figure 5.7-1 of the *General Plan EIR*, the immediate vicinity of the Santa Ana River and East Twin Creek, as well as the Waterman Basins and the East Twin Creeks Spreading Grounds are within the 100-year flood plain. The Waterman Basins capture stormwater runoff and the East Twin Creeks Spreading Grounds capture stormwater runoff and serve as an overflow for the Waterman Basins. The Project does not include housing or other structures that would be habitable. No impact would occur.

MITIGATION MEASURES

No mitigation is required.

Impact 4.7-6: Would the Project place structures within a 100-year Flood Area which would impede or redirect flows? *Level of Significance: Less than Significant Impact*.

CONSTRUCTION- AND OPERATIONS-RELATED IMPACTS

The improvements within the Waterman Basins, East Twin Creek Spreading Grounds, and Chino Basin are partially located within a 100-year flood hazard area, as delineated by the Federal Emergency Management Agency (FEMA). The proposed Project would recharge recycled water within one or more of these facilities. Historically, these facilities have been used by SBCFCD and IEUA primarily to intercept and convey flood flows through and away from developed areas of the County. A secondary benefit of these facilities included water conservation through groundwater recharge within the basins. The proposed Project would augment the facilities' recharge production. The Project would include the

proposed improvements listed in Section 3.0, *Project Description*. The Project would only include the development of pipeline facilities to connect the recharge basins to the conveyance facility, which would be located underground. Furthermore, the improvements within the basin would facilitate recharge operations within the basins. While facility improvements would be developed within the 100-year floodplain, these improvements would be largely located underground and those facilities aboveground would be installed within the recharge basins. As such, impacts would be less than significant.

MITIGATION MEASURES

No mitigation is required.

Impact 4.7-7: Would the Project expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam? *Level of Significance: Less than Significant Impact*.

CONSTRUCTION- AND OPERATIONS-RELATED IMPACTS

The southerly half of the Project site is located within the limits of a flooded area with Seven Oaks Dam (*General Plan EIR* Figure 5.7-2). Seven Oaks Dam is a single purpose flood control project constructed by the United States Army Corps of Engineers. The dam operates in tandem with Prado Dam to provide flood protection to the region. The dam is designed to provide 350-year flood protection and withstand an earthquake of 8-plus magnitude.

While the Project would not expose people to significant hazards, structures would be constructed within this inundation area. However, based on the extremely remote probability of dam failure, less than significant impacts are identified.

MITIGATION MEASURES

No mitigation is required.

Impact 4.7-8: Would the Project expose people or structures to a significant risk of loss, injury or death involving inundation by seiche, tsunami, or mudflow? *Level of Significance: Less than Significant Impact*.

Seiching is defined as a periodic oscillation of liquid within a container or reservoir. Its period is determined by the resonant characteristics of the container as controlled by its physical dimensions. There are no anticipated impacts to the proposed Project from seiche or tsunami, as no structures, topographical features, or water bodies capable of producing such events exist within the Project site or vicinity.

Implementation of the proposed Project would result in more days with standing water within the Waterman Basin and East Twin Creek Spreading Grounds, Chino Basin, or a combination of these three. However, because the existing sub-basins/cells are relatively small (up to approximately 23 acres of surface area and 4 feet of conservation storage depth) and the sub-basins are separated by flood control berms, it is unlikely that a seiche could occur or result in significant damage due to the limited surface area for each individual basin and cell.

The potential for mudflows depends on various factors within a given watershed, including sediment availability, exposure of slopes, presence of debris, channel roughness and constrictions, and existing drainage and channel developments. Estimates of sediment availability would depend on the potential for landslides, hill slope sloughing or failure, channel bank failure, bed scour, or overland sediment yield.

One important factor that may contribute to an increase in sediment/debris concentrations is wildland fires. If fires were to impact upstream hillsides prior to an extreme storm event, the concentration of sediment/debris by volume of flow could rise substantially. As previously stated in Section 4.6, *Hazards and Hazardous Materials*, a large swath of the northern portion of the City is designated as a Very High Fire Hazard Severity Zone (VHFHSZ). However, this event would not be caused by the proposed Project; this event could occur regardless of the proposed Project improvements.

The East Twin Creek Spreading Grounds, Waterman Basins, and Chino Basin, are currently designed for flood control purposes and would attenuate mudflows by capture of sediment and debris within their basins. Following a mudflow event the basins/spreading grounds may be compromised until they are cleared, and recycled water would need either to be conveyed to direct users or discharged to the RIX Facility; however, if discharge to the RIX Facility would occur, it would be similar to existing conditions.

It should be noted that the impoundment of recycled water within the basins/spreading grounds prior to a mudflow event is unlikely to occur. An agreement between the San Bernardino County Flood Control District and the San Bernardino Municipal Water Department is required in order to define the operational requirements and parameters of the facilities' operations, similar to the agreement enacted between the SBCFCD, Inland Empire Utilities Agency, Chino Basin Water Conservation District, and Chino Basin Watermaster that governs the operation and maintenance of the Chino Recharge Basin facilities. In order for the two purposes to not conflict, the agreement requires the preparation of a Conservation Plan with a schedule of "conservation pool elevations, or criteria that defines when water can be stored for conservation and when water in conservation must be released to restore the full flood protection capabilities of the basins or allow for facility maintenance and repair, etc." Annual maintenance will be required to remove fine sediments from the bottom of the basins and to perform weed abatement and erosion control at the facilities; therefore, impacts are considered less than significant.

Additionally, the Project area is not located near an open ocean; therefore, there is no risk of a tsunami.

MITIGATION MEASURES

No mitigation is required.

4.7.4 CUMULATIVE IMPACTS

SBMWD recognizes that other water agencies are considering projects that, if approved, could also reduce flows to the Santa Ana River along the Study Reaches. The proposed Project is part of long-term coordinated plans by water agencies and other public entities to increase water resource sustainability along the Santa Ana River and within the greater watershed area. The Clean Water Factory Project is a proposed project listed as part of the Upper Santa Ana River Habitat Conservation Plan (HCP) and SBMWD is identified as a participating water resource agency in the HCP planning process. The HCP is being developed as the method for obtaining incidental take permits for threatened and endangered species from federal and State agencies in order to build the proposed water-related projects. Phase 2 HCP development includes an extensive effort to study, define, and model the hydrology of the Santa Ana River Watershed in order to understand how best to avoid or minimize adverse hydrological impacts from cumulative water management projects within the watershed.

The Valley District Santa Ana River Water Right Applications for Supplemental Water Supply EIR addresses the cumulative impacts of water resources projects within the Santa Ana River watershed. The Santa Ana River is currently subject to various stresses affecting water quality and flow, and the Project and other potential future projects or plans/programs would add to these stresses. Some of these cumulative

projects would affect storm flows in the Santa Ana River; however, the Project's primary effect is related to non-storm RIX base flow into the Santa Ana River, and as such Project impacts related to storm events and any associated conribution to cumulative impacts would be minimal. Certain cumulative projects could further reduce dry season base flow in the Santa Ana River. Within the Project area (specifically the Santa Ana River reaches most affected by the Project), these cumulative projects have been considered as the Project's Santa Ana River base flow analysis as an absolute value regardless of the combination of source reductions. This EIR, as summarized in Table 4.7-5 above, analyzes what is considered as the cumulative worst-case condition for potential future wastewater treatment plant discharge reductions in the Study Reaches.

For instance, Valley District's proposed Sterling Natural Resource Center (SNRC) would provide tertiary treatment to wastewater generated within East Valley Water District's (EVWD) service area, modify EVWD's wastewater collection facilities, and construct treated water conveyance systems to beneficially use treated water in the upper Santa Ana River watershed. Currently, EVWD conveys wastewater to SBWRP for conveyance to RIX, where it is discharged to the Santa Ana River. If approved and constructed, the SNRC would treat wastewater further upstream and reuse it for other beneficial uses that may reduce flows to the Santa Ana River.[9] The SNRC proposes to initially treat up to 9.28 cfs (6 MGD) associated with existing wastewater volumes, and up to 15.4 cfs (10 MGD) with consideration of wastewater increases from future growth and development. Under this scenario, the flows that are diverted from the Santa Ana River as a result of the SNRC would thereby reduce the amount of discharge that could be limited by the Project. The City of Rialto has filed a Petition for Change to reduce its current wastewater treatment plant discharge, proposing a 100% reduction to zero discharge. If both of these cumulative projects are approved in full (SNRC and the Rialto Petition for Change[10]), the net reduction of flows could be as much as 24.0 cfs (15.5 MGD). This flow reduction would not be in addition to proposed Project discharge reductions, but would reduce the amount of RIX discharge reduction available to SBMWD. Given the regulatory constraints and importance of downstream habitat, it is considered unlikely that greater than the modeled Phase 5 flow reductions would receive necessary regulatory agency permitting, and this therefore represents the worst-case discharge reduction to the Study Reaches from RIX and the Rialto wastewater treatment plant.

As such, the cumulative impacts of the project, in conjunction with other key projects, would not result in a cumulative reduction of water within the Santa Ana River that is greater than Phase 5 of the Project (Refer to Table 4.7-7**,** *Proposed RIX Discharge Phased Reduction Scenarios,* above. Furthermore, the Project's RIX Phased Discharge Reduction will be phased over time to ensure no significant impacts occur to the Santa Ana River and its associated base flow depenent habitat and species (refer to Section 4.4, *Biological Resources*).

Because the Project would produce blended product water for recharge that would have a combined TDS of 233 mg/l and Nitrate of 2.45mg/l, which is well below the basin objectives, the Project's contribution to groundwater quality impacts would not be cumulatively considerable.

4.7.5 SIGNIFICANT UNAVOIDABLE IMPACTS

No significant unavoidable impacts to hydrology and water quality have been identified.

[9] There Sterling NRC includes provisions for the delivery of water to the Santa Ana River when needed for environmental benefits.

[10] SWRCB Petition number WW0079; notice dated June 18, 2015.

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Section 4.8
Land Use and Planning

Section 4.8
Land Use and Planning

This section identifies the existing land use conditions, evaluates the Project's consistency with relevant land use plans, policies, and regulations, and when necessary, recommends mitigation measures to avoid or lessen the significance of potential impacts. The analyses involving the various Project components consider the applicable plans, policies or regulations of the agency with jurisdiction over that particular Project component. The San Bernardino Water Reclamation Plant (SBWRP), Conveyance System, Rapid Infiltration and Extraction (RIX) Facility, and conveyance facilities are generally located in the City of San Bernardino, with a small portion of the Project located within San Bernardino County and Riverside County jurisdiction. Information for this section was gathered from the *City of San Bernardino General Plan* (2005), *City of San Bernardino General Plan EIR* (2005), *County of San Bernardino General Plan* (2007), the Southern California Association of Governments (SCAG) *Regional Comprehensive Plan* (RCP 2008) and *Regional Transportation Plan/Sustainable Communities Strategy Plan (*RTP/SCS 2012).

4.8.1 AFFECTED ENVIRONMENT

EXISTING LAND USES

Most of the Project is located within the City of San Bernardino (See Exhibit 3.0-2, *Project Vicinity*). A small portion of Conveyance Alignment 1 crosses land within the County of San Bernardino jurisdiction (See Exhibit 3.0-4, *Conveyance System Alternatives (Southerly Portion)*). This alignment would be located within existing paved right-of-way. The proposed facilities would be constructed within the San Bernardino Municipal Water Department (SBMWD) service area and would lie above the San Bernardino Basin Area, specifically within the Bunker Hill Basin. However, if the Chino Basin option is selected, the proposed facilities would be constructed within the Inland Empire Utilities Agency (IEUA) service area to service an existing IEUA-owned recharge basin.

The Project area includes the plant boundary of the City's existing SBWRP located just north of the confluence of the East Twin Creeks and the Santa Ana River at 399 Chandler Place, San Bernardino, California, near the intersection of E Street and Orange Show Road, north of the Santa Ana River.

The Project area also includes the alignments for four different conveyance pipeline options, which would extend from the SBWRP along existing street and/or flood control channel rights-of-way (ROWs) within the City. The conveyance pipeline system would extend to the Waterman Basin and East Twin Creek Spreading Grounds at the foothills of the San Bernardino Mountains, or potentially travel west to a recharge basin along the Chino Basin pipeline alignment.

Table 4.8-1, *Existing Land Use Conditions* describes the existing conditions of the Project site by each Project component's locations. Table 4.8-2, *Surrounding Land Use Conditions,* describes the surrounding land uses in the vicinity of the Project components. Exhibit 4.8-1, *General Plan Land Use* illustrates the existing land use conditions of the Project site and vicinity.

Table 4.8-1: Existing Land Use Conditions

Project Component	Existing Conditions
RIX Phased Discharge Reduction	The RIX Facility treats approximately 28 MGD of raw wastewater and discharges approximately 31.3 MGD of water into the Santa Ana River. The Facility, which is owned by the City of Colton and the SBMWD, and operated by SMBWD, is located approximately four miles southwest of the SBWRP, along the Santa Ana River. Currently, the SBWRP treats approximately 22 million gallons per day (mgd) of raw wastewater from the City of San Bernardino, the City of Loma Linda, and the East Valley Water District to secondary standards.
Waterman Basins	The Waterman Basins, owned and operated by San Bernardino County Flood Control District (SBCFCD), are used as an active spreading area, approximately 70 acres in size. The principal drainage course for this area is Waterman Canyon Creek. Water moves from north to south through the facility via spillways and outlet pipes. The Waterman Basins are just east of State Route 18, bordered partially by Waterman Avenue and E 40th Street, north of State Route 210. Wildwood Park is adjacent to the southwest portion of the basins.
East Twin Creek Spreading Grounds	The East Twin Creek Spreading Grounds are owned and operated by SBCFCD. The spreading grounds capture storm water runoff, and serve as an overflow for the Waterman Basins. The East Twin Creek Spreading Grounds are north of State Route 210 between Valencia Avenue and Harrison Street. The East Twin Creek Spreading Grounds are located south of 40th Street, immediately south of the Waterman Basins. The principal drainage course for this area is East Twin Creek. Stormwater in Waterman Canyon Creek that is not captured at the Waterman Basins discharges into the East Twin Creek Spreading Grounds.
Chino Basin	The Chino Basin, managed by the Chino Basin Watermaster, encompass approximately 235 square miles of the upper Santa Ana River watershed. The Chino Basin is located west of the SBWRP. If the Chino Basin pipeline alignment is selected, SBMWD would select an existing IEUA-owned recharge basin along this alignment for groundwater recharge.
Water Reclamation Plant (SBWRP)	The SBWRP currently treats approximately 22 mgd of wastewater to secondary treatment standards using a treatment train including headworks, primary clarifiers, secondary activated sludge, nitrogen removal carousel, secondary clarifiers, anaerobic digestion, and solids handling. The secondary treated water is then conveyed through a pipeline to the Rapid Infiltration and Extraction (RIX) Facility.
Conveyance and Storage Facilities	The conveyance facilities are located within existing public ROWs including roadway and flood control facilities. Exhibit 4.8-1, *General Plan Land Use* illustrates the existing uses within conveyance facilities' alignment.

Table 4.8-2: Surrounding Land Use Conditions

Project Components	Existing Conditions
RIX Phased Discharge Reduction	North: Public/Institution uses, Western Riverside Channel, vacant land East: Open Space/Resource land uses, Santa Ana River, vacant land South: Open Space/Resource land uses, Santa Ana River West: Public/Institution uses, Western Riverside Channel, City of Rialto
Waterman Basins	North: Vacant land, large-lot residential homes East: East Twin Creek, single-family residential homes South: Parkland, single-family residential homes West: Single-family residential homes
East Twin Creek Spreading Grounds	North: Flood control facilities East: Single-family residential homes South: Flood control facilities, single-family residential homes West: Vacant land, single-family residential homes
Chino Basin	Surrounded by various existing uses depending on the recharge basin option that would ultimately be selected.
Water Reclamation Plant (SBWRP)	North: Light industrial uses, vacant land East: East Twin Creek, golf course South: East Twin Creek, golf course West: Golf course, light industrial uses, commercial uses
Conveyance Facilities	Surrounded by various existing uses depending on the Conveyance Alignment option that would ultimately be selected (Exhibit 4.8-1, *General Plan Land Use*).

General Plan Land Use Designations

Existing General Plan land use designations within the Project area are illustrated in Exhibit 4.8-1, *General Plan Land Use*. Table 4.8-3, *Project Site General Land Use Designations* provides a summary of land use designations by each major Project component.

Surrounding Land Use Designations

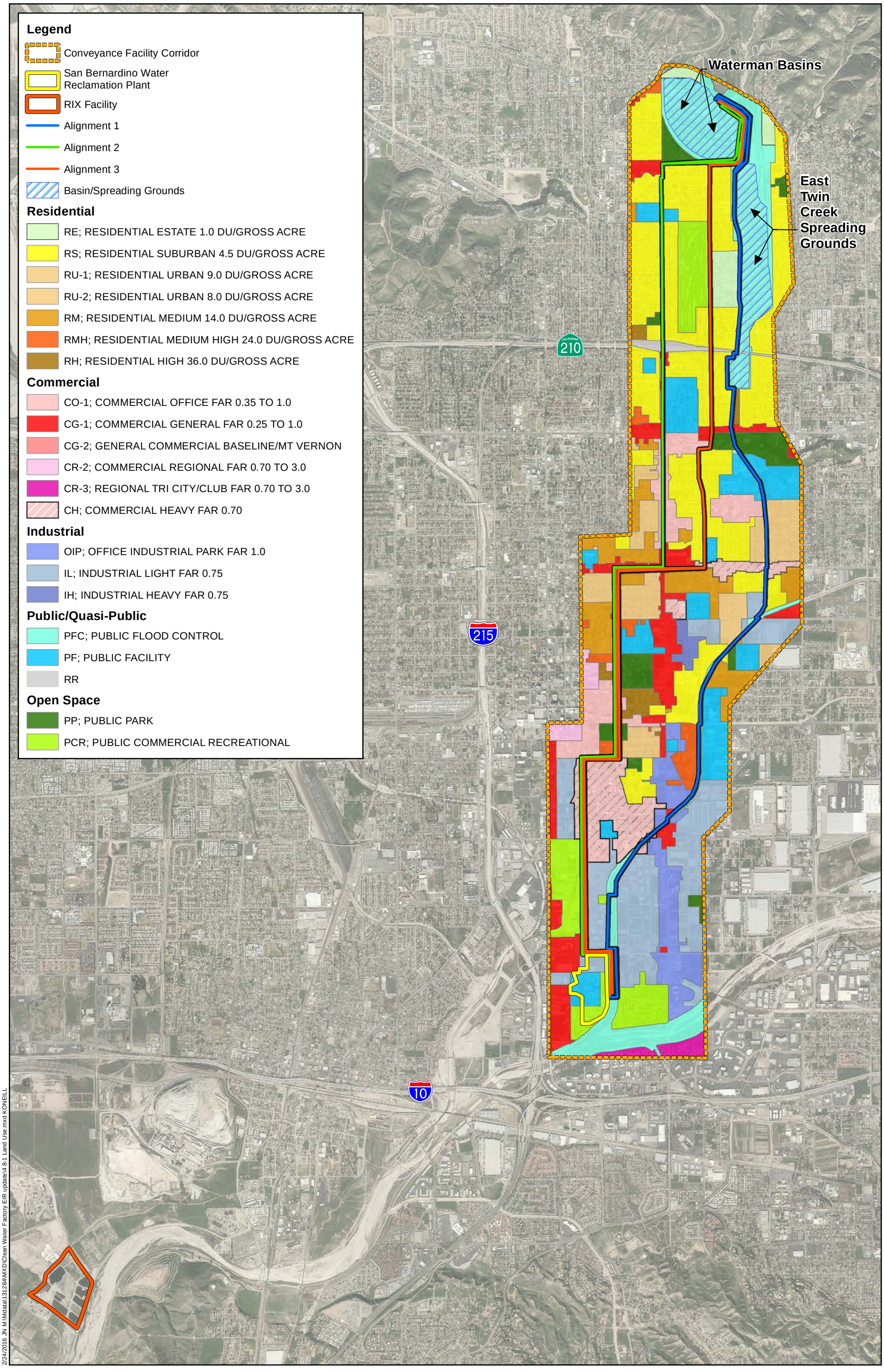
Project components are surrounded by multiple General Plan land use designations as shown on Exhibit 4.8-1, *General Plan Land Use Designations*. Table 4.8-4, *Surrounding General Land Use Designations* provides a summary of land use designations by each major Project component.

Table 4.8-3: Project Site General Plan Land Use Designations

Project Component	General Plan Land Use Designation
RIX Phased Discharge Reduction	Public Institution
Waterman Basins	Public Flood Control (PFC) District
East Twin Creek Spreading Grounds	Public Flood Control (PFC) District
Chino Basin	Various existing land uses depending on the recharge basin option that would ultimately be selected.
SBWRP	Public Facilities (PF) District and Public/Commercial Recreation (PCR) District
Conveyance Facilities	Transect various zoning districts based on Alternative Alignment selected (Refer to Exhibit 4.8-1)
Sources: City of Colton, City of Colton General Plan Land Use Plan, August 20, 2013, http://ca-colton.civicplus.com/DocumentCenter/View/774. Accessed October 14, 2015; City of San Bernardino, San Bernardino General Plan Figure LU-1, November 2005; and County of San Bernardino, General Plan Section II – Land Use Element, April 2007.	

Table 4.8-4: Surrounding General Plan Land Uses

Project Components	General Plan Land Use Designation
RIX Phased Discharge Reduction	North: Public/Institution East: Public/Institution, Heavy Industrial, and Open Space-Resource South: Heavy Industrial West: Heavy Industrial, Public/Institution, Open Space-Resource
Waterman Basins	North: Residential Estate (RE) District, Open Space (OS) District East: Residential Suburban (RS) District, RE South: Public Park (PP) District, RS, PFC West: RS, Residential Medium High (RMH) District
East Twin Creek Spreading Grounds	North: PFC East: RS South: RS, PFC West: RS, RE
SBWRP	North: Industrial Light (IL), Commercial General (CG-1) East: PFC, IL, PCR South: PCR, PFC West: IL, CG-1
Chino Basin	Surrounded by various General Plan land uses depending on the specific recharge basin(s) selected
Conveyance Facilities	Surrounded by various General Plan land uses depending on Alternative Alignment selected
Source: City of Colton, City of Colton General Plan Land Use Plan, August 20, 2013, http://ca-colton.civicplus.com/DocumentCenter/View/774. Accessed October 14, 2015; City of San Bernardino, San Bernardino General Plan Figure LU-1, November 2005; and County of San Bernardino, General Plan Section II – Land Use Element, April 2007.	



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Michael Baker INTERNATIONAL

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Source: City of San Bernardino General Plan Land Use, ESRI World Imagery, San Bernardino County GIS

CLEAN WATER FACTORY PROJECT EIR

General Plan Land Use

Exhibit 4.8-1

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ZONING

The City of San Bernardino's zoning map corresponds with the General Plan designations. Appendix 8 of the *City of San Bernardino General Plan* contains a matrix describing the relationship between the General Plan Land Use Designations and the Zoning Districts. The zoning classifications that intersect the Project site are the same as the land use classifications in the General Plan.[1] The City of Colton's zoning map also corresponds with the General Plan land use designations.

4.8.2 REGULATORY FRAMEWORK

FEDERAL

There are no federal plans, policies, or laws related to land use that are applicable to the proposed Project. Various federal Executive Orders, including those pertaining to Environmental Justice and Tribal Lands, are addressed in Section 7.0, *Effects Found not to be Significant*.

STATE

California Planning and Zoning Law

The legal framework in which California cities and counties exercise local planning and land use functions is set forth in the California Planning and Zoning Law, sections 65000 - 66499.58. Under State planning law, each city and county must adopt a comprehensive, long-term general plan. State law gives cities and counties wide latitude in how a jurisdiction may create a general plan, but there are fundamental requirements that must be met. These requirements include the inclusion of seven mandatory elements described in the Government Code, including a section on land use. Each of the elements must contain text and descriptions setting forth objectives, principles, standards, policies, and plan proposals, diagrams and maps that incorporate data and analysis, and mitigation measures.

California Codes

The California Codes are 29 legal codes enacted by the California State Legislature, which together form the general statutory law of California. Unlike the United States Code or other U.S. state legal codes, they have never been consolidated into a single unified code. The official Codes are maintained by the California Legislative Counsel for the Legislature.

California Government Code Section 53091(d) states "Building ordinances of a county or city shall not apply to the location or construction of facilities for the production, generation, storage, treatment, or transmission of water, wastewater, or electrical energy by a local agency."

Furthermore, Section 539091(e) states "Zoning ordinances of a county or city shall not apply to the location or construction of facilities for the production, generation, storage, treatment, or transmission of water, or for the production or generation of electrical energy, facilities that are subject to Section 12808.5 of the Public Utilities Code, or electrical substations in an electrical transmission system that receives electricity at less than 100,000 volts. Zoning ordinances of a county or city shall apply to the location or construction of facilities for the storage or transmission of electrical energy by a local agency, if the zoning ordinances make provision for those facilities."

[1] City of San Bernardino, 2005, *San Bernardino General Plan: Appendix 8,* www.ci.san-bernardino.ca.us/pdf/DevSvcs/General%20Plan%20Document.pdf. Accessed December 23, 2014.

LOCAL

Airport Comprehensive Land Use Plan

The Project site is located within two miles of a public airport (i.e., San Bernardino International Airport [SBIA]). SBIA is located in the City of San Bernardino at 294 S. Leland Norton Way and is bounded by the Santa Ana River to the south, Tippecanoe Avenue to the west, 3rd Street to the north, and Alabama Street to the east. However, a Comprehensive Land Use Plan (CLUP) and Airport Master Plan have yet to be adopted for the SBIA. Policies in the City of San Bernardino General Plan have been designed to address compatibility with the noise and safety zones in terms of land use, density, and height. The *City of San Bernardino General Plan EIR* determined that "overall the General Plan update provides sufficient protection from airport safety hazards."

Southern California Association of Governments

The Southern California Association of Governments (SCAG) is the Metropolitan Planning Organization (MPO) for six counties: Los Angeles, Orange, San Bernardino, Riverside, Ventura, and Imperial. The region encompasses a population exceeding 19 million persons in an area of more than 38,000 square miles. As the designated MPO, SCAG is mandated by the Federal government to research and draw up plans for transportation, growth management, hazardous waste management, and air quality. Additional mandates exist at the State level.

SCAG is responsible for the maintenance of a continuous, comprehensive, and coordinated regional planning process. SCAG is also responsible for the development of demographic projections, as well as the development of integrated land use, housing, employment, transportation programs, measures, and strategies for portions of the South Coast Air Quality Management Plan (AQMP).

SCAG Regional Comprehensive Plan

SCAG's 2008 Regional Comprehensive Plan (RCP) addresses regional issues such as housing, traffic/transportation, water and air quality. The RCP serves as an advisory document to local agencies in the Southern California region for their information and voluntary use in preparing local plans and handling local issues of regional significance. The RCP presents a vision of how Southern California can balance resource conservation, economic vitality and quality of life. The RCP identifies voluntary best practices to approach growth and infrastructure challenges in an integrated and comprehensive way. It also includes goals and outcomes to measure progress toward a more sustainable region.

Sustainability Planning Grant Program

The Sustainability Planning Grant Program (formerly known as the Compass Blueprint Growth Program) was established to promote local jurisdictional efforts to test local planning protocols. The Program was initiated in 2005 and has seen the completion of over 133 projects with the goal of implementing effective growth planning as of 2014. The Sustainability Planning Grant Program offers technical assistance to any SCAG participating agency. The Program provides grants for the following three categories:

- Integrated Land Use: Including Sustainable Land Use Planning, Transit Oriented Development, and Land Use and Transportation Integration.
- Active Transportation: Bicycle, Pedestrian and Safe Routes to School Plans.
- Green Region: Natural Resource Plans, Climate Action Plans (CAPs) and Greenhouse Gas (GHG) Reduction Programs.

SCAG Regional Transportation Plan/Sustainable Communities Strategy Plan[2]

On April 4, 2012, SCAG's Regional Council adopted the landmark *2012-2035 Regional Transportation Plan/Sustainable Communities Strategy* (RTP/SCS): Towards a Sustainable Future. The 2012-2035 RTP/SCS provides goals for the long-range plan, identifies key transportation investments to address the growing population in the region and strategies to reduce traffic congestion and greenhouse gas emissions. The SCS is a new element of the long-range plan that demonstrates the integration of land use, transportation strategies, and transportation investments within the Plan. The RTP/SCS is updated every four years to reflect changes in economic trends, state and federal requirements, progress made on projects and adjustments for population and jobs. Transportation projects must be included in the RTP in order to qualify for federal and state funding.

SCAG reviews environmental documents for regionally significant projects for their consistency with the adopted RTP/SCS. Specific RTP/SCS goals applicable to the proposed Project, as identified by SCAG, are listed in the Project impacts discussion of this Section, along with a discussion of the Project's consistency with each of these goals. SCAG is currently developing the 2016-2040 RTP/SCS which is scheduled to have an adoption date of April 2016.

2012 RTP/SCS Goals

The 2012 RTP/SCS links the goal of sustaining mobility with the goals of fostering economic development, enhancing the environment, reducing energy consumption, promoting transportation-friendly development patterns, and encouraging fair and equitable access to residents affected by socio-economic, geographic and commercial limitations. The goals included in the 2012 RTP/SCS are meant to provide guidance for considering the proposed Project within the context of regional goals and policies.

City of San Bernardino General Plan

The Land Use Element of the *City of San Bernardino General Plan* includes goals and policies that are relevant to the proposed Project as follows:

Goal 2.2 Promote development that integrates with and minimizes impacts on surrounding land uses.

Policy 2.2.1 Ensure compatibility between land uses and quality design through adherence to the standards and regulations in the Development Code and policies and guidelines in the Community Design Element.

Policy 2.2.2 Require new uses to provide mitigation or buffers between existing uses where potential adverse impacts could occur, including, as appropriate, decorative walls, landscape setbacks, restricted vehicular access, enclosure of parking structures to prevent sound transmission, and control of lighting and ambient illumination.

Policy 2.2.3 Sensitively integrate regionally beneficial land uses such as transportation corridors, flood control systems, utility corridors, and recreational corridors into the community.

Policy 2.2.10 The protection of the quality of life shall take precedence during the review of new projects. Accordingly, the City shall utilize its discretion to deny or require mitigation of projects that result in impacts that outweigh benefits to the public.

[2] Southern California Association of Governments, 2014, *2012-2035 Regional Transportation Plan/Sustainable Communities Strategy,* http://rtpscs.scag.ca.gov/Pages/default.aspx. Accessed December 21, 2014.

Goal 2.7	Provide for the development and maintenance of public infrastructure and services to support existing and future residents, businesses, recreation, and other uses.
Policy 2.7.1	Enhance and expand drainage, sewer, and water supply/storage facilities to serve new development and intensification of existing lands.
Policy 2.7.2	Work with the San Bernardino Valley Municipal Water District to create additional water storage capacity and take advantage of the abundant water supplies.
Policy 2.7.3	Continue to explore opportunities, such as water themed uses, to financially capitalize on the City's water resources to enhance the City's image.

City of San Bernardino Development Code

This Development Code is the primary tool for implementing the goals, objectives, and policies of the *City of San Bernardino General Plan*, pursuant to the mandated provisions of the State Planning and Zoning Law (Government Code Section 65000 et seq.), State Subdivision Map Act (Government Code Section 66410 et seq.), California Environmental Quality Act (Public Resources Code 21000 et seq.), and other applicable State and local requirements. All development within the unincorporated area of the City's Sphere of Influence should be consistent with the *City of San Bernardino General Plan*.

Western Riverside County Multiple Species Habitat Conservation Plan, Upper Santa Ana River Habitat Conservation Plan, and the Santa Ana Sucker Conservation Program

Portions of the Santa Ana River downstream of the RIX Facility, where diversion of 28 MGD is proposed, are either covered by the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP) or the Santa Ana Sucker (SASU) Conservation Program for the Santa Ana River.

Western Riverside County Multiple Species Habitat Conservation Plan

The Western Riverside County MSHCP is a comprehensive, multi-jurisdictional habitat conservation plan focusing on conservation of species and their associated habitats in Western Riverside County. The MSHCP is intended to address the requirements of the State and Federal Endangered Species Acts. The MSHCP plan area encompasses approximately 1.26 million acres (1,966 square miles); it includes all unincorporated Riverside County land west of the crest of the San Jacinto Mountains to the Orange County line, as well as the jurisdictional areas of the Cities of Temecula, Murrieta, Lake Elsinore, Canyon Lake, Norco, Corona, Riverside, Moreno Valley, Banning, Beaumont, Calimesa, Perris, Hemet, and San Jacinto.

In June 2004, the United States Fish and Wildlife Service (USFWS) issued a Section 10(a)(1)(B) permit for the MSHCP. Additionally, the California Department of Fish and Wildlife (CDFW) issued California Natural Community Conservation Plan Approval and Take Authorization for the MSHCP, based on California Fish and Game Code, Section 2800 *et seq*. The MSHCP establishes a multiple species conservation program to minimize and mitigate habitat loss and the incidental take of covered species in association with activities covered under the permit.

Upper Santa Ana River Habitat Conservation Plan

Development of the *Upper Santa Ana River Habitat Conservation Plan* is currently underway in a joint effort led by Valley District, USFWS, CDFW, and other interested parties. The HCP participants include permittees, wildlife agencies, and other relevant stakeholders. Ten water resource agencies currently participate in the HCP planning process, including SBMWD. The HCP will analyze the impacts of proposed water supply projects on Santa Ana sucker and other select species. The ultimate goal of the HCP is to

obtain an Incidental Take Permit for the proposed water supply projects covered under the HCP, which include, but are not limited to, recharge projects, channel diversion projects, recycled water projects, as well as various maintenance and improvement projects along the Santa Ana River. Refer to Section 4.4, *Biological Resources,* for further discussion of the HCP process.

Santa Ana Sucker (SASU) Conservation Program

The Santa Ana Sucker Conservation Program has been in effect since 2000 and was developed by the Santa Ana Watershed Project Authority (SAWPA) in cooperation with the USFWS. It is being implemented by SAWPA and eight other participants, including SBMWD. The RIX Facility falls within the boundaries of the Santa Ana Sucker Conservation Program. SBMWD, as a participant in this program, is well aware of the presence of essential habitat for Santa Ana sucker downstream of the RIX Facility and the need to protect the habitat. In 2010 USFWS re-designated Santa Ana sucker Critical Habitat that included portions of the upper reaches of the Santa Ana River which, although unoccupied by SASU, provide sand and cobble needed for Santa Ana sucker for breeding. The Final Rule (75 FR 77962) designating Critical Habitat in 2010 has been in litigation since then and, currently, has not been implemented by USFWS. Refer to Section 4.4, *Biological Resources*, for additional discussion.

4.8.3 ENVIRONMENTAL IMPACTS

SIGNIFICANCE CRITERIA UNDER CEQA

The thresholds of significance for impacts are based on the environmental checklist in Appendix G of the State CEQA Guidelines, as amended. Based on these criteria, impacts on land use and planning would be significant if Project implementation would do any of the following:

- Physically divide an established community; (refer to Impact Statement 4.8-1)
- Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect; (refer to Impact Statement 4.8-2) or
- Conflict with any applicable habitat conservation plan or natural community conservation plan? (refer to Impact Statement 4.8-3)

Additional Topics Related to Land Use

In addition to CEQA significance criteria noted above, this EIR also addresses certain additional environmental topics related to Land Use and Planning. These include:

- Potential adverse effects upon disadvantaged communities (refer to Section 7.0, *Effects Found Not to be Significant* for a discussion regarding Environmental Justice)
- Potential adverse effects upon tribal lands (refer to Section 7.0, *Effects Found Not to be Significant* regarding potential adverse effects upon tribal lands)
- Potential growth-inducing impacts (refer to Section 5.0, *Other CEQA Considerations* regarding potential growth-inducing impacts of the Project)

SUMMARY OF APPLICABLE PROJECT DESIGN FEATURES AND EXISTING LAWS, ORDINANCES, AND REGULATIONS

Refer to Sections 4.2 and 4.4 for a discussion of Aesthetics and Biological Resources as related to Land Use and Planning. Potential Project impacts related to Land Use and Planning would be substantially avoided or otherwise mitigated through various Project Design Features and existing laws, ordinances and regulations, including:

- The Project proposes to utilize existing infrastructure wherever possible, including the existing SBWRP site and existing recharge basins and reuse of existing abandoned pipelines, which reduces the extent of construction-related impacts and reduces the physical area required for conversion to long-term water supply related uses;
- Phasing Project construction, which minimizes potential adverse effects upon the Santa Ana River as an open space resource;
- The Project creates a long-term sustainable water supply for SBMWD and potential partners, a portion of which would be utilized for landscape irrigation, further contributing to the long-term aesthetic quality of the City and environs;
- Complying with applicable local, state and federal regulations, including applicable General Plan policies; and
- Sensitive siting and design of any above-ground Project facility located adjacent to sensitive receptors such as existing residential areas.

Impact 4.8-1: Would the Project Physically divide an established community? *Level of Significance: No Impact.*

Refer to discussion in Section 7.0, *Effects Found Not to be Significant regarding the Project's lack of significant Environmental Justice effects upon existing communities.*

RIX PHASED DISCHARGE REDUCTION

Construction

The Project proposes minimal construction activities within the vicinity of the RIX Facility, including the potential installation of an additional disinfection system (NaOCl system) and pump stations (only if the Chino Basin pipeline option is selected) as well as potential minor River enhancement measures described in Section 4.4, *Biological Resources*. Therefore, the Project would not physically divide a community and would have no impact.

Operation

The RIX Phased Discharge Reduction would not physically divide an established community, because the only change would be a reduction in discharge to the Santa Ana River. However, the reduction in discharge has implications for potential adverse effects to the federally Threatened Santa Ana sucker and associated River habitat due to the Project's potential impacts to the depth and flow characteristics of the Santa Ana River resulting from reduced discharge. Refer to Section 4.4, *Biological Resources*, for a complete discussion on impacts to Santa Ana sucker. Consistency with the MSHCP and the Santa Ana Sucker Conservation Plan is discussed further in Impact 4.8-3, below. The operation of the RIX Facility would have no impact on existing communities.

WATER RECLAMATION PLANT

Construction

The Project would require minor construction activities at the SBWRP to upgrade the water treatment technology currently used. However, these facility modifications would be minor in nature and would occur within the perimeter of the already developed SBWRP boundaries. Project-related Land Use impacts have been minimized by utilizing the existing SBWRP site and through compliance with all applicable land use policies and regulations. Therefore, the Project would not divide an established community and would have no impact.

