GROUNDWATER BASINS MASTER PLAN

Draft Program Environmental Impact Report

Prepared for
Water Replenishment District
of Southern California

December 2015

ESA

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Acronym List

AADT	Annual Average Daily Trips
AARF	Los Angeles Forebay Aquifer Recharge and Recovery Facilities
AB	Assembly Bill
ABP	Alamitos Barrier Project
AC	Advisory Circular
ACI	American Concrete Institute
ACS	American Community Survey
AF	acre-feet
AFY	acre-feet per year
AGBP	Alamitos Gap Barrier
AIA	Airport Influence Area
AISC	American Institute of Steel Construction
ALUC	Airport Land Use Commissions
ALUCP	Airport Land Use Compatibility Plan
AMSL	above mean sea level
APA	allowable pumping allocation
APS	alternative planning strategy
AQMP	air quality management plan
AR4	Fourth Assessment Report
ASCE	American Society of Civil Engineers
ATCM	airborne toxics control measure
ATS	Active Treatment Systems
AWT	advanced water treatment
AWTF	advanced water treatment facility
BAT	best available technology
BCT	best conventional pollutant control technology
BMP	best management practices
BP	Before Present
BSBPO	Basin Specific Basin Plan Objective
CAA	Clean Air Act
CAAA	CAA Amendments of 1990
CAER	Community Awareness and Emergency Response
CAL-ARP	California Accidental Release Prevention Program
CALEMA	California Emergency Management Agency
CALTRANS	California Department of Transportation
CARB	California Air Resources Board
CB	Central Basin
CBC	California Building Code
CBMWD	Central Basin Municipal Water District
CCAP	Community Climate Action Plan
CCAR	California Climate Action Registry
CCAT	California Climate Action Team
CCC	California Coastal Commission
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CDP	census-designated places
CDPH	California Department of Public Health
CEC	California Energy Commission

CEC	chemicals of emerging concern
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFC	chlorofluorocarbons
CGP	Construction General Permit
CGS	California Geological Survey
CH4	methane
CIP	Capital Improvements Program
CIWMB	California Integrated Waste Management Board
CMP	Congestion Management Program
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society Electronic Inventory
CO	carbon monoxide
COC	constituents of concern
CPUC	California Public Utilities Commission
CRA	Colorado River Aqueduct
CRWRF	Carson Regional Water Reclamation
CWA	Clean Water Act
DART	Downey Area Recycling and Transfer Facility
DB	decibels
DCP	Coastal Development Permit
DDW	Division of Drinking Water
DGBP	Dominguez Gap Barrier Project
DGSG	Dominguez Gap Spreading Grounds
DHCD	California Department of Housing and Community Development
DHS	California Department of Health Services
DSAC	Dam Safety Action Class
DTSC	California Department of Toxic Substances Control
ECLWRF	Edward C. Little Water Reclamation Facility
EIR	environmental impact report
EOP	Emergency Operations Plan
ERA	Exceedance Response Action
ERP	Emergency Response Plan
ESA	I Environmental Site Assessments
FAA	Federal Aviation Administration
FAT	Full Advanced Treatment
FEMA	Federal Emergency Management Agency
FESA	Federal Endangered Species Act
FHSZ	Fire Hazard Severity Zones
FHWA	Federal Highway Administrations
FIX-IT	Forebay Increased Extraction-Intrabasin Transfer
FTA	Federal Transit Administration
GAMA	Groundwater Ambient Monitoring and Assessment
GBMP	Groundwater Basins Master Plan
GBOP	Groundwater Basin Optimization Pipeline
GHG	greenhouse gas
GIS	Geographic Information System
GRIP	Groundwater Reliability Improvement Program
GRRP	Groundwater Recharge Replenishment Projects
GRRP	groundwater recharge reuse project
GVQ	gross vehicle weight