Operation

Operation of the SBWRP would occur within the existing site and would be consistent with existing uses and operation activities. Project-related land use impacts have been minimized by utilizing the existing SBWRP site and through compliance with all applicable land use policies and regulations. SBWRP operations would not divide an established community and the Project would have no impact.

CONVEYANCE AND STORAGE

Construction

The proposed conveyance system is surrounded by various existing land uses depending on the conveyance alignment option that would ultimately be selected (refer to Exhibit 4.8-1). Construction would occur in linear segments, and while these linear segments would act as a temporary physical barrier, detour routes would be made available so as not to isolate or block access between communities (refer to *Section 4.11*, *Transportation and Circulation*, regarding constructions impact on circulation). Construction activities would be temporary in nature and therefore would not physically divide established communities. Because of temporary re-routing necessary for construction activities, the Project would have a less than significant impact on existing communities.

Pump stations and storage reservoir construction would occur on properties up to one-half acre in size adjacent to the conveyance pipeline alignments and would require limited grading. The pump station and storage tank sites would be fitted with typical appurtenant facilities related to water storage and conveyance. Project-related construction would be localized to the booster pump/reservoir sites and, due to the relatively small size of the sites that would house these facilities, would not physically divide an established community or conflict with applicable land use plans, policies or regulations. Therefore, the Project would not physically divide any existing communities.

Operation

Conveyance and storage facilities maintenance and operation activities of would include periodic, scheduled inspections and equipment replacement. Those impacts would be similar to the construction impacts described above, although much smaller in scope and duration. These activities would occur within existing rights-of-way and would not encroach onto surrounding land uses. Operations and maintenance activities of the conveyance system would not physically divide an established community and the Project would have no impact.

DIRECT USE CUSTOMERS

Distribution lines to serve direct use sites would be installed within existing street rights-of-way to connect customers to the conveyance pipelines where necessary and on an as-needed basis.

Construction

Construction would be temporary in nature and would occur primarily within existing street rights-of-way. Therefore, it would not physically divide established communities and the Project would have no impact.

Operation

Operation of the Project for direct use customers would not physically divide established communities and the Project would have no impact. The Project provides a long-term reliable water supply that would help sustain the local communities served by the Project.

RECHARGE BASINS

Construction

The Waterman Basins and East Twin Creek Spreading Grounds are surrounded by vacant land, large-lot residential homes, East Twin Creek, single-family residential homes, parkland and flood control facilities. Construction activities would be similar to those described for the conveyance systems, and would require excavation and/or grading of soils for construction of proposed outlet works and erosion control. Construction would occur within the existing facilities and public rights-of-way; therefore, construction of the recharge site improvements would not physically divide established communities and the Project would have no impact.

Operation

Similar to the conveyance systems, maintenance and operations of the recharge facilities would include periodic, scheduled inspections, equipment replacement, removal of fine sediment that has accumulated in the bottom of the basins, and erosion control maintenance. These activities would occur within the existing basins themselves and would not physically divide an established community and the Project would have no impact.

Chino Basin

Construction activities associated with recharge site improvements would differ depending on the specific recharge basin selected. However, construction activities would be similar to those proposed for the Waterman Basins and East Twin Creek Spreading Grounds options (see Section 3.0, *Project Description*) and would occur within the existing facilities and public rights-of-way. Maintenance and operational activities associated with the Chino Basin recharge option would be similar to those proposed for the Waterman Basins and East Twin Creek Spreading Grounds option, above.

Therefore, construction and operation at these sites would not physically divide an established community and the Project would have no impact in this regard.

Impact 4.8-2: Would the Project conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect? *Level of Significance: Less Than Significant Impact with Mitigation Incorporated.*

As discussed under Section 4.8.1, *Affected Environment*, construction and operation of the proposed Project would traverse several General Plan zoning districts and land uses. The various Project components are mainly located within the City of San Bernardino; however, the IEUA-owned Chino Basin and its associated conveyance pipeline are located within the City of Fontana as well as the County of San Bernardino's jurisdiction. The City of Fontana is not incorporated into this EIR's land use consistency analysis since the Project's proposed improvements to these existing facilities would be minor in nature and would follow existing permitted uses of each site. The following discussion is limited to the RIX Phased Discharge Reduction and Conveyance and Storage Project components, as the proposed Water Reclamation Plant improvements, Direct Use Customers, and Recharge Basins components of the Project would be consistent with the permitted uses of each site, and would not substantially differ from the development, infrastructure, and current operations that occur within those locations..

The proposed conveyance pipelines would transect various jurisdictions, including the City of San Bernardino and County of San Bernardino, and their respective zoning districts and land uses. However, the pipelines would be located completely underground and therefore would not conflict with adjacent land uses once construction is complete. The proposed pump stations and storage tanks would be located along the selected pipeline alignment option and could be installed within a variety of land use designations and zoning classifications. Nearly all of the construction would occur within existing public rights-of-way or easements within roadways or other developed areas. Depending on the conveyance system option selected, there would be some construction that would occur along East Twin Creek (within maintenance access areas) and along the east and northeast edges of the Waterman Basins. Grading and construction for these areas would be conducted in a manner that avoids sensitive habitat areas or other identified biological resources. The location of potential pump station/reservoir sites are depicted on Exhibit 3.0-5. Project components would be designed and constructed in accordance with applicable provisions of the American Water Works Association (AWWA) Standards, California State Building Code (CBC), and the Uniform Building Code (UBC). All above-ground facilities would be sited, designed and constructed in accordance with applicable local, State, and federal regulations. In addition, above-ground facility impacts would be mitigated to less than significant levels through sensitive facility siting, design and construction, consistent with City policies and practices, as set forth in Mitigation Measure LUP-1, and as summarized at the end of this section in Table 4.8-5. As part of the proposed Project, secondary effluent from the SBWRP to the RIX Facility would be reduced in accordance with a phased reduction program and the proposed Adaptive Management Plan. The secondary effluent from the SBWRP that would have previously been discharged from the RIX Facility would be treated to a tertiary or advanced level and utilized for recycled water customers or groundwater recharge as part of the proposed Project. The RIX Phased Discharge Reduction would not conflict with the land use or zoning for the site and vicinity. Refer to Section 4.4, *Biological Resources*, for a complete discussion on impacts to Santa Ana sucker. Consistency with the MSHCP and Santa Ana Sucker Conservation Plan is discussed further in Impact 4.8-3.

General Plan and RTP/SCS Consistency Analysis

In addition to consistency with the City of San Bernardino's General Plan and zoning regulations as discussed above, a small portion of the Project traverses San Bernardino County as well as the City of Fontana jurisdiction. The components of the proposed Project that would be located within the City of Fontana jurisdiction include portions of the existing Chino Basin pipeline, which is fully located within disturbed paved rights-of-way. Project improvements to the Chino Basin pipeline would be minor in nature and include the installation of connector facilities to the SBMWD service area. For this reason, the City of Fontana is not included as part of the Project's land use consistency analysis and instead consistency with the County of San Bernardino and City of San Bernardino General Plan documents is reviewed, as well as consistency with the goals included in the 2012 RTP/SCS, which are meant to provide guidance for considering a proposed project within the context of regional goals and policies. Table 4.8-5, *Land Use Policy Consistency Analysis*, provides a consistency determination for the applicable General Plan policies and SCAG RTP/SCS goals. As indicated in Table 4.8-5, located at the end of this section, the Project does not conflict with the goals and policies in the General Plans or RTP/SCS.

Additionally, policies in the *City of San Bernardino General Plan* have been designed to address compatibility with the San Bernardino International Airport noise and safety zones in terms of land use, density and height. The *City of San Bernardino General Plan EIR* determined that "overall the General Plan update provides sufficient protection from airport safety hazards."

Consistency with Applicable Water Policies

As discussed further in Section 3.0, *Project Description* and Section 6.0, *Alternatives to the Proposed Action*, the proposed Project has been developed in direct response to local, regional, and state water supply policies in light of the current drought, regulatory and judicial constraints on the use of local groundwater and fresh water supplies, mandates toward more effective use of reclaimed water, and reduced long-term reliability of imported water supplies. The Clean Water Factory Project is expressly listed as one of several planned regional water supply projects within the Upper Santa Ana River Habitat Conservation Plan and more recent regional water supply stakeholder-driven efforts to develop long-term sustainable water supplies for the Upper Santa Ana River watershed. Refer to Table 4.8-6, *Water Policy Consistency Analysis*, at the end of this section.

With the incorporation of Project Design Features, existing laws, regulations and ordinances, and implementation of Mitigation Measure LUP-1, less than significant impacts would occur in this regard.

MITIGATION MEASURES:

LUP-1 Siting, design, and construction of all aboveground facilities will comply with applicable local, State and federal regulations. The following mitigation measures will be implemented where necessary to comply with local, State, and federal regulations and policies, to mitigated potential land use impacts below a level of significance:

- Aboveground facilities shall be sited on compatible land uses, including existing publicly-owned parcels, public rights-of-way, or otherwise developed areas that are absent of significant natural resources;
- SBMWD shall ensure no net loss of public parkland through facility siting on non-recreational parcels, and/or by providing offsetting parkland within the affected communities (refer to Section 4.10, *Recreation*);

- Site design and construction shall avoid or substantially mitigate, consistent with applicable city and/or County policies, ordinances, and regulations, the potential aesthetic and noise effects of the Project's aboveground facilities. These siting and design considerations include but are not limited to siting facilities as far away as practicable from existing sensitive uses, providing adequate landscape screening or buffering between facilities and adjacent sensitive uses, providing adequate noise attenuation to meet relevant noise standards, and providing suitable architectural design of aboveground facilities so as to be consistent within the communities in which they are located.

Impact 4.8-3: Would the project conflict with the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP) or the Santa Ana Sucker (SASU) Conservation Program? *Level of Significance: Less than Significant with Mitigation Incorporated.*

As discussed in Section 4.4, *Biological Resources,* the RIX Phased Discharge Reduction could impact the federally-threatened Santa Ana sucker, due to potential changes in the depth and flow characteristics of the Santa Ana River resulting from reduced discharge. To avoid or minimize potential impacts to the Santa Ana River and associated sensitive habitat, SBMWD proposes an Adaptive Management Plan as part of the required Biological Assessment and regulatory permitting for the Project (Mitigation Measure BIO-7). Project operations would also be addressed as part of the regional Upper Santa Ana River HCP, which is currently in progress. Potential impacts to the Santa Ana sucker and other biological resources are discussed and evaluated in detail in Section 4.4, *Biological Resources*. As discussed in Section 4.4, the Project would have a less than significant impact with mitigation on the Santa Ana sucker. Refer to Section 4.4 for a complete discussion on the Project's potential impacts to Santa Ana sucker and overall MSHCP consistency.

MITIGATION MEASURES

BIO-7 Refer to Section 4.4, *Biological Resources*.

4.8.4 CUMULATIVE IMPACTS

The *City of San Bernardino General Plan EIR* (2005) and the *San Bernardino County General Plan EIR* (2007) address the cumulative impacts of long-term development within the surrounding Project area. Cumulative impacts to land use are defined as impacts that result from either incremental changes in land use that would result in substantial disruption within an established community; or conflicts with adopted plans and policies related to avoidance or mitigation of environmental effects. Both the City and County General Plan EIRs concluded that their respective General Plans would not result in substantial disruption within an established community and therefore would not result in cumulative impacts in this area. In addition, the City and County General Plan EIRs concluded the General Plans would not be in conflict with any land use plans or policies. The Project's uses are consistent with the land use designated for the sites as shown in the *City of San Bernardino General Plan* and the *San Bernardino County General Plan*.

The Project is part of long-term coordinated plans to increase sustainability of water resources by water agencies and other public entities along the Santa Ana River, and within the greater watershed area. The Project is included as a proposed project in the Upper Santa Ana River HCP. The HCP is being developed

as part of the process for obtaining permits from federal and State agencies to build the included water-related projects.

Achievement of orderly growth would be dependent upon development in the future occurring in a manner consistent with each jurisdiction's General Plan and development regulations. Because the City and County have adopted these plans, and will continue to implement these plans to avoid significant land use impacts, no cumulative land use and planning impacts are anticipated to occur. The Project is compatible with the existing surrounding land uses as well as approved and anticipated land uses. In addition, the analysis above has determined that the Project would not physically divide an established community or conflict with applicable land use plans and policies, including the *San Bernardino General Plan* and *County of San Bernardino General Plan*.

As described in Section 4.4, *Biological Resources*, the Project would have less than significant impacts to the Western Riverside County MSHCP or the Santa Ana Sucker Conservation Program with implementation of Mitigation Measure BIO-7. The Project would have no significant impacts on land use and planning. Therefore, the Project would not contribute to a significant cumulative impact to land use and planning and no significant cumulative impact to land use would occur.

Refer to Section 5.1, *Growth-inducing Impacts of the Proposed Project*, for a discussion of the Project's potential growth-inducing effects.

4.8.5 SIGNIFICANT UNAVOIDABLE IMPACTS

No unavoidable significant impacts related to land use and planning are anticipated to occur.

Table 4.8-5: Land Use Policy Consistency Analysis

Applicable Land Use Plan	Consistency Analysis
City of San Bernardino General Plan	
Goal 2.2 Promote development that integrates with and minimizes impacts on surrounding land uses.	**Consistent**: The Project components are located within land designated and zoned as Public Flood Control (PFC), Public Facilities (PF), and Public/Commercial Recreation (PCR). The proposed conveyance pipelines would transect various zoning districts. However, the pipelines would be completely underground and thus would not conflict with adjacent land uses. The proposed SBWRP improvements would upgrade existing facilities and be located within the existing SBWRP footprint. Improvements would occur within the existing facility and within public rights-of-way. Therefore, the Project is consistent with this goal. Project facilities would comply with Mitigation Measure LUP-1.
Policy 2.2.1 Ensure compatibility between land uses and quality design through adherence to the standards and regulations in the Development Code and policies and guidelines in the Community Design Element.	**Consistent**: The proposed improvements would occur within existing facilities and public rights-of-way. No new development is proposed. Pipelines would be located underground and would therefore not conflict with the surrounding land uses or design. Project components would be designed and constructed in accordance with applicable provisions of the American Water Works Association (AWWA) Standards, California State Building Code (CBC),

Applicable Land Use Plan	Consistency Analysis
	and the Uniform Building Code (UBC). Proposed facilities would comply with Mitigation Measures AES-1 and LUP-1.
Policy 2.2.2 Require new uses to provide mitigation or buffers between existing uses where potential adverse impacts could occur, including, as appropriate, decorative walls, landscape setbacks, restricted vehicular access, enclosure of parking structures to prevent sound transmission, and control of lighting and ambient illumination.	**Consistent**: The proposed pump stations and storage reservoirs may affect the surrounding visual environment during the operational phase of the Project; however, the pump stations would be enclosed in an appropriately designed and screened structure and both the pump stations and storage reservoirs would be screened through the use of perimeter fencing and landscaping. Other potential adverse impacts (noise, air quality, aesthetics, etc.) have been evaluated within other sections of this EIR and, where necessary, mitigation provided to address potential impacts, including Mitigation Measures AES-1, LUP-1, and N-1, N-2, and N-3. As currently proposed, improvements to the SBWRP would be located within the footprint of the existing SBWRP site just south of Orange Show Road. This facility currently has existing perimeter fencing and landscaping. The proposed improvements would not differ significantly from the development and infrastructure that currently exists on the site. Similar to the SBWRP improvements, the proposed improvements to the Waterman Basins and East Twin Creek Spreading Grounds would occur on sites that currently contain flood control facilities. The proposed improvements would be similar to the existing onsite infrastructure and visual setting. The conveyance pipelines would be buried primarily beneath existing roadways or flood control maintenance roads within existing rights-of-way and would not be visible after construction is complete. The proposed pump station and storage reservoir sites may include security or entryway lighting. These facilities would adhere to the City's standards regarding lighting.
Policy 2.2.3 Sensitively integrate regionally beneficial land uses such as transportation corridors, flood control systems, utility corridors, and recreational corridors into the community.	**Consistent**: See discussion above.
Policy 2.2.10 The protection of the quality of life shall take precedence during the review of new projects. Accordingly, the City shall utilize its discretion to deny or require mitigation of projects that result in impacts that outweigh benefits to the public.	**Consistent**: The Project includes mitigation and design measures that are intended to reduce potential impacts to a less than significant level. The overall goal of the Project is to increase SBMWD's water supply reliability and sustainability to meet current and future projected water demands in a manner that provides SBMWD and its customers with a safe, reliable, cost-effective water supply that effectively addresses the groundwater replenishment obligations of the Western Judgment (Western Municipal Water District of Riverside County v. East San Bernardino County Water District, Superior Court of Riverside County, Case No. 78426 [April 17, 1969]); and that minimizes existing and potential future supply

Applicable Land Use Plan	Consistency Analysis
	reliability and system operational risk associated with imported water.
Goal 2.7 Provide for the development and maintenance of public infrastructure and services to support existing and future residents, businesses, recreation, and other uses.	**Consistent**: See discussion above under Policy 2.2.10.
Policy 2.7.1 Enhance and expand drainage, sewer, and water supply/storage facilities to serve new development and intensification of existing lands.	**Consistent**: See discussion above under Policy 2.2.10. Additionally, the Project's objectives are to: • Reduce SBMWD's dependence on imported water and establish a reliable, sustainable source of potable water; • Reduce the need for SWP water to replenish local groundwater basins by providing an alternate source of recycled, Title 22 treated water; and • Maximize the availability of recycled water to local users.
Policy 2.7.2 Work with the San Bernardino Valley Municipal Water District to create additional water storage capacity and take advantage of the abundant water supplies.	**Consistent**: The Project maximizes use of the abundant supply of treated water as well as groundwater recharge available.
Policy 2.7.3 Continue to explore opportunities, such as water themed uses, to financially capitalize on the City's water resources to enhance the City's image.	**Consistent**: Should the Direct Use option be employed, SBMWD could financially capitalize off of the City's available water resources by making reclaimed water available to private entities and/or utilize Project water to enhance existing or future City landscaped areas.
County of San Bernardino General Plan	
Goal LU 1 The County will have a compatible and harmonious arrangement of land uses by providing a type and mix of functionally well-integrated land uses that are fiscally viable and meet general social and economic needs of the residents.	**Consistent:** A small portion of Conveyance Alignment 1 would be located within the County of San Bernardino. Conveyance pipelines may also traverse San Bernardino County if the Chino Basin pipeline and recharge option is selected. Conveyance pipelines would be buried primarily beneath existing roadways or flood control maintenance roads within existing rights-of-way and would not be visible after construction is complete. The conveyance pipelines are compatible with surrounding land uses.
Policy LU 1.2 The design and siting of new development will meet locational and development standards to ensure compatibility of the new development with adjacent land uses and community character.	**Consistent**: See discussion above.
SCAG 2012-2013 RTP/SCS	
Goal G1 Align the plan investments and policies with improving regional economic development and	**Consistent**: The goal of the Project is to increase SBMWD's water supply reliability and sustainability to meet current and future projected water demands in a manner that provides SBMWD and its customers with a safe, reliable, cost-effective water supply that

Applicable Land Use Plan	Consistency Analysis
competitiveness.	effectively addresses the groundwater replenishment obligations of the Western San Bernardino Judgment (Western Municipal Water District of Riverside County v. East San Bernardino County Water District, Superior Court of Riverside County, Case No. 78426 [April 17, 1969]); and that minimizes existing and potential future supply reliability and system operational risk associated with imported water. Refer to Section 3.0, *Project Description*, for further discussion.
Goal G2 Maximize mobility and accessibility for all people and goods in the region.	**Not applicable** with respect to Project operation: SBMWD is proposing to reduce its dependence on imported water and establish a reliable, sustainable source of clean water. The Project does not have a transportation/mobility related component. Refer to Section 3.0, *Project Description*, for further discussion. Temporary impacts to the local road system within the Project vicinity may occur during construction. Implementation of the selected pipeline conveyance system could potentially result in partial road closures during roadway and pipeline improvements. Mitigation Measure TRA-1 would require preparation and implementation of a Traffic Control Plan which would ensure that roadways remain functional during all construction phases both on and off-site. Refer to Section 4.11, *Transportation and Traffic*, for further discussion.
Goal G3 Ensure travel safety and reliability for all people and goods in the region.	**Not applicable**: See discussion above under Goal G2.
Goal G4 Preserve and ensure a sustainable regional transportation system.	**Not applicable**: See discussion above under Goal G2.
Goal G5 Maximize the productivity of our transportation system.	**Not applicable**: See discussion above under Goal G2.
Goal G6 Protect the environment and health for our residents by improving air quality and encouraging active transportation (non-motorized transportation, such as bicycling and walking).	**Not applicable**: See discussion above. Temporary impacts to air quality may occur during construction. Several Mitigation Measures are presented in Section 4.3, *Air Quality and Greenhouse Gas Emissions* in order to reduce the Project's construction-related impacts to air quality. Refer to Section 4.3, *Air Quality and Greenhouse Gas Emissions*, for further discussion.
Goal G7 Actively encourage and create incentives for energy efficiency, where possible.	**Consistent.** The Project would comply with applicable energy efficiency requirements for water supply projects. Pursuant to State policy and as discussed further in Section 4.3, *Air Quality and Greenhouse Gas Emissions* the Project reduces GHG emissions through various Project Design Features.
Goal G8 Encourage land use and growth patterns that facilitate transit and non-motorized transportation.	**Not applicable**: See discussion above under Goal G2. The Project facilitates existing and future development by providing a long-term sustainable water supply.

Applicable Land Use Plan	Consistency Analysis
Goal G9 Maximize the security of the regional transportation system through improved system monitoring, rapid recovery planning, and coordination with other security agencies	**Not applicable**: See discussion above under Goal G2.

Table 4.8-6: Water Policy Consistency Analysis

Applicable Water Policy	Consistency Analysis
State Water Resources Control Board 2009 Recycled Water Policy	**Consistent:** The State Water Resources Control Board 2009 Recycled Water Policy (2009 Recycled Water Policy) encourages local and regional water agencies to move toward local water sustainability by emphasizing water recycling, water conservation, improved maintenance of supply infrastructure and the capture and use of stormwater and dry-weather urban runoff. The Project proposes groundwater recharge within the local Bunker Hill Basin, and therefore is consistent with the 2009 Recycled Water Policy.
SBX-7	**Consistent:** SBX-7 requires urban water retailers to reduce per capita water demands by 10 percent by 2015 and by 20 percent by 2020, with that reduction measured against a specified per capita baseline. The proposed Clean Water Factory Project would augment the City's existing water supply with advanced treated recycled water in order to achieve anticipated future water demands. As such, the proposed Project is consistent with SBX-7.
Upper Santa Ana River Habitat Conservation Plan	**Consistent:** The ultimate goal for the Upper Santa Ana River Habitat Conservation Plan (HCP) is to obtain all of the necessary environmental permits for each of the included water supply projects, which include, but are not limited to, recharge projects, channel diversion projects, recycled water projects, as well as various maintenance and improvement projects along the Santa Ana River. SBMWD is identified as a participating water resource agency in the HCP planning process. As such, the Clean Water Factory Project would be incorporated into—and is expected to be consistent with—the HCP's environmental analysis.
Upper Santa Ana Watershed Integrated Regional Water Management Plan	**Consistent:** The purpose of the plan is to fulfill current water management requirements while developing water supply reliability and furthering the use of local and imported resources. Implementation of the Project would assist the region with optimizing the management and use of water resources in the region while protecting water quality from degradation, consistent with the IRWM Plan.

Applicable Water Policy	Consistency Analysis
2010 San Bernardino Valley Regional Urban Water Management Plan	**Consistent:** The 2010 San Bernardino Valley Regional Urban Water Management Plan (2010 UWMP) provides a summary of anticipated supplies and demands for the years 2010 through 2035. This EIR incorporates the water supplies and demands set forth in the 2010 UWMP in order to analyze the Project's impacts on local water supplies. The 2010 UWMP commits SBMWD to reducing water use by 20 percent by 2020 in order to comply with SBX-7 and identified that the water department will implement a recycled water program. As the Clean Water Factory Project proposes improving local groundwater recharge through a recycled water program in order to reduce local water use, the proposed Project is consistent with the 2010 UWMP.

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Section 4.9
Noise

Section 4.9
Noise

This section describes the environmental and regulatory settings of noise, and potential construction-related and operational noise impacts as they pertain to implementation of the proposed Project. Information given in this section is based on noise information obtained from available public resources including the *City of San Bernardino General Plan* (2005), the *City of San Bernardino General Plan* EIR (2005), and the *Clean Water Factory Project Recycled/Advanced Water Conveyance System Engineering Analysis Summary Report*, prepared by Michael Baker International (formerly RBF Consulting) and Black & Veatch (July 2012). Refer also to Appendix 10.8, *Noise Modeling Studies*.

4.9.1 AFFECTED ENVIRONMENT

NOISE SCALES AND DEFINITIONS

Sound is described in terms of the loudness (amplitude) of the sound and frequency (pitch) of the sound. The standard unit of measurement of the loudness of sound is the decibel (dB). Since the human ear is not equally sensitive to sound at all frequencies, a special frequency-dependent rating scale has been devised to relate noise to human sensitivity. The A-weighted decibel scale (dBA) performs this compensation by discriminating against frequencies in a manner approximating the sensitivity of the human ear.

Decibels are based on the logarithmic scale. The logarithmic scale compresses the wide range in sound pressure levels to a more usable range of numbers in a manner similar to the Richter scale used to measure earthquakes. In terms of human response to noise, a sound 10 dBA higher than another is judged to be twice as loud, and 20 dBA higher four times as loud, and so forth. Everyday sounds normally range from 30 dBA (very quiet) to 100 dBA (very loud). Examples of various sound levels in different environments are illustrated on Exhibit 4.9-1, *Sound Levels and Human Exposure*.

Many methods have been developed for evaluating community noise to account for, among other things:

- The variation of noise levels over time;
- The influence of periodic individual loud events; and
- The community response to changes in the community noise environment.

Numerous methods have been developed to measure sound over a period of time; refer to Table 4.9-1, *Noise Descriptors*.

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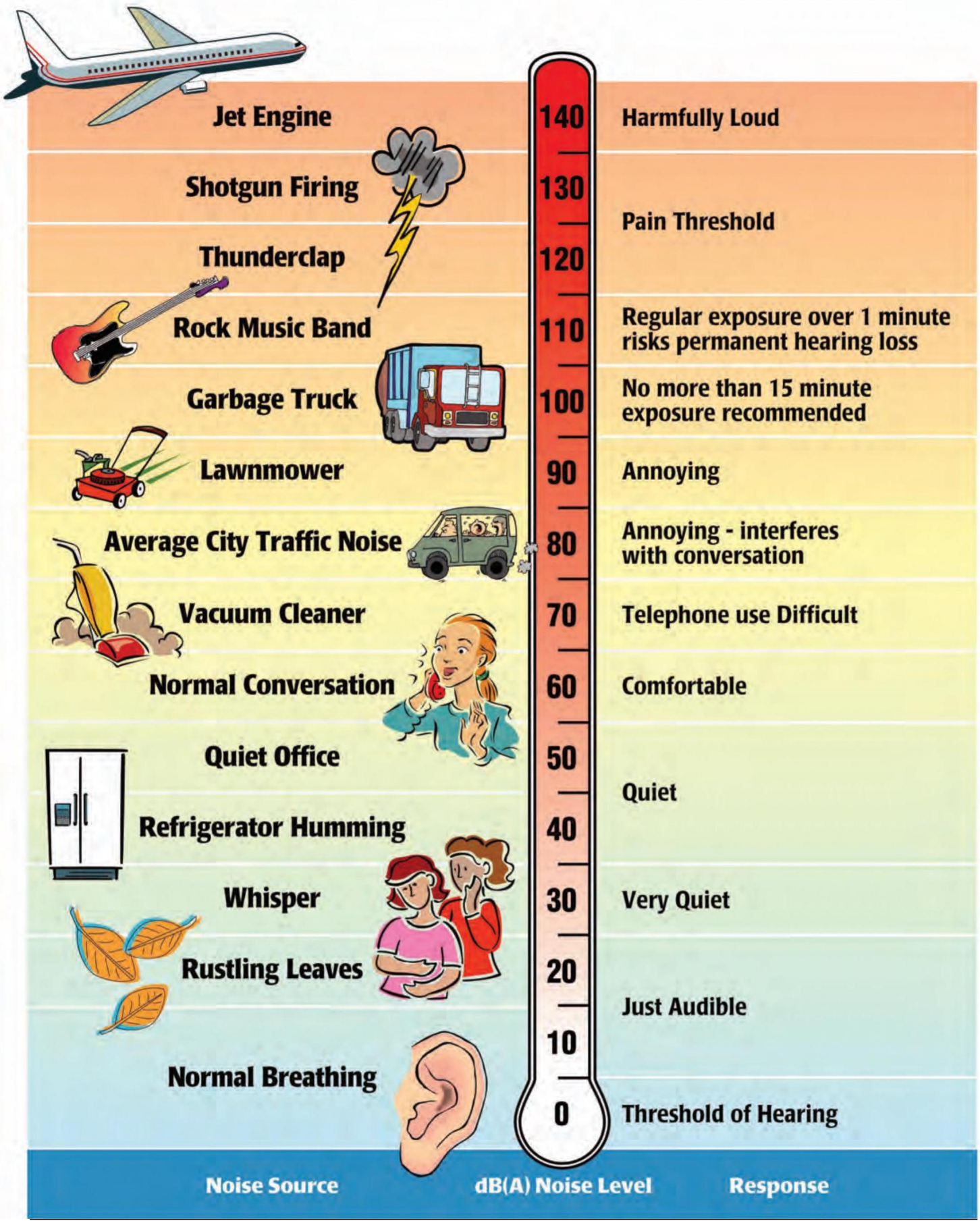

Michael Baker INTERNATIONAL

CLEAN WATER FACTORY PROJECT EIR

Sound Levels and Human Exposure

Source: RBF Consulting

Exhibit 4.9-1

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Table 4.9-1: Noise Descriptors

Term	Definition
Decibel (dB)	The unit for measuring the volume of sound equal to 10 times the logarithm (base 10) of the ratio of the pressure of a measured sound to a reference pressure (20 micropascals).
A-Weighted Decibel (dBA)	A sound measurement scale that adjusts the pressure of individual frequencies according to human sensitivities. The scale accounts for the fact that the region of highest sensitivity for the human ear is between 2,000 and 4,000 cycles per second (hertz).
Equivalent Sound Level (L_{eq})	The sound level containing the same total energy as a time varying signal over a given time period. The L_{eq} is the value that expresses the time averaged total energy of a fluctuating sound level.
Maximum Sound Level (L_{max})	The highest individual sound level (dBA) occurring over a given time period.
Minimum Sound Level (L_{min})	The lowest individual sound level (dBA) occurring over a given time period.
Community Noise Equivalent Level (CNEL)	A rating of community noise exposure to all sources of sound that differentiates between daytime, evening, and nighttime noise exposure. These adjustments are +5 dBA for the evening, 7:00 PM to 10:00 PM, and +10 dBA for the night, 10:00 PM to 7:00 AM.
Day/Night Average (L_{dn})	The L_{dn} is a measure of the 24-hour average noise level at a given location. It was adopted by the U.S. Environmental Protection Agency (EPA) for developing criteria for the evaluation of community noise exposure. It is based on a measure of the average noise level over a given time period called the L_{eq}. The L_{dn} is calculated by averaging the L_{eq}'s for each hour of the day at a given location after penalizing the "sleeping hours" (defined as 10:00 PM to 7:00 AM) by 10 dBA to account for the increased sensitivity of people to noises that occur at night.
Exceedance Level (L_n)	The A-weighted noise levels that are exceeded 1%, 10%, 50%, and 90% (L_{01}, L_{10}, L_{50}, L_{90}, respectively) of the time during the measurement period.
Source: Cyril M. Harris, *Handbook of Noise Control*, dated 1979.	

HEALTH EFFECTS OF NOISE

Human response to sound is highly individualized. Annoyance is the most common issue regarding community noise. However, many factors influence people's response to noise. The factors can include the character of the noise, the variability of the sound level, the presence of tones or impulses, and the time of day of the occurrence. Additionally, non-acoustical factors, such as the person's opinion of the noise source, the ability to adapt to the noise, the attitude towards the source and those associated with it, and the predictability of the noise, all influence people's response. As such, response to noise varies

widely from one person to another and with any particular noise, individual responses will range from "not annoyed" to "highly annoyed."

The effects of noise are often only transitory, but adverse effects can be cumulative with prolonged or repeated exposure. The effects of noise on the community can be organized into six broad categories:

- Noise-Induced Hearing Loss;
- Interference with Communication;
- Effects of Noise on Sleep;
- Effects on Performance and Behavior;
- Extra-Auditory Health Effects; and
- Annoyance.

According to the United States Public Health Service, nearly ten million of the estimated 21 million Americans with hearing impairments owe their losses to noise exposure. Noise can mask important sounds and disrupt communication between individuals in a variety of settings. This process can cause anything from a slight irritation to a serious safety hazard, depending on the circumstance. Noise can disrupt face-to-face communication and telephone communication, and the enjoyment of music and television in the home. It can also disrupt effective communication between teachers and pupils in schools, and can cause fatigue and vocal strain in those who need to communicate in spite of the noise.

Interference with communication has proved to be one of the most important components of noise-related annoyance. Noise-induced sleep interference is one of the critical components of community annoyance. Sound level, frequency distribution, duration, repetition, and variability can make it difficult to fall asleep and may cause momentary shifts in the natural sleep pattern, or level of sleep. It can produce short-term adverse effects on mood changes and job performance, with the possibility of more serious effects on health if it continues over long periods. Noise can cause adverse effects on task performance and behavior at work, and non-occupational and social settings. These effects are the subject of some controversy, since the presence and degree of effects depends on a variety of intervening variables. Most research in this area has focused mainly on occupational settings, where noise levels must be sufficiently high and the task sufficiently complex for effects on performance to occur.

Annoyance can be viewed as the expression of negative feelings resulting from interference with activities, as well as the disruption of one's peace of mind and the enjoyment of one's environment. Field evaluations of community annoyance are useful for predicting the consequences of planned actions involving highways, airports, road traffic, railroads, or other noise sources. The consequences of noise-induced annoyance are privately held dissatisfaction, publicly expressed complaints to authorities, and potential adverse health effects, as discussed above. In a study conducted by the United States Department of Transportation, the effects of annoyance to the community were quantified. In areas where noise levels were consistently above 60 dBA CNEL, approximately nine percent of the community is highly annoyed. When levels exceed 65 dBA CNEL, that percentage rises to 15 percent. Although evidence for the various effects of noise have differing levels of certainty, it is clear that noise can affect human health. Most of the effects are, to a varying degree, stress related.

GROUNDBORNE VIBRATION

Vibration is an oscillatory motion through a solid medium in which the motion's amplitude can be described in terms of displacement, velocity, or acceleration. The peak particle velocity (PPV) or the root

mean square (RMS) velocity is usually used to describe vibration amplitudes. PPV is defined as the maximum instantaneous peak or vibration signal, while RMS is defined as the square root of the average of the squared amplitude of the signal. PPV is typically used for evaluating potential building damage, whereas RMS is typically more suitable for evaluating human response. Typically, groundborne vibration, generated by man-made activities, attenuates rapidly with distance from the source of vibration. Man-made vibration issues are therefore usually confined to short distances (i.e., 500 feet or less) from the source.

Both construction and operation of development projects can generate groundborne vibration. In general, demolition of structures preceding construction generates the highest vibrations. Construction equipment such as vibratory compactors or rollers, pile drivers, and pavement breakers can generate perceptible vibration during construction activities. Heavy trucks can also generate groundborne vibrations that vary depending on vehicle type, weight, and pavement conditions.

SENSITIVE RECEPTORS

Human response to noise varies widely depending on the type of noise, time of day, and sensitivity of the receptor. The effects of noise on humans can range from temporary or permanent hearing loss to mild stress and annoyance due to such things as speech interference and sleep deprivation. Prolonged stress, regardless of the cause, is known to contribute to a variety of health disorders. Noise, or the lack thereof, is a factor in the aesthetic perception of some settings, particularly those with religious or cultural significance. Certain land uses are particularly sensitive to noise, including schools, hospitals, rest homes, long-term medical and mental care facilities, and parks and recreation areas. Residential areas are also considered noise sensitive, especially during the nighttime hours. In addition to the numerous residential uses surrounding the Project site, Table 4.9-2, *Sensitive Receptors*, indicates all other sensitive receptors within 0.50 miles of the Project site.

Table 4.9-2: Sensitive Receptors

Type	Name	Address	Distance from Project Site (miles)
Medical Facilities	St. Bernardine Medical Center	2101 North Waterman Avenue	0.36
	Kaiser Permanente San Bernardino Mental Health Offices	325 West Hospitality Lane	0.44
	Planned Parenthood – San Bernardino Health Center	1873 South Commercenter Drive West	0.35
Places of Worship	Church of Jesus Christ of LDS	1894 South Commercenter Drive West	0.33
	First Presbyterian Church	1900 North D Street	0.22
	St. Mark Baptist Church	259 East Central Avenue	0.29
	Roadhouse Biker Church	255 West Benedict Street	0.12
	Greater Victory Church COGIC	253 West Mill Street	0.29
	Greater Bethel Baptist Church	222 East 2nd Street	0.35
	Trinity Full Gospel Church	235 North Lena Road	0.40
	Our Lady of Fatima Church	1000 North Valencia	0.40
	Unified Baptist Church	1094 East Baseline Street	0.10
	The Church of Jesus Christ of Latter-Day Saints	1244 Pacific Street	0.32
	Judson Baptist Church	1406 Pacific Street	0.50
	Strong Faith Ministries	1200 East Highland Avenue	0.50

Type	Name	Address	Distance from Project Site (miles)
	Grace Baptist Church	1333 East 39th Street	0.50
	Lutheran Church of Our Savior	5050 North Sierra Way	0.50
Schools	Concorde Career College	201 East Airport Drive	0.45
	Options for Youth – San Bernardino School	985 South E Street	0.35
	Community School / Independent Alternative Education	679 South Allen Street	0.12
	Burbank Elementary School	198 West Mill Street	0.28
	Bing Wong Elementary School	1250 Ninth Street East	0.46
	Sierra High School	570 East Ninth Street	0.40
	Bradley Elementary School	1300 Valencia Avenue	0.41
	SBCUSD – Roger Anton Elementary School	1501 Anton Court	0.10
	Pacific High School	1020 Pacific Street	Adjacent
	Fairfax Elementary School	1362 Pacific Street	0.46
	Options for Youth	1181 East Highland Avenue	0.41
	Parkside Elementary School	3775 North Waterman Avenue	0.50
	Golden Valley Middle School	3800 North Waterman Avenue	0.50
Parks	Meadowbrook Recreation Park	179 East Rialto Avenue	0.41
	Meadowbrook Park	250 North Sierra Way	0.50
	Seccombe Lake Park	160 West 5th Street	0.35
	Palm Field Park	No address	0.10
	Community Gardens	No address	0.10
	Paris Hill Park	1135 East Highland Avenue	Adjacent
	Hampshire Floodway Park	No address	Adjacent
	Harrison Canyon Park	No address	Adjacent
	Wildwood Park	No address	Adjacent
	San Bernardino National Forest	No address	0.35
Source: Google Earth, 2015.			

MOBILE NOISE SOURCES

San Bernardino has long been a hub of transportation and includes several highways (such as State Routes 18, 30, 330, and 66, as well as Interstates 10 and 215), major arterials, railways, and the San Bernardino International Airport and Trade Center. These transportation facilities, while important components to mobility and economic vitality, are the major contributors of noise in San Bernardino.

Roadways

Roadways are a significant source of noise in the City. Sound emanates from vehicle engines and from the tires rolling over the pavement. One way the City can control vehicle noise is through speed reduction. A change of just 5 miles per hour can change the resultant noise by approximately one to two dBA. The difference in noise associated with a reduction of 10 miles per hour reduction could be roughly equivalent to reducing the traffic volume by one-half.

The City also has some control over traffic-generated noise through weight limitations and the designation of truck routes. Medium trucks, (i.e., those with a gross vehicle weight between five and 13.25 tons) produce as much acoustical energy as approximately five to 16 automobiles depending on the speed, with

slower speeds demonstrating greater differential. Similarly, heavy trucks (i.e., those with a gross vehicle weight in excess of 13.25 tons) produce as much acoustical energy as 10 to 60 automobiles.

The City can further reduce traffic-generated noise by ensuring that street paving is maintained and bumps and dips are eliminated. Poor paving causes vehicles to bounce and this bouncing exacerbates the noise due to the rattling of the vehicle.

Aircraft

The San Bernardino International Airport (SBIA) accommodates cargo, airlines, and general aviation with the capacity to provide regional air traffic for domestic and international service, both commercial and cargo along with the necessary support facilities for major and smaller airlines. Airport operations generate noise nuisances that could negatively impact nearby residences and businesses. For planning purposes, federal and state laws have established well-defined regulations for acceptable noise levels with the basic criterion set at a maximum 65 dB CNEL value. The noise contours for the San Bernardino International Airport have not yet been defined and a Comprehensive Land Use Plan (CLUP) for the SBIA has not yet been adopted. While there are some acceptable mitigation measures within the noise contours, avoidance by noise sensitive uses is often the best remedy. Conversely, those land uses with the fewest people or those that generate significant noise levels themselves (e.g. industrial uses), are ideally suited to locate within these noise contours.

Overflight creates another noise concern. An overflight is a distinctly visible and audible passage of an aircraft, not necessarily one that is directly overhead. Overflight often extends past the boundary of the defined CNEL contour and creates an annoyance. The SBIA has limited control of overflight impacts but provide policy guidance for minimizing these impacts in the CLUP.

In addition, local helicopter air traffic is commonplace throughout the City. News and other helicopters (e.g., freeway traffic report helicopters) fly through the area. Helicopter use for fire and police and at hospitals is considered as an emergency activity and is addressed by FAA regulations. There are currently five heliports in San Bernardino (National Orange Show, Red Dog Properties, San Bernardino Community Hospital, SCE Eastern Division, and in the Tri-City area).

Railways

Another prevalent source of noise in the City is from railroad operations. Within the San Bernardino planning area, trains travel on three different rail lines that include: (1) The Cajon Pass Line; (2) The Main Line Redlands, which extends eastward to the City of Redlands; and, (3) The Main Line-Colton, which extends westward to the City of Colton. Burlington Northern Santa Fe (BNSF) and Union Pacific (UP) also operate rail lines within the City. These rail lines include: (1) The Santa Fe Subdivision Two Line; (2) The Santa Fe Subdivision Three Line; and, (3) The Santa Fe Cajon Pass Line. Each route contributes a different level of noise to the City resulting from the different volumes of train traffic that occur on each line. Railroad noise is dependent on a number of factors including the number of operations per day, the times these operations occur, the numbers of engines and railcars, the speed, the type of rail (i.e., continuous or bolted), and whether at-grade rail crossings exist that require engineers to sound a warning horn.

STATIONARY NOISE SOURCES

The City currently has a diverse collection of land uses, most of which generate their own noise. Industrial facilities generate noise through various processes that involve the use of heavy equipment and machinery. Commercial facilities and residential units can generate noise from the use of heating, ventilating, air conditioning (HVAC) units, pool and spa pumps, as well as landscape maintenance

equipment. Additionally, schoolyard activities, barking dogs, and residential parties can also be sources of nuisance noise.

Another source of noise comes from the operations of trucks and trains within the City. The operation of railroad trains and heavy trucks is preempted from local noise regulation while operating on public roads and dedicated right-of-ways. However, noise is also generated by operations (e.g., idling, loading, and unloading) that occur at facilities. Once on private property, these sources are no longer considered preempted and the City has authority to regulate this noise if it impacts adjacent areas.

NOISE MEASUREMENTS

In order to determine the ambient noise levels within the Project area, noise measurements were taken by Michael Baker International, Inc., on October 15, 2015; refer to Table 4.9-3, *Noise Measurements*. The noise measurement sites were representative of typical existing noise exposure along the Project site. Ten-minute measurements were taken at each site, between 9:30 AM and 11:30 AM Meteorological conditions were cloudy skies, mild temperatures, with light wind speeds (0 to 5 miles per hour), and low humidity. Measured noise levels during the daytime measurements ranged from 48.9 to 61.5 dBA L_{eq}.

Table 4.9-3: Noise Measurements

Site No.	Location	L_{eq} (dBA)	L_{min} (dBA)	L_{max} (dBA)	Time
1	Easternmost portion of west century drive, to the north/northwest of the San Bernardino Public Golf Course.	58.7	52.9	83.3	9:59 am
2	Vacant lot at corner of South Washington Avenue and East Dumas Street, near residential uses.	61.5	45.2	85.9	10:18 am
3	Open space/park near the Perris Hill Senior Center.	56.9	48.0	71.6	10:51 am
4	At the corner of Sonora Street and San Gabriel Street, within residential neighborhood.	48.9	36.7	74.7	11:13 am
Source: Michael Baker International, Inc. October 15, 2015.					

Noise monitoring equipment used for the ambient noise survey consisted of a Brüel & Kjær Hand-held Analyzer Type 2250 equipped with a 4189 microphone. The monitoring equipment complies with applicable requirements of the American National Standards Institute (ANSI) for Type I (precision) sound level meters. The results of the field measurements are indicated in Appendix 10.8, *Noise Modeling Studies*. The measured noise levels were used to calibrate the noise model.

4.9.2 REGULATORY FRAMEWORK

STATE

California Environmental Quality Act

CEQA was enacted in 1970 and requires that all known environmental effects of a project be analyzed, including environmental noise impacts. Under CEQA, a project has a potentially significant impact if the project exposes people to noise levels in excess of standards established in the local general plan or noise ordinance. Additionally, under CEQA, a project has a potentially significant impact if the project creates a substantial increase in the ambient noise levels in the project vicinity above levels existing without the

project. If a project has a potentially significant impact, mitigation measures must be considered. If mitigation measures to reduce the impact to less than significant levels are not feasible due to economic, social, environmental, legal or other conditions, the most feasible mitigation measures must be considered.

California Government Code

California Government Code Section 65302 (f) mandates that the legislative body of each county and city adopt a noise element as part of its comprehensive general plan. The local noise element must recognize the land use compatibility guidelines established by the State Department of Health Services. The guidelines rank noise land use compatibility in terms of "normally acceptable", "conditionally acceptable", "normally unacceptable", and "clearly unacceptable" noise levels for various land use types. Single-family homes are "normally acceptable" in exterior noise environments up to 60 CNEL and "conditionally acceptable" up to 70 CNEL. Multiple-family residential uses are "normally acceptable" up to 65 CNEL and "conditionally acceptable" up to 70 CNEL. Schools, libraries, and churches are "normally acceptable" up to 70 CNEL, as are office buildings and business, commercial, and professional uses.

LOCAL

City of San Bernardino General Plan

The goals and policies in the *County of San Bernardino General Plan* Noise Element are listed below.

Goal 14.3 Protect residents from the negative effects of "spill over" or nuisance noise.

Policy 14.3.1 Require that construction activities adjacent to residential units be limited as necessary to prevent adverse noise impacts.

Policy 14.3.2 Require that construction activities employ feasible and practical techniques that minimize the noise impacts on adjacent uses.

City of San Bernardino Municipal Code

The City of San Bernardino Noise Ordinance (Section 19.20.030.15 of the Development Code) specifies the maximum acceptable levels of noise for residential uses in the City. These standards indicate that exterior noise levels at residential locations should not exceed a CNEL of 65 dBA while interior levels shall not exceed an annual CNEL of 45 dBA in any habitable room.

In addition to the exterior and interior noise standards, the City of San Bernardino Municipal Code sets forth prohibitions and exemptions for certain noise producing activities in Chapter 8.54 (Noise Control). Section 8.54.020 (Prohibited Acts) details the activities prohibited by the Municipal Code, of which the following would apply to the proposed Project:

(A) Sounding any horn or signal device on any automobile, motorcycle, bus, or other motor vehicle in any other manner or circumstances or for any other purpose than required or permitted by the California Vehicle Code, or other laws, for an unnecessary or unreasonable period of time.

(C) Operating or permitting the use of any motor vehicle on any public right-of-way or public place or on private property within a residential zone for which the exhaust muffler, intake muffler, or any other noise abatement device has been modified or changed in a manner such that the noise emitted by the motor vehicle is increased above that emitted by the vehicle as originally manufactured,

(H) The unnecessary or excessive blowing of whistles, sounding of horns, ringing of bells, or use of signaling devices by operators of trains, motor trucks, and other transportation equipment

(I) The creation of loud and excessive noise in connection with the loading or unloading of motor trucks and other vehicles

(L) The operation or use between the hours of 10:00 PM and 8:00 AM of any pile driver, steam shovel, pneumatic hammers, derrick, steam or electric hoist, power driven saw, or any other tool or apparatus, the use of which is attended by loud and excessive noise, except with the approval of the City

(M) Creating excessive noise adjacent to any school, church, court, or library while the same is in use, or adjacent to any hospital or care facility, which unreasonably interferes with the workings of such institution, or which disturbs or unduly annoys patients in the hospital, provided conspicuous signs are displayed in such streets indicating the presence of a school, institution of learning, church, court, or hospital.

(N) Making or knowingly and unreasonably permitting to be made any unreasonably loud, unnecessary, or unusual noise that disturbs the comfort, repose, health, peace and quiet, or which causes discomfort or annoyance to any reasonable person of normal sensitivity. The characteristics and conditions that may be considered in determining whether this section has been violated include, but are not limited to, the following:

1. The level of noise;
2. The level of background noise;
3. The proximity of the noise to sleeping facilities;
4. The nature and zoning of the areas within which the noise emanates;
5. The density of the inhabitation of the area within which the noise emanates;
6. The time of day or night the noise occurs;
7. The duration of the noise;
8. Whether the noise is recurrent, intermittent, or constant; and
9. Whether the noise is produced by a commercial or noncommercial activity.

In addition to prohibited activities, the City of San Bernardino Municipal Code Section 8.54.050 (Controlled Hours of Operation) establishes time limits on noise producing activities in order to ensure that such activities do not intrude upon recognized sleep hours within residential areas, or where sensitive uses may be located outside of residentially zoned areas. Municipal Code Section 8.54.050 states that it shall be unlawful for any person to engage in the following activities other than between the hours of 8:00 AM and 8:00 PM in residential zones and other than between the hours of 7:00 AM and 8:00 PM in all other zones:

(A) Operate or permit the use of powered model vehicles and planes.

(B) Load or unload any vehicle, or operate or permit the use of dollies, carts, forklifts, or other wheeled equipment that causes any impulsive sound, raucous, or unnecessary noise within one thousand (1,000) feet of a residence.

(C) Operate or permit the use of domestic power tools, or machinery or any other equipment or tool in any garage, workshop, house, or any other structure.

(D) Operate or permit the use of gasoline or electric powered leaf blowers, such as commonly used by gardeners and other persons for cleaning lawns, yards, driveways, gutters, and other property.

(E) Operate or permit the use of privately operated street/parking lot sweepers or vacuums, except that emergency work and/or work necessitated by unusual conditions may be performed with the written consent of the City Manager.

(F) Operate or permit the use of electrically operated compressor, fan, and other similar devices.

(G) Operate or permit the use of any motor vehicle with a gross vehicle weight rating in excess of ten thousand (10,000) pounds, or of any auxiliary equipment attached to such a vehicle, including, but not limited to, refrigerated truck compressors for a period longer than fifteen (15) minutes in any hour while the vehicle is stationary and on a public right-of-way or public space except when movement of said vehicle is restricted by other traffic.

(H) Repair, rebuild, reconstruct, or dismantle any motor vehicle or other mechanical equipment or devices in a manner so as to be plainly audible across property lines.

Furthermore, the City of San Bernardino Municipal Code, under Section 8.54.060 provides exemptions to the noise limits described above. The following activities and noise sources that apply to the project shall be exempt from the provisions of Chapter 8.54 for noise control:

(A) The use of horns, sirens, or other signaling or warning devices by persons vested with legal authority to use the same, and in pursuit of their lawful duties, such as on ambulances, fire, police, or other governmental or official equipment.

(B) Such noises as are an accompaniment and effect of a lawful business, commercial or industrial enterprise carried on in an area zoned for that purpose, except where there is evidence that such noise is a nuisance and that such a nuisance is a result of the employment of unnecessary and injurious methods of operation.

(C) Activities conducted on the grounds of any public or private school during regular hours of operation.

(E) Activities conducted at public spaces during hours of operation

(F) Any mechanical devices, apparatus, or equipment used, related to, or connected with emergency machinery, vehicle, or work.

(H) Construction, operation, maintenance, and repairs of equipment, apparatus, or facilities of park and recreation departments, public work projects, or essential public services and facilities, including, but not limited to, trash collection and those of public utilities subject to the regulatory jurisdiction of the California Public utilities Commission.

(I) Construction, repair, or excavation work performed pursuant to a valid written agreement with the City, or any of its political subdivisions, which provides for noise mitigation measures.

Section 8.54.070 specifies the time limits that construction activity may occur. It states that no person shall be engaged or employed, or cause any other person to be engaged or employed, in any work of construction, erection, alteration, repair, addition, movement, demolition, or improvement to any building or structure except within the hours of 7:00 AM and 8:00 PM.

4.9.3 ENVIRONMENTAL IMPACTS

SIGNIFICANCE CRITERIA UNDER CEQA

Appendix G of the CEQA Guidelines contains analysis guidelines related to the assessment of noise impacts. These guidelines have been utilized as thresholds of significance for this analysis. As stated in Appendix G, a project would create a significant environmental impact if it would:

- Expose persons to, or generate, noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies (refer to Impact Statement 4.9-1);
- Expose persons to or generate excessive ground borne vibration or ground borne noise levels (refer to Impact Statement 4.9-2);
- Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project (refer to Impact Statements 4.9-3);
- Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project (refer to Impact Statement 4.9-1 and 4.9-4);
- For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, expose people residing or working in the project area to excessive noise levels (refer to Impact Statement 4.9-5); and
- For a project within the vicinity of a private airstrip, expose people residing or working in the project area to excessive noise levels (refer to Section 7.0, *Effects Found not to be Significant*)).

METHODS AND ASSUMPTIONS

Construction

Construction impacts are evaluated with regards to existing noise data, the project study area, project elements, Project phasing, and the location of sensitive receptors. Construction of the proposed Project has the potential to create noise impacts through the use of heavy-duty construction equipment and through vehicle trips generated from construction workers traveling to and from the Project site. Construction would consist of separate activities for the Water Reclamation Plant, conveyance systems, and recharge site that would occur concurrently. Water reclamation plant construction would involve improvements at the SBWRP that include the installation of new equipment for water treatment. Several different pipeline alignments could potentially be developed, including an alternative alignment that consists of the combination of two different alignments. Therefore, the scenario with the maximum potential impacts was quantified and analyzed.

Operations

The proposed Project primarily involves the addition of treatment improvements and a conveyance system for surface spreading into the groundwater basin. Operation of the Project has the potential to generate periodic noise from maintenance visits and enclosed stationary mechanical equipment (e.g., pumps, generators, etc.). As the Project only involves short-term construction activities, improvements to existing facilities, and does not include a trip-generating land use, it is assumed that operational mobile source noise would be nominal.

SUMMARY OF APPLICABLE PROJECT DESIGN FEATURES AND EXISTING LAWS, ORDINANCES, AND REGULATIONS

Implementation of the Project would be subject to the standards identified above in Section 4.9.2, including the noise standards established in Chapter 8.54 (Noise Control) of the City's Municipal Code and Section 19.20.030.15 (Noise) of the City's Development Code.

4.9.4 CONSTRUCTION AND OPERATIONAL NOISE IMPACTS

Impact 4.9-1: Would the Project result in the exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies? *Level of Significance: Less Than Significant Impact with Mitigation Incorporated.*

CONSTRUCTION-RELATED IMPACTS

Construction activities have a short and temporary duration, lasting from a few days to a period of several months. The construction duration is anticipated to be approximately 18 months. Groundborne noise and other types of construction-related noise impacts would typically occur during the initial site preparation, which can create the highest levels of noise. Generally, site preparation has the shortest duration of all construction phases. Activities that occur during this phase include earthmoving and soils compaction. High groundborne noise levels and other miscellaneous noise levels can be created by the operation of heavy-duty trucks, backhoes, and other heavy-duty construction equipment.

Noise from construction activities is generated by two primary sources: (1) the noise related to active construction equipment; and, (2) the transport of workers and equipment to construction sites. These noise sources can be a nuisance to local residents and businesses or unbearable to sensitive receptors (i.e., residential, hospital, hotel/motel, schools, parks, and places of worship). The Federal Transit Administration (FTA) has compiled data regarding noise generating characteristics of specific types of construction equipment and typical construction activities. These data are presented in Table 4.9-4, *Construction Equipment Noise Emissions Levels*. These noise levels would decrease rapidly with distance from the construction site at a rate of approximately 6 dBA per doubling distance.

Table 4.9-4: Construction Equipment Noise Emission Levels

Equipment	Typical Noise Level (dBA) at 50 feet from Source
Air Compressor	81
Backhoe	80
Compactor	82
Concrete Mixer	85
Concrete Pump	82
Concrete Vibrator	76
Dozer	85
Grader	85
Jack Hammer	88

Equipment	Typical Noise Level (dBA) at 50 feet from Source
Loader	85
Paver	89
Pile-Driver (Impact)	101
Pile-Driver (Sonic)	96
Scraper	89
Shovel	82
Truck	88
Source: Federal Transit Administration, *Transit Noise and Vibration Impact Assessment Guidelines*. May 2006.	

Operating cycles for these types of construction equipment used may involve one or two minutes of full power operation followed by three to four minutes at lower power settings. Other primary sources of acoustical disturbance would be random incidents, which would last less than one minute (such as dropping large pieces of equipment or the hydraulic movement of machinery lifts).

Water Reclamation Plant

Construction of the SBWRP improvements would occur within a primarily commercial and industrial area, and would be approximately 750 feet from the closest residential use and 150 feet from the San Bernardino Public Golf Course. Construction activities would cause increased noise in the immediate vicinity of the Project site and along access routes to and from the SBWRP due to movement of equipment and workers. However, construction would be short-term in nature and limited to normal daytime hours per Municipal Code Section 8.54.070. In addition, industrial and commercial uses in the immediate vicinity (e.g., San Bernardino Animal Control to the north) are noise-generating land uses that would buffer noise from construction at the SBWRP and would mask construction equipment noise. Noise from vehicles accessing the Project site would be short-term in nature. Implementation of Mitigation Measure NOI-1 would reduce construction noise and minimize impacts at sensitive receptors. The City does not have specific limits for construction noise within the hours of 7:00 AM and 8:00 PM. Mitigation Measure NOI-1 would also restrict Project construction to occur within the City's allowable hours. As such, noise impacts from construction of the SBWRP improvements are not anticipated to be significant.

Conveyance Systems

Construction of the conveyance systems would primarily occur within roadways and along Twin Creek Channel. It should be noted that construction of the pipelines in the conveyance systems would generally occur in a linear fashion, and would not be confined to one location for an extended period of time. Sensitive receptors are located adjacent to, or within close proximity to, the proposed pipeline alignments and pump station/reservoir construction sites. Construction activities would cause increased noise along access routes to and from the construction areas due to movement of equipment and workers. However, construction would be limited to daytime hours per Municipal Code Section 8.54.070.

Adherence to the City's Municipal Code requirements and compliance with the recommended Mitigation Measure NOI-1 would reduce short-term construction noise impacts by requiring mobile and stationary equipment to be muffled and requiring best management practices for hauling activities. Mitigation Measure NOI-1 also requires that stationary construction equipment be located away from sensitive

receptors and that a Noise Disturbance Coordinator is used to respond to and resolve complaints. Additionally, construction activities associated with the conveyance systems are not anticipated to include pile driving. Construction of the conveyance systems are anticipated to occur over an 18-month period and sensitive receptors would not be exposed to significant construction noise levels over an extended period of time. Construction noise impacts would cease upon completion of the construction phase. Pursuant to the City of San Bernardino Municipal Code Section 8.54.060, construction noise is exempt between the hours of 7:00 AM and 8:00 PM. Implementation of Mitigation Measure NOI-1 would minimize any impacts from construction noise and reduce impacts to a less than significant level.

Recharge Site

The closest sensitive receptors to the recharge site would be the surrounding residences, which are located as close as 150 feet. Construction associated with the recharge site would include installing flow measuring and recording devices, monitoring wells, replacing outlet valves, and repairing internal berms. Recharge site construction activities would occur at various locations throughout the Waterman Basins and East Twin Creek Spreading Grounds and would not be confined to one location for an extended period of time. Construction activities would cause increased noise along access routes to and from the recharge site due to movement of equipment and workers. However, as construction would be limited to daytime hours per Municipal Code Section 8.54.070, and due to the short-term nature of construction activities, noise from vehicles accessing the recharge site is not anticipated to be significant.

Adherence to the City's Municipal Code requirements and compliance with the recommended Mitigation Measure NOI-1 would reduce short-term construction noise impacts by requiring mobile equipment to be muffled and requiring best management practices for hauling activities. Construction at the recharge site is anticipated to occur over an approximate 6-month period and sensitive receptors would not be exposed to significant construction noise levels over an extended period of time. Construction noise impacts would cease upon completion of the construction phase. Implementation of Mitigation Measure NOI-1 would minimize any impacts from construction noise and reduce impacts to a less than significant level.

OPERATIONS-RELATED IMPACTS

Water Reclamation Plant

The purpose of the Clean Water Factory Project is to reduce the SBMWD's dependence on imported water and establish a reliable, sustainable source of clean water. Long-term operations would consist of periodic maintenance visits, a minor increase in employee trips, and operation of mechanical equipment. Additionally, all stationary mechanical equipment (e.g., pumps, generators, etc.) would be housed within enclosed structures, and therefore, noise generated by Project operation is not anticipated to adversely affect these adjacent land uses. However, in order to ensure on-site operational equipment does not exceed the City's noise standards at nearby sensitive receptors, SBMWD would review equipment noise specifications (power ratings, noise ratings, etc.), and enclosure details (refer to Mitigation Measure NOI-2). Furthermore, implementation of the proposed Project would not result in a significant increase in traffic on local roadways, as the Project does not involve a trip-generating land use (increases in employee trips would be minimal). Therefore, implementation of the proposed Project would not be expected to expose persons to or generate noise levels in excess of standards established in the local General Plan or noise ordinance, or applicable standards of other agencies. A less than significant impact would occur in this regard.

Conveyance Systems

Operations of the conveyance systems involve underground pipelines, reservoirs, and pump stations. Operations of the pipelines and reservoirs do not have the potential to generate significant noise levels. However, typical water conveyance pumps generate approximately 90 dB at one meter (3.28 feet). Based on distance attenuation alone, pump levels could be approximately 72 dBA at 25 feet and 66 dBA at 50 feet. As the pump stations have the potential to be located in residential areas, noise levels would be potentially significant. Implementation of Mitigation Measure NOI-3 would reduce this impact by requiring the Project Applicant to submit noise specifications of the outdoor pump stations, and if necessary, noise attenuation features that would reduce noise levels to within the City's noise level standards. Such noise-attenuating implementation measures could include locating pump stations within an enclosure, etc. Compliance with Mitigation Measure NOI-3 would reduce the impact to a less than significant level.

Recharge Site

Potential noise generating activities associated with operations of the recharge sites would occur from the water flowing from the outlet of the recharge distribution pipelines. Operational noise associated with the Project would be similar to existing conditions as the recharge sites already include water outlets that empty into the basin. Additionally, the distribution pipeline outlet would be located approximately 1,500 feet from the closest receptor. Noise levels would be reduced by distance attenuation, attenuation from molecular absorption, and anomalous excess attenuation. Operations of the recharge site do not have the potential to significantly increase noise levels or exceed the City's noise standards. Therefore, impacts in this regard are anticipated to be less than significant.

RIX Phased Discharge Reduction

Effluent discharge from the RIX Facility to the Santa Ana River would be reduced though the implementation of a phasing plan in order to allow the gradual reduction of flow into the Santa Ana River. The flow from RIX Facility to the Santa Ana River would be diverted at the SBWRP, where it would be treated and conveyed for recharge or direct reuse. The impacts associated with the diverted flow at the SBWRP and processing at the SBWRP are analyzed in the Water Reclamation Plant discussion, above. Diversion at the SBWRP would reduce the need for tertiary treatment at the RIX Facility. Reduced discharge at the RIX Facility would result in an overall decrease in operational noise due to less activity at this facility. With reduced loading at the RIX Facility, basin maintenance (scrapers, dozers, dump trucks, etc.) and operations of the sand wash plant would be reduced. Impacts would be less than significant.

MITIGATION MEASURES

NOI-1 Prior to construction, SBMWD shall confirm that the Grading Plan, Building Plans, and specifications stipulate that:

- All construction equipment, fixed or mobile, shall be equipped with properly operating and maintained mufflers and other State required noise attenuation devices.
- SBMWD shall provide a qualified "Noise Disturbance Coordinator." The Disturbance Coordinator shall be responsible for responding to any local complaints about construction noise. When a complaint is received, the Disturbance Coordinator shall notify the SBMWD within 24-hours of the complaint and determine the cause of the noise complaint (e.g., starting too early, bad muffler, etc.) and shall implement

reasonable measures to resolve the complaint, as deemed acceptable by SBMWD. The contact name and the telephone number for the Disturbance Coordinator shall be clearly posted on site.

- When feasible, construction haul routes shall be designed to avoid noise sensitive uses (e.g., residences, convalescent homes, etc.).
- During construction, stationary construction equipment shall be placed such that emitted noise is directed away from sensitive noise receivers.
- Construction activities that produce noise shall not take place outside of the allowable hours specified by each affected jurisdiction's governing code. For the City of San Bernardino, this is Municipal Code Section 8.54.070 (8:00 AM to 8:00 PM in residential zones, and 7:00 AM to 8:00 PM in all other zones). For the County, this is Municipal Code Chapter 83.01.80 (7 a.m. to 7 p.m., not including Sundays and federal holidays).

NOI-2 Water Reclamation Plant Noise. Prior to construction, SBMWD shall review noise specifications (noise ratings, power ratings, etc.) for all stationary equipment (microfiltration units, reverse osmosis units, pumps, generators, etc.) to confirm that the noise levels at the Project site are within the City's acceptable noise standards at nearby sensitive receptors. If noise levels are anticipated to exceed the City's noise standards, noise-attenuation measures, such as locating stationary equipment within enclosed structures with adequate setback and screening, would be required to achieve acceptable noise levels at the property lines of nearby residences in accordance with the noise standards identified within Section 19.20.030.15 (Noise) of the City of San Bernardino's Development Code. Once the equipment is installed, noise levels shall be monitored to ensure compliance with the City's noise standards. If stationary noise exceeds the City's standards, an acoustical engineer shall be retained to install additional noise attenuation measures in order to meet the applicable noise standard.

NOI-3 Pump Station Noise. Prior to construction, SBMWD shall review noise specifications (noise ratings, power ratings, etc.) for all stationary equipment (conveyance pumps, generators, etc.) to confirm that the noise levels at the Project site are within the City's acceptable noise standards at nearby sensitive receptors. If noise levels are anticipated to exceed the City's noise standards, noise-attenuation measures, such as locating stationary equipment within enclosed structures with adequate setback and screening, would be incorporated into Project design sufficient to achieve acceptable noise levels at the property lines of nearby residences in accordance with the noise standards identified within Section 19.20.030.15 (Noise) of the City of San Bernardino's Development Code. Once the equipment is installed, noise levels shall be monitored to ensure compliance with the City's noise standards. If stationary noise exceeds City's standards, an acoustical engineer shall be retained to install additional noise attenuation measures in order to meet the applicable noise standard.

Impact 4.9-2: Would the Project result in the exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels? *Level of Significance: Less Than Significant Impact*.

CONSTRUCTION-RELATED IMPACTS

Project construction can generate varying degrees of groundborne vibration, depending on the construction procedure and the construction equipment used. Operation of construction equipment generates vibrations that spread through the ground and diminish in amplitude with distance from the source. The effect on buildings located in the vicinity of the construction site often varies depending on soil type, ground strata, and construction characteristics of the receiver building(s). The results from vibration can range from no perceptible effects at the lowest vibration levels, to low rumbling sounds and perceptible vibration at moderate levels, to slight damage at the highest levels. Groundborne vibrations from construction activities rarely reach levels that damage structures.

The FTA has published standard vibration velocities for construction equipment operations. In general, the FTA architectural damage criterion for continuous vibration (i.e., 0.20 inch/second) appears to be conservative.

The types of construction vibration impact include human annoyance and building damage. Human annoyance occurs when construction vibration rises significantly above the threshold of human perception for extended periods of time. Building damage can be cosmetic or structural. Ordinary buildings that are not particularly fragile would not experience any cosmetic damage (e.g., plaster cracks) at distances beyond 30 feet. This distance can vary substantially depending on the soil composition and underground geological layer between vibration source and receiver. In addition, not all buildings respond similarly to vibration generated by construction equipment. Typical vibration produced by construction equipment is illustrated in Table 4.9-5, *Typical Vibration Levels for Construction Equipment*.

Table 4.9-5: Typical Vibration Levels for Construction Equipment

Equipment	Approximate Peak Particle Velocity at 25 feet (inches/second)[1]	Approximate Peak Particle Velocity at 75 feet (inches/second)[2]
Large Bulldozer	0.089	0.017
Loaded Trucks	0.076	0.015
Small Bulldozer	0.003	0.001
Auger/Drill Rigs	0.089	0.017
Jackhammer	0.035	0.007
Vibratory Hammer	0.035	0.007

Notes:
1. Federal Transit Administration, *Transit Noise and Vibration Impact Assessment Guidelines*, May 2006. Table 12-2.
2. Calculated using the following formula:

$PPV_{equip} = PPV_{ref} \times (25/D)^{1.5}$

where: PPV (equip) = the peak particle velocity in in/sec of the equipment adjusted for the distance

PPV (ref) = the reference vibration level in in/sec from Table 12-2 of the FTA *Transit Noise and Vibration Impact Assessment Guidelines*

D = the distance from the equipment to the receiver

Groundborne vibration decreases rapidly with distance. As indicated in Table 4.9-5, based on the FTA data, vibration velocities from typical heavy construction equipment operations that would be used during

Project construction range from 0.003 to 0.089 inch-per-second peak particle velocity (PPV) at 25 feet from the source of activity. At 75 feet from the source of activity, vibration velocities range from 0.001 to 0.017 inch-per-second PPV. With regard to the proposed Project, groundborne vibration would be generated primarily during site clearing and grading activities on site and by off-site haul-truck travel.

Water Reclamation Plant

Construction of the SBWRP improvements would primarily be within commercial and industrial areas and would be approximately 750 feet from the closest residential use and 150 feet from the San Bernardino Public Golf Course. Additionally, construction activities associated with the improvements at the SBWRP are not anticipated to include pile driving. Therefore, project construction equipment would not generate groundborne vibration levels above the FTA architectural damage criterion of 0.20 inches/second. Impacts would be less than significant in this regard.

Conveyance Systems

Construction of the conveyance systems would occur as close as approximately 25 feet from sensitive receptors. However, construction activities associated with the conveyance systems would not include pile driving. Therefore, conveyance system construction equipment would not generate groundborne vibration levels above the FTA architectural damage criterion of 0.20 inches/second. Impacts would be less than significant in this regard.

Recharge Site

Construction at the recharge site would involve relatively minor activities as well as berm repair. Berm repair would require heavy equipment. However, as the closest sensitive receptors would be located 150 feet away or more from construction activities, vibration levels would not exceed the 0.20 inches/second threshold. Impacts would be less than significant in this regard.

OPERATIONS-RELATED IMPACTS

Water Reclamation Plant, Conveyance Systems, and Recharge Site

The Water Reclamation Plant equipment and pump station equipment would be designed to produce very low vibration levels, because to operate efficiently, the equipment needs to be well balanced. Equipment that is not well balanced would result in excessive wear and ultimately failure of the equipment. Such equipment has a low possibility for vibration impacts to surrounding land uses.

Vibration design standards for water treatment and pump equipment generally range from 0.20 to 0.30 inches per second (peak) generally depending on the horsepower size and style of the equipment. The closest residences could be 25 feet from the pump stations and 750 feet from the Water Reclamation Plant. Assuming the vibration level previously noted is directly transferred to the surrounding area, the resulting vibration level at a distance of 25 feet would be less than 0.008 inches/second. This vibration level is well below the threshold of human perception for vibration. Thus, because the vibration associated with operation of the pump station would not be perceptible, the vibration impact would be less than significant.

MITIGATION MEASURES

No mitigation is required.

Impact 4.9-3: Would the Project result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project? *Level of Significance: Less Than Significant Impact with Mitigation Incorporated.*

CONSTRUCTION- AND OPERATIONS-RELATED IMPACTS

WATER RECLAMATION PLANT, CONVEYANCE SYSTEMS, AND RECHARGE SITE

As discussed above, the proposed Project would construct new treatment facilities, pipelines, reservoirs, and pump stations to provide a sustainable source of clean water. As described in Impact Statement 4.9-1, construction-related noise impacts would be reduced to a less than significant level with adherence to the City's Municipal Code and implementation of Mitigation Measure NOI-1, which requires the implementation of best practices to minimize construction noise. Additionally, as described in Impact Statement 4.9-1, operational noise impacts would be reduced to a less than significant level with the implementation of Mitigation Measures NOI-2 and NOI-3, which require outdoor pump stations and SBWRP equipment to comply with the City's noise standards or be located within enclosures. Therefore, implementation of the proposed Project would not result in a substantial permanent increase in ambient noise level in the project vicinity. Impacts in this regard would be less than significant with the implementation of Mitigation Measures NOI-1 through NOI-3.

MITIGATION MEASURES

NOI-1 Refer to Impact 4.9-1 above.

NOI-2 Refer to Impact 4.9-1 above.

NOI-3 Refer to Impact 4.9-1 above.

Impact 4.9-4: Would the Project result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project? *Level of Significance: Less Than Significant Impact with Mitigation Incorporated.*

CONSTRUCTION- AND OPERATIONS-RELATED IMPACTS

Water Reclamation Plant, Conveyance Systems, and Recharge Site

As discussed above in Impact Statement 4.9-1, construction activities have a short and temporary duration, lasting from a few days to a period of several months. The overall construction duration is anticipated to be approximately 18 months, and would be limited to daytime hours per Municipal Code Section 8.54.070. Furthermore, construction of the conveyance systems would occur in roadway rights-of-way and other locations in the closest proximity to sensitive receptors. Pipeline installation (the majority of the conveyance construction activities in close proximity to sensitive receptors) would occur at a rate of approximately 300 to 500 feet per day (depending on location) and the majority of equipment would not generate noise in one fixed location the entire time.

As depicted in Table 4.9-4, pavers and jackhammer generate a maximum noise level of 89 and 88 dBA L_{max} at 50 feet, respectively. During pipeline installation (the construction work that would be closest to sensitive receptors), the equipment would travel~~s~~ along the right-of-way in a linear fashion. From the perspective of a sensitive receptor, the equipment approaches, passes by, and then recedes into the

distance. Peak noise levels would thus be periodic, intermittent, and temporary during brief pass-by periods when construction equipment operates at the far extent of the construction limits most near identified sensitive receptors. Ambient noise levels are measured over a long-term period and consider noise levels during the daytime (i.e., 7:00 AM to 10:00 PM) and nighttime (i.e., 10:00 PM to 7:00 AM). Noise standards for changes in ambient conditions (such as CNEL) are also designed to consider the level of noise over a long duration such as 24 hours. As discussed above, construction activities would not produce sustained changes in ambient noise levels.

Instead, construction equipment would travel throughout the pipeline construction areas and other construction sites and would be focused on the interior of the sites, thus not occurring near sensitive receptors for extended periods of time. Accordingly, the construction activities have limited ability to the influence the ambient noise levels. Furthermore, the Project would implement noise-attenuating measures that would further minimize potential short-term construction noise impacts (refer to Mitigation Measure NOI-1). The Project is not considered a new development that can materially increase ambient CNEL. Finally, even if the Project could create substantial increase in ambient noise levels (which it cannot) Municipal Code Section 8.54.060(I) exempts construction activities from the standards of the Noise Ordinance provided that they take place within the hours of 7:00 AM and 8:00 PM. Mitigation Measure NOI-1 mandates that the Project adhere to the construction hour limitations.

Therefore, construction of these components would not occur in close proximity to sensitive receptors for long durations or at times when receptors are most sensitive to increased noise. Sensitive receptors would not be exposed to significant construction noise levels over an extended period of time, as noise impacts would cease upon completion of the construction phase and as equipment progresses to the next location.