GWP	global warming potential
HAP	hazardous air pollutant
HCP	Habitat Conservation Plans
HFC	hydrofluorocarbons
HMBP	Hazardous Materials Business Plan
HMR	Hazardous Materials Regulations
HSWA	Hazardous and Solid Waste Amendments
HTP	Hyperion Treatment Plant
HVAC	heating, ventilating, and air conditioning
HZ	hertz
IBA	Important Bird Area
IBC	International Building Code
IC/ID	Illicit Connections and Illicit Discharges
IRP	Integrated Resources Plan
JOS	Joint Outfall System
JPA	joint powers authority
JWPCP	Joint Water Pollution Control Plant
LACDPW	Los Angeles County Department of Public Works
LACFCD	Los Angeles County Flood Control District
LACSD	Los Angeles County Sanitation District
LADWP	Los Angeles Department of Water and Power
LAMC	Los Angeles Municipal Code
LARWQCB	Los Angeles Regional Water Quality Control Board
LAWA	Los Angeles World Airports
LAX	Los Angeles International Airport
LBWRP	Long Beach Water Reclamation Plant
LCFA	Low Carbon Fuel Standard
LCP	Local Coastal Programs
LCWRP	Los Coyotes Water Reclamation Plant
LOS	Level of Service
LST	localized significance threshold
LUP	linear utility project
LUST	leaking underground storage tank
LVW	loaded vehicle weight
MACT	Maximum Achievable Control Technology
MAR	managed aquifer recharge
MBTA	Migratory Bird Treaty Act
MCL	maximum contaminant level
MF	microfiltration
MFSG	Montebello Forebay Spreading Ground
MGD	million gallons per day
MMI	Modified Mercalli Intensity
MMRP	Mitigation Monitoring and Reporting Program
MMT	million metric tons
MOA	Memorandum of Agreement
MPO	Metropolitan Planning Organizations
MRP	Monitoring and Reporting Program
MS4	Municipal Separate Storm Sewer System
MWD	Metropolitan Water District of Southern California
N2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards

NAHC	Native American Heritage Commission
NAL	numeric action levels
NCCP	Natural Community Conservation Plans
NDMA	N-Nitrosodimethylamine
NEL	numeric effluent limitations
NESHAP	National Emission Standards for Hazardous Air Pollutants
NFIP	National Flood Insurance Program
NH3	ammonia
NHPA	National Historic Preservation Act
NIU	Newport-Inglewood Uplift
NL	notification level
NMFS	National Marine Fisheries Service
NO2	nitrogen dioxide
NOD	Notice of Determination
NOI	Notice of Intent
NOP	Notice of Preparation
NOX	oxides of nitrogen
NPDES	National Pollutant Discharge Elimination System
NPDWR	National Primary Drinking Water Regulations
OAL	Office of Administrative Law
OEHHA	Office of Environmental Health Hazard Assessment
OHP	Office of Historic Preservation
OPR	California Office of Planning and Research
OSHA	Occupational Safety and Health Administration
PEIR	program environmental impact report
PFC	perfluorocarbons
PHMSA	Pipeline and Hazardous Material Safety Administration
PM10	particulate matter with an aerodynamic diameter of 10 micrometers or less
PM2.5	particulate matter with an aerodynamic diameter of 2.5 micrometers or less
POTW	Publicly Owned Treatment Works
PPM	parts per million
PPV	peak particle velocity
PRC	Public Resources Code
PSD	Prevention of Significant Deterioration
PVC	Polyvinyl chloride
QISP	qualifying industrial storm water practitioner
QSE	qualifying storm event
RA	replenishment assessment
RCRA	Resource Conservation and Recovery Act
RHCSG	Rio Hondo Coastal Spreading Grounds
RHSG	Rio Hondo Spreading Grounds
RMP	Risk Management Plan
RMS	root mean square
RO	reverse osmosis
ROG	reactive organic gases
ROW	rights of way
ROWD	report of waste discharge
RSL	Regional Screening Levels
RTP	regional transportation plan
RWC	Recycled Water Contribution
RWQCB	Regional Water Quality Control Board