As discussed above, the proposed Project would be required to implement Mitigation Measures NOI-1 to reduce temporary construction noise impacts by requiring mobile and stationary construction equipment to be muffled and requiring best management practices for hauling activities. Implementation of Mitigation Measure NOI-1 would minimize the effects of temporary construction noise and would reduce impacts to a less than significant level. Additionally, as described in Impact Statement 4.9-1, operational noise impacts would be reduced to a less than significant level with the implementation of Mitigation Measures NOI-2 and NOI-3, which require outdoor pump stations and SBWRP equipment to comply with the City's noise standards or be located within enclosures.

Therefore, the Project would not create a substantial temporary or periodic increase in ambient noise levels in the Project vicinity above levels existing without the Project and impacts would be less than significant.

MITIGATION MEASURES

NOI-1 Refer to Impact 4.9-1 above.

NOI-2 Refer to Impact 4.9-1 above.

NOI-3 Refer to Impact 4.9-1 above.

Impact 4.9-5: For a Project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels? *Level of Significance: Less Than Significant Impact*.

CONSTRUCTION- AND OPERATIONS-RELATED IMPACTS

Water Reclamation Plant, Conveyance Systems, and Recharge Site

The only airport located within two miles of the Project site is the San Bernardino International Airport (SBIA) located approximately one mile to the east of the Project site at 1601 East 3rd Street. According to the City's General Plan, the southern portion of the Project site falls within the SBIA "Airport Influence Area". The City's General Plan requires that all new development be consistent with the SBIA Comprehensive Land Use Plan (CLUP). As the Project does not propose development of sensitive land uses, the Project would not expose people residing or working in the Project area to excessive noise levels. Therefore, it can be assumed that the proposed Project would be consistent with the SBIA CLUP with regards to noise, and impacts in this regard would be less than significant

MITIGATION MEASURES

No mitigation is required.

4.9.5 CUMULATIVE IMPACTS

Short-term (construction) noise is a localized activity and would only affect land uses that are immediately adjacent to the construction areas due to the fact that noise dissipates as it travels away from its source. The cumulative projects depicted on Table 4.1-1 primarily include minor pipeline and basin improvement projects, similar to the proposed Project, but on a smaller scale. As a result, the cumulative projects would not involve extensive construction activities over long durations. Project compliance with Mitigation Measure NOI-1 would reduce construction noise and so that impacts would not be cumulatively considerable. Contractors at the job sites of any related cumulative projects would also be required to adhere to the City's Noise standards. Thus, the Project's cumulative contribution to construction noise impacts would be less than significant.

Long-term stationary noise sources associated with of the development at the Water Reclamation Plant and development of new pump stations, combined with other cumulative projects could cause local noise level increases. Noise levels associated with the proposed Project and related cumulative projects together could result in higher noise levels than considered separately. However, the expected combined cumulative effect within the Project area would be reduced by Mitigation Measures NOI-2 and NOI-3, as well as adherence to the General Plan Policies and compliance with the City's noise standards. Additionally, related cumulative projects would be required to comply with the City's noise level standards and include mitigation measures if this standard is exceeded. Therefore, cumulative noise impacts from stationary noise sources would be considered less than significant.

4.9.6 SIGNIFICANT UNAVOIDABLE IMPACTS

No significant unavoidable impacts related to noise have been identified following implementation of the recommended mitigation.

Section 4.10
Recreation

Section 4.10
Recreation

This section describes the environmental and regulatory settings related to parks and recreation, and potential Project impacts and mitigation measures that would avoid or reduce those impacts to less than significant levels. Information for this section was gathered from the *City of San Bernardino General Plan* (2005) and *City of San Bernardino General Plan EIR* (2005).

4.10.1 AFFECTED ENVIRONMENT

A total of 52 existing parks and recreational facilities are located within the City's boundaries including: 19 neighborhood parks; 10 community parks; 17 mini-parks; 3 regional parks; and 3 special facilities. The parks provide a broad range of amenities, including children's play equipment, tennis and volleyball courts, and athletic fields. The locations of these recreational facilities are illustrated on Figure PRT-1, *Existing Parks and Recreational Facilities*, of the *City of San Bernardino General Plan*.

There are a total of 14 parks and recreational facilities (207.62 acres total) located in the Project study area, including those located within and immediately adjacent to the conveyance facility corridor. These parks and recreational facilities are described in Table 4.10-1, *Parks and Recreational Facilities*, and their locations are shown on Exhibit 4.10-1, *Parks and Recreational Facilities*, and Exhibit 3.0-5, *Recycled Water System Conveyance Alternatives (Northerly Portion)*.

Table 4.10-1: Parks and Recreational Facilities

Park/Recreational Facility and Address	Map No.	Park/Facility Type	Size (Acres)
Wildwood Park – 536 E. 40th Street	1	Community	24.20
Horine Park – 3150 Waterman Avenue	2	Neighborhood	5.67
Harrison Canyon Park – 39th and Golden Avenue	3	Neighborhood	6.00
Sonora Tot Lot – 1286 Sonora Street	4	Mini	0.17
Perris Hill Park – 607 E. Highland Avenue	5	Regional	64.40
Palm Field – 888 E. 6th Street	6	Community	22.30
North Norton Community Center – 24424 Monterey Avenue	7	Special Facility	1.00
Center for Individual Development – 8088 Palm Lane	8	Mini	5.00
Mill Park – 503 Central Avenue	9	Community	14.30
Seccombe Lake Park – 160 E. 5th Street	10	Regional	44.00
Meadowbrook Park/Hernandez Center – 2nd Street and Sierra Way	11	Neighborhood	14.12
Meadowbrook Field House and Park – 179 E. Rialto Avenue	12	Mini	4.96
Del Rosa School Field – 3395 N. Mountain Avenue	13	Mini	0.50
Golden Valley School Field – 3800 N. Waterman Avenue	14	Mini	1.00
		Total Acres	207.62

According to the Parks, Recreation and Trails Element of the *City of San Bernardino General Plan*, the City has a Multi-Purpose recreational trail system which combines both on- and off-street hiking, equestrian, and bike trails. Pedestrian access and recreation is provided through the City via its sidewalks and hiking trails. Combined, the off- and on-street trails provide a system that interconnects the City's parks, schools, and civic facilities with each other and the surrounding area; see Figure PRT-2, *Conceptual Trail System*, of the *San Bernardino General Plan*.

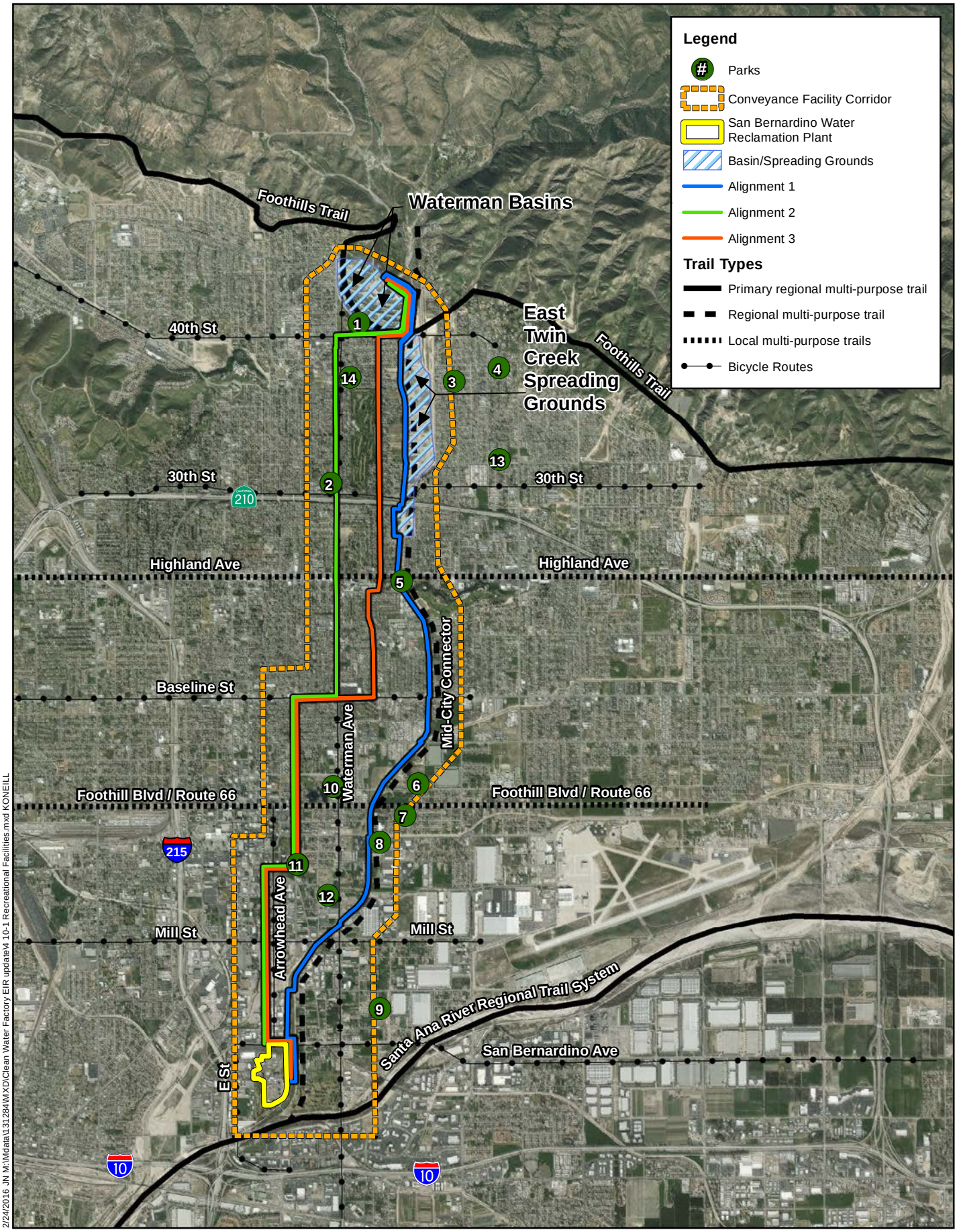
Six primary regional and regional multi-purpose trails traverse the City: Santa Ana Regional Trail System; Mid-City Connector; Cajon/Lytle Creek Trail; Devils Canyon Connector; Foothills Trail; and City Creek Connector. There are also several local, multi-purpose trails and bicycle routes throughout the City. Three primary regional and regional multi-purpose trails traverse the Project study area, including the conveyance facility corridor: Foothills Trail; Mid-City Connector; and Santa Ana River Regional Trail System. These trails are described in Table 4.10-2, *Trails* below, and their locations are shown in Exhibit 4.10-1, *Recreational Facilities*.

Table 4.10-2: Trails

Trail Name	Trail Type
Foothills Trail	Primary regional multi-purpose trail
Mid-City Connector	Regional multi-purpose trail
Santa Ana River Regional Trail System	Primary regional multi-purpose trail
Multiple: Foothill Boulevard/Route 66 Highland Avenue	Local multi-purpose trails
Multiple: Waterman Avenue Valencia Avenue 30th Street 40th Street Baseline Street Arrowhead Avenue Mill Street San Bernardino Avenue "E" Street	Bicycle Routes

The City and National Recreation and Parks Association (NRPA) parkland standards are discussed in Section 4.10.2 below. Based on the City's or the NRPA standards, the City will experience a shortage of required parkland at General Plan buildout, if no additional parkland is provided. At buildout, there will be an approximate shortfall of 1,368 acres of parkland based on the NRPA standards, or 1,048 acres based on the City standards, unless additional parkland can be provided.[1] These estimates are based on the forecast buildout population and current parkland, which does not account for parks that may be acquired by the City or required in new subdivisions.

[1] *City of San Bernardino General Plan,* 2005, Parks, Recreation, and Trails Element, Page 8-5.



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Michael Baker INTERNATIONAL

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Source: City of San Bernardino General Plan Land Use, ESRI World Imagery, San Bernardino County GIS

CLEAN WATER FACTORY PROJECT EIR

Recreational Facilities

Exhibit 4.10-1

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4.10.2 REGULATORY FRAMEWORK

FEDERAL

No federal plans, policies, ordinances, laws, regulations, or executive orders related to recreation are applicable to the Project.

STATE

No State plans, policies, ordinances, laws, or regulations related to recreation are applicable to the Project.

LOCAL

City of San Bernardino General Plan

The *City of San Bernardino General Plan* states in its Parks, Recreation and Trails Element that the City's adopted park standard is 5.0 acres per 1,000 residents. This standard defines acceptable per capita park acreage for local parkland, and is based on national averages. Because these acreages are intended to accommodate different types of parks, no single set of accepted standards exists. The NRPA has published benchmark guidelines for different park needs. The NRPA standards, however, do not include regional parks, because of their variation in size and purpose. The NRPA standards are: neighborhood parks, 1.0 to 2.0 acres per 1,000 residents; mini-parks, 0.25 to 0.5 acre per 1,000 residents, and community parks 2.0 to 3.0 acres per 1,000 residents.

In addition, the following General Plan policies and programs pertain to active and passive recreational facilities within the City:

Goal 8.1 Improve the quality of life in San Bernardino by providing adequate parks and recreation facilities and services to meet the needs of our residents.

Policy 8.1.1 Establish a comprehensive parks master plan, which accomplishes the following:

a. Establishes the standard of 5 acres of parkland for every 1,000 residents;

b. Establishes guidelines for the types and amounts of recreational facilities and services necessary to adequately serve future residents;

c. Defines park development standards based on types and sizes of parks (mini, neighborhood, community, regional) and their service area (e.g. Mini- ¼ to ½ service radius);

d. Describes the steps necessary to achieve the park standards and guidelines;

e. Defines existing and anticipated recreational needs (based on population size, density, demographics, and types of facilities);

f. Identifies areas in need of new or expanded recreational facilities and the types of facilities needed;

g. Disperses park facilities and equipment throughout the City to prevent an undue concentration at any location; including sports fields, basketball courts, tennis courts, swimming pools, picnic areas, and other facilities;

h. Identifies appropriate park fees;

i. Identifies potential locations and types of new or expanded facilities; and

j. Identifies potential funding sources.

Policy 8.1.3 Pursue the development of portions of the Santa Ana River, Lytle Creek, and flood control drainages and detention basins for recreational uses that will not inhibit flood control purposes or be adversely impacted by flooding.

Policy 8.1.10 Maintain and expand cooperative arrangements with the San Bernardino Unified School District, City Municipal Water Department, Cal State San Bernardino and San Bernardino Valley College for after hour and summertime use of parks, pools, concert halls, and other facilities.

4.10.3 ENVIRONMENTAL IMPACTS

SIGNIFICANCE CRITERIA UNDER CEQA

Appendix G of the *CEQA Guidelines* contains the Initial Study Checklist form, which includes questions related to parks and recreation. The issues presented in the Initial Study Checklist have been utilized as Thresholds of Significance in this Section. Accordingly, a project may create a significant environmental impact if one or more of the following occurs:

a. Would the Project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated (refer to Impact Statement 4.10-1);

b. Does the Project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment (refer to Impact Statement 4.10-2); or

c. Would the Project result in substantial adverse physical impacts associated with the provision of new or physically altered park/recreational facilities, need for new or physically altered park/recreation facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios or other performance objectives (refer to Impact Statement 4.10-3)?

METHODS AND ASSUMPTIONS

When considering the significance of an individual impact, the existing local, State and federal regulations, laws and policies in effect are considered, including applicable San Bernardino General Plan Policies. In addition, the impact analysis considers the Project design features that have been incorporated into the Project to avoid, reduce, or offset potential impacts. In cases where existing regulations and policies and Project design features may not adequately reduce Project impacts, SBMWD has proposed additional mitigation measures to avoid, reduce, or offset Project-related impacts. For purposes of this analysis, the study area concerning parks and recreation is confined to the Project study area described in Section 3.0, *Project Description*.

Summary of Applicable Project Design Features and Existing Laws, Ordinances, and Regulations

The construction of pump stations associated with the proposed conveyance systems, as well as work at the storage reservoirs, could affect recreational facilities under several of the possible Project location options. However, the possible loss of these facilities is addressed specifically in the mitigation measures below. Several Project Design Features will serve to minimize the Project's impacts to parks and recreation, as follows:

- The Project proposes to utilize existing infrastructure wherever possible, including the SBWRP site and existing recharge basins, and reuse existing abandoned pipelines, which reduces the Project's construction and operational impacts;
- The Project provides a sustainable water supply which will facilitate the City's long-term maintenance and enhancement of existing landscaped areas, including City parks; and
- Unless other options are determined to be infeasible, the Project would not site storage reservoirs/pump stations within City parkland. If the Project applicant determines that the storage reservoirs/pump stations must be sited within City parkland, Mitigation Measures REC-1 and REC-2 will be implemented.

Impact 4.10-1: Would the Project increase the use of existing neighborhood and regional parks and trails or other recreational facilities such that substantial physical deterioration of the facilities would occur or be accelerated? *Level of Significance: Less Than Significant Impact with Mitigation Incorporated*.

Construction-Related Impacts

Water Reclamation Plant

There is no parkland located in the SBWRP's vicinity. However, a bicycle route (Orange Show Road), primary regional multi-purpose trail (Santa Ana River), and regional multi-purpose trail (Mid-City Connector) are located north, south, and east of the SBWRP, respectively; see Table 4.10-1 and Table 4.10-2, and Exhibit 4.10-1. The proposed improvements to the SBWRP would involve construction activities, which may result in temporary circulation/access impacts to these nearby recreational facilities. However, it is expected that construction activities would primarily be localized within the existing perimeter of the SBWRP and therefore would not interfere with use of these recreational facilities such that increased use of other existing trails would occur. Less than significant impacts are identified.

Direct Use Sites

Direct use sites, which include parks, presently operate independent of recycled water supplies. Project construction for direct use sites would include various minor site improvements (including recycled water conveyance lines, vaults, and other appurtenances), in order to comply with water reuse regulations. Access to these parks may be temporarily interrupted, depending on the nature and location of improvements, and therefore could result in the temporary increased use of other existing neighborhood and regional parks. However, with implementation of Mitigation Measure REC-1, which involves coordination with the City Parks, Recreation and Community Services Department to avoid construction activities during periods of peak-usage, the temporary construction-related impacts to direct use customers (specifically parks using recycled water) would be reduced to a less than significant level.

Conveyance Systems and Recharge Sites

There are seven optional sites (three intermediate and four northerly) for co-located pump station/storage reservoir siting; see Exhibit 4.10-1 and Exhibit 3.0-5, *Recycled Water System Conveyance Alternatives (Northerly Portion)*. Four of the seven optional sites are located within two City parks: Perris Hill Park; and Wildwood Park. Perris Hill Park is a 64.4-acre regional park that is accessible via Highland Avenue and Valencia Avenue. Wildwood Park is a 24.2-acre community park that is accessible via 40th Street and Waterman Avenue. Wildwood Park is home to four baseball fields, including two Little League, one Senior League, and one T-ball field.

The final determination for pump station and storage reservoir siting will be made during the final design process. Although the EIR evaluates several optional sites, SBMWD may identify a more preferable site during final design. As discussed further below, the EIR does address potential pump station/storage reservoir sites that would impact existing City parkland, some of which would potentially affect active recreation uses such as ballfields or parking. SBMWD would only pursue a pump station/reservoir site affecting active recreation or parking at a City park if no other viable option was available. At present, Option C is the preferred intermediate location, from a system design perspective, and would minimize impacts to City parkland by only affecting the landscaped portion of a City park. Neither of the two top options for northern pump station/reservoirs would impact active recreational uses.

The locations of these parks and the primary pump station/storage reservoir sites are shown on Exhibit 4.10-1. The optional pump station/storage reservoir sites are shown on Exhibit 3.0-5, *Recycled Water System Conveyance Alternatives (Northerly Portion)* and are described further below (only optional sites potentially affecting parkland are discussed below):

Intermediate Pump Station/Storage Reservoir Optional Locations:

- Pump station/storage reservoir site "Option B" is located at the northwest corner of Perris Hill Park, at East Highland Avenue and Valencia Avenue. It is anticipated that the tank would be either partially buried or buried pre-stressed concrete, since it would be located at the Park entrance. Total land required for Option B is approximately 1.02 acres, which are currently occupied by a landscaped, grassy area.
- Pump station/storage reservoir site "Option C" is located in Perris Hill Park at the corner where East Highland Avenue and East Twin Creek Channel intersect, west of East Twin Creek Channel. It is anticipated that the tank would be above-grade welded steel or buried pre-stressed concrete, since it is located at the edge of the park near East Twin Creek Channel. Total land required for Option C is approximately 1.10 acres, which are currently occupied by a landscaped, grassy area. This is the currently preferred intermediate location (refer to Figure 9-3 of Appendix 10.2.2, *Preliminary Design Report*).

Northern Pump Station/Storage Reservoir Optional Locations:

- Pump station/storage reservoir site "Option D" is located in Wildwood Park along the west edge of the park where it borders Waterman Avenue. It is anticipated that the tank would be partially buried or buried pre-stressed concrete due to its location within the Park. Total land required for Option D is approximately 1.39 acres, which are currently occupied by a paved parking lot. This option is ranked second among the northern options (the first ranked site is within SBCFCD property, and would not affect parkland).
- Pump station/storage reservoir site "Option E" is located in Wildwood Park at the southeast corner where it borders East 40th Street. It is anticipated that the tank would be partially buried

or buried pre-stressed concrete due to its location within Wildwood Park. Total land required for Option E is approximately 1.20 acres, which are currently occupied by a baseball diamond and associated parking lot.

Construction activities related to the four out of the seven pump station/storage reservoir sites that would be located within City parkland could indirectly increase the use of other City parks and recreation facilities due to the temporary partial-closures that would occur at Wildwood Park and/or Perris Hill Park. However, construction activities would be localized within the specific improvement footprints identified above and would not result in entire park closure, as the majority of the parkland would be open and accessible to the public during construction. Any potential construction-related impacts would be temporary in nature and would cease upon completion of construction. Impacts due to temporary increased use of other facilities would be further reduced through implementation of Mitigation Measure REC-1, which requires SBMWD to coordinate pump station/storage reservoir construction with the City Parks, Recreation and Community Services Department to ensure activities occur outside of peak-use periods. The Project Design Features identified above, as well as implementation of Mitigation Measure REC-1, would reduce the temporary impacts related to increased use of existing neighborhood and regional parks to a less than significant level.

Operations-Related Impacts

Water Reclamation Plant, Direct Use Sites, and Conveyance Systems and Recharge Sites

The Project involves water infrastructure improvements. No housing or employment generating land uses that would increase parks and recreation facility usage such that substantial physical deterioration of the facility would occur are proposed. However, selection of site Options B, C, D or E in any combination would result in impacts to parkland, with site Option E requiring the relocation of a baseball diamond. As such, Project implementation could result in the removal of as many as 1.4 acres of parkland and the removal/relocation of a baseball diamond within Wildwood Park (this option would only be selected if no other viable option was available).

As identified previously, the City will experience a shortage of required parkland at General Plan buildout if no additional parkland is provided. Project implementation could increase the City's deficiency in parkland due to removal of as many as 1.4 acres of parkland, which could indirectly increase the usage of other City parkland. Additionally, Wildwood Park is home to four baseball fields, including two Little League, one Senior League and one T-ball field. The removal of a Wildwood Park baseball diamond associated with pump station/storage site Option E could potentially increase the usage of the remaining baseball diamonds and impact the local baseball leagues that utilize Wildwood Park. However, increased usage of the other existing baseball diamonds/recreational facilities would be temporary and would not result in substantial physical deterioration of the facilities. Further, as described in Section 4.10.4, if active recreational uses or parking is affected, Mitigation Measure REC-2 would require SBMWD to prioritize siting that avoids parkland first, avoids active recreational uses or parking second, and only if no other feasible option is available, facilities would be sited that would impact active recreational uses or parking. In this worst-case scenario, SBMWD would purchase replacement parkland and/or develop parking of equal size, function, and value within the City such that Project implementation results in no net-loss of City parkland or parking. Compliance with Mitigation Measure REC-2 would reduce the Project's potentially significant impacts related to increased recreational facility use to a less than significant level.

MITIGATION MEASURES

REC-1 Prior to commencement of construction, SBMWD shall coordinate with the City of San Bernardino Parks, Recreation, and Community Services Department to ensure Project construction activities within City parkland minimizes construction during peak-usage periods for any impacted facilities, to the extent practical. In addition, where practical, Project-related improvements should be timed with other park improvements to minimize the total time period that any one park is affected by construction activities.

REC-2 SBMWD shall prioritize siting and design of Project facilities such that direct impacts to City parklands is minimized. Non-parkland areas are preferred, and if a park site must be affected due to Project design requirements or other constraints, SBMWD shall prioritize siting of pump stations and/or storage reservoirs that avoid direct impacts to active recreational areas (such as ballfields) and associated parkland parking. If facility siting requirements necessitate that the Project pump station/reservoir be cited within active parkland uses, including parking areas, prior to commencement of construction activities, SBMWD shall provide or fund replacement parkland of equivalent size, function, and value, such that the Project results in no net-loss of City active recreational parkland.

Impact 4.10-2: Would the Project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse effect on the environment? *Level of Significance: Less than Significant Impact*.

Construction-Related Impacts

Water Reclamation Plant, Direct Use Sites, and Conveyance Systems and Recharge Sites

The Project involves water infrastructure improvements and no recreational facilities. Housing and employment-generating land uses are not proposed, thus, the Project does not create a demand for new parks or other recreational facilities, or expansion of existing recreational facilities.

As discussed above, construction of the pump station/storage reservoir could impact as many as 1.4 acres of City parkland. Sections 4.1 through 4.11 of this EIR describe and (where appropriate) mitigate the construction-related impacts that would occur associated with the pump station/storage reservoir siting options, including the Project's potential impacts involving noise, traffic, and air quality and greenhouse gases. A less than significant impact would occur in this regard.

As concluded above, the Project would require the construction of new parkland, in order to maintain acceptable service ratios identified by the City General Plan. Mitigation Measure REC-2 requires SBMWD to purchase replacement parkland of equal size, function, and value within the City such that Project implementation results in no net-loss of City parkland (if active recreational park areas are impacted). Once it has been determined that the construction of new facilities is warranted and that the proposal is subject to CEQA, further environmental analysis would be conducted by SBMWD, in order to determine whether construction of replacement parkland would result in an environmental impact. SBMWD's acquisition of replacement parkland would be subject to a separate environmental review process, as well as applicable City General Plan policies and recreational facility siting and design practices, and would be required to mitigate any potential adverse environmental impacts identified at that time. Therefore, the Project would result in a less than significant adverse physical impact associated with the construction or expansion of recreational facilities.

Operations-Related Impacts

Water Reclamation Plant, Direct Use Sites, and Conveyance Systems and Recharge Sites

Operation of the SBWRP and direct use sites would not result in any long-term impacts related to recreational facilities. However, the Project could require the provision of replacement parkland to mitigate the loss of parkland that would occur due to potential pump station/storage reservoir siting constraints. As noted above, Mitigation Measure REC-2 requires SBMWD to purchase replacement parkland of equal size, function, and value if facility siting constraints dictate that the Project would result in a loss of active recreational parkland or parking. Operational impacts resulting from this mitigation/replacement parkland would depend upon the nature and location of improvements. Further, operational impacts resulting from mitigation/replacement parkland would be analyzed through a separate environmental review process, once it is determined that construction of new facilities is warranted and subject to CEQA. Therefore, the Project would result in less than significant impacts regarding the operation of recreational facilities.

MITIGATION MEASURES

No mitigation is required.

Impact 4.10-3: Would the Project result in substantial adverse physical impacts associated with the provision of new or physically altered park/recreational facilities, need for new or physically altered park/recreation facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios or other performance objectives for any of the public services? *Level of Significance: Less than Significant Impact.*

Construction and Operations-related Impacts

Water Reclamation Plant, Direct Use Sites, and Conveyance Systems and Recharge Sites

Construction and operational activities associated with the SBWRP and direct use sites are not anticipated to result in significant environmental impacts related to provision of or need for new or physically altered park/recreational facilities. As described above, Mitigation Measure REC-2 would require SBMWD to obtain replacement parkland of equal size, function, and value if pump station/storage reservoir facility siting dictates that these facilities will impact Wildwood and/or Perris Hill Parks; refer to Impact 4.10-2, above. A less than significant impact would occur in this regard.

MITIGATION MEASURES

No mitigation is required.

4.10.4 CUMULATIVE IMPACTS

Project implementation would temporarily interfere with access to recreational opportunities during construction. However, as concluded above, with mitigation, the Project's temporary impacts would not result in increased usage of existing recreational facilities such that substantial physical deterioration of the facility would occur. Further, there are no other related projects that would temporarily interfere with the use of existing recreational facilities. The Project's incremental effects are not considered cumulatively

considerable and a less than significant impact would occur in this regard. The Project involves water infrastructure improvements and no recreational facilities. Housing and employment-generating land uses are not proposed, thus, the Project does not create a demand for new parks or other recreational facilities nor would the Project require, or expansion of existing recreational facilities.

Selection and operation of pump station/storage facility site Options B, C, D and/or E would result in the permanent loss of as many as 1.4 acres of parkland within the City, including the removal of a baseball diamond (Option E only), which could affect local baseball leagues. However, Project impacts are mitigated to less than significant through compliance with Mitigation Measure REC-1, which requires SBMWD to coordinate with the City Parks, Recreation and Community Services Department to avoid construction within City parkland during periods of peak use. Mitigation Measure REC-2 requires SBMWD to provide replacement parkland such that the City does not experience a net-loss in active recreational facilities.

The *City of San Bernardino General Plan EIR* addresses the cumulative impact to parks and recreation upon City buildout, including City-wide efforts to provide local and regional recreation, joint use agreements with local school districts, and mandating that each project be subject to the City's adopted park standard of 5.0 acres per 1,000 residents (General Plan Parks, Recreation and Trails Element) and/or pay development impact fees to finance public facilities attributable to each new development. Such fees would minimize, to the greatest extent practicable, the cumulative developments' impacts on the City's recreational facilities.

4.10.5 SIGNIFICANT UNAVOIDABLE IMPACTS

No significant unavoidable impacts related to recreational facilities have been identified following implementation of the recommended mitigation.

Section 4.11
Transportation and Circulation

Section 4.11
Transportation and Circulation

This section describes regulations related to transportation and circulation and the existing transportation systems in the Project Area, identifies significance criteria for impacts on transportation and circulation, and evaluates potential impacts associated with the proposed Project.

Information given in this section is based on transportation and circulation information obtained from available public resources including the *County of San Bernardino General Plan* (2007), *City of San Bernardino General Plan EIR* (2005), the *Clean Water Factory Air Quality/Greenhouse Gas Modeling Assumptions*, prepared by Michael Baker International (2015), and available Geographical Information Systems (GIS) data and maps. Traffic impact data for construction impacts was derived from the air quality/greenhouse gas analysis modeling assumptions, which include information about truck trips that would occur during the construction phase. These modeling assumptions can be found in Appendix 10.3, *Air Quality/Greenhouse Gas Modeling Data*.

4.11.1 AFFECTED ENVIRONMENT

EXISTING TRANSPORTATION FACILITIES

The Project would have only nominal operational traffic due to the nature of the facilities, and would not require any new or modified arterial streets or intersections. Therefore, the affected environment discussion focuses on existing facilities, including roadways, railroads, airports, and public transit facilities. These facilities are shown on Exhibit 4.11-1, *Existing Transportation Facilities*.

ROADWAYS

As described in Section 3.0, *Project Description*, the Project, including the SBWRP and proposed conveyance system alignments, are located within a "Conveyance Facility Corridor" (corridor) that extends north from the SBWRP, near the I-10/I-215 interchange to the Waterman Basins, located at the foot of the San Bernardino Mountains. The corridor is approximately 7.5 miles long and varies from approximately 1.0 to 1.4 miles wide, and includes multiple major roadways as identified in the *City of San Bernardino General Plan* Circulation Element. The following roads, identified as "Major Arterials" in the *General Plan,* traverse the corridor:

North-South

- "E" Street
- Arrowhead Avenue
- State Route 18 (SR-18)/Waterman Avenue

East-West

- 40th Street
- Highland Avenue
- Baseline Street
- 5th Street

- 3rd Street
- 2nd Street
- Mill Street
- San Bernardino Avenue

There are two major regional vehicular travel routes located within the Project Area: Interstate 210 (I-210) and State Route 18 (SR-18). Segments of both I-210 and SR-18 are located within the northern portion of the corridor boundaries. Because the Project proposes pipeline crossings that would traverse a Caltrans-controlled transportation facility (I-210), coordination with Caltrans would be required with Project implementation, as described below.

CHINO BASIN OPTION

The Chino Basin recharge option would connect the Chino Basin pipeline beginning at the RIX Facility to a recharge facility located within the Chino Groundwater Basin and the IEUA's non-potable system would be provided. The future approximately ten-mile long conveyance pipeline would generally be aligned in an east to west direction along Riverside, Slover, Citrus, and Jurupa Avenues; see Exhibit 3.0-7, *Inter-Agency Conveyance Facilities*. The Chino Basin pipeline alignment would traverse several jurisdictional boundaries including the cities of Colton, Rialto, and Fontana.

Caltrans Coordination

Caltrans has very specific requirements for submittal of proposed pipeline crossings of its freeway right-of-way. Requirements include: (1) the pipeline generally must cross perpendicular to the freeway right-of-way at no more than 15 degree skew from perpendicular; (2) the pipeline must be within a steel casing pipeline; and (3) the top of the steel casing pipeline must be at least 15 feet below any part of the freeway (freeway road base or bridge abutment). The proposed Project includes pipeline alignment alternatives to the East Twin Creek Spreading Grounds and Waterman Basins that would cross I-210. Alignment Option 1 would cross I-210 near a bridge abutment of the I-210 crossing of East Twin Creek Channel and the pipeline would need to meet Caltrans guidelines for separation from bridge abutments. Alignment Option 2 would cross I-210 near the Valencia Avenue Bridge and further coordination would be required to evaluate whether one or both pipelines could be installed within spare bridge cells designated for future pipelines. Alignment Option 3 would cross I-210 near the Waterman Avenue Bridge and further coordination would be required to evaluate whether one or both pipelines could be installed within spare bridge cells designated for future pipelines.

Railroads

The southerly portion of the proposed corridor also includes a segment of a railroad operated by Burlington Northern Santa Fe (BNSF). The railroad enters the corridor just south of the intersection at S. Arrowhead Avenue and W. Rialto Avenue, traverses south and east for a total approximate distance of 2.2 miles, and exits the corridor just west of the Santa Ana River. Because the Project proposes a pipeline crossing that would traverse this railway, coordination with BNSF would be required, as described below.

Railroad Coordination

Each pipeline alignment option from the SBWRP to the East Twin Creek Spreading Grounds and Waterman Basins has one railroad crossing. This railroad is currently owned by the San Bernardino Association of Governments (SANBAG) and operated by BNSF. It is utilized as a regional rail line for freight delivery

(designated as Southern California Regional Rail - A). There are specific requirements for submittal of proposed pipeline crossings of railroads. Design of pipeline crossings of railroads are generally determined by the utility agency with review by the railroad, but typically require jack and bore crossings to minimize service interruption and compliance with standards of practice.

Airports

The Project site is located within two miles of a public airport, the San Bernardino International Airport (SBIA). SBIA is located on 294 S. Leland Norton Way and is bounded by the Santa Ana River to the south, Tippecanoe Avenue to the west, 3rd Street to the north, and Alabama Street to the east. The airport has one active concrete runway, which is 10,001 feet long and 200 feet wide. Specifically, the Project's eastern conveyance facility corridor boundary is approximately one mile from SBIA's western boundary, and a portion of the corridor does fall within the SBIA Airport Influence Area, according to Figure LU-4 in the City's General Plan Land Use Element.

The airport and its related areas contain approximately 1,350 acres that are managed by the San Bernardino International Airport Authority (SBIAA), which is a Joint Powers Authority made up of representatives from the cities of San Bernardino, Highland, Loma Linda, Colton, and the County of San Bernardino. A Comprehensive Land Use Plan (CLUP) and Airport Master Plan have yet to be adopted for the SBIA.

Public Transit/Bicycle and Pedestrian Facilities

Public transportation in the San Bernardino area is provided by Omnitrans, the regional Public Transit operator for San Bernardino County. Omnitrans functions as a joint powers agency supported by the County of San Bernardino and all the cities in the east and west San Bernardino Valley. The City of San Bernardino is represented on the Omnitrans Board.

Omnitrans operates 27 local-fixed routes, covering 15 cities and portions of the unincorporated areas of San Bernardino County. Omnitrans operates bus services within, and in the vicinity of, the Project area along the following roads:

- Highland Avenue and Mount Vernon Avenue (Route 1)
- "E" Street (Route 2)
- Baseline Road (Route 3/4)
- Waterman Avenue (Route 5)
- Slover Avenue (Route 29/82)
- Tippecanoe Avenue (Route 8)
- 9th Street (Route 15)

Bikeways, trails, and pedestrian facilities are addressed in the Parks, Recreation, and Trails Element of the *City of San Bernardino's General Plan*; and the Circulation and Infrastructure Element of *County of San Bernardino General Plan*; as well as Section 4.10, *Recreation*.

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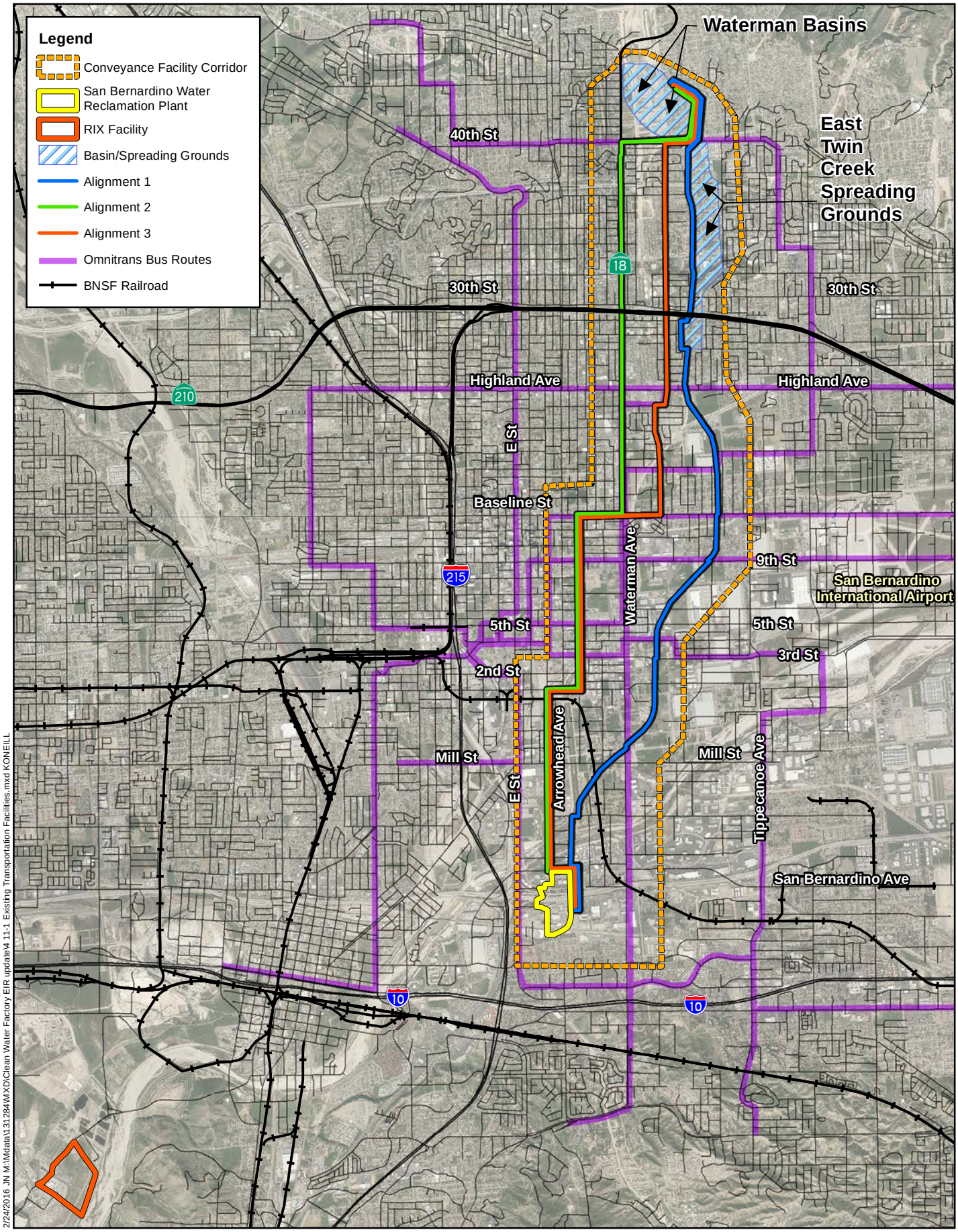

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Michael Baker INTERNATIONAL

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Source: City of San Bernardino, ESRI World Imagery, San Bernardino County

CLEAN WATER FACTORY PROJECT EIR

Existing Transportation Facilities

Exhibit 4.11-1

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4.11.2 REGULATORY SETTING

FEDERAL

No federal plans, policies, regulations, or laws related to transportation and circulation are applicable.

STATE

The California Department of Transportation (Caltrans) is responsible for planning, designing, constructing, operating, and maintaining all State-owned roadways, including those in San Bernardino County. Federal highway standards are implemented in California by Caltrans. In addition, Caltrans is responsible for permitting and regulation of the use of state roadways. The Project area includes two roadways that fall under Caltrans' jurisdiction; Interstate 210 (I-210) and State Route 18 (SR-18).

Caltrans' construction practices require temporary traffic control planning during any time the normal function of a roadway is suspended (Caltrans 2006). In addition, Caltrans requires that permits be obtained for transportation of oversized loads and transportation of certain materials and for construction-related traffic disturbance. Caltrans regulations would apply to construction within and immediately adjacent to roadways, as well as the transportation of construction crews and construction equipment throughout the action area (Caltrans 2007).

LOCAL

Southern California Association of Governments (SCAG) Regional Transportation Plan (RTP)

The Southern California Association of Governments (SCAG) is a regional agency established pursuant to California Government Code §6500, also referred to as the Joint Powers Authority law. SCAG is designated as a Council of Governments (COG), a Regional Transportation Planning Agency (RTPA), and a Metropolitan Planning Organization (MPO). The Project site is within SCAG's regional authority. On April 4, 2012, SCAG adopted a Regional Transportation Plan (RTP) with goals to: 1) maximize mobility and accessibility for all people and goods in the region; 2) ensure travel safety and reliability for all people and goods in the region; 3) preserve and ensure a sustainable transportation system; 4) maximize productivity of the transportation system; 5) protect the environment, improve air quality, and promote energy efficiency; 6) encourage land use and growth patterns that complement the transportation investments and improve the cost-effectiveness of expenditures; and 7) maximize the security of the transportation system (Southern California Association of Governments 2012). Performance measures and funding strategies also are included to ensure that the adopted goals are achieved through implementation.

County of San Bernardino Congestion Management Program (CMP)

The San Bernardino County CMP was prepared by the San Bernardino Associated Governments (SANBAG) in accordance with Proposition 111, which was passed by voters in June 1990. The intent of the CMP is to more directly link land use, transportation, and air quality planning and to prompt reasonable growth management programs that would more effectively utilize new and existing transportation funds to alleviate traffic congestion and related impacts and improve air quality. The San Bernardino CMP was first adopted in November 1992 and has since been updated eight (8) times, with the most recent comprehensive update in December 2007. Deficiencies along the CMP system must be identified when they occur so that improvement measures can be identified. Understanding the reason for these deficiencies and identifying ways to reduce the impact of future growth and development along a critical

CMP corridor is intended to conserve scarce funding resources and help target those resources appropriately.

City of San Bernardino General Plan

The Land Use and Circulation Elements of the *City of San Bernardino General Plan* include the following transportation goals, policies, and programs, which are applicable to the proposed Project:

Land Use Element

Goal 2.9 Protect the airspace of the San Bernardino International Airport and minimize related noise and safety impacts on our citizens and businesses.

Policy 2.9.1 Require that all new development be consistent with the adopted Comprehensive Land Use Plan for the San Bernardino International Airport and ensure that no structures or activities encroach upon or adversely affect the use of navigable airspace. (LU-1).

Policy 2.9.3 Limit the type of development, population density, maximum site coverage, and height of structures as specified in the applicable safety zones in the Comprehensive Land Use Plan for the SBIA and as shown on Figure LU-4. (LU-1).

Policy 2.9.5 Ensure that the height of structures do not impact navigable airspace, as defined in the Comprehensive Land Use Plan for the SBIA. (LU-1).

Policy 2.9.6 As required by State Law for real estate transactions within the Airport Influence Area, as shown on Figure LU-4, require notification/disclosure statements to alert potential buyers and tenants of the presence of and potential impacts from the San Bernardino International Airport. (LU-1).

Circulation Element

Goal 6.2 Maintain efficient traffic operations on City streets.

Policy 6.2.1 Maintain a peak hour level of service of D or better at street intersections.

Policy 6.2.2 Design each roadway with sufficient capacity to accommodate anticipated traffic based on intensity of projected and planned land use in the City and the region while maintaining a peak hour level of service (LOS) “C” or better.

Policy 6.2.3 Keep traffic in balance with roadway capacity by requiring traffic studies to identify local roadway and intersection improvements necessary to mitigate the traffic impacts of new developments and land use changes. (LU-1).

Policy 6.2.5 Design roadways, monitor traffic flow, and employ traffic control measures (e.g. signalization, access control, exclusive right and left turn-turn lanes, lane striping, and signage) to ensure City streets and roads continue to function safely within our Level of Service standards.

Goal 6.3 Provide a safe circulation system.

Policy 6.3.7 Require that adequate access be provided to all developments in the City including secondary access to facilitate emergency access and egress (LU-1).

4.11.3 ENVIRONMENTAL IMPACTS

SIGNIFICANCE CRITERIA UNDER CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)

Appendix G of the State *CEQA Guidelines* contains the Initial Study Checklist form, which includes questions related to transportation, traffic, parking, and circulation. The issues presented in the Initial Study Checklist have been utilized as Thresholds of Significance in this section. Accordingly, a project may create a significant environmental impact if one or more of the following occurs:

Would the Project:

a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit; (refer to Impact Statement 4.11-1)

b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways; (refer to Impact Statement 4.11-2)

c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks; (refer to Impact Statement 4.11-3)

d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment); (refer to Impact Statement 4.11-4)

e) Result in inadequate emergency access; (refer to Impact Statement 4.11-5) or

f) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities? (refer to Impact Statement 4.11-6)

METHODS AND ASSUMPTIONS

During the construction phase of the Project, the relative impact of implementing the Project has been determined by estimating the amount of traffic associated with construction activities within the study area and superimposing that traffic onto current traffic volumes. Because the future operational traffic volumes associated with typical post-Project activities would be similar to existing Project operational traffic volumes, quantitative analysis of resulting traffic operations under current and cumulative conditions is not warranted (the Project would result in only nominal changes in long-term operational traffic, associated with proposed SBWRP expansion and additional facility maintenance activity).

SUMMARY OF APPLICABLE PROJECT DESIGN FEATURES AND EXISTING LAWS, ORDINANCES, AND REGULATIONS

Potential impacts to transportation and circulation associated with the proposed Project would occur primarily during the construction phase, primarily at the SBWRP and along the conveyance system routes, and would be temporary in nature. Permanent above-ground structures, such as those at the SBWRP and for pump station and reservoir sites and minor appurtenant facilities (valves, meters, vaults, etc.) would

not generate substantial traffic and are not otherwise anticipated to result in significant transportation impacts. Several Project Design Features would serve to minimize Project impacts, as follows:

1) The Project proposes to utilize existing infrastructure wherever possible, including the existing SBWRP site and existing recharge basins and reuse of existing abandoned pipelines, which reduces the extent of construction-related impacts (refer to Section 6.0, *Alternatives to the Proposed Project*, which discusses various pipeline alternatives, including re-use of existing Baseline Feeder and/or the existing Alabama Street Effluent Pipeline);
2) Project conveyance facilities would be constructed to accommodate anticipated ultimate flow volumes, to avoid the need for new pipeline construction and associated construction-related impacts.

TRIP GENERATION

The amount of automobile and truck traffic associated with implementation of the Project would vary throughout the construction season as different activities occur. To ensure that the magnitude of traffic impacts is not underestimated for this analysis, it assumes the maximum probable concurrent employment on the site and maximum concurrent truck activity as the construction traffic level to evaluate.

LEVEL OF SERVICE

Traffic operations of roadway facilities are described using the term "Level of Service" (LOS). LOS is a qualitative description of traffic flow based on several factors such as speed, travel time, delay, and freedom to maneuver. Six levels are typically defined ranging from LOS "A," representing completely free-flow conditions, to LOS "F," representing breakdown in flow resulting in stop-and-go conditions. LOS "E" represents operations at or near capacity, an unstable level where vehicles are operating with the minimum spacing for maintaining uniform flow. Table 4.11-1, *Signalized Intersection LOS Thresholds* and Table 4.11-2, *Unsignalized Intersection LOS Thresholds*, summarize typical operational conditions at signalized and unsignalized intersections for each LOS classification, respectively.

The definition of an intersection deficiency in the City of San Bernardino is based on the *City of San Bernardino General Plan* Circulation Element. The *City of San Bernardino General Plan* states that target LOS "D" be maintained at intersections under the City's jurisdiction wherever possible.

Table 4.11-1: Signalized Intersection LOS Thresholds

Level of Service	Description	Average Control Delay (Seconds)
A	Operations with very low delay occurring with favorable progression and/or short cycle length.	0 to 10.00
B	Operations with low delay occurring with good progression and/or short cycle lengths.	10.01 to 20.00
C	Operations with average delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures begin to appear.	20.01 to 35.00
D	Operations with longer delays due to a combination of unfavorable progression, long cycle lengths, or high V/C ratios. Many vehicles stop and individual cycle failures are noticeable.	35.01 to 55.00

Table 4.11-1, continued

Level of Service	Description	Average Control Delay (Seconds)
E	Operations with high delay values indicating poor progression, long cycle lengths, and high V/C ratios. Individual cycle failures are frequent occurrences. This is considered to be the limit of acceptable delay.	55.01 to 80.00
F	Operation with delays unacceptable to most drivers occurring due to over-saturation, poor progression, or very long cycle lengths.	80.01 and up
Source: HCM 2000, Chapter 16		

Table 4.11-2: Unsignalized Intersection LOS Thresholds

Level of Service	Description	Average Control Per Vehicle (Seconds)
A	Little or no delays.	0 to 10.00
B	Short traffic delays.	10.01 to 15.00
C	Average traffic delays.	15.01 to 25.00
D	Long traffic delays.	25.01 to 35.00
E	Very long traffic delays.	35.01 to 50.00
F	Extreme traffic delays with intersection capacity exceeded.	>50.00
Source: HCM 2000, Chapter 17		

Impact 4.11-1: Would the Project conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit? *Level of Significance: Less Than Significant Impact with Mitigation Incorporated.*

CONSTRUCTION-RELATED IMPACTS

Water Reclamation Plant

Table 4.11-3, *SBWRP Improvements Construction Assumptions*, below, shows the construction assumptions for the SBWRP improvements component of the proposed Project. Construction activities associated with SBWRP improvements are expected to take place over a duration of 18 months. The maximum onsite construction employment for the SBWRP improvements is 23 persons. Therefore, 23 inbound trips are expected to be generated in the a.m. peak hour and 23 outbound trips are expected in the p.m. peak hour. As shown in Table 4.11-3, no earthwork hauling trips are anticipated to be required with construction of SBWRP improvements.

Localized truck traffic could result as materials (i.e., concrete) are hauled to specific work zones for the SBWRP improvements. Truck traffic destined for the SBWRP site would enter at West Century Avenue via E Street. The SBWRP is located at the terminus of Chandler Place and does not receive through traffic. Although trucks would be noticeable on these routes at various times over the construction period, they would not represent an appreciable volume that affects traffic operation and congestion that would

conflict with an applicable plan, policy, or measure of effectiveness for the performance of the circulation system. A less than significant impact would occur with construction of SBWRP improvements.

Table 4.11-3: SBWRP Improvements Construction Assumptions

Total Duration (days)	Earthwork (CY)		Construction Trips	
			Worker Trips/Day[1]	Total Hauling Trips[2,3]
396	0	Duration = 18 months	23	0

Notes:
1. Worker trips are based on California Emissions Estimator Model (CalEEMod).
2. Hauling trips are round trips and assume 16 CY truck capacity.
3. Total hauling trips only accounts for earthwork associated trips, not materials delivery (i.e. concrete).
Source: Air Quality/Greenhouse Gas Analysis Construction Assumptions

Conveyance Systems

Table 4.11-4, *Pipeline Conveyance System Construction Assumptions*, shows the construction assumptions for the conveyance systems component of the proposed Project, broken out into the separate activities of pipeline conveyance system, and the pump stations and reservoir sites. The conveyance facility corridor, which covers the area within which pipeline conveyance facilities would be constructed, includes multiple roadways and transportation facilities, as discussed in Section 4.11.1 above, and shown on Exhibit 4.11-1 and Exhibits 3.0-4, 3.0-5, and 3.0-6.

Construction activities associated with the pipeline conveyance system are expected to take place over a duration of 439 days. The maximum onsite construction employment for the pipeline conveyance construction is estimated at 33 persons. Therefore, 33 inbound trips are expected to be generated in the a.m. peak hour and 33 outbound trips are expected in the p.m. peak hour. As noted in Table 4.11-4, the total amount of earthwork in cubic yards is estimated at 129,926 cy. However, most of the excavated soil would be backfilled. As such, it is assumed that no (or nominal) hauling trips would be required with construction of the pipeline conveyance system. Similar to traffic impacts expected with the SBWRP improvements discussed above, although trucks would be noticeable on routes adjacent to where pipeline conveyance construction would occur, at various times over the construction period, they would not represent an appreciable volume that affects traffic operation and congestion. Pipeline construction of this type is typical in urban areas, and SBMWD has extensive experience in successfully implementing water/wastewater improvements without significantly impacting local communities. Therefore, a less than significant impact would occur with construction of the pipeline conveyance system.

Construction activities associated with the pump stations and reservoir site are expected to take place over a duration of 132 days. The maximum onsite construction employment for the pump stations and reservoir sites is estimated at 15 persons. Therefore, 15 inbound trips are expected to be generated in the a.m. peak hour and 15 outbound trips are expected in the p.m. peak hour. As noted in Table 4.11-4, the total amount of earthwork in cubic yards would be 44,187 cy. Of this amount, 39,775 cy is estimated to be the amount of export based on assumption of partially buried or buried reservoirs (this is a conservative assumption, as SBMWD may not bury reservoirs depending on site-specific conditions). The remainder of 4,412 cy is estimated to be the amount of cut and fill for the tank foundation, and as such, would not require hauling. The total number of hauling trips estimated for the 39,775 cy of export would be 4,972 round-trips over the entire construction period, assuming a 16 cy truck capacity. Assuming a construction total duration of 250 days that would occur at several different sites, the Project would involve an average of 20 roundtrip hauling trips per day, most of which would avoid peak hours since hauling would occur throughout the day. Therefore, trucks trips due to the construction activities

associated with the pump stations and reservoir sites would result in a substantial temporary increase in traffic and potential circulation impacts to the existing transportation system within the Project Area.

Overall, truck traffic generated during the construction phase of the Project would result in total volumes higher than existing conditions, which represents a potentially significant impact to transportation and circulation. However, these temporary construction-related impacts would be mitigated through Mitigation Measure TRA-1, which requires the implementation of a Traffic Management Plan (TMP) to be established by SBMWD prior to construction of any improvements. The TMP would require prior notices, adequate sign-posting, detours, phased construction and temporary driveways where necessary to reduce construction-related impacts that may result from the proposed Project. Refer to Mitigation Measure TRA-1, below. With implementation of this mitigation measure, traffic and circulation impacts to the existing transportation system would be reduced to a less than significant level.

Table 4.11.3-4: Pipeline Conveyance System Construction Assumptions

Activity	Total Duration (days)	Earthwork (CY)		Construction Trips		
				Worker Trips/Day[1]	Total Hauling Trips[2,4]	Notes
Pipeline/ Conveyance	439	129,926[1]		33	N/A	Most excavation would be backfilled.
Pump Stations and Reservoir Sites	132	39,775	Estimated earthwork/ export based on buried reservoirs	15	4,972	Round trips, assumes 16 CY truck capacity
		4,412	Cut and fill for tank foundation and piping		N/A	Assumes balance

Notes:
1. Pipeline earthwork assumes soil would not need to be hauled away.
2. Worker trips are based on California Emissions Estimator Model (CalEEMod).
3. Hauling trips are round trips and assume 16 CY truck capacity.
4. Total hauling trips only accounts for earthwork associated trips, not materials delivery (i.e. concrete).
Source: Air Quality/Greenhouse Gas Analysis Construction Assumptions

Recharge Site Improvements

Table 4.11-5, *Recharge Site Improvements Construction Assumptions*, below shows the construction assumptions for the Waterman Basins and the East Twin Creek Spreading Grounds recharge site improvements component of the proposed Project. Construction activities associated with the recharge site improvements are expected to take place over a duration of 6 months. The maximum onsite construction employment for the recharge site improvements is estimated at 20 persons. Therefore, 20 inbound trips are expected to be generated in the a.m. peak hour and 20 outbound trips are expected in the p.m. peak hour. As noted in Table 4.11-5, the total amount of earthwork in cubic yards is estimated at 250,000 cy, which could be required for relatively minor access road improvements and/or grading to improve recharge basin cell functionality. This is considered a conservative grading estimate, as actual recharge basin grading may be substantially less considering that these are existing functioning spreading basins. In addition, grading operations are anticipated to occur entirely within the footprint of the existing

recharge basin and not require offsite grading. As such, no hauling trips are anticipated to be required with construction of the recharge site improvements.

Localized truck traffic could result as materials are hauled to specific work zones for the recharge site improvements. Truck traffic destined for the recharge site would enter the site at East 40th Street via North Waterman Avenue/SR-18. Similar to traffic impacts expected with the SBWRP improvements discussed above, although trucks may be noticeable on routes adjacent to where recharge site improvement construction would occur, at various times over the construction period, they would not represent an appreciable volume that affects traffic operation and congestion. A less than significant impact would occur with construction of the recharge site improvements.

Table 4.11.3-5: Recharge Site Improvements Construction Assumptions

				Construction Trips	
Total Duration (days)	Earthwork (CY)		Worker Trips/Day[1]	Total Hauling Trips[2][3]	Notes
66	250,000	Duration = 6 months	20	N/A	Assumes balance

Notes:
1. Worker trips are based on California Emissions Estimator Model (CalEEMod).
2. Worker trips are based on California Emissions Estimator Model (CalEEMod).
3. Total hauling trips only accounts for earthwork associated trips, not materials delivery (i.e. concrete).
Source: Air Quality/Greenhouse Gas Analysis Construction Assumptions

OPERATIONS-RELATED IMPACTS

Water Reclamation Plant, Conveyance Systems, and Recharge Site Improvements

Maintenance and operations of water infrastructure facilities of the Project would include periodic, scheduled inspections, the replacement of any equipment that have reaches the end of their lifetime or failed during use, the removal of fine sediment that has accumulated in the bottom of the basins, and maintenance of erosion control. On-going operations would continue similar to existing conditions, and it is not anticipated that operation of these facilities would result in increased traffic or impacts to circulation in the Project Area. As a result, levels of service would remain the same and would remain within adopted standards. For these reasons, the operational traffic impact on the existing roadway system would be less than significant.

RIX Phased Discharge Reduction

The RIX Phased Discharge Reduction is an activity that would not require any construction activities.[1] Operational activities associated with RIX Phased Discharge Reduction would not impact any of the transportation facilities identified in Section 4.11.1, above, and on Exhibit 4.11-1. No noticeable increase in traffic on the existing transportation system is anticipated with the RIX Phased Discharge Reduction, and no impact is anticipated in this regard.

[1] As discussed in Section 4.4, *Biological Resources*, the Adaptive Management Plan may result in various Santa Ana River enhancements, which could require relatively nominal construction workers and equipment to implement.

MITIGATION MEASURES

TRA-1 Short-term construction-related impacts to roadway use shall be mitigated by a Traffic Management Plan (TMP) to be established by SBMWD prior to construction of any improvements. This TMP shall require prior notices, adequate sign-posting, detours, phased construction and temporary driveways where necessary. The TMP shall specify implementation timing of each plan element (prior notices, sign-posting, detours, etc.) as determined appropriate by SBMWD. Adequate access shall be provided at all times to adjacent uses. Proper detours and warning signs shall be established. The TMP shall be devised so that construction shall not interfere with any emergency response or evacuation plans. Construction activities shall proceed in a timely manner to reduce impacts.

Impact 4.11-2: Would the Project conflict with an applicable congestion management program, including, but not limited to, level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways? *Level of Significance: Less Than Significant Impact With Mitigation Incorporated.*

CONSTRUCTION-RELATED IMPACTS

Water Reclamation Plant, Conveyance Systems, and Recharge Site Improvements

Refer to the response for Impact 4.11-1, above. Construction of the SBWRP, pipeline conveyance systems and recharge site improvements is expected to result in short-term impacts to roadways within the Project Area. Relatively nominal, temporary effects to Levels of Service may occur during the construction phases. Implementation of a Traffic Management Plan (TMP), to be established by SBMWD prior to construction of any improvements, would mitigate construction-related impacts. Refer to Mitigation Measure TRA-1 described in Impact 4.11-1 above. With implementation of this mitigation measure, traffic and circulation impacts to the existing transportation system would be reduced to a less than significant level.

OPERATIONS-RELATED IMPACTS

Water Reclamation Plant, Conveyance Systems, and Recharge Site Improvements

Maintenance and operations of water infrastructure facilities would include periodic, scheduled inspections, the replacement of any equipment that have reaches the end of its lifetime or failed during use, the removal of fine sediment that has accumulated in the bottom of the basins, and maintenance of erosion control. On-going operations would continue similar to existing conditions, and it is not anticipated that operation of these facilities would result in increased traffic or impacts to circulation in the Project Area. As a result, levels of service would remain the same and would remain within adopted standards. For these reasons, this impact of operational traffic on the existing roadway system would be less than significant.

RIX Phased Discharge Reduction

The RIX Phased Discharge Reduction is an activity that would not require any construction activities. Operational activities associated with RIX Phased Discharge Reduction would not impact any of the transportation facilities identified in Section 4.11.1, above, and on Exhibit 4.11-1. No increase in traffic on the existing transportation system is anticipated with the RIX Phased Discharge Reduction, and therefore, no level of service degradation would result. No impact is anticipated in this regard.

MITIGATION MEASURES

TRA-1 Refer to Impact 4.11-1 above.

Impact 4.11-3: Would the Project result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks? *Level of Significance: No Impact.*

CONSTRUCTION-RELATED IMPACTS

Water Reclamation Plant, Conveyance Systems, and Recharge Site Improvements

The Project's eastern conveyance corridor boundary is located approximately one mile west of the San Bernardino International Airport (SBIA), and a portion of the corridor does fall within the SBIA Airport Influence Area, according to Figure LU-4 in the City's General Plan Land Use Element. Construction of the infrastructure associated with the conveyance alternatives and recharge site improvements would not interfere with flight operations at SBIA because construction would not result in significant sources of glare, direct illuminations, vapor, smoke, or dust which would affect airport operations. The Project would have no impact on air traffic patterns.

OPERATIONS-RELATED IMPACTS

Water Reclamation Plant, Conveyance Systems, and Recharge Site Improvements

As noted above, the Project's eastern conveyance corridor boundary is located approximately one mile west of the San Bernardino International Airport (SBIA). However, none of the infrastructure proposed for the Project would have a height of more than 45 feet and would not extend into the airspace or interfere with flight operations at the SBIA. Furthermore, the proposed Project does not include an air travel component (e.g., runway, helipad, etc.) that could affect air traffic patterns. Accordingly, the Project would not have the potential to affect air traffic patterns, including an increase in traffic levels or a change in flight path location that results in substantial safety risks. Therefore, no impact would occur as a result of Project operation.

RIX Phased Discharge Reduction

Construction and operational activities associated with RIX Phased Discharge Reduction that would occur with the Project would not impact any of the transportation facilities identified in Section 4.11.1, above, and on Exhibit 4.11-1. No impacts to air traffic patterns are identified as a result of RIX Phased Discharge Reduction.

MITIGATION MEASURES

No mitigation is required.

Impact 4.11-4: Would the Project substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)? *Level of Significance: Less Than Significant Impact.*

CONSTRUCTION-RELATED IMPACTS

Water Reclamation Plant, Conveyance Systems, and Recharge Site Improvements

The Project proposes improvements to the existing SBWRP and construction of new water infrastructure beneath existing roadways in the Project area, which would result in temporary lane closures during the Project's construction phases. All improvements within Project area roadway rights-of-way would be installed in conformance with City design standards so that no hazardous transportation design features would be introduced by construction of the Project. A Traffic Management Plan (TMP) would be established by SBMWD prior to construction of any improvements to safely route traffic through the area during temporary construction activities and maintain adequate vehicular access. A less than significant impact would occur in this regard.

OPERATIONS-RELATED IMPACTS

Water Reclamation Plant, Conveyance Systems, and Recharge Site Improvements

The water infrastructure proposed by the Project would be compatible with existing development in the surrounding area and the long-term planning vision for the area as called for by the respective City's General Plan. In addition, no new roadways are proposed as part of the Project and therefore, no hazardous roadway design features would result. As such, implementation of any of the conveyance and recharge alternatives would not create a transportation hazard as a result of an incompatible use, and no impact has been identified.

RIX Phased Discharge Reduction

The phased reduction in the amount of water that would be discharged from the RIX Facility would have no impact on transportation or traffic since this activity would be entirely contained within the RIX Facility and would not require construction activities. Operational activities associated with RIX Phased Discharge Reduction that would occur would not impact any of the transportation facilities identified in Section 4.11.1, above, and on Exhibit 4.11-1. Therefore, no impacts regarding hazardous design features or incompatible uses would occur as a result of the RIX Phased Discharge Reduction.

MITIGATION MEASURES

No mitigation is required.

Impact 4.11-5: Would the Project result in inadequate emergency access? *Level of Significance: Less Than Significant Impact with Mitigation Incorporated.*

CONSTRUCTION-RELATED IMPACTS

Water Reclamation Plant, Conveyance Systems, and Recharge Site Improvements

Traffic circulation may be temporarily adversely affected during construction phases for the proposed Project. Impacts would occur as a result of construction equipment and vehicles on roadways adjacent to construction areas. Impacts that are likely to occur would be a disruption of the normal flow of traffic as

a result of the movement of construction vehicles and heavy equipment within existing and proposed new right-of-way and temporary lane closures, and fire and police protection emergency vehicles may be temporarily impacted.

Depending on the conveyance alignment and recharge basins selected, the City of San Bernardino, and/or any other affected jurisdiction, shall deploy appropriate temporary signage and identify any detour routes to provide efficient movement of vehicles, including emergency vehicles, during construction phases. Refer to Mitigation Measure TRA-1, below, which requires the SBMWD to implement a TMP prior to the start of any Project construction. With implementation of this mitigation measure, impacts regarding emergency access would be reduced to a less than significant level.

OPERATIONS-RELATED IMPACTS

Water Reclamation Plant, Conveyance Systems, and Recharge Site Improvements

The Project consists of water infrastructure improvements and does not propose any housing or residences, nor would the Project increase the demand for transportation facilities. All of the pipeline alignments proposed would follow existing right-of ways and would not conflict with policies related to existing transportation facilities, nor would access to the existing transportation facilities be impeded as a result of Project operation (refer to Section 4.11.1, *Existing Transportation Facilities* for a description of these facilities). Therefore, operation of the SBWRP, conveyance systems, and recharge sites would have no impact on emergency access.

RIX Phased Discharge Reduction

Phased discharge reduction is the amount of water that would be discharged from the RIX Facility to the Santa Ana River, in million gallons per day (mgd) by phase, through the year 2035. This component of the proposed Project would have no bearing on transportation or traffic since this activity would be entirely contained within the RIX Facility and would not require construction activities. Operational activities associated with RIX Phased Discharge Reduction would not impact any of the transportation facilities identified in Section 4.11.1, above, and on Exhibit 4.11-1. Therefore, no impact regarding emergency access has been identified as a result of the RIX Phased Discharge Reduction.

MITIGATION MEASURES

TRA-1 Refer to Impact 4.11-1 above.

Impact 4.11-6: Would the Project conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks?) *Level of Significance: Less Than Significant Impact with Mitigation Incorporated.*

CONSTRUCTION-RELATED IMPACTS

Water Reclamation Plant, Conveyance Systems, and Recharge Site Improvements

Traffic circulation may be temporarily adversely affected during construction phases. Impacts would occur as a result of construction equipment and vehicles on roadways adjacent to construction areas. Impacts that are likely to occur would be a disruption of the normal flow of traffic as a result of the movement of construction vehicles and heavy equipment within existing and proposed new right-of-way and temporary lane closures. As such, alternative transportation facilities such as bus turnouts and bicycle lanes may be temporarily impacted. As discussed in Impact 4.11-3, above, these temporary construction-related

impacts would be mitigated with implementation of a Traffic Management Plan (TMP), to be established by SBMWD prior to construction of any improvements. Refer to Mitigation Measure TRA-1, below.

OPERATIONS-RELATED IMPACTS

Water Reclamation Plant, Conveyance Systems, and Recharge Site Improvements

The proposed Project is a water infrastructure project, which is a land use that is not likely to attract large volumes of pedestrian, bicycle, or transit traffic. In addition, the Project does not include any element that would preclude the use of alternative transportation facilities. Conveyance pipelines would be located underground and would not be visible after construction. Aboveground infrastructure components, including the SBWRP and recharge site, are appropriately screened and separated from the adjacent public road rights-of-way, thereby precluding any potential conflict between Project operations and alternative transportation facilities such as sidewalks, bicycle lanes, and bus turnouts. The Project has been designed to comply with all applicable City of San Bernardino transportation policies.

As demonstrated above, the proposed Project would not conflict with adopted policies, plans or programs related to alternative transportation, or otherwise substantially decrease the performance or safety of such facilities, and a less than significant impact would occur.

RIX Phased Discharge Reduction

The RIX Phased Discharge Reduction is an activity that would not require any construction activities. Operational activities associated with RIX Phased Discharge Reduction would not impact any of the transportation facilities identified in Section 4.11.1, above, and on Exhibit 4.11-1. No impacts to alternative transportation facilities are identified as a result of RIX Phased Discharge Reduction.

MITIGATION MEASURES

TRA-1 Refer to Impact 4.11-1 above.

4.11.4 CUMULATIVE IMPACTS

Planned or future projects in the area could consist of many types of development projects ranging from residential/commercial/industrial developments, to projects related to the proposed recharge Project that may occur along the Santa Ana River that would include, but not be limited to, dam projects channel diversion projects, recycled water projects, and various maintenance and improvement projects along the Santa Ana River.

Cumulative impacts in the Project area have been addressed in the City and County General Plan EIRs, as noted in Section 2.7, *Incorporation by Reference*. Concurrent construction of the proposed Project with other projects listed in Section 4.1, *Environmental Analysis*, would contribute to short-term, construction-related cumulative impacts to transportation and circulation in the Project Area; however, these would be confined to the immediate area of the proposed Project and would cease upon completion of construction. With implementation of applicable existing transportation and traffic regulations and incorporation of Mitigation Measure TRA-1 for temporary construction-related impacts, the proposed Project would not create significant new or cumulatively considerable transportation impacts.

The proposed Project would not contribute to long-term operational cumulative transportation impacts because the nature of the proposed water infrastructure land uses are not likely to attract additional vehicular, transit, pedestrian, or bicycle traffic. The conveyance pipelines would be located underground,

and operational activities associated with the SBWRP and recharge site would be confined to the interior of those facilities, away from adjacent public road rights-of-way. Maintenance and operation activities would continue to occur as they currently do; therefore, long-term operation of the Project would not create additional vehicular or truck trips or a demand for new transportation facilities.

4.11.5 SIGNIFICANT UNAVOIDABLE IMPACTS

No significant unavoidable impacts related to transportation and circulation have been identified following implementation of the recommended mitigation.

Section 5.0
Other CEQA Considerations

Section 5.0
Other CEQA Considerations

5.0 CEQA GUIDELINES

CEQA Section 21100(b)(5) specifies that the growth-inducing impacts of a project must be addressed in an EIR. Section 15126.2(d) of the State CEQA Guidelines states that a proposed project alternative is growth inducing if it could "foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment."

Public Resources Code Section 21100(b)(3) and CEQA Guidelines Appendix F require that an EIR evaluate whether a Project would result in the wasteful, inefficient, or unnecessary consumption of energy.

Section 15126.2(b) of the State CEQA Guidelines requires an EIR to "describe any significant impacts, including those which can be mitigated but not reduced to a level of insignificance.

This section of the EIR:

- analyzes the potential environmental consequences of the foreseeable growth and development that could be induced, due to implementation of the proposed Project under CEQA Guidelines Section 15126.2(d);
- evaluates the whether the Project's energy consumption would be wasteful, inefficient, or unnecessary, and describes under CEQA Guidelines Section Appendix F; and.
- Describes any significant impacts of the Project that cannot be reduced to a level of significance under CEQA Guidelines Section 15126.2 (b)

CEQA Guidelines Section 15126.2(c) requires that an EIR discuss the significant irreversible environmental changes that would be involved in a proposed project, should it be implemented. However, this analysis is limited by CEQA Guidelines Section 15127 to the following activities:

(a) The adoption, amendment, or enactment of a plan, policy, or ordinance of a public agency;
(b) The adoption by a Local Agency Formation Commission of a resolution making determinations; or
(c) A project which will be subject to the requirement of preparing an Environmental Impact Statement pursuant to NEPA.

Since the Project does not conform to any of the activities described above, it is not subject to the requirements of CEQA Guidelines Section 15126.2(c), and will not be further evaluated.

5.1 GROWTH-INDUCING IMPACTS OF THE PROPOSED PROJECT

Direct growth inducement would result if a project involved, for example, the construction of new housing. Indirect growth inducement would result if a project established substantial new permanent employment opportunities (e.g., new commercial, industrial, or governmental enterprises), involved a construction effort with substantial short-term employment opportunities that would indirectly stimulate the need for additional housing and services, or removed an obstacle to housing development. Examples of growth-inducing actions include developing water, wastewater, fire, or other types of service areas in areas not previously served; extending transportation routes into previously undeveloped areas; and establishing major new employment opportunities.

Growth-inducing impacts fall into two general categories, direct and indirect. Direct growth-inducing impacts are generally associated with the provision of urban services to an undeveloped area. The

provision of these services to a site, and the subsequent development, can induce other landowners in the vicinity to convert their property to urban uses. Indirect, or secondary, growth-inducing impacts consist of growth induced in the region by the additional demands for housing, goods and services associated with the population increase caused by, or attracted to, a new project.

Among other improvements, conveyance facilities, and recharge, the proposed Project would result in the addition of tertiary and advanced treatment processes at an existing secondary wastewater facility that currently treats 22 mgd of wastewater, and will maintain capacity to projected year 2030 demands of 33 mgd.

5.2 POPULATION AND HOUSING GROWTH

The proposed Project does not include housing of any type and would not directly induce population growth through construction of residential units. In addition, Project construction is expected to draw from the regional labor pool, and not represent a substantial increase in employment for the area that would induce population or housing growth.

Two of the key objectives of the Project are to reduce reliance on SWP water and improve water supply reliability. The project would support water supply for projected growth consistent with regional plans.

Economic Growth

Construction of the proposed Project would be temporary in nature, and due to the extent of the construction requirements, would not directly result in a land use or Project that would generate a substantial number of new jobs or an increase in now housing within the Project area. However, the Project could indirectly support growth by providing needed water supply for development under approved general plans within the Project service area. However, it is assumed that the degree in which the Project would support growth would be nominal, as the recycled water that would be produced under the Project is necessary to replace the supply of recharge water currently lost due to changing climate conditions and reductions in SWP Table A deliveries (refer to the discussion below).

City of San Bernardino General Plan EIR

The *City of San Bernardino General Plan EIR* identifies that the City's population growth anticipated by the year 2025 are greater than those projected by the Southern California Association of Governments (SCAG). As such, the General Plan would result in significant growth inducing consequences with regards to General Plan buildout. The *City of San Bernardino General Plan EIR* identifies that growth accommodated by General Plan buildout would necessitate the expansion of water and wastewater facilities, consistent with the goals of the Clean Water Factory Project. The City of San Bernardino General Plan EIR identifies potential impacts of the General Plan that could not be mitigated to a level below significance and are therefore identified as significant and unavoidable including impacts to air quality, cultural resources, noise, and traffic.

County of San Bernardino General Plan EIR

Based on the *County of San Bernardino General Plan EIR*, the County's population growth anticipated by the year 2030 is consistent with the regional growth forecasts adopted by Southern California Association of Governments. The County also anticipates that there will be an increase in the amount of economic activity resulting from the direction and strategies within the County, which is considered to be growth inducing. The County of San Bernardino General Plan EIR also identifies significant and unavoidable impacts that cannot be mitigated to below a level of significance including impacts to aesthetics, agriculture, air quality, biological resources, hazards and hazardous materials, traffic and circulation.

Upper Santa Ana River Watershed Integrated Regional Water Management Plan

The Upper Santa Ana Water Resources Association members prepared this *Integrated Regional Water Management Plan* (IRWMP). The IRWMP concentrates on water management issues for users within the Upper Santa Ana River Watershed. The purpose of the IRWMP is to fulfill current water management requirements while developing water supply reliability and furthering the use of local and imported resources. Implementation of the IRWMP will assist the region with optimizing the management and use of water resources in the region while protecting water quality from degradation. The IRWMP identifies that demand within the Upper Santa Ana River Watershed IRWMP region will increase by more than 100,000 AFY by the year 2035 and thus will require continued water supply diversification efforts. As such, the Clean Water Factory Project is consistent with the water supply diversification goals of the IRWMP. The IRWMP does not identify growth-inducing impacts.

2010 San Bernardino Valley Regional Urban Water Management Plan

The *2010 San Bernardino Valley Regional Urban Water Management Plan* (2010 UWMP) is a regional water management plan that identifies anticipated regional supplies and demands through the year 2035. The 2010 UWMP includes an analysis of eight water agencies, including SBMWD. The 2010 UWMP incorporates the proposed Clean Water Factory Project into its analysis and identifies the Project as being in the planning stages of development. As described in the 2010 UWMP, SBMWD finds that it does not have sufficient water supply to satisfy service area demands. As such, it is not anticipated that the Clean Water Factory Project would necessarily induce growth, but would instead accommodate the existing service area water needs identified in the 2010 UWMP.

5.3 OBSTACLES TO GROWTH

Several types of projects can induce population growth by removing obstacles that prevent growth. A bridge can be constructed to increase transportation to an area that had no access, therefore the bridge would remove an obstacle to growth, which would be a representation of induced growth. Although the Project does not involve an expansion of the SBWRP beyond its existing rated capacity, the provision of a more reliable water supply source does remove an obstacle to growth and, as such, would potentially/indirectly induce growth.

5.4 ENERGY CONSERVATION

Public Resources Code Section 21100(b)(3) and CEQA Guidelines Appendix F require that an EIR evaluate whether a Project would result in the wasteful, inefficient, or unnecessary consumption of energy. In 1975, the California State Legislature adopted Assembly Bill 1575 (AB 1575) in response to the oil crisis of the 1970s. Appendix F of the State CEQA Guidelines provides guidance for assessing potential impacts that a project could have on energy supplies, focusing on the goal of conserving energy by ensuring that projects use energy wisely and efficiently. Because Appendix F does not include specific significance criteria, this threshold is based on the goal of Appendix F. Therefore, an energy impact is considered significant if the proposed project would:

> *Develop land uses and patterns that cause wasteful, inefficient, and unnecessary consumption of energy or construct new or retrofitted buildings that would have excessive energy requirements for daily operation.*

Short-term Construction

In 1994, the U.S. Environmental Protection Agency (EPA) adopted the first set of emission standards (Tier 1) for all new off-road diesel engines greater than 37 kilowatts (kW). The Tier 1 standards were phased in for different engine sizes between 1996 and 2000, reducing NO_X emissions from these engines by 30 percent. The EPA Tier 2 and Tier 3 standards for off-road diesel engines are projected to further reduce emissions by 60 percent for NO_X and 40 percent for particulate matter from Tier 1 emission levels. Tier 4 standards were established in 2004 and reduce NO_X, PM_{10}, and $PM_{2.5}$ emissions by 90 percent and were phased in between 2008 and 2014. These emissions standards require highly efficient combustion systems that maximize fuel efficiency and reduce unnecessary consumption.

The Project would be constructed in several phases, with the first phase generally over a period of approximately 18 months. Construction would consist of grading, excavating, trenching, pipe installation, placement of backfill, asphalt patching, and the construction of reservoirs, pump stations, and other limited structural improvements. Table 5.0-1, *Construction Fuel Consumption*, provides an estimate of construction fuel consumption for the project based on information provided by the CalEEMod air quality computer model; refer to Appendix 10.3, *Air Quality/Greenhouse Gas Modeling Data*.

Table 5.0-1: Construction Fuel Consumption

Equipment	No.	Horsepower	Load Factor	Fuel Consumption Rate[1] (gallons per hour)	Duration[2] (total hours)	Total Fuel Consumption[3,4] (gallons)
Grading						
Excavators	2	162	0.38	2.46	320	788
Graders	1	174	0.41	2.85	160	457
Rubber Tired Dozers	1	255	0.40	4.08	160	653
Scrapers	2	361	0.48	6.93	320	2,218
Tractors/Loaders/ Backhoes	2	97	0.37	1.44	320	459
Paving						
Paving						
Pavers	2	125	0.42	2.10	160	336
Paving Equipment	2	130	0.36	1.87	160	300
Rollers	2	80	0.38	1.22	160	195
Building Construction						
Cranes	1	226	0.29	2.62	1,610	4,221
Forklifts	3	89	0.20	0.71	5,520	3,930
Generator Sets	1	84	0.74	2.49	1,840	4,575
Tractors/Loaders/Backhoes	3	97	0.37	1.44	4,830	6,934
Welders	1	46	0.45	0.83	1,840	1,524
					TOTAL[4]	***26,588***

Notes:
1. Derived using the following equation:
   Fuel Consumption Rate = Horsepower x Load Factor x Fuel Consumption Factor, Where:
   Fuel Consumption Factor for a diesel engine is 0.04 gallons per horsepower per hour (gal/hp/hr) and a gasoline engine is 0.06 gal/hp/hr.
2. Total hours of duration derived from CalEEMod modeling results; refer to Appendix 10.3, Air Quality/Greenhouse Gas Emissions Data.
3. Total Fuel Consumption calculated using the following equation: Total Fuel Consumption = Duration in Hours x Fuel Consumption Rate
4. Values may be slightly off due to rounding.

Source: Refer to Appendix 10.3, Air Quality/Greenhouse Gas Emissions Data, for CalEEMod assumptions used in this analysis.

Project construction would be associated with three main components (water reclamation plant, conveyance system improvements [pipelines, pump stations, and reservoirs] and recharge sites), with the second phase (construction of the pump stations and reservoir sites) utilizing the most construction equipment. Table 5.0-1 depicts the "worst-case" construction phase with regards to the highest amount of fuel utilized during construction. Construction of the pump stations and reservoir sites would consume a total of approximately 26,588 gallons of fuel. Construction associated with the remaining two components would each consume less than construction of the pump stations and reservoir sites. There are no unusual Project characteristics that would necessitate the use of construction equipment that would be less energy-efficient than at comparable construction sites in the region or State. In addition, the Project would be required to comply with Mitigation Measure AQ-3, which requires all construction equipment to be at least Tier 3 certified. As noted above, these engines use highly efficient combustion engines to minimize unnecessary fuel consumption. Therefore, it is expected that construction fuel consumption associated with the proposed Project would not be any more inefficient, wasteful, or unnecessary than other similar development projects of this nature. A less than significant impact would occur in this regard.

Long-term Operations

The Project consists of adding tertiary/advanced wastewater treatment facilities at the San Bernardino Water Reclamation Plant (SBWRP), as well as a phased reduction at the RIX Facility (proportional to the treatment increase at the SBWRP), for the purpose of providing tertiary/advanced treated recycled water to direct use customers, and existing and potential future groundwater recharge basins. The Project does not include any growth-inducing land uses that increase energy consumption in the community. Rather, the Project would reduce the City of San Bernardino Municipal Water Department's (SBMWD's) dependence on imported water supplies by incorporating a reliable, sustainable, and local source of water to SBMWD's existing water supply portfolio. The Project would aid SBMWD in meeting current and future projected water demands through methods that would also contribute to the groundwater management obligations of the Western Judgment.[1]

As the Project would result in additional pumping and treatment, energy consumption is expected to increase. Operation of the new wastewater treatment facilities would result in an additional 20 million gallons per day (MGD) of advanced and tertiary treatment at the SBMWD, which would result in the use approximately 21,551 megawatt hours (MWh) per year. It should be noted that this additional treatment

[1] It should be noted that SBMWD is considered a non-plaintiff under the Western Judgment. However, this ruling has significant influence on Upper Santa Ana water management and helps to dictate how water resources in the Upper Santa Ana River (where the Project is located) are managed.

would represent a covered activity under the plant's existing rated capacity in order to maintain capacity to Year 2030 demands. For this reason, the SBWRP's increase in energy consumption would not represent a significant impact to energy consumption. In addition, approximately 23,981 MWh per year would be consumed from operation of conveyance system pumps. The various Project Design Features, such as potential solar photovoltaic electricity generation, would also act to minimize the energy consumption required by the proposed Project (refer to Section 4.3, *Air Quality and Greenhouse Gas Emissions*). Furthermore, the discharge amount at the RIX Facility would be reduced from 34.3 MGD to a minimum flow of 13.4 MGD, which would serve to reduce energy consumption by approximately 10,147 MWh per year. Therefore, the increased treatment (and associated energy consumption) proposed at the SBWRP would be offset by the reduction at the RIX Facility. With the implementation of this design feature, the proposed Project would support various energy conservation policies within the City's General Plan as well as the State building codes, GHG reduction targets, and renewable portfolio standard targets. As such, the proposed Project would not result in the inefficient, wasteful, or unnecessary consumption of energy.

5.5 SIGNIFICANT UNAVOIDABLE ENVIRONMENTAL EFFECTS

5.5.1 CEQA GUIDELINES

Section 15126.2(b) of the State CEQA Guidelines requires an EIR to "describe any significant impacts, including those which can be mitigated but not reduced to a level of insignificance. Where there are impacts that cannot be alleviated without imposing an alternative design, their implications and the reasons why the project is being proposed, notwithstanding their effect, should be described."

Sections 4.2 through 4.11 of this EIR describe the potential environmental impacts of the proposed Project and recommend mitigation measures to reduce impacts to a less than significant level, where feasible. After implementation of the recommended mitigation measures, most of the significant impacts associated with the Project would be reduced to a less than significant level. However, the following impacts would remain significant and unavoidable; that is, the identified mitigation measures would not, or might not be sufficient enough, to reduce the impacts to a less than significant level.

5.5.2 PROJECT IMPACTS

Implementation of the proposed Project would result in a significant and unavoidable impact for the following Air Quality and Greenhouse Gas Emissions areas:

- **Regional Construction Related Emissions** – Construction of the project would exceed the SCAQMD daily emission threshold for regional NO_X after implementation of all feasible mitigation measures. Therefore, the construction of the project would have a significant and unavoidable impact on regional air quality. Construction emissions would not exceed the SCAQMD significance threshold for ROG CO, SO_X, PM_{10}, and $PM_{2.5}$.
- **Localized Construction Related Emission** – Construction-related emissions would exceed the SCAQMD localized significance thresholds for PM_{10} and $PM_{2.5}$ after implementation of all feasible mitigation measures. Therefore, construction would have a significant and unavoidable impact on localized air quality.
- **Cumulative Construction Emissions** – As described in Section 4.3, *Air Quality and Greenhouse Gas Emissions*, compliance with SCAQMD rules and implementation of Mitigation Measures AQ-1

through AQ-3 would minimize construction emissions from the proposed Project. However, despite the implementation of these mitigation measures, total construction impacts would not be reduced to a less than significant level (refer to *Air Quality and Greenhouse Gas Emissions*, Table 4.3-7). Therefore, the proposed Project would have a cumulative contribution to air emissions in the region and impacts would be cumulatively considerable in this regard.

If SBMWD approves the Clean Water Factory Project, SBMWD would be required to cite their findings in accordance with Section 15091 of CEQA and prepare a Statement of Overriding Considerations in accordance with Section 15093 of CEQA. Refer to Section 6.0, *Alternatives to the Proposed Action*, for a discussion of alternatives that could reduce potential unavoidable significant impacts. The Project itself represents a local, alternative water supply source for SBMWD and its service area, which reduces dependence on imported water supplies. From an air quality and GHG perspective, the Project is far superior to imported water in terms of energy required to produce and convey the water, and therefore has considerably less indirect emissions than imported water. It should also be noted that cumulative air quality and GHG emissions are regulated by SCAQMD (construction emissions, stationary emissions, and related regulations) and by the Air Resources Board (including mobile vehicle emissions and CAAQS).

5.6 CONCLUSION

Although the Project does not involve an expansion of the SBWRP beyond its existing rated capacity, the provision of a more reliable water supply source may remove an obstacle to growth and, as such, the Project would indirectly induce population growth as wastewater treatment capacity is considered a needed service for development. The Project would also involve significant and unavoidable impacts related to regional construction related emissions, localized construction related emissions, and cumulative construction related emissions. Impacts are considered significant and unavoidable and no mitigation for these impacts are available that would fully reduce the Project's impacts to a less than significant level.

The Project provides an alternative, local water supply source with substantially reduced energy demands in comparison to conventional water supplies such as imported water. The decision to commit these resources to the proposed Project has been determined on the grounds that the SBMWD service area would benefit from Project implementation. Benefits of the proposed Project are consistent with the Project Objectives and include reducing SBMWD's dependence on imported water supply, reducing the need for SWP water, and maximizing the availability of recycled water to local users. As such, these benefits are expected to outweigh SBMWD's commitment of these resources.

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Section 6.0
Alternatives to the Proposed Action

Section 6.0
Alternatives to the Proposed Action

This Section describes a reasonable range of alternatives pursuant to requirements of the California Environmental Quality Act (CEQA), as described further below. The alternatives evaluated (with the exception of the "No Project" Alternative) have each been formulated to accomplish most of the basic Project objectives, as discussed in this Section, while avoiding or substantially lessening one or more of the potentially significant effects of the proposed Project. As described in Section 3.0 of this EIR, the Project has been developed by SBMWD in direct response to local, regional, and State goals to reduce reliance upon imported water and maximize utilization of recycled water resources. Therefore, the "Project" could be viewed as an "alternative" to SBMWD's current water supply portfolio, and is being pursued to mitigate impacts associated with reliance upon imported water and utilization of local groundwater resources.

In addition, it is important to note that the "Project" itself as described throughout this EIR includes multiple "alternatives," in that it includes various options that could be implemented in some combination using a phased approach, based on operational considerations and financial/funding considerations, as well as final facility design and siting determinations. The programmatic nature of this EIR is intended, where noted for Project alternatives still under consideration, to provide an adequate level of environmental analysis such that SBMWD could pursue any combination of the Project alternatives and proceed with regulatory permitting and construction. For example, six conveyance facility scenarios have been developed to analyze the Project's potential conveyance facility alignments and three recharge basin options have been selected for the Clean Water Factory Project. Additionally, several direct use applications are proposed as part of the Project. The Project's proposed conveyance system alternatives, recharge basins, and direct use applications have previously been analyzed based on their overall feasibility as part of the Project (refer to Appendix 10.2.2, *Preliminary Design Report*).

Currently, there are several proposed regional water supply project alternatives within the upper reaches of the Santa Ana River (refer to Exhibit 4.1-1, *Cumulative Projects*). These projects have been the subject of several stakeholder meetings, including those for the *Regional Recycled Water Concept Study*, where SBMWD is an active participating member. The *Regional Recycled Water Concept Study* will identify regional recycled water projects that maximize water supply reliability, water quality, and habitat sustainability. This Alternatives evaluation has incorporated consideration of the *Regional Recycled Water Concept Study* as noted further below.

6.1 CEQA REQUIREMENTS

In accordance with Section 15126.6 of the CEQA Guidelines, this environmental document includes an analysis of alternatives that could feasibly attain most of the basic Project objectives, a review of a "No Project" alternative, an assessment of whether feasible offsite alternatives exist, and a discussion of alternatives considered but determined to be infeasible. CEQA Guidelines Section 15126.6 states that the alternatives analysis must:

- describe a range of reasonable alternatives to the project that could feasibly attain most of the basic objectives of the project but would substantially lessen or avoid any of the significant effects of the project;

- focus on alternatives capable of avoiding or substantially lessening any of the significant environmental impacts of the project, even if they may be more costly or could otherwise impede some of the project's objectives; and
- evaluate the comparative merits of the alternatives.

The focus and definition of alternatives evaluated in this Draft EIR are governed by the "rule of reason," in accordance with Section 15126.6 of the CEQA Guidelines. In addition to the guiding principles for selection of alternatives set forth above, the CEQA Guidelines require that the environmental document evaluate a "No Project" alternative, identify alternatives that were initially considered, but then eliminated from detailed evaluation, and identify the "environmentally superior alternative." This EIR describes and evaluates a "No Project" Alternative (Alternative 1) to provide the decision-makers and the public with an assessment of what could reasonably be expected to occur if the proposed Project were not approved and implemented. This Section also describes various alternatives that were considered, but eliminated from detailed evaluation, because they are infeasible or do not meet most of the basic Project objectives, or both.

CEQA Guidelines Section 15126.6(f) provides that the analysis of alternatives should identify whether any of the potentially significant Project effects would be avoided or substantially lessened by locating the Project in another feasible location. CEQA Guidelines Section 15126.6(f) also states that if the lead agency concludes that no feasible alternative locations exist, it must disclose the reasons for this conclusion. Among the factors that may be taken into account when addressing the feasibility of offsite alternatives are site suitability, economic viability, availability of infrastructure, plan and policy consistency, other regulatory limitations, and whether the Project proponents can reasonably acquire, control, or otherwise have access to the alternative site. Accordingly, this Section provides a discussion of potential offsite alternatives and discussion of whether any of them are feasible.

6.2 PROJECT OBJECTIVES

CEQA Guidelines Section 15124(b) requires that the project description contain a clear statement of the project objectives, including the Project's underlying purpose. As described in Section 3.0, *Project Description*, the objectives identified for the proposed Project include the following:

- Reduce SBMWD's dependence on imported water and establish a safe, reliable, sustainable source of potable water in light of current and potential future drought conditions;
- Reduce the need for SWP water to replenish local groundwater basins by providing an alternate source of recycled, Title 22 treated water;
- Maximize the availability of recycled water to local users;
- Allow SBMWD to effectively address obligations of the Western Judgment; and
- Minimize risk to existing and potential future supply reliability and system operations associated with imported water, regulatory requirements, and other factors.

6.3 SIGNIFICANT UNAVOIDABLE ADVERSE IMPACTS OF THE PROPOSED PROJECT

The Project's potentially significant impacts are set forth in Sections 4.2 through 4.11 of this EIR. As noted in these sections, most of the potentially significant impacts identified can be mitigated to a less than

significant level through implementation of feasible mitigation measures. However, significant and unavoidable impacts could occur as a result of implementation of the proposed Project in the following Air Quality and Greenhouse Gas Emissions areas:

- **Regional Construction Related Emissions** – Construction of the Project would exceed the SCAQMD daily emission threshold for regional NO_X after implementation of all feasible mitigation measures. Therefore, the construction of the Project would have a significant and unavoidable impact on regional air quality. Construction emissions would not exceed the SCAQMD significance threshold for ROG CO, SO_X, PM_{10}, and $PM_{2.5}$.
- **Localized Construction Related Emission** – Construction-related emissions would exceed the SCAQMD localized significance thresholds for PM_{10} and $PM_{2.5}$ after implementation of all feasible mitigation measures. Therefore, construction would have a significant and unavoidable impact on localized air quality.
- **Cumulative Construction Emissions** – As described in Section 4.3, *Air Quality and Greenhouse Gas Emissions*, compliance with SCAQMD rules and implementation of Mitigation Measures AQ-1 through AQ-4 would minimize construction emissions from the proposed Project. However, despite the implementation of these mitigation measures, total construction impacts would not be reduced to a less than significant level (refer to Table 4.3-7, *Maximum Daily Pollutant Emissions During Construction (Mitigated)*). Therefore, the proposed Project would have a cumulative contribution to air emissions in the region and impacts would be cumulatively considerable in this regard.
- **Santa Ana sucker**–The Project identifies a significant unavoidable impact to Santa Ana sucker. It is noted that even with the Project's full implementation of BIO-7, BIO-14, other EIR mitigation measures and Project Design Features noted herein, as well as ongoing SBMWD commitment and participation in the HCP, the sheer listing of Santa Ana sucker in the federal ESA, along with the RIX Phased Discharge Reduction, would result in a significant unavoidable impact to Santa Ana sucker.

6.4 ALTERNATIVES TO THE PROPOSED PROJECT

Based on the purpose of the alternatives analysis as described above, and as prescribed in Section 15126.6 of the State CEQA Guidelines, the following alternatives were selected by SBMWD for evaluation in the EIR.

- Alternative 1: No Project Alternative (rejected from further consideration)
- Alternative 2: Increased Conservation Alternative
- Alternative 3: Reduced Capacity Alternative
- Alternative 4: Project Variations Under Consideration
- Alternative 5: Imported Water Supply Alternative
- Alternative 6: In Lieu Water Supply Alternative
- Alternative 7: Hybrid Alternative
- Alternative 8: Regional Partnership Alternative

The analysis of project alternatives takes into consideration the base assumption that all applicable mitigation measures associated with the Project would be implemented with the appropriate alternatives.

However, applicable mitigation measures may be scaled down to reduce or avoid the potential impacts of the alternative under consideration, and may be modified from those identified for the proposed Project. If a specific impact is not raised within the discussion of an alternative, it is because the effect is expected to be similar to that associated with the implementation of the proposed Project.

6.4.1 PROJECT ALTERNATIVES

SBMWD has considered an array of alternatives to reduce dependence on imported water and establish a reliable, sustainable source of clean water. In compliance with CEQA, an alternatives screening process was undertaken for this Project to fulfill requirements for developing alternatives for analysis in this Draft EIR. The screening methodology used criteria developed from the Project Objectives described in Section 6.2, above.

The alternatives development process was structured so that potential alternatives were systematically identified and then compared to these criteria to ascertain their ability to meet the Project Objectives identified above. SBMWD has considered alternatives identified by stakeholders through the NOP scoping process, as well as ongoing discussion with stakeholders on potential regional water supply solutions. Alternatives passing this screening review were carried forward into this Draft EIR for evaluation of potential environmental impacts. The alternatives evaluated in this EIR focus on project alternatives that could avoid or lessen the identified significant Project environmental impacts while meeting future water demands in a manner consistent with the stated Project Objectives, as described below.

Alternative 1- No Project Alternative

The No Project Alternative (Alternative 1) evaluates the impacts and water supply implications should SBMWD not proceed with the Clean Water Factory Project, and assumes consideration of other available water supply options and increased reliance upon water conservation. Analysis of a No Project Alternative provides decision makers with an additional benchmark against which to compare the magnitude of environmental impacts of the Action Alternatives, as the No Project Alternative represents a "future-without-Project" condition. This alternative represents a continuation of existing conditions for an estimation of the most reasonable future conditions that could occur without implementation of any Action Alternatives, including the Project. The No Project Alternative assumes continued operations of the existing facilities (the SBWRP, the RIX Facility, and the Waterman Basins/East Twin Creek Spreading Grounds and Chino Basin), as described below, in the absence of the SBMWD's proposed Project. Under this alternative, the "current status" would be maintained and potable water would continue to be provided primarily through groundwater utilization. As population growth increases over the long term (2035) and local and regional water supplies continue to be constrained due to prolonged drought and regulatory limitations, the increment of imported water would have to be increased over time as necessary to avoid groundwater overdraft and ensure long term supply.

San Bernardino Water Reclamation Plant (SBWRP). The No Project Alternative considers continuation of operations of the existing SBWRP, which is operated by SBMWD. The SBWRP is a 33 MGD regional secondary treatment facility that provides wastewater treatment services. The facility employs primary and secondary treatment processes to meet the National Pollutant Discharge Elimination System (NPDES) Permit discharge standards specified in RWQCB Permit Number CA0105392 that includes headworks, primary clarifiers, aeration systems with nitrogen removal capabilities, and secondary clarifiers. The secondary treated wastewater is conveyed via a pipeline to the RIX Facility for tertiary treatment; see below. The SBWRP's projected treatment demands are: 28 MGD by 2015; 31 MGD by 2020; and up to 33 MGD by 2035. The SBWRP will be expanded or upgraded to meet projected 2035 demands.

Rapid Infiltration and Extraction (RIX) Facility. The No Project Alternative considers continuation of operations of the existing RIX Facility. SBMWD and the City of Colton are members of a Joint Powers Authority that owns and operates the RIX Facility. The RIX Facility is permitted to treat 40 MGD of secondary treated effluent and discharge up to 64 MGD of tertiary-treated recycled water. It currently receives/treats approximately 27 MGD of secondary-treated effluent, including approximately 5.3 MGD from the City of Colton and approximately 22 MGD from the SBWRP. The RIX Facility currently discharges approximately 31.3 MGD of tertiary-treated recycled water (including 22 MGD from the SBWRP) into Santa Ana River, which flows to the southeastern side of the facility and into Santa Ana River Regulatory Reach 4 (the RIX discharge includes a small amount of groundwater extraction).

The RIX uses natural bio-filtration through percolation basins and ultraviolet disinfection to meet the State of California Title 22 tertiary standards, in addition to NPDES discharge standards specified in the RWQCP. Secondary effluent is applied to percolation ponds, cloth disk filters, and a sand filter. Following filtration by the local soils, filtered effluent is extracted and combined with effluent from the conventional filters (when in operation), then disinfected with ultraviolet light and discharged to the Santa Ana River.

As part of the proposed Project, secondary effluent from the SBWRP to the RIX facility would be reduced from approximately 22 MGD to between 4 and 7 MGD. This proposed action would not occur under the No Project Alternative.

Waterman Basins/East Twin Creek Spreading Grounds (Recharge Basins). The Recharge Basins are owned and operated by the San Bernardino County Flood Control District (SBCFCD) and currently function as flood control facilities.

The Waterman Basins, which encompass approximately 230 acres,[1] capture storm water runoff and are a current recharge location for the Valley District. The estimated 10-year average storm water runoff is 2,100 AFY (1.9 MGD). Valley District also uses the basins to recharge groundwater with State Water Project water (SWP). The estimated Valley District recharge with SWP is 10,700 AFY (9.5 MGD). The total recharge that could be used as dilution water[2] is 12,800 AFY (11.4 MGD).

The East Twin Creek Spreading Grounds, which encompass approximately 170 acres,[1] capture storm water runoff and serves as an overflow for the Waterman Basins. The Spreading Grounds do not currently have a turnout for Valley District recharge using SWP water, although a future turnout is planned. The estimated future 10-year average storm water runoff is 3,900 AFY (3.5 MGD). The estimated future Valley District recharge with SWP is 6,000 AFY (5.3 MGD). The total future recharge that could be used as dilution water is 9,900 AFY (8.8 MGD).

As part of the proposed Project, the Recharge Basins would be used as the groundwater recharge facilities. Total recharge that could be used as dilution water as required by the California Department of Public Health (CDPH) Replenishment Recharge Reuse regulations is estimated at 22,700 AFY (20.2 MGD). (Dilution water is also utilized to meet the Bunker Hill-A Basin water quality objectives.) Under the No Project Alternative, the Recharge Basins would continue to function as flood control facilities with additional SWP recharge by Valley District, but no additional recharge by SBMWD.

[1] The total area of the recharge facility, or gross area, is the parcel surface area.

[2] "Dilution water" is the quantity of "fresh water" (stormwater or SWP water) that can be blended with advanced treated wastewater to comply with state drinking water regulations.

Assumptions and Concepts[3]

- Reductions in water usage from water conservation (SBX-7-7), based on the 2010 UWMP, to be included – (13,574 AF/Y for 2035), augmented as needed to meet the State's mandatory conservation target of 26% for SBMWD.
- Water projected by the UWMP to be provided through recycling (25,500 AF/Y for 2035) would continue to be made up through increased reliance on SWP water (through Valley District, as a SWP contractor) which would be provided at levels necessary to maintain safe yield for the groundwater basins.[4]
- Upgrade of the SBWRP to realize 33 MGD design capacity, implemented to meet long-term treatment needs related to growth.[5]
- This alternative would not include any of the physical improvements identified under the Project or otherwise.

Relationship of No Project Alternative to Project objectives that would/ would not be achieved under the No Project Alternative include:

- **Reduce SBMWD's dependence on imported water and establish a reliable, sustainable source of potable water**: This alternative would not reduce SBMWD's dependence on imported water. The No Project Alternative would not establish a sustainable potable water resource for SBMWD.
- **Reduce the need for SWP water to replenish local groundwater basins by providing an alternate source of recycled, Title 22 treated water**: This alternative would not provide SBMWD with a new source of Title 22 treated water. As such, it would not reduce the need for SWP water to replenish local groundwater basins.
- **Maximize the availability of recycled water to local users**: Under this alternative, SBMWD would incorporate the amount of recycled water specified in its UWMP (25,500 AF/Y for 2035) through increased reliance on SWP water (SWP water would be recharged into existing groundwater recharge basins). However, this method would not maximize available recycled water to local users.
- **Allow SBMWD to effectively address the obligations of the Western Judgment:** This alternative would not effectively address the obligations of the Western Judgment, if SWP water is not available.
- **Minimize risk to existing and potential future supply reliability and system operations associated with imported water, regulatory requirements, and other factors:** The No Project Alternative would not reduce SBMWD's reliance on imported water, as such, it would not minimize risk to existing and potential future water supply reliability and system operations associated with imported water, regulatory requirements, and other factors.

[3] All references to UWMP figures are based on Projected Single-Dry year Supplies and Demand for 2035, unless otherwise indicated.

[4] State Water Project Delivery Capability Report 2015 (July 1, 2015).

[5] The treatment upgrades necessary to accommodate growth would be minor in nature and would not include any of the physical improvements identified under the Project. The 33 MGD design capacity is the existing permitted treatment capacity of the SBWRP.

Conclusion

The No Project Alternative would effectively avoid all potentially significant impacts identified for Project implementation. However, the No Project Alternative would not achieve any of the Project's objectives outlined in Section 6.2, above. The No Project Alternative would not reduce dependence on imported water supplies and, as such, this alternative would likely still retain a significant unavoidable impact to air quality and greenhouse gases due to the large amount of energy required to transport imported water to the SBMWD service area (refer to Section 4.3, *Air Quality and Greenhouse Gas Emissions*). Additionally, this Alternative would not assist SBMWD in increasing local groundwater storage within the Bunker Hill Groundwater Basin.

Alternative 2- Increased Water Conservation Alternative

Under the Increased Water Conservation Alternative (Alternative 2), SBMWD would continue reducing water usage from water conservation (SBX-7-7) based on the 2010 Urban Water Management Plan (UWMP) for 13,574 AFY by 2035, exceeding the State's mandatory conservation target of 26%. Under the Increased Water Conservation Alternative, water projected by the UWMP to be provided through recycling (25,500 AF/Y for 2035) would continue to be made up through increased reliance on SWP water which would be provided by Valley District (a SWP contractor) at levels necessary to maintain safe yield for the groundwater basins, and the SBWRP and RIX Facility would be expanded/upgraded to meet long term treatment needs related to growth (i.e., expanded solids handling, aeration, etc.).

Water Conservation

SBMWD has implemented a number of water demand management tools to maximize the efficiency of local resources in order to reduce the local demand for water, particularly in times of limited supply. Bolstered water conservation measures within the City, financial incentive programs for residents to increase the use of water efficient landscaping methods and other water efficient practices, adoption of drought-tolerant landscaping, as well as other conservation measures have been implemented to reduce water demand within the City. Intensified use of water Demand Management Measures (DMM) and more stringent water use regulations would further reduce water demand within the City.

The *2010 San Bernardino Valley Regional Urban Water Management Plan* developed a water conservation strategy to achieve a reduction in gross water use of 20% by 2020 in order to meet the requirements of the Water Conservation Bill of 2009 (SBX-7-7). The proposed DMMs include residential rebate programs, commercial, industrial, and institutional rebate programs, education programs, water-smart landscaping programs, as well as many others. Based on the findings from the *2010 Urban Water Management Plan*, SBMWD could possibly conserve additional water through the implementation of additional DMMs that were not implemented under the *2010 Urban Water Management Plan*, including leak surveys, rebate programs, as well as others. The City is currently implementing a variety of programs to achieve the State's mandatory water conservation target for SBMWD of a 26% reduction in water usage.

If this alternative were selected instead of the proposed Project, the City would have to increase its water-use conservation target through the use of conservation programs such as those noted above. However, an increase in the percentage of reduction does not equate to a linear increase in cost. Rather, this intensified reduction would be increasingly costly given that the most-easily achievable reductions have been implemented or are already scheduled for implementation.

Assumptions and Concepts[6]

- Reductions in water usage from water conservation (SBX-7-7), based on the 2010 UWMP, to be included – (13,574 AF/Y for 2035), exceeding the State's mandatory conservation target of 26%.
- Water projected by the UWMP to be provided through recycling (25,500 AF/Y for 2035) would continue to be made up through increased reliance on SWP water (through Valley District, as a SWP contractor) which would be provided at levels necessary to maintain safe yield for the groundwater basins.
- Upgrade of the SBWRP to realize 33 MGD design capacity, implemented to meet long-term treatment needs related to growth.[7]
- No new construction related to the proposed Project would be completed.

Relationship of Increased Water Conservation Alternative to Project objectives:

- **Reduce SBMWD's dependence on imported water and establish a reliable, sustainable source of potable water:** The Increased Water Conservation Alternative would reduce SBMWD's dependence on imported water; however, it would not establish a new source of potable water.
- **Reduce the need for SWP water to replenish local groundwater basins by providing an alternate source of recycled, Title 22 treated water:** The Increased Water Conservation Alternative would not generate additional recycled water sources, and therefore would not satisfy this Project Objective.
- **Maximize the availability of recycled water to local users:** The Increased Water Conservation Alternative would not create additional recycled water for local users, and therefore would not satisfy this Project Objective.
- **Allow SBMWD to effectively address the obligations of the Western Judgment:** Under the Increased Water Conservation Alternative, SBMWD would continue to pursue increased water reclamation and water recycling opportunities as they do presently. However, this alternative may not allow SBMWD to effectively uphold obligations of the Western Judgment, in cases where there is inadequate imported water supplies.
- **Minimize risk to existing and potential future supply reliability and system operations associated with imported water, regulatory requirements, and other factors:** Under the Increased Water Conservation Alternative, water needs projected by the 2010 UWMP would continue to be made up through increased reliance on SWP water. As such, the Increased Water Conservation Alternative would not effectively minimize risk to existing and potential future supply reliability and system operations associated with imported water, regulatory requirements, and other factors.

Conclusion

Because it does not involve construction or similar levels of reduced discharge to the Santa Ana River, this alternative would avoid or reduce most of the significant impacts of the Project. For the reasons noted above, this Alternative does not meet the Project Objectives. As demonstrated in SBMWD's 2010 UWMP,

[6] All references to UWMP figures are based on Projected Single-Dry year Supplies and Demand for 2035, unless otherwise indicated.

[7] The treatment upgrades necessary to accommodate growth would be minor in nature and would not include any of the physical improvements identified under the Project. The 33 MGD design capacity is the existing permitted treatment capacity of the SBWRP.

conservation is part of a balanced water supply portfolio, but is itself not adequate to meet future water demands without developing new water supplies like the proposed Project. This is particularly true during the State's extraordinary drought conditions. Increased conservation may also have potential impacts on the Santa Ana River due to reduced flows from the RIX Facility, as reduced demand would generate a reduced supply of effluent water for treatment at the RIX facility. Furthermore, increased conservation would likely result in increased concentration of waste to the wastewater treatment facilities and lower flows through the collection system. This would require increased collection system maintenance, and would likely result in increased sanitary sewer overflows, etc. The increased use of SWP water necessary for this alternative may also adversely affect the groundwater quality of the Bunker Hill Groundwater Basin. For the past two years, SWP water exceeded Bunker Hill A total dissolved solids (TDS) objective of 310 mg/L (335 mg/L and 361 mg/L TDS, for 2015 and 2016, respectively). As Basin water quality degrades, TDS into the SBWRP increases and the treated effluent gets closer to permit limits. If the trend continued, desalting prior to discharge would be required. However, water conservation remains a priority for the City and an essential component of its long-term water supply strategy.[8]

Alternative 3 – Reduced Capacity Alternative

The proposed Project includes a number of phases that would be incrementally implemented in order to reduce impacts to the Santa Ana River hydrology. As such, a phased approach, including various "Reduced Capacity" scenarios, is analyzed across all impact areas throughout the EIR. The Project proposes reducing the RIX discharge into the Santa Ana River over five phases that span a total of 20 years. As noted in Table 6.0-1, *Proposed RIX Discharge Phased Reduction Scenarios*, the gradual reduction of the RIX discharge and increase in advanced treated water for both direct use and indirect potable reuse would allow for a reduced capacity alternative to the proposed Project. For the purposes of the "Reduced Capacity" Alternative, the Project would only operate up to Phase 3. The impact of this reduced Project capacity (resulting in less reduction in RIX discharge) is addressed in detail within the Draft EIR, particularly biological resources and hydrology (Sections 4.4 and 4.7 of the Draft EIR, respectively).[9]

Table 6.0-1: Proposed RIX Discharge Phased Reduction Scenarios

Source	Baseline[2]	Phase 1	Phase 2	Phase 3	Phase 4	Phase 5	Zero[3]
RIX	53.0	44.9	38.4	32.2	26.3	20.8	0
Rialto Drain	9.5						
Model SAR Input	62.5	54.4	47.9	41.7	35.8	30.3	9.5

cfs = cubic feet per second, SAR=Santa Ana River

Notes:

1. The Project assumes phased discharge reduction approach, with additional reductions in discharge occurring every five years.
2. For the model, baseline discharge was based on average RIX discharge measured on October 18-19, 2012. Average discharge was approximately 53 cfs. Annual RIX discharge has varied from 55.7 cfs in 2010 to 48.4 cfs in 2013.
3. The Zero scenario assumes a RIX shutdown, for instance for maintenance, in which case all discharge would come from the Rialto Drain, and a total flow volume of 9.5 cfs is used as a model assumption.

Source: City of San Bernardino Municipal Water Department 2015.

[8] City of San Bernardino Municipal Water Department Website, http://conserve.sbmwd.org/, Accessed February 10, 2016.

[9] The Draft EIR addresses several Project phases, including a Phase 3 scenario. The Project's Phase 3 Scenario is equivalent to this hypothetical "Reduced Capacity" Alternative. As discussed in the Draft EIR (Sections 4.4 and 4.7), Phase 3 implementation would not have any significant biological resource impacts. Although this Alternative reduces the Project's individual and cumulative impact to the Santa Ana River Study Reaches, neither the Project nor the Reduced Capacity Alternative would result in significant Project impacts or "cumulatively considerable" cumulative impacts.

Assumptions and Concepts[10]

- Reductions in water usage from water conservation (SBX-7-7), based on the 2010 UWMP, to be included (13,574 AF/Y for 2035), augmented as needed to meet the State's mandatory conservation target of 26% for SBMWD.
- Water projected by the UWMP to be provided through recycling (25,500 AF/Y for 2035) would continue to be made up through increased reliance on SWP water (through Valley District, as SWP contractor) which would be provided at levels necessary to maintain safe yield for the groundwater basins.
- Upgrade of the SBWRP to realize 33 MGD design capacity, implemented to meet long-term treatment needs related to growth. Construction of the conveyance pipelines and recharge facilities would still be required (although perhaps a reduced capacity project would allow for smaller pipe diameters and a smaller area of recharge basin, these reductions are not anticipated to substantially reduce Project impacts relative to conveyance lines, pump stations and recharge basins due to similar construction footprint and operational requirements).
- RIX discharge would be partially reduced to the Phase 3 scenario, and water not used for recycled water supply would be discharged into the River as it is currently. This would reduce potential adverse effects on the Santa Ana River, although Project impacts are anticipated to be mitigated to less than significant levels (refer to Draft EIR Section 4.4, *Biological Resources*).

Relationship of Reduced Capacity Alternative to Project objectives:

- **Reduce SBMWD's dependence on imported water and establish a reliable, sustainable source of potable water:** While the Reduced Capacity Project Alternative would establish a limited supply of local potable water, it would only partially achieve the objective of reducing dependence on imported water.
- **Reduce the need for SWP water to replenish local groundwater basins by providing an alternate source of recycled, Title 22 treated water:** While the Reduced Capacity Alternative would allow for additional recycled water supply, it would only partially achieve the objective of providing an alternate recycled, Title 22 water supply source.
- **Maximize the availability of recycled water to local users:** The Reduced Capacity Alternative would only partially fulfill the objective to maximize the availability of recycled water.
- **Allow SBMWD to effectively address the obligations of the Western Judgment:** The Reduced Capacity Alternative would only partially address the obligations of the Western Judgment, by providing a portion of the new water supply needed to reduce dependence on SWP.
- **Minimize risk to existing and potential future supply reliability and system operations associated with imported water, regulatory requirements, and other factors:** The Reduced Capacity Alternative would only partially reduce SBMWD's dependence on imported water. As such, it would only partially minimize risk to existing and potential future supply reliability and system operations associated with imported water and regulatory requirements.

[10] All references to UWMP figures are based on Projected Single-Dry year Supplies and Demand for 2035, unless otherwise indicated.

Conclusion

While the Reduced Capacity Alternative would have reduced impacts on the Santa Ana River and recharge basins, conveyance infrastructure would still be required and as such construction impacts would largely remain the same as the proposed Project. Due to the State's extraordinary drought condition and constrained nature of the City's groundwater resources, any reduction in recycled water production would necessitate other water supply alternatives, thereby adding to the impacts of the Reduced Capacity Alternative. The Reduced Capacity Alternative would likely need to be coupled with one or more alternative water supply solutions, such as increased reliance upon imported water. Furthermore, the Reduced Capacity Alternative would not fully achieve the Project Objectives as successfully as the full-scale Project due to the reduced amount of product water that would ultimately be produced by the Project.

Alternative 4- Project Variations under Consideration

SBMWD, along with relevant stakeholders, is considering project variations that could contribute to meeting future water demand and to the management of groundwater supplies throughout the region. In lieu or in supplement to the conveyance facility corridors and groundwater recharge basins analyzed for the proposed Project, there are three additional conveyance and recharge scenarios that could be considered for implementation as part of or in addition to the Project (Geothermal Pipeline, Baseline Feeder, and the Alabama Street Effluent Pipeline and Redlands Recharge Basin). Under this Alternative, there would be similar (no change) in impacts related to RIX discharge and WRP upgrades, as these Project elements would be required for any of these design variations, which focus on alternative concepts for conveyance and recharge. Refer to Exhibit 6.0-1, *Alternative Pipeline Alignments*, for further information on the alternative pipelines and facilities.

Geothermal Pipeline:

The Geothermal Pipeline is an existing 12" to 8" Ductile Iron pipe water line that was intended to be used as a water conveyance facility for a major industrial facility on Tippecanoe Avenue. The pipeline, which is owned by SBMWD but is currently not in operation, could be used to convey advanced treated water from the SBWRP to direct use customers or to local recharge basins. The pipeline runs adjacent to the SBWRP from Orange Show Road, south across the Santa Ana River to Hospitality Lane, east to Waterman Avenue, and then generally northeast along Vanderbilt Way, Carnegie Drive, Brier Drive, Gilford Avenue, and Cooley Court until it terminates at the corner or Cooley Court and Tippecanoe Avenue. Selection of the existing Geothermal Pipeline could reduce the Project's overall construction costs and timeline, while subsequently reducing Project construction impacts due to the use of existing facilities.

Baseline Feeder:

The Baseline Feeder is an existing 78-inch pipeline that connects into the SBMWD conveyance system. The pipeline, which generally spans from the SBWRP north to East 9th Street, could be used to convey advanced treated water from the SBWRP to the Waterman Basins and the East Twin Creek Spreading Grounds for groundwater recharge (avoiding construction of a portion of the product water conveyance pipeline). The pipeline begins at the SBWRP and then proceeds east along Orange Show Road, where it then continues north along Valley View Avenue, Lena Road, Pedley Road, and west along 9th Street until terminating near Wall Avenue. While the Baseline Feeder alignment may require modification prior to operation, selection of this existing alignment would substantially reduce the Project's overall construction activities and would therefore reduce impacts related to construction of conveyance facilities from the SBWRP to the northern recharge facilities.

Alabama Street Effluent Pipeline and Redlands Recharge Basin:

The Alabama Street Effluent Pipeline may serve as a potential future connection of the SBWRP to the Redlands Recharge Basin (or other recharge basins in the vicinity), and would use an existing 36" west-east sewer conveyance line corridor known as the Alabama Street Effluent Pipeline. The Redlands Recharge Basin is owned and operated by the City of Redlands and is located within the City of Redlands service area. The Redlands Recharge Basin is located east of the SBWRP and feeds into the larger Bunker Hill Groundwater Basin. The Redlands Recharge Basin is more specifically located north of the River Bluff Avenue, south of the Santa Ana River, east of the San Bernardino International Airport (SBIA), and west of the Interstate 210. SBMWD would construct this pipeline to the vicinity of the proposed Valley District pipeline in Alabama Street, as described in the SNRC Draft EIR. This alternative assumes the SBWRP recycled water is then conveyed southerly within the existing Alabama Street bridge deck, although the *Regional Recycled Water Concept Study* indicates multiple potential recharge locations for this advance treated recycled water.[11] For this EIR, similar to the Chino Basin Pipeline providing a recharge connection west of SBMWD, this design option would provide a connection point east of SBMWD, allowing connection by others and conveyance of recycled water to the Redlands Basin or other locations.

The Alabama Street Effluent Pipeline would transport water from the SBWRP to the Redlands Recharge Basin. This corridor is approximately 6 miles long and would traverse existing street right-of-way and easement areas, and portions of the SBIA in a west to east fashion, starting at East Dumas Street to South Waterman Avenue, then proceeding to East Central Avenue, along an easement to the SBIA as the pipeline travels in an easterly direction to terminate at the Redlands Recharge Basin on Alabama Street. The existing pipeline may require replacement or rehabilitation, such as pipe bursting, slip lining, or repairs. The condition of the pipeline along with verification of the pipe's pressure class will need to be assessed to ensure that any additional pumping pressure will not affect the pipeline's integrity. Additional temporary construction easements may also be required in specific areas should repairs/replacement be required. The pipeline has existing turnouts into the Santa Ana River which would be retained in order to allow for potential Santa Ana River recharge. An approximately 200-foot section would traverse undeveloped land within the San Bernardino International Airport Authority (SBIAA) habitat conservation area. If necessary, this relatively short pipeline section may be constructed using jack and bore or other trenchless construction methods to avoid sensitive habitat.[12]

The Alabama Street Effluent Pipeline would be extended across the Santa Ana River within the Alabama Street right-of-way, conveying advanced treated water to an existing Redlands Recharge Basin. Refer to Appendix 10.9, *Geotechnical and Geologic Hazard Evaluation*; Appendix 10.10.1, *Habitat Assessment for the Alabama Street Effluent Pipeline/Redlands Basin Alignment Option for the Clean Water Factory Project*; and Appendix 10.10.2, *Cultural Resources Assessment for the Alabama Street Effluent Pipeline*.

Assumptions and Concepts

- The Geothermal Pipeline and the Alabama Street Effluent Pipeline pump station/storage would be located at the SBWRP.

[11] East Valley Water District, *Recycled Water Feasibility Study*, Figure 10-7, Potential Recharge Sites, October 2014, prepared by RMC Consultants.

[12] Note: SBMWD has included this recycled water recharge option consistent with regional recycled water stakeholder discussions. The actual recharge location and end user extraction would be the responsibility of the appropriate municipal entity with recharge authority over the affected basin.

- Construction activities for the Geothermal Pipeline and Baseline Feeder would be less intensive than the proposed Project, as SBMWD would utilize existing water conveyance infrastructure. Construction would occur within existing facilities and public rights-of-way.
- Maintenance and operational impacts related to the Geothermal Pipeline, Baseline Feeder, and Alabama Street Effluent Pipeline would be similar to the activities proposed for the conveyance scenarios under the proposed Project.
- Construction activities for the Redlands Recharge Basin option would be similar to those proposed for the Waterman Basins and East Twin Creek Spreading Grounds options (see discussion above). Construction would occur within existing facilities and public rights-of-way.
- Maintenance and operational impacts related to the Redlands Recharge Basin option would be similar to those proposed for the Waterman Basins and East Twin Creek Spreading Grounds options.

Impacts Compared to the Proposed Project

Aesthetics, Light, and Glare

Geothermal Pipeline and Baseline Feeder

Like the proposed Project, selection of the Geothermal Pipeline and/or Baseline Feeder would temporarily alter the existing visual resources or site character of the Project site and would not result in any new sources of light or glare. However, selection of the existing Geothermal Pipeline and/or Baseline Feeder would generally reduce the Project's overall construction impacts to Aesthetics, Light, and Glare, as construction activities would involve minor improvements to the existing pipelines and would therefore likely occur over a reduced timeframe. Similar to the proposed Project, operation of the Geothermal Pipeline and/or Baseline Feeder would not impact aesthetic resources, as Project infrastructure would be located belowground and aligned within existing public rights-of-way. As such, it is assumed that the Geothermal Pipeline and Baseline Feeder would result in reduced (already less than significant) temporary impacts to aesthetic resources, and comparable less than significant operational impacts to aesthetic resources.

Alabama Street Effluent Pipeline and Redlands Recharge Basin

Similar to the proposed Project, selection of the Redlands Recharge Basin would also temporarily alter the existing visual resources or site character of the Project site and would not result in any new sources of light or glare. As discussed above, construction impacts would be comparable to the proposed Project and would include existing facility modifications and relatively minor site improvements. Operational impacts to Aesthetics, Light, and Glare would also be similar to the proposed Project, as the Redlands Recharge Basin would require similar minor site improvements as those proposed at the Waterman Basins and East Twin Creek Spreading Grounds. As such, the construction and operation of the Redlands Recharge Basin would also result in less than significant impacts to Aesthetics, Light, and Glare.

Air Quality and Greenhouse Gases

Geothermal Pipeline and Baseline Feeder

Under the Geothermal Pipeline and/or Baseline Feeder Alternative, SBMWD would utilize existing pipeline infrastructure to convey product water from the SBWRP to recharge facilities and direct use customers. While these conveyance alignments may require rehabilitation or modification prior to operation (i.e., pipebursting, sliplining, or repairs), selection of these existing alignments would reduce the Project's overall construction activities (due to utilizing existing infrastructure) and would therefore reduce short

term construction impacts to Air Quality and Greenhouse Gases. Similar to the proposed Project, the Geothermal Pipeline and Baseline Feeder Alternatives would not entail long-term impacts to air quality due to the nature of the Project itself.

Alabama Street Effluent Pipeline and Redlands Recharge Basin

Construction activities associated with the rehabilitation and extension of the Alabama Street Effluent pipeline would generally be less intensive than those proposed under the Clean Water Factory Project, as the construction duration and scope of activities would generally be reduced under this option (due to the majority of the alignment utilizing existing infrastructure). As such, it is anticipated that the short-term construction-related impacts to air quality would be reduced under this option. As described above, construction and operation of the Redlands Recharge Basin would generally be similar to the construction and operation activities described for the Waterman Basins and East Twin Creek Spreading Grounds. As such, long-term impacts related to Air Quality and Greenhouse Gases are anticipated to be comparable to those identified for the proposed Project.

Biological Resources

Geothermal Pipeline and Baseline Feeder

Like conveyance alternatives under the proposed Project, construction activities associated with the Geothermal Pipeline and/or Baseline Feeder would be localized within existing paved rights-of-way that are generally devoid of biological resources. Similarly, operations and maintenance activities associated with these two conveyance facilities would involve similar less than significant impacts to biological resources as those identified for the conveyance alignments described for the proposed Project, as they would be infrequent and minor in nature and would occur within existing paved rights-of-way. As such, it is anticipated that the selection of the Geothermal Pipeline and/or Baseline Feeder Alternative would involve less than significant impacts to Biological Resources that are comparable to the proposed Project.

Alabama Street Effluent Pipeline and Redlands Recharge Basin

Selection of the Redlands Recharge Basin would require similar construction and operational activities compared to the Waterman Basins and East Twin Creek Spreading Grounds, and would therefore entail similar potential impacts to biological resources previously identified in this EIR. However, as described above, an approximately 200-foot section of the Alabama Street Effluent Pipeline would traverse undeveloped land within the SBIAA habitat conservation area in order to eventually connect to the existing Redlands Recharge Basin. This alignment would require coordination between SBMWD and SBIAA in order to mitigate any potential impacts to the habitat conservation area. If necessary, this section could be constructed using jack and bore or other trenchless construction methods to avoid sensitive habitat. Refer to Appendix 10.10.1, *Habitat Assessment for the Alabama Street Effluent Pipeline/Redlands Basin Alignment Option for the Clean Water Factory Project*. As this alignment option has the potential to conflict with an adopted habitat management plan, a greater impact is identified as compared to the proposed Project. With mitigation (habitat avoidance or mitigation pursuant to existing regulatory requirements), this alignment is not anticipated to have significant biological resource impacts. The following mitigation measure would be required for implementation of this Alternative, in addition to applicable Project mitigation measures, standard construction measures and existing regulatory requirements:

ASEP-1: San Bernardino Municipal Water Department (SBMWD) shall conduct focused surveys for the Alabama Street Effluent Pipeline alignment, and shall prepare conceptual design plans showing pipeline rehabilitation/replacement sections, staging/laydown areas, pipeline extension to a future connection point in Alabama Street, and any other physical pipeline

modifications necessary. Based on the focused surveys for San Bernardino kangaroo rat and sensitive plants (Santa Ana River woolly star, slender-horned spineflower) and consultation with San Bernardino International Airport Authority (SBIAA) and regulatory agencies, SBMWD shall develop avoidance measures such as trenchless construction, where necessary, to avoid sensitive habitat within the SBIAA. If a federal- or state-listed species occurs within the pipeline alignment, and disturbance cannot be avoided, SBMWD shall consult with the US Fish and Wildlife Service and the California Department of Fish and Wildlife regarding the requirements or the potential need for Incidental Take Permits under Section 7 of the Endangered Species Act or Section 2081 of the Fish and Game Code, respectively, and implement all permit conditions.

Cultural and Paleontological Resources

Geothermal Pipeline and Baseline Feeder

Development of the Geothermal Pipeline and/or Baseline Feeder option would occur in a similar Area of Potential Effects (APE) compared to the one analyzed for the proposed Project; however, construction would be minor in nature and would occur along existing paved rights-of-way where there would be little risk of uncovering cultural or historic resources. Selection of the Geothermal Pipeline and/or Baseline Feeder would follow the same mitigation measures described in Section 4.5, *Cultural and Paleontological Resources*. For this reason, it is likely that the Geothermal Pipeline and Baseline Feeder would have similar less than significant impacts to Cultural Resources as compared to the proposed Project.

Alabama Street Effluent Pipeline and Redlands Recharge Basin

Construction and operation of the Redlands Recharge Basin alternative would be comparable to those proposed for the Waterman Basins and East Twin Creek Spreading Grounds, as construction and operation would mainly occur within existing facilities and would involve minor facility improvements. Additionally, the construction required for rehabilitation of the Alabama Street Effluent Pipeline (with the exception of the 200-foot extension required to connect the existing pipeline to the Redlands Recharge Basin) would occur within existing paved road rights-of-way that would have little risk of significantly impacting cultural, historic, paleontological, or archaeological resources. Activities occurring at the Redlands Recharge Basin the Alabama Street Effluent Pipeline would be subject to the same mitigation measures described in Section 4.5, *Cultural and Paleontological Resources*, and as such, this alternative would also entail less than significant impacts to cultural, paleontological, and historic resources. Refer also to Appendix 10.10.2, *Cultural Resources Assessment for the Alabama Street Effluent Pipeline*.

Hazards and Hazardous Materials

Geothermal Pipeline and Baseline Feeder

Like the proposed Project, selection of the Geothermal Pipeline and/or Baseline Feeder would involve several phases during project construction that would require the transportation, use, or disposal of hazardous materials. Construction activities associated with the Geothermal Pipeline and/or Baseline Feeder options proposed under Alternative 4 would require these materials. However, as the Geothermal Pipeline and Baseline Feeder currently exist and would therefore require less intense construction activities, it can be assumed that the quantities of these materials would be slightly less under this alternative. As such, the Project's less than significant impacts to hazards and hazardous materials would be slightly reduced under this alternative.

Alabama Street Effluent Pipeline and Redlands Recharge Basin

Use of the Redlands Recharge Basin would require similar construction and operational activities compared to the Waterman Basins and East Twin Creek Spreading Grounds, and would have similar potential impacts related to hazards and hazardous materials to those of the Project. Construction activities associated with the rehabilitation and extension of the existing Alabama Street Effluent Pipeline would also require reduced quantities of hazardous materials due to the reduced amount of construction that would be required. Construction and operational impacts related to hazards and hazardous materials would be subject to the same mitigation measures outlined in Section 4.6, *Hazards and Hazardous Materials*. A similar, less than significant impact is anticipated in this regard.

Hydrology and Water Quality

Geothermal Pipeline and Baseline Feeder

Compared to the proposed Project, the Geothermal Pipeline and/or Baseline Feeder alternative would involve more minor construction activities associated with rehabilitation or modification prior to operation (i.e., pipebursting, sliplining, or repairs). Thus either of these existing alignments would reduce the Project's overall construction activities and would therefore slightly reduce the hydrology and water quality impacts related to construction of conveyance facilities from the SBWRP to the recharge facilities and/or direct use sites. The already less than significant construction-related impacts to hydrology and water quality identified by the proposed Project would therefore be further slightly reduced under this Alternative.

Alabama Street Effluent Pipeline and Redlands Recharge Basin

Construction and operational activities associated with the Redlands Recharge Basin alternative would be comparable to those proposed for the Waterman Basins and East Twin Creek Spreading Grounds, as construction and operation would mainly occur within existing facilities and would involve minor facility improvements. Selection of the existing Alabama Street Effluent Pipeline would reduce the Project's already less than significant construction-related impacts to hydrology and water quality, as both construction intensity and duration would be reduced under this alternative. Activities occurring at the Redlands Recharge Basin the Alabama Street Effluent Pipeline would be subject to the same hydrology and water quality mitigation measures described in Section 4.7, *Hydrology and Water Quality*, and as such, this alternative would slightly reduce the Project's already less than significant impacts to hydrology and water quality.

Land Use and Planning

Geothermal Pipeline and Baseline Feeder

As described in Section 4.8, *Land Use and Planning*, the water conveyance infrastructure proposed for the Clean Water Factory Project is anticipated to have no impacts or less than significant impacts with mitigation related to dividing an established community or conflicting with applicable land use plan, policy, or regulation. Construction and operation of the Geothermal Pipeline and Baseline Feeder would be required to comply with the same mitigation measures described under the Clean Water Factory Project and thus this Alternative would yield similar land use impacts to the proposed Project.

Alabama Street Effluent Pipeline and Redlands Recharge Basin

The construction and operational impacts that would occur from use of the Redlands Recharge Basin would be comparable to those identified for the Waterman Basins and East Twin Creek Spreading Grounds. Like the proposed Project, any necessary facility improvements would occur within the Recharge Basin itself, while improvements to the Alabama Street Effluent Pipeline would occur underground within existing street rights-of-way and would therefore have no land use implications. No operational or long-

term impacts to land use would occur under this alternative. Like the proposed Clean Water Factory Project, the Alabama Street Effluent Pipeline and Redlands Recharge Basin Alternative would result in less than significant impacts to land use and planning.

Noise

Geothermal Pipeline and Baseline Feeder

The Clean Water Factory Project would result in less than significant impacts to noise and vibration with mitigation incorporated. Construction activities associated with implementation of the Project would cause increased noise within the immediate vicinity of the Project site, but would be short term in nature and would cease upon end of construction. Due to the reduced scale of construction that would be necessary to install improvements to the existing Geothermal Pipeline and/or Baseline Feeder (due to using existing infrastructure), it can be assumed that these alignment's construction impacts to noise and vibration would be slightly less than those identified under the proposed Project. Like the proposed Project, the operation of these conveyance facilities is not anticipated to significantly impact noise or vibration levels.

Alabama Street Effluent Pipeline and Redlands Recharge Basin

The Redlands Recharge Basin Alternative would have similar construction and operational noise impacts as those identified for the Waterman Basins and East Twin Creek Spreading Grounds, as the Redlands Recharge Basin would require similar construction and would adhere to the same mitigation measures prescribed for the Project. Because the rehabilitation and extension of the Alabama Street Effluent Pipeline would require less intensive construction activities, the construction-related noise and vibration impacts of this alignment would be slightly less than those identified for the proposed Project.

Recreation

Geothermal Pipeline, Baseline Feeder, and Alabama Street Effluent Pipeline and Redlands Recharge Basin

The Clean Water Factory Project would potentially result in the removal of up to 1.4 acres of parkland due to pump station/storage facility siting. However, the impacts that would occur due to Project implementation would be mitigated through Mitigation Measure REC-2, which would require the City of San Bernardino to obtain replacement parkland of equivalent size, value, and function. The Geothermal Pipeline and Baseline Feeder would involve the minor rehabilitation of existing conveyance infrastructure and therefore would not significantly impact parkland facilities. Although minor repairs in addition to a 200-foot pipeline extension would be required for the Alabama Street Effluent Pipeline, construction activities would occur primarily within existing road rights-of-way and would not result in loss of parkland, therefore avoiding potential construction and operational impacts to recreation. As such, recreational impacts would be less than those identified for the proposed Project with implementation of any of these conveyance and recharge alternatives.

Transportation and Circulation

Geothermal Pipeline and Baseline Feeder

The Geothermal Pipeline and Baseline Feeder Alternatives would involve a shorter construction duration than that proposed for the Clean Water Factory Project due to these alternatives' use of existing facilities. As described above, these alternative options would likely only require minimal construction activities associated with the rehabilitation activities that would be necessary for these existing pipelines. As such, this alternative is anticipated to slightly reduce the Project's less than significant temporary impacts to transportation and traffic. Like the proposed Project, selection of the Geothermal Pipeline and/or Baseline

Feeder Alternative would not involve operational impacts to transportation and traffic, as infrastructure would be located underground and would not generate increased trips.

Redlands Recharge Basin and Alabama Street Effluent Pipeline

Selection of the Redlands Recharge Basin would require similar construction activities as those identified for the Waterman Basins and East Twin Creek Spreading Grounds, and would therefore also yield a less than significant impact to transportation and traffic. However, selection of the Alabama Street Effluent Pipeline would slightly reduce the Project's already less than significant short-term impacts to transportation and traffic, as SBMWD could utilize this existing alignment to connect the SBWRP to the Redlands Recharge Basin. As detailed above, minor pipeline rehabilitation and modification procedures may be required, but these would entail a shorter construction duration than identified for the proposed Project, thus decreasing the Project's already less than significant construction-related impacts to transportation and traffic. Like the proposed Project, selection of the Redlands Recharge Basin and Alabama Street Effluent Pipeline would not involve operational impacts to transportation and traffic, as appurtenant infrastructure would be located underground or within existing facilities, and therefore would not generate increased trips.

Relationship of Project Variations under Consideration Alternative to Project objectives:

- **Reduce SBMWD's dependence on imported water and establish a reliable, sustainable source of potable water**: This alternative would not satisfy SBMWD's objective to reduce dependence on imported water and establish a reliable, sustainable source of potable water, because the recharge options proposed under this Alternative do not contribute to the groundwater pumped by SBMWD for potable supply.
- **Reduce the need for SWP water to replenish local groundwater basins by providing an alternate source of recycled, Title 22 treated water**: This alternative would not reduce the need for SWP water to replenish groundwater by providing an alternative source of recycled Title 22 water because the recharge options proposed under this Alternative do not contribute to the groundwater pumped by SBMWD for potable supply.
- **Maximize the availability of recycled water to local users**: This alternative would further enhance the availability of recycled water to local users by providing additional direct use and recharge options.
- **Allow SBMWD to effectively address the obligations of the Western Judgment:** This alternative would assist SBMWD in effectively addressing the groundwater replenishment obligations of the Western Judgment.
- **Minimize risk to existing and potential future supply reliability and system operations associated with imported water, regulatory requirements, and other factors:** As this Alternative would satisfy SBMWD's objective to reduce imported water supplies, this Alternative would also minimize the risk to existing and potential future supply reliability and system operations associated with imported water and regulatory requirements.

Conclusion

Alternative 4 successfully satisfies three of the five identified Project Objectives. However, Alternative 4 would not reduce SBMWD's dependence on imported water, or reduce the need for SWP water, since the groundwater recharge options proposed under this alternative do not contribute to the groundwater supply pumped by SBMWD for potable supply. Additionally, the alignments proposed under Alternative 4 are existing facilities (with the exception of the 200-foot extension of the Alabama Street Effluent

Pipeline), thereby reducing the overall construction impacts and associated air quality impacts that would occur under the proposed Project. Alternative 4 would reduce the Project's construction-related impacts, and would have similar operational impacts as the Project. In the event that all of the options associated with Alternative 4 were implemented, the improvements would be the same as the proposed Project, with the addition of a few pipeline segments in order to provide additional recharge options, and support inter-agency system flexibility. Thus, the cumulative effect of all these elements would be nominal. In addition, all of the mitigation associated with the proposed Project would also apply to this Alternative.

Alternative 5- Imported Water Supply

Under the Imported Water Supply Alternative (Alternative 5), SBMWD would rely on imported water supplies to meet future demand and to manage current groundwater supplies within the Project area. The imported water supplies would primarily originate from the SWP. Since the reliability and availability of imported water can be restricted at times, particularly during the State's current extraordinary drought conditions, water banking could be used to increase water supply reliability. "Banked"[13] imported water would then be "wheeled"[14] to this area through neighboring water agencies. Implementation of this alternative would not preclude future development of Project facilities or other uses at the Project site, subject to applicable discretionary reviews and approvals.

State Water Project

The SWP obtains its supplies from the Sacramento River basin. SWP supplies can be pumped from the northern Sacramento-San Joaquin Delta (Delta) into the North Bay Aqueduct or pumped out of the southern Delta into the California Aqueduct (the majority of SWP water is supplied via the southern Delta). The California Aqueduct conveys water along the San Joaquin Valley and is pumped 1,926 feet over the Tehachapi Mountains where it then divides into the East and West Branches. Both Valley District and WMWD receive SWP water from the East Branch.

The reliability of SWP supplies to be delivered to its contractors in a given year depends largely on the amount of rainfall, snowpack, runoff, water in storage, pumping capacity from the Delta, demand for supply, and legal and regulatory constraints. In 2015, the California Department of Water Resources (DWR) released its *State Water Project Final Delivery Reliability Report 2015* which provides current and future (2035) estimates of water delivery by the SWP. This report includes potential factors that can affect SWP deliveries and include: climate change, sea level rise, restrictions of SWP operations from State and federal regulations protecting endangered and threated species, and vulnerability of delta levees to floods and earthquakes. As of November 2015,[15] DWR estimated that in 2033, SWP deliveries could be 62% of long-term average Table A deliveries, with extended drought periods producing as low as 11% of Table A deliveries.

The Delta ecosystem is currently at risk due to a lack of floodplain habitat, marginalized channels, lost tidal marshes, altered flows, toxic contaminates and nutrients, and invasive species. The Delta provides habitat to approximately 500 plant and animal species including the threatened Delta smelt and endangered Chinook salmon. In 2009, the Delta Reform Act was passed making management of the Delta

[13] Water "banking" refers to the practice of foregoing water deliveries during certain periods, and "banking" either the right to use the foregone water in the future, or saving it for someone else to use in exchange for a fee or delivery in kind.

[14] Water "wheeling" refers to the conveyance of unused water to a receiving water agency by an alternate water provider with excess supplies.

[15] *State Water Project Final Delivery Reliability Report 2015*, Table 6-4, Estimated Average and Dry-Period Deliveries of SWP Table A Water (Existing Conditions, in taf/year) and Percent of Maximum SWP Table A Amount, 4,132 taf/year, page 27.

State policy. The Delta Stewardship Council (DSC) was created as a result of the Delta Reform Act and is tasked with developing a comprehensive management plan for the Delta. The Bay Delta Conservation Plan (BDCP) is a planning process to inform the DSC as it develops the Delta Plan; the BDCP is currently being updated.[16]

The BDCP is a collaborative effort that includes State and federal resource and wildlife agencies, environmental organizations, and water agencies throughout California to address the co-equal goals of providing for the conservation and management of aquatic and terrestrial species, restoring and enhancing Delta habitat, and improving the reliability of water supplies conveyed through the SWP. The BDCP is considering several possible alternatives that would divert water from north of the Delta and convey it around the Delta where it would be pumped for the SWP, which could potentially increase reliability of SWP deliveries.

Rather than going through neighboring water agencies, SBMWD may elect to purchase water from private water rights holders (typically farmers or other water agencies) in Northern and Central California and utilize neighboring water agencies and Metropolitan Water District of Southern California (MWD) facilities to wheel water to its service area. As part of this alternative, SBMWD would be required to pay conveyance fees for use of SWP facilities for delivery of this water. Typically, this water is obtained through SWP facilities, which are a requirement at the point of origination (where the water is coming from) and point of conclusion (where the water will ultimately end up). However, due to Delta export limitations as well as contractual agreements and growing SWP contractors' water demands, the availability of aqueduct capacity for transferring, or "wheeling," non-SWP water is becoming increasingly restricted.

Depending on the specific source(s), imported supplies tend to be higher in TDS and may contain other undesirable constituents requiring treatment prior to introduction into the potable water supply system (see Section 4.7, *Hydrology and Water Quality*). Additionally, SWP water reliability could be jeopardized through natural disasters, including potential earthquake events occurring along the San Andreas Fault.[17]

Colorado River

In 1963, the U.S. Supreme Court reduced California's Colorado River supply to 4.4 million AF/Y. Over the last 10 years, California's annual use of Colorado River water has ranged from 4.5 to 5.2 million AF/Y due to surplus water from Arizona and Nevada. However, Arizona is approaching its apportionment, thereby reducing the likelihood of California receiving unused water in the near future. Of the 4.4 million AF/Y, agricultural entities hold up to 3.85 million AF/Y under water delivery contracts and in previous years have provided unused surplus water for domestic use. It is not anticipated that SBMWD would receive Colorado River water as imported water but rather SWP water.

Water Banking and Water Wheeling

Imported water is not always available in the quantities necessary to meet demand, particularly during peak summer months and/or drought conditions. The concept of water banking is to contract with a water storage district to store or bank imported water in a groundwater aquifer when SWP water is readily available, typically in spring and wet years, and extract groundwater at a later time when demands increase and imported water becomes less available to its contractors. SBMWD does not currently utilize a groundwater banking program. Imported water is typically stored by spreading or injecting the water

[16] Bay Delta Conservation Plan Website, "Environmental Review Process," http://baydeltaconservationplan.com/EnvironmentalReview/EnvironmentalReview/EnvironmentalReview.aspx. Accessed on February 11, 2016.

[17] The SWP aqueduct traverses the San Andreas Fault and other major earthquake faults, and therefore is considered to be at risk to earthquake events.

into an aquifer. Groundwater extraction is accomplished by pumping out groundwater and wheeling the water through private or State-owned facilities to an entity's service area. Currently, SBMWD has water exchange and transfer agreements with several surrounding agencies that are exercised on an as-needed basis. SBMWD would have to contract with the facilities owner(s) to wheel water to the SBMWD service area, for recharge in local recharge basins such as Sweetwater Percolation Basin and Waterman Basin.

SBMWD

SBMWD currently receives 100 percent of its water supplies from the Bunker Hill Groundwater Basin, which is managed in part with Valley District. Imported water supplies available to SBMWD include SWP water purchased from Valley District. SBMWD occasionally purchases imported water, averaging approximately 9 AFY since the 2010 UWMP. SBMWD has an existing and planned agreement of up to 2,000 AFY of SWP water purchased from Valley District. This existing agreement between SBMWD and Valley District could provide the full allotment of 2,000 AFY of SWP water if needed.

This alternative would not provide a reliable long-term water supply solution, as consistently obtaining imported water to meet demands remains uncertain. The City would be purchasing Tier 2 water, which does not have a firm guarantee to receive imported water in the future. To meet project objectives, the City would have to rely on long-term water banking or exchange agreements to meet service area demands and manage groundwater supplies. Reliance upon long-term imported water supply agreements, while potentially meeting short-term needs, would not ensure long-term water reliability, due to uncertainty of imported water supplies (especially given the State's extraordinary drought conditions), and vulnerability to regional conveyance system interruption (for maintenance or repair due to natural disasters). In addition, water banking has its own environmental impact due to the energy required to recharge, maintain, extract and convey the imported water supplies.

Relationship of Imported Water Supply Alternative to Project objectives:

- **Reduce SBMWD's dependence on imported water and establish a reliable, sustainable source of potable water**: The Imported Water Alternative would require SBMWD to purchase imported water and therefore would not achieve the Project Objective of reducing dependence on imported water.
- **Reduce the need for SWP water to replenish local groundwater basins by providing an alternate source of recycled, Title 22 treated water**: Since no aspect of the proposed Project would be constructed, the Imported Water Supply Alternative would not achieve the Project Objective of replenishing the local groundwater basin with Title 22 treated water. Additionally, this Alternative would increase reliability on SWP water. As such, this alternative does not satisfy this Project Objective.
- **Maximize the availability of recycled water to local users**: Under this alterative, SBMWD would satisfy local water demands through increased reliance on SWP water. As such, this Alternative would not maximize available recycled water to local users.
- **Allow SBMWD to effectively address the obligations of the Western Judgment:** Due to the unreliability of imported supplies, this Alternative would not effectively address the groundwater replenishment obligations of the Western Judgment.
- **Minimize risk to existing and potential future supply reliability and system operations associated with imported water, regulatory requirements, and other factors:** As described above, the Imported Water Supply Alternative would increase SBMWD reliability on SWP water. As such, the Imported Water Supply Alternative would not satisfy this Project objective**.**

Conclusion

Alternative 5 would require imported water supplies to meet anticipated demands and as a result would not achieve the Project objective of creating a reliable, sustainable source of potable water for future use due to the uncertainties in securing long-term imported water. Although this Alternative would avoid the physical environmental impacts of the Project, imported water has its own environmental impacts, so this Alternative would not completely avoid the significant impacts of the Project. For the purposes of this EIR, it is assumed that any imported water has already received environmental and regulatory permitting approvals to address such issues as impacts to local groundwater and freshwater resources, construction and operational impacts, and the GHG emission impact of conveying imported water to SBMWD. This alternative would not achieve Project objectives in maximizing local potable water production since it would rely heavily on imported supplies. In addition, this alternative would represent an unreliable system for addressing potential future water supplies, as the ongoing availability and quantity of water supplies from the SWP remain uncertain due to potential climate change implications, sea level rise, restrictions of SWP operations from State and federal regulations protecting endangered species, and vulnerability of Delta levees and conveyance facilities to floods and earthquakes. Therefore, notwithstanding other concerns noted above, this Alternative could only meet a small fraction of the projected additional water supplies necessary for the City to meet future water demands, even with conservation and recycling.

Alternative 6- In Lieu Water Supply Alternative

An "In Lieu" Water Supply Alternative (Alternative 6) has been suggested by downstream Santa Ana River stakeholders. Under Alternative 6, no reduction would be made by SBMWD to the current flows to RIX/Santa Ana River from the SBWRP, resulting in a "loss" of recycled water for SBMWD (as recycled water that would have been diverted for direct use and recharge as part of the Project would instead be allowed to continue to be discharged to the Santa Ana River). This water supply "loss" would hypothetically be offset by SBMWD obtaining agreements either with Orange County Water District (OCWD) or other downstream entities to finance and secure an "In Lieu" imported water supply to replace the 23.3 MGD (26,100 AFY) that SBMWD would have recovered for recharge/recycling under the proposed Project. Although there are a myriad of different methods that could be utilized to provide water "in lieu" of Project water under the SBMWD control, all such methods would likely involve imported water from outside the SBMWD service area. Increases in In Lieu supply could be phased over time and would, at a minimum, need to provide a reliable supply of water necessary to offset groundwater overdraft of the basins that would otherwise occur.

As an example, SBMWD could consider initiating a water wheeling agreement with a proposed coastal desalination facility by setting up an agreement such that the coastal water district transfers its unused capacity through an existing SWP connection to SBMWD. OCWD is currently exploring a seawater desalination agreement with Poseidon Water (the Huntington Beach Desalination Project, which has yet to receive its final regulatory approvals), and could potentially wheel its existing SWP water supplies to SBMWD. Under this hypothetical scenario, SBMWD could receive wheeled OCWD SWP water through a sub-agreement with neighboring SBVMWD (a local SWP contractor), and could receive a share of SWP water via minor modifications to existing SBVMWD SWP turnout facilities. Other potential means of obtaining "In Lieu" imported water supplies could include transferring SWP water allocations or securing long-term contracts through water exchange agreements.

Consideration of an In Lieu Water Supply Alternative represents a variety of potential challenges for SBMWD. These include:

- uncertainty in actually securing long-term offsetting water supplies through multi-party agreements, which typically require months if not years of complex transaction negotiation and approvals;
- uncertainty in the reliability of long-term imported water supply agreements given the State's extraordinary drought conditions and continued regulatory constraints upon imported water;
- foregoing utilizing a locally-controlled water supply, in conflict with numerous local, regional and State policies to maximize utilization of recycled water; and
- uncertain future regulatory risk and long-term obligations toward maintaining the full RIX Facility discharge.

Assumptions and Concepts[18]

- Upgrade of the SBWRP to realize 33 MGD design capacity, implemented to meet long-term treatment needs related to growth. Reductions in water usage from water conservation (SBX-7-7), based on the 2010 UWMP, to be included (13,574 AFY for 2035), augmented as needed to meet the State's mandatory conservation target of 26% for SBMWD.
- Modifications to SWP turnout facilities to convey in-lieu water and potential extension of conveyance facilities to allow recharge in larger Santa Ana River storage basins on behalf of SBMWD may be necessary.
- Site improvements at the Waterman Basins, East Twin Creek Spreading Grounds and/or similar recharge basins may be necessary to accommodate additional recharge flows, consistent with the Project goals of groundwater recharge.
- A component of the Project (as identified in the 2010 Petition for Change) includes identification of the future connection of the RIX Facility to the Chino Basin, which would support the conveyance of available SBWRP water that would otherwise be discharged to the Santa Ana River. Such water could then be exchanged for In-Lieu water from other sources. This component could be utilized under this alternative.

Relationship of In Lieu Water Supply Alternative to Project objectives:

- **Reduce SBMWD's dependence on imported water and establish a reliable, sustainable source of potable water**: This alternative would not reduce SBMWD's dependence on imported water. The In Lieu Alternative would not establish a sustainable potable water resource for SBMWD, as full SWP deliveries may not be guaranteed during dry years.
- **Reduce the need for SWP water to replenish local groundwater basins by providing an alternate source of recycled, Title 22 treated water**: This alternative would not provide SBMWD with a source of recycled Title 22 treated water. As such, it would not reduce the need for SWP water to replenish local groundwater basins.
- **Maximize the availability of recycled water to local users**: Under this alternative, SBMWD would purchase In Lieu water supplies from OCWD or other entities to make up for the 23.3 MGD of water that the Project would have provided. Therefore, this alternative would not maximize available recycled water to local users.

[18] All references to UWMP figures are based on Projected Single-Dry year Supplies and Demand for 2035, unless otherwise indicated.

- **Allow SBMWD to effectively address the obligations of the Western Judgment:** The In Lieu Water Supply Alternative would not effectively allow SBMWD to address the groundwater replenishment obligations of the Western Judgment, as SWP deliveries may not be guaranteed during dry years.
- **Minimize risk to existing and potential future supply reliability and system operations associated with imported water, regulatory requirements, and other factors:** This alternative would not reduce SBMWD's dependence on imported supplies. As such, it would not minimize the risk to existing and potential future supply reliability and system operations associated with imported water, regulatory requirements, and other factors.

Conclusion

This alternative would reduce the Project's potential impacts to the federally endangered Santa Ana sucker and associated habitat and species in the Santa Ana River; however, under the proposed Project these impacts would be phased, monitored and fully mitigated to less than significant levels as discussed in the EIR Section 4.4, *Biological Resources*. In addition, this alternative's potential reduction in the Project's Santa Ana River impacts would be offset by this alternative's contribution toward impacting biologically sensitive habitat and species in other surface water sources such as the Sacramento-San Joaquin Delta. This alternative could reduce the Project's unavoidable significant impacts of construction-related greenhouse gas emissions (and other impacts related to the Project's physical construction footprint) due to overall reduced construction and avoiding the more GHG-intensive advanced water treatment components of the Project. However, the Project's air quality and GHG impacts would not be avoided and would likely remain significant, due to the various improvements anticipated to be required to convey, store, recharge and/or pump the imported water to SBMWD end users, as well as the additional GHG impact of conveying imported water long distances, especially if the source water is SWP.

Alternative 7 – Hybrid Alternative

This alternative would combine components of the Reduced Capacity Alternative (Alternative 3) and the In Lieu Water Supply Alternative (Alternative 6). Thus, under the Hybrid Alternative (Alternative 7), SBMWD would implement a reduced capacity scenario, consistent with the description for Alternative 3, plus utilize an in lieu mechanism to obtain imported water consistent with the potential mechanisms described in Alternative 6, in order to ultimately achieve the water volume consistent with Phase 5 of the proposed Project. The effects of this combined alternative is evaluated in discussion of Alternative 3 and 6, and would result in a slight reduction in operational impacts compared to the proposed Project, associated with a smaller discharge reduction.

Alternative 8- Regional Partnership

Under the Regional Partnership Alternative (Alternative 8), SBMWD and Valley District would partner on recycled water conveyance and recharge facilities to reduce net construction impacts and cost. Note that while SBMWD has had preliminary discussions with Valley District and EVWD regarding this concept, this remains a conceptual arrangement that has yet to be discussed in detail or agreed upon by all parties. Valley District approved the SNRC Project on March 15, 2016.[19] The SNRC (summarized further below) includes up to 10 MGD of advanced treated wastewater proposed for conveyance southerly from the SNRC treatment plant to the existing Redlands Recharge Basin. Alternative 8 envisions that, to provide additional conveyance and recharge options, Valley District could, in addition to the proposed SNRC,

[19] San Bernardino Valley Municipal Water District, *Sterling Natural Resources Center Draft EIR*, December 2015, and *Final EIR,* March 2016, prepared by ESA Associates.

convey the SNRC recycled water westerly in new conveyance pipelines (within existing streets) to tie into the proposed Clean Water Factory Project recycled water conveyance system. From this connection, the SNRC recycled water would be combined with Project recycled water and conveyed to the East Twin Creek Spreading Grounds and Waterman Basins for recharge. The net effect of this Alternative would be to construct a relatively short pipeline segment to connect the proposed Clean Water Factory Project facilities with the proposed SNRC project facilities, and thereby share regional recycled water facilities with SBMWD from the Baseline Feeder northerly to the recharge basins. Although the combined net effect of this Alternative would be slightly greater than the two individual projects (due to adding a short pipeline segment), this additional impact is de minimis, as the pipeline would be within existing streets. Such short pipeline segments for purposes of connecting water agency systems are often exempted from CEQA.

Sterling Natural Resource Center

Valley District's proposed SNRC Project involves the construction and operation of a water treatment facility (SNRC), upgrades to an existing wastewater collection system, a treated effluent conveyance system, and discharge facilities. The proposed location for the SNRC is an approximately 20-acre parcel of undeveloped land just north of the SBIA and east of City Creek. Tertiary effluent produced at the SNRC would be conveyed in existing rights-of-way along East 6th Street to Alabama Street to continue to the existing Redlands Recharge Basins for groundwater recharge. Pipelines would also be installed to convey water for discharge into City Creek.

Implementation of Alternative 8 would necessitate an agreement between SBMWD and Valley District to combine the two projects' conveyance and recharge infrastructure. Connecting the SNRC Project and Clean Water Factory Project would have similar overall construction and operational impacts, and the two projects could effectively share water conveyance and groundwater recharge infrastructure. The assumptions and concepts analyzed under this alternative are detailed below.

Assumptions and Concepts[20]

- No changes to the Clean Water Factory Project would occur, although the Regional Partnership may reduce the need for SBMWD to pursue various other Project conveyance or recharge options described in this EIR.
- The SNRC Project would convey treated wastewater westerly in addition to its proposed southerly route, adding a short segment of pipeline construction corridors.
- Valley District and SBMWD would share conveyance infrastructure, thus providing increased operational flexibility to maximize utilization of scarce water resources.

Relationship of Regional Partnership Alternative to Project objectives:

- **Reduce SBMWD's dependence on imported water and establish a reliable, sustainable source of potable water**: This alternative would reduce SBMWD's (and Valley District's) dependence on imported water. Alternative 7 would establish a sustainable potable water resource for SBMWD.
- **Reduce the need for SWP water to replenish local groundwater basins by providing an alternate source of recycled, Title 22 treated water**: This alternative would provide SBMWD with a source of recycled Title 22 treated water. As such, it would reduce the need for SWP water to replenish local groundwater basins.

[20] All references to UWMP figures are based on Projected Single-Dry year Supplies and Demand for 2035, unless otherwise indicated.

- **Maximize the availability of recycled water to local users**: Under this alternative, SBMWD would partner with Valley District to provide recycled water to local users. Therefore, this alternative would maximize available recycled water to local users.
- **Allow SBMWD to effectively address the obligations of the Western Judgment:** This alternative would aid SBMWD (and Valley District) in addressing the obligations of the Western Judgment. As such, this Project Objective would be satisfied.
- **Minimize risk to existing and potential future supply reliability and system operations associated with imported water, regulatory requirements, and other factors:** As this alternative would reduce SBMWD (and Valley District's) dependence on imported water supplies, it would also minimize risk to existing and potential future supply reliability and system operations associated with imported water, regulatory requirements, and other factors.

Conclusion

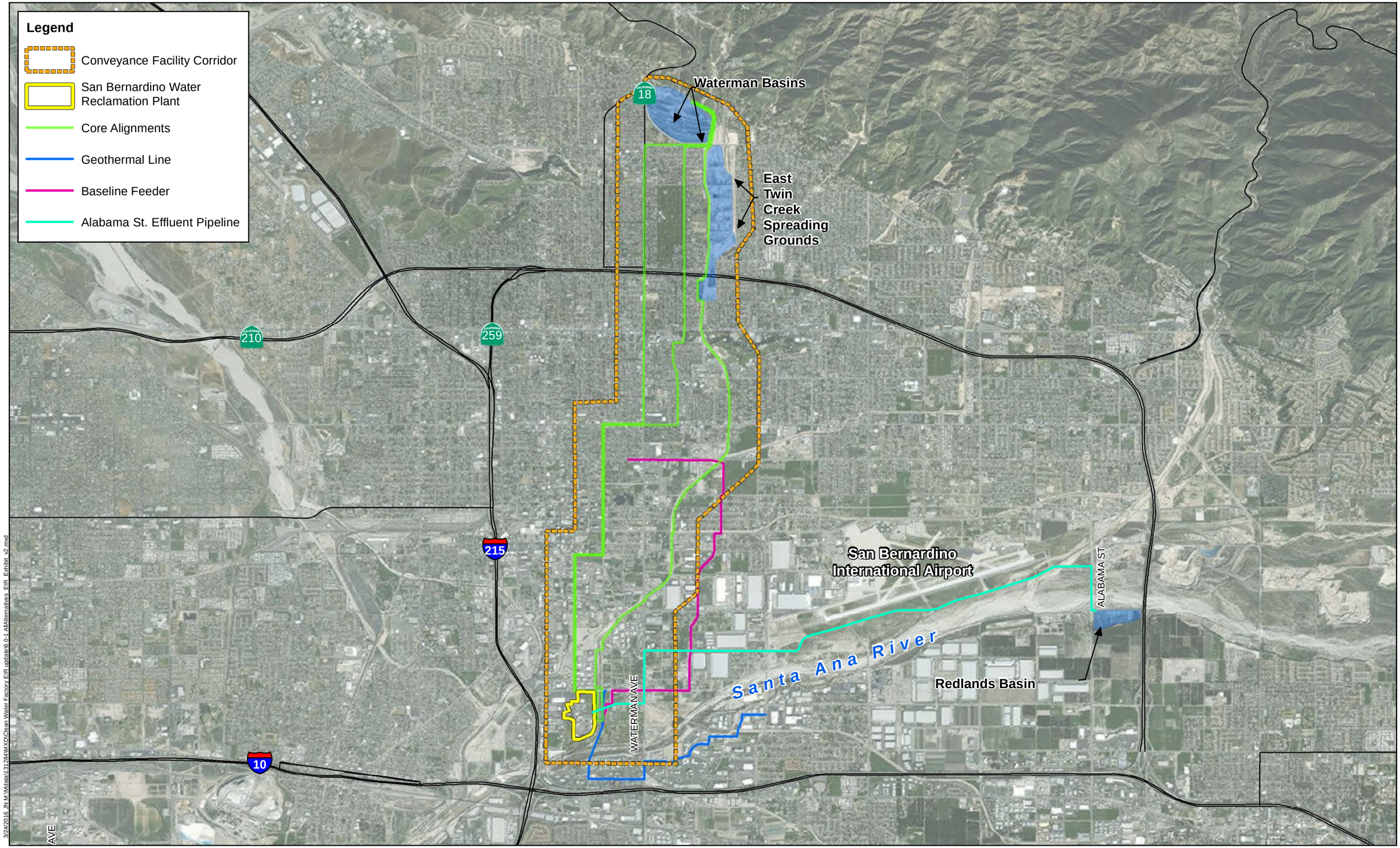
SBMWD would consider implementation of the Regional Partnership Alternative at the request of Valley District or other Santa Ana River stakeholders. Alternative 8 would satisfy the Project Objectives identified above. The construction-related and operational impacts across all environmental topic areas would likely be similar under this Alternative, as the project would involve shared conveyance facilities and recharge basins.

6.5 ENVIRONMENTALLY SUPERIOR ALTERNATIVE

The Reduced Capacity Alternative (Alternative 3) is an environmentally superior alternative to the proposed Project.

The Hybrid Alternative (Alternative 7) would result in a slight reduction in impacts compared to the propose Project, and is therefore, considered an environmentally superior alternative.

The Imported Water Supply Alternative (Alternative 5) also is an environmentally superior alternative to the proposed Project. The Imported Water Supply Alternative is also environmentally superior when compared to the other alternatives evaluated herein, and therefore, is considered *the* environmentally superior alternative.



Michael Baker INTERNATIONAL

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Source: ESRI World Imagery

CLEAN WATER FACTORY PROJECT EIR

Alternative Pipeline Alignments

Exhibit 6.0-1

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Section 7.0
Effects Found Not to be Significant

Section 7.0
Effects Found Not to be Significant

In the course of this evaluation, certain impacts of the Project were found to be less than significant due to the inability of a project of this scope to create such impacts or the absence of project characteristics producing effects of this nature. The following section provides a brief description of effects found not to be significant or less than significant based on the analysis conducted through the EIR preparation process. Several issues indicated as "No Impact" or "Less than Significant Impact" are nonetheless addressed in this Draft EIR as a matter of clarification or convenience for the reader.

7.1 AGRICULTURAL AND FORESTRY RESOURCES

a) Would the proposed Project convert Prime Farmland, Unique Farmland or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use? ***Level of Significance: No Impact.***

The Project area does not contain Prime or Unique Farmland as designated by California's FMMP. The only farmland of any Statewide Importance in the Project area, a 10-acre site at 6th Street and Pedley Road, would be approximately 370 feet east of pipeline Alignment 1 option. As this is the closest any construction activities would occur to this parcel, currently a community garden, the temporary construction activities associated with the implementation of the Project would have no impact.

b) Would the proposed Project conflict with existing zoning for agricultural use, or a Williamson Act contract? ***Level of Significance: No Impact.***

According to the County of San Bernardino Zoning Map[1] and City of San Bernardino Zoning Map,[2] the Project area is zoned with a mix of commercial, office, public/institutional, single- and multi-family residential and industrial. No parcels within the Project area are zoned Agriculture. As shown on the San Bernardino County Williamson Act map,[3] there no lands within the Project site or vicinity under a Williamson Act contract. Therefore, construction and operation of Project would not conflict with existing zoning for agricultural use, or a Williamson Act contract. No impact is identified.

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[1] County of San Bernardino County. Interactive Zoning Layers. 2014. http://sbcounty.maps.arcgis.com/apps/OnePane/basicviewer/index.html?appid=b3a8d3286a6b41d7ad2b80e871a4e048. Accessed December 16, 2014.

[2] City of San Bernardino. Zoning Map. 2014, https://www.ci.san-bernardino.ca.us/civicax/filebank/blobdload.aspx?blobid=15890. Accessed December 16, 2014.

[3] Department of Conservation, Division of Land Protection. San Bernardino County Williamson Act Map (2012/2013). ftp://ftp.consrv.ca.gov/pub/dlrp/wa/sanbernardino_so_12_13_WA.pdf. Accessed December 15, 2014.

c) Would the Project conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))? *Level of Significance: No Impact.*

According to the County of San Bernardino Zoning Map[4] and City of San Bernardino Zoning Map,[5] the Project area is zoned with a mix of commercial, office, public/institutional, single- and multi-family residential and industrial. No parcels within the Project area are zoned Agriculture or Forestry. Construction and operation of the Project would not result in the conversion of forestry lands or zoning of forestry lands to non-forestry uses. Therefore, construction and operation of the Project would not conflict with existing zoning for forestry or timberland production. No impact is identified.

d) Would the Project result in the loss of forest land or conversion of forest land to non-forest use? *Level of Significance: No Impact.*

As noted previously, there are no forest lands within the Project site or vicinity. As such, construction and operation of the proposed Project would not result in the loss of forest land or conversion of forest land to non-forest use. No impact is identified.

e) Would the Project involve other changes in the existing environment which, due to their location or nature, could result in the conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use? *Level of Significance: No Impact.*

Construction and operation the proposed Project would not result in changes to the environment that would otherwise result in conversion of agricultural lands or forest lands within San Bernardino County and vicinity to non-agricultural and non-forest uses. No impact is identified.

7.2 GEOLOGY, SOILS, AND SEISMICITY

a) Would the Project result in a significant risk of loss, injury, or death resulting from the:

- **rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault;**
- **strong seismic ground shaking;**
- **seismic-related ground failure, including liquefaction; and/or**
- **landslides?**

Level of Significance: Less Than Significant Impact.

The proposed Project would not increase geological risks, including the risk of loss, injury, or death involving earthquake fault rupture, seismic ground shaking, seismic-related ground failure including liquefaction, or landslides. Several Project components currently exists and are operational (i.e., San Bernardino Water Reclamation Plant, RIX Facility, Recharge Basins), and the proposed Project would primarily involve modifications to these existing facilities. Additionally, the Project does not propose any

[4] County of San Bernardino. Interactive Zoning Layers. 2014. http://sbcounty.maps.arcgis.com/apps/OnePane/basicviewer/index.html?appid=b3a8d3286a6b41d7ad2b80e871a4e048. Accessed December 16, 2014.

[5] City of San Bernardino. Zoning Map. 2014, https://www.ci.san-bernardino.ca.us/civicax/filebank/blobdload.aspx?blobid=15890. Accessed December 16, 2014.

new habitable structures, further reducing the risks of loss, injury, or death as a result of Project implementation.

Proposed improvements to the Water Reclamation Plant and the proposed conveyance facilities would be implemented in compliance with the California Building Code and requirements of the *City of San Bernardino General Plan*, resulting in less than significant impacts. Additionally, the *Geotechnical and Geologic Hazard Evaluation Report* prepared by Converse Consultants found that the proposed conveyance alignment options are generally suitable for the proposed conveyance facilities and that the proposed improvements are feasible within the Project Area, subject to the findings and recommendations of site-specific subsurface geotechnical investigations (Appendix 10.9). For these reasons, there are less than significant impacts associated with the risk of loss, injury, or death involving earthquake fault rupture, seismic ground shaking, seismic-related ground failure including liquefaction, or landslides.

b) Would the Project result in substantial soil erosion or loss of topsoil? *Level of Significance: Less Than Significant Impact.*

Facility improvements to the SBWRP and Recharge Basins may require some earth moving in the construction process within their existing facility footprints; however, the Project would implement Best Management Practices to limit storm water run-off and erosion control would therefore limit impacts by the proposed improvements to a less than significant impact in regard to soil erosion. Additionally, improvements to the Recharge Basins would be required to prepare a Stormwater Pollution Prevention Plan in compliance with the NPDES permitting process. The SBWRP, Recharge Basins, and RIX Facility would all operate in a manner consistent with their current use and within their current footprint and would not result in significant operational impacts to soil erosion or loss of topsoil. No impact would occur in this regard.

The Conveyance System infrastructure improvements necessary for Project implementation would be constructed within previously disturbed urbanized areas. Conveyance pipelines would be buried primarily beneath existing roadways or flood control maintenance roads within existing rights-of-way. Excavation and trenching is involved in the construction process for the conveyance systems which results in the stockpiling of soil that, if not properly managed, could erode during rain events. The implementation of Best Management Practices to limit storm water run-off and erosion control would therefore limit impacts by the construction of conveyance systems to a less than significant impact in regard to soil erosion. The operation of proposed conveyance systems would not result in increased erosion. Any maintenance work on the conveyance system would be done by implementing best management practices for soil and water-run off. As such, a less than significant impact would occur.

c) Would the Project be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the Proposed Project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse? *Level of Significance: Less Than Significant Impact.*

Facility improvements necessary for the proposed Project would occur primarily within existing facilities (i.e., Water Reclamation Plant and Recharge Sites). The SBWRP and Waterman Basins and Twin Creek Spreading Grounds are located in an area designated by San Bernardino County as being highly susceptible to liquefaction. However, the proposed improvements to the Water Reclamation Plant, as well as those necessary for the Recharge Sites, would be implemented in compliance with the California Building Code and requirements of the *City of San Bernardino General Plan*, which require development to meet performance standards designed to minimize risk of damage from liquefaction. As a result, the Project

would result in less than significant impacts associated with the risk of landslides, lateral spreading, liquefaction or collapse of soils.

The conveyance system infrastructure improvements would be constructed within previously disturbed urbanized areas. The southernmost portions of the conveyance facilities, connecting to the SBWRP, are located in an area designated by the County of San Bernardino has having high susceptibility to liquefaction. This susceptibility decreases as the groundwater becomes less shallow as the alignment moves northward. The proposed conveyance facilities would be implemented in compliance with the California Building Code and requirements of the *City of San Bernardino General Plan*, resulting in less than significant impacts associated with the risk of landslides, lateral spreading, liquefaction or collapse of soils. The Project would not have operational impacts in regards to landslides, lateral spreading, liquefaction, or collapse of soils, as each Project component would be consistent with existing uses. The RIX Facility Flow Reduction and Direct Use Customers would not result in an impact related to landslides, lateral spreading, liquefaction, or soil collapse. Overall, a less than significant impact would occur.

d) Would the Project be located on expansive soils, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property? *Level of Significance: Less Than Significant Impact.*

Improvements to the SBWRP and Recharge Basins would be located within the footprint of the existing facilities. These improvements would be minor in nature. The SBWRP, Conveyance Systems, and Recharge Sites are located in an area classified by the USDA as nonplastic or slightly plastic. Based on these classifications, the soils within these Project components are anticipated to be very low expansive. The RIX Facility Flow Reduction and Direct Use Customers components would not result in impacts related to expansive soils. Less than significant impacts would occur in this regard.

e) Would the Project have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water? *Level of Significance: No Impact.*

No aspect of the proposed Project would involve the use of septic tanks or alternative wastewater disposal. No impacts would occur in this regard.

7.3 INDIAN TRUST ASSETS

a) Would the Project result in loss, damage, unlawful alienation, waste, or depletion of Indian Trust Assets? *Level of Significance: Less Than Significant Impact.*

Construction and operation of the proposed Project would not occur on any Tribal land, including the federally-recognized San Manuel Indian Reservation, and none of the proposed water resource infrastructure facilities are located on Tribal land. In addition, construction and operational activities would not block access to the Reservation. Because the Reservation's water supply currently comes from EVWD, the RIX phased discharge reduction as proposed by SBWMD would not result in impacts to the San Manuel Indian Reservation. Therefore, Project implementation would not result in adverse impacts to the San Manuel Indian Reservation, and would not result in loss, damage, unlawful alienation, waste, or depletion of the Reservation. Refer to Section 4.5, *Cultural and Paleontological Resources*, for additional discussion regarding Native American resources.

b) Would the Project result in loss of treaty-based fishing, hunting, gathering, or similar rights of access and resource use on traditional tribal lands? *Level of Significance: No Impact.*

Refer to the discussion above. Project implementation would not impact the San Manuel Indian Reservation, a federally recognized ITA, located approximately 2.3 miles due east of the East Twin Creek Spreading Grounds near the City of Highland. Much of the surrounding area is generally urbanized and does not retain resources that support hunting, fishing, and gathering activities. Therefore, such traditional uses are not supported within the Project area and no impact would occur in this regard.

As the Reservation's water supply currently comes from EVWD, the RIX Phased Discharge Reduction would not result in impacts to the San Manuel Indian Reservation. In addition, much of the surrounding area is generally urbanized and does not retain resources that support hunting, fishing, and gathering activities. Therefore, such traditional uses are not supported within the Project area and no impact would occur in this regard.

7.4 MINERAL RESOURCES

a) Would the Proposed Project result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state? *Level of Significance: Less Than Significant Impact.*

The implementation of the proposed Project would involve construction in three different areas: the existing Water Reclamation Plant, along one of several identified conveyance system alignments, and at the retention basins which would ultimately store the recycled water resulting from the Project. Project implementation would occur within existing facilities, and necessary facility improvements would be consistent with existing uses. The only Project component that is likely to contain mineral deposits is the SBWRP, which includes areas classified as MRZ-2 and MRZ-3. However, the potential impact to mineral resources from the construction and operation of these improvements is anticipated to be less than significant due to the typically developed or disturbed nature of the affected land, the unlikelihood of the limited undeveloped areas to be utilized for mineral extraction, and relatively limited footprint of the improvements. Less than significant impacts would occur in this regard.

b) Would the Proposed Project result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan? *Level of Significance: No Impact.*

According to the General Plans of both the City and County of San Bernardino, there are no existing mineral resource recovery sites in the Project area[6,7]. No impact is identified.

7.5 NOISE

a) For a Project located within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels? *Level of Significance: No Impact.*

No private airstrips are located in the vicinity of the Project area. Therefore, no impacts would occur in this regard.

[6] *County of San Bernardino General Plan*, 2007, Land Use Element.
[7] *City of San Bernardino General Plan*, 2005, Land Use Element

7.6 POPULATION AND HOUSING, SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE

a) Would the proposed Project induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)? *Level of Significance: No Impact.*

The Project is a water resource infrastructure project and does not propose the development of any new housing units or commercial/industrial uses, and as such, the Project would not induce population growth. The infrastructure being proposed will accommodate growth already anticipated in existing planning studies and documents. Therefore, there would be no significant impacts relative to population growth inducement or housing displacement as a result of Project implementation. Refer to Section 5.0, *Other CEQA Considerations*, for additional discussion.

b) Would the Project displace substantial numbers of existing housing or people, necessitating the construction of replacement housing elsewhere? *Level of Significance: Less Than Significant Impact.*

Project construction would involve a short-term increase in population and employment and potentially would create a short-term need for additional housing because of the need to hire and house construction workers. Construction is scheduled to take place over several years.

It is expected that the created construction jobs would be drawn from a regional labor pool and would not be exclusive to the San Bernardino area. Some of the workers would commute in, while others may require short-term housing. According to the California Department of Housing and Community Development, a housing vacancy rate of 5 percent is considered normal. Vacancy rates below 5 percent indicate a housing shortage in a community. The City of San Bernardino had a vacancy rate of 8.7 percent for rental units in 2013.[8] The addition of a maximum of 33 seasonal construction workers to the San Bernardino area would not be great enough in magnitude to substantially affect rental housing demand even if all 33 temporary workers required rental housing. Construction employment in San Bernardino constitutes approximately 8.1 percent of total employment[9]. The increase in employment associated with construction, although beneficial, would not be of great enough magnitude to substantially alter population patterns or housing demand. Therefore, implementing the Project is not expected to result in significant impacts on population, employment, or housing on either a localized or a regional basis. The impacts would be less than significant.

As the Project does not include the development of residential uses, there would be no direct contribution to local or regional growth in population or housing. Employment growth associated with Project operations and maintenance could result in indirect housing demand and population growth through project-induced in-migration to the region. After it is constructed, the Project would result in the need for a negligible amount of additional full-time employees at SBMWD. This increase would represent a very small amount of the public administration employment within the San Bernardino area. This increase in employment associated with Project operation, although beneficial, would not be of great enough magnitude to substantially alter population patterns or housing demand. Impacts would be less than significant.

[8] U.S. Census Bureau, 2009-2013 American Community Survey 5-Year Estimates, http://factfinder2.census.gov/ accessed 12-16-14.
[9] U.S. Census Bureau, 2009-2013 American Community Survey 5-Year Estimates, http://factfinder2.census.gov/ accessed 12-16-14.

c) Would the Project result in changes to the economy in the Project area? ***Level of Significance: Less Than Significant Impact.***

The proposed Project includes water resource infrastructure improvements that would require expenditures on labor and materials. No fiscal impact analyses were prepared for the proposed Project to quantify potential economic impacts of the Project. However, proposed construction activities associated with Project implementation would provide minor short-term economic benefit to the region through these expenditures and through additional employment opportunities, but such effects would not be significant given the relatively small size of the Project and the relatively large size and diversity of the local economy. Implementation of the Project would not appreciably change the economic character or stability of the surrounding area. Accordingly, the Project's economic impacts would be beneficial but not significant. In addition, Project construction activities would occur primarily within existing City right-of-way and is not anticipated to require acquisition of any private property. As such, no property would be removed from the City's property tax role, and the City would not experience a decrease in property tax revenues it collects, and a less than significant impact is anticipated.

Any long-term increase in expenditures attributable to the Project would be very small compared to the total economic activity occurring in San Bernardino County. As such, operations and maintenance activities associated with the proposed Project would be less than significant.

d) Would the Project result in impacts to minority and/or low-income populations? ***Level of Significance: Less Than Significant Impact.***

There is generally not a high presence of low-income populations within the Project study area. However, there is a high presence of minority populations in the Project study area, and in fact the data indicates that the Project area overall contains predominantly minority populations, of both non-White non-Hispanic, and non-White Hispanic ethnicities. Therefore, the Project is subject to the provisions on Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* (for any federal funding or permits/approvals),and must identify and address disproportionately high and adverse effects on the health or environment of minority populations.

Due to the composition of minority households within the Project area, certain impacts of the Project could have the potential to result in disproportionate effects on these populations. An assessment of the Project-related impacts identified in the other resource sections of this EIR was conducted to determine which, if any, of these impacts could result in disproportionate effects on minority households. Adverse Project-related effects, such as noise, air pollutant emissions, soils and water quality effects, and traffic delays resulting from construction activities associated with construction would occur, as a result of Project implementation. These impacts would not be confined to minority populations but would result to the general population residing with proximity to construction areas. These impacts would be temporary in nature and would cease upon Project completion. In addition, the Project proposes several mitigation measures that would reduce potential construction-related impacts and would be required to comply with multiple regulations and provisions within the City's Municipal Code. For example, the Project would be required to: develop a Transportation Management Plan (TMP) to mitigate traffic impacts; develop a Storm Water Pollution Prevention Plan (SWPPP) to mitigate water quality impacts; adhere to construction hour and time limitations to mitigate noise impacts; and would be required to adhere to Best Management Practices (BMPs) during construction to mitigate air quality/greenhouse gas impacts. As such, construction-related impacts of the Project would not occur disproportionately to minority nor low-income populations, and construction of the Project would, therefore, not cause disproportionately high and adverse effects on any minority or low-income populations consistent with Executive Order 12898.

SBMWD has engaged stakeholders for input at all levels of the Project decision-making process to ensure early, accessible, and meaningful participation. By stakeholders' participation, the agencies have included them in the decision-making process and have explored opportunities to address Environmental Justice within current statutory and regulatory structure.

There is no indication that operation and maintenance activities of the Project would affect identified minority or low-income populations to a greater degree than the general population of the surrounding area. The Project would not result in any housing or displacement impacts. Potential operational impacts would not have a disproportionately adverse impact on low-income or minority populations. They would affect the general population in the Project study area, not just low-income or minority populations. In addition, mitigation measures have been recommended to reduce potentially significant impacts to a less than significant level. For any significant and unavoidable impacts, SBMWD is required to make findings as to whether the Project's benefits would outweigh the significant and unavoidable environmental impact. Operational impacts of the Project would not occur disproportionately to minority nor low-income populations, consistent with Executive Order 12898.

7.7 PUBLIC SERVICES AND UTILITIES

a) Would the Project result in substantial adverse impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services: fire protection, police protection, schools, parks, or other public facilities? *Level of Significance: No Impact.*

As currently proposed, treatment upgrades and the siting of storage tanks or pump stations associated with SBWRP improvements as well as Recharge Site improvements would be located within the existing facilities. The temporary construction activities associated with the Project's SBWRP and Recharge Site improvements would not be expected to create a need for additional fire or police protection services, and would have no impact on schools, parks, or other governmental services.

Installation of conveyance facilities would initiate temporary impacts associated with construction such as traffic delays. The Traffic Management Plan for the proposed Project addresses traffic delays and provides for the timely movement of emergency vehicles. The temporary construction activities associated with the proposed Project's conveyance facilities would not be expected to create a need for additional fire or police protection services, and would have no impact on schools, parks, or other governmental services. Potential loss of parkland due to pump station and reservoir siting is addressed in Section 4.10, *Recreation*.

b) Would the Project exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board? *Level of Significance: Less Than Significant Impact.*

The proposed Project is located within the purview of the Santa Ana Regional Water Quality Control Board (Region 8), and would be required to demonstrate compliance with the applicable elements of the regions Basin Plan. The SBWRP has an existing rated capacity of 33 MGD of secondary effluent and currently only treats 22 MGD. As the modifications proposed under the Project would enhance existing treatment capacity, and the Clean Water Factory Project would be required to demonstrate compliance with the applicable elements of the region's Basin Plan, a less than significant impact is identified. Refer also to Section 4.7, *Hydrology and Water Quality*.

c) Would the Project require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects? *Level of Significance: Less Than Significant Impact.*

Treatment upgrades and the siting of storage tanks or pump stations associated with SBWRP improvements would be located within the existing SBWRP site. The temporary construction activities associated with the Proposed Project's SBWRP improvements would have no impact on storm water facilities. The temporary construction activities associated with the proposed Project's conveyance facilities are anticipated to have no impact on storm water facilities.

The proposed construction of the recharge site improvements would occur within the existing storm water management facilities: Waterman Basins and East Twin Creek Spreading Grounds. The temporary construction activities associated the proposed Project's recharge site improvements would have a less than significant effect upon storm water facilities as the Project proposes to improve the facilities. Environmental impacts associated with the recharge basins are analyzed throughout this EIR. Section 4.7, *Hydrology and Water Quality*, provides further discussion on the storm water drainage facilities.

Operational activities associated with the proposed Project would be consistent with the maintenance that currently takes place within the SBWRP and Recharge Basins. Section 4.7, *Hydrology and Water Quality*, provides further discussion on the storm water drainage facilities. Impacts associated with operation of the SBWRP and Recharge Basins would be less than significant.

d) Would the Project have sufficient water supplies available to serve the Project from existing entitlements and resources, or are new or expanded entitlements needed? *Level of Significance: Less Than Significant Impact.*

The temporary construction activities associated with the proposed Project's improvement areas would have a less than significant impact on water supplies, and would be more than offset by the positive effect of the Project's long-term water supply enhancement. The Project itself is a water supply project and as such has a net beneficial effect on local and regional water supplies. Although the Project would reduce RIX discharge into the Santa Ana River, the effect on water supplies for downstream agencies is strictly regulated by the Western Judgment and other applicable agreements (refer to Section 4.7, *Hydrology and Water Quality*).

Operation of the SBWRP would treat wastewater to tertiary and advanced levels. Currently the SBWRP treats wastewater to a secondary level. Improvements in treatment would not impact the water supply. Operation and maintenance of the conveyance system would not require the use of water; therefore, the operation of the conveyance system, across all alternative alignments, would not have an impact on the water supply. Operation of the Recharge site would not require water, rather the recharge site recharges the Bunker Hill Basin and/or Chino Basin with tertiary and/or advanced level recycled water from SBWRP. Recharging of the groundwater basin reduces the risk of over drafting groundwater supplies and would therefore have no negative impact on water supplies. The RIX Phased Discharge Reduction and potential Direct Use Customer components would not have an impact on SBMWD water supplies.

e) Would the Project result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the Project's projected demand in addition to the provider's existing commitment? *Level of Significance: Less Than Significant Impact.*

SBMWD owns and operates the SBWRP. SBWMD and the City of Colton are members of a Joint Powers Agency that own and operate the RIX Facility. The SBWRP has an existing rated capacity of 33 MGD of

secondary effluent and currently only treats 22 MGD. As the modifications proposed under the Project would enhance existing treatment capacity, a less than significant impact is identified.

f) Would the Project be served by a landfill with sufficient permitted capacity to accommodate the Project's solid waste disposal needs? *Level of Significance: Less Than Significant Impact.*

The temporary construction activities associated with all aspects of the proposed Project would result in a minor, temporary demand for solid waste service, but would not result in the need for new solid waste disposal systems. Prior to construction, the Project Contractor would be required to identify the proper landfill and recycling collection facility. Impacts would be less than significant.

Operation of the SBWRP would continue as it does currently and would not result in increased solid waste production. Impacts to solid waste capacity would be less than significant. Operation and maintenance of the conveyance system and Recharge Sites would not generate solid waste with the exception of occasional maintenance and repair resulting in some construction debris. Similar to construction, the contractor performing maintenance or repair work on the conveyance system would be required to identify proper landfill and recycling collection facilities prior to beginning work. Therefore, the operation of the conveyance system and Recharge Sites would have a less than significant impact. No impacts are identified for the RIX Phased Discharge Reduction or Direct End Use components.

g) Would the Project comply with federal, state, and local statutes and regulations related to solid waste? *Level of Significance: No Impact.*

All development would be required to comply with federal, State, and local statutes relative to solid waste. No impacts would occur in this regard.

Section 8.0
References

Section 8.0
References

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