S/N	salt and nutrients
SAR	Second Assessment Report
SARA	Superfund Amendments and Reauthorization Act
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SCS	sustainable communities strategy
SDC	Seismic Design Category
SDWA	Safe Drinking Water Act
SDWP	Safe Drinking Water Program
SEA	Significant Ecological Area
SF6	sulfur hexafluoride
SGCSG	San Gabriel Coastal Spreading Grounds
SHPO	State Historic Preservation Officer
SIP	state implementation plan
SJCWRP	San Jose Creek Water Reclamation Plant
SNMP	Salt and Nutrient Management Plan
SO2	sulfur dioxide
SO3	sulfur trioxide
SOC	Statement of Overriding Considerations
SOX	sulfur oxides
SR	State Route
SRF	State Revolving Fund
STLC	Soluble Threshold Limit Concentration
SVP	Society for Vertebrate Paleontology
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TAC	toxic air contaminants
TCLP	Toxicity Characteristic Leaching Procedure
TDS	total dissolved solids
TDS	total dissolved solids
TIWRP	Terminal Island Water Reclamation Plant
TMDL	Total Maximum Daily Loads
TPY	tons per year
TTLC	Total Threshold Limit Concentration
ULSD	Ultra Low Sulfur Diesel
UNFCCC	United Nations Framework Convention on Climate Change
USACE	U.S. Army Corps of Engineers
USEPA	United States Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	US Geological Survey
VC	Volume to Capacity
VMT	vehicle miles travelled
VOC	volatile organic compound
WBMWD	West Basin Municipal Water District
WCB	West Coast Basin
WCBBP	West Coast Basin Barrier Project
WET	Waste Extraction Test
WIN	Water Independence Now
WQBEL	water-quality based effluent limitations
WQO	water quality objectives
WRD	Water Replenishment District of Southern California

WRF	Water Reclamation Facility
WRP	Water Reclamation Plant
WRR	Water Recycling Requirements
WTF	Water Treatment Facility
WWII	World War II

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EXECUTIVE SUMMARY

ES.1 Introduction

The Water Replenishment District of Southern California (WRD) has developed the Draft Groundwater Basins Master Plan (GBMP, or proposed project) to provide a single reference document for the entities responsible for managing and maintaining the West Coast and Central groundwater basins. The GBMP establishes a framework to enhance groundwater replenishment in the West Coast and Central basins, increase the reliability of groundwater water supplies, improve and protect groundwater quality, and accommodate growing potable water demands (CH2M, 2012). The proposed project is a multi-agency, multi-jurisdictional project that would be implemented collectively by WRD and other partner agencies that were consulted during development of the GBMP, including West Basin Municipal Water District, Central Basin Municipal Water District, Sanitation Districts of Los Angeles County, City of Los Angeles, City of Long Beach, and Los Angeles County Department of Public Works, Flood Control District.

As the lead agency, WRD has prepared this Draft Program Environmental Impact Report (PEIR) to provide the public, trustee agencies, and responsible agencies with information about the potential effects on the local and regional environment associated with the implementation of the Draft GBMP. This Draft PEIR has been prepared in compliance with the California Environmental Quality Act (CEQA) of 1970 (as amended), codified at California Public Resources Code Sections 21000 et. Seq. and the State *CEQA Guidelines* in the Code of Regulations, Title 14, Division 6, Chapter 3.

The Draft GBMP was prepared in July 2012 by WRD and is currently being revised to reflect changes in existing conditions. Once this PEIR is certified by the WRD Board of Directors, the GBMP will be finalized and adopted by WRD. The GBMP is intended to be a living document that provides WRD and its partner agencies with flexibility to implement projects appropriate to changing conditions and regulations. As such the GBMP may be revisited and revised in the future to help guide WRD with meeting its long-term goals for groundwater replenishment and basin sustainability. All documentation related to the Draft GBMP and this Draft PEIR is available at the WRD offices located at 4040 Paramount Blvd, Lakewood, CA 90712.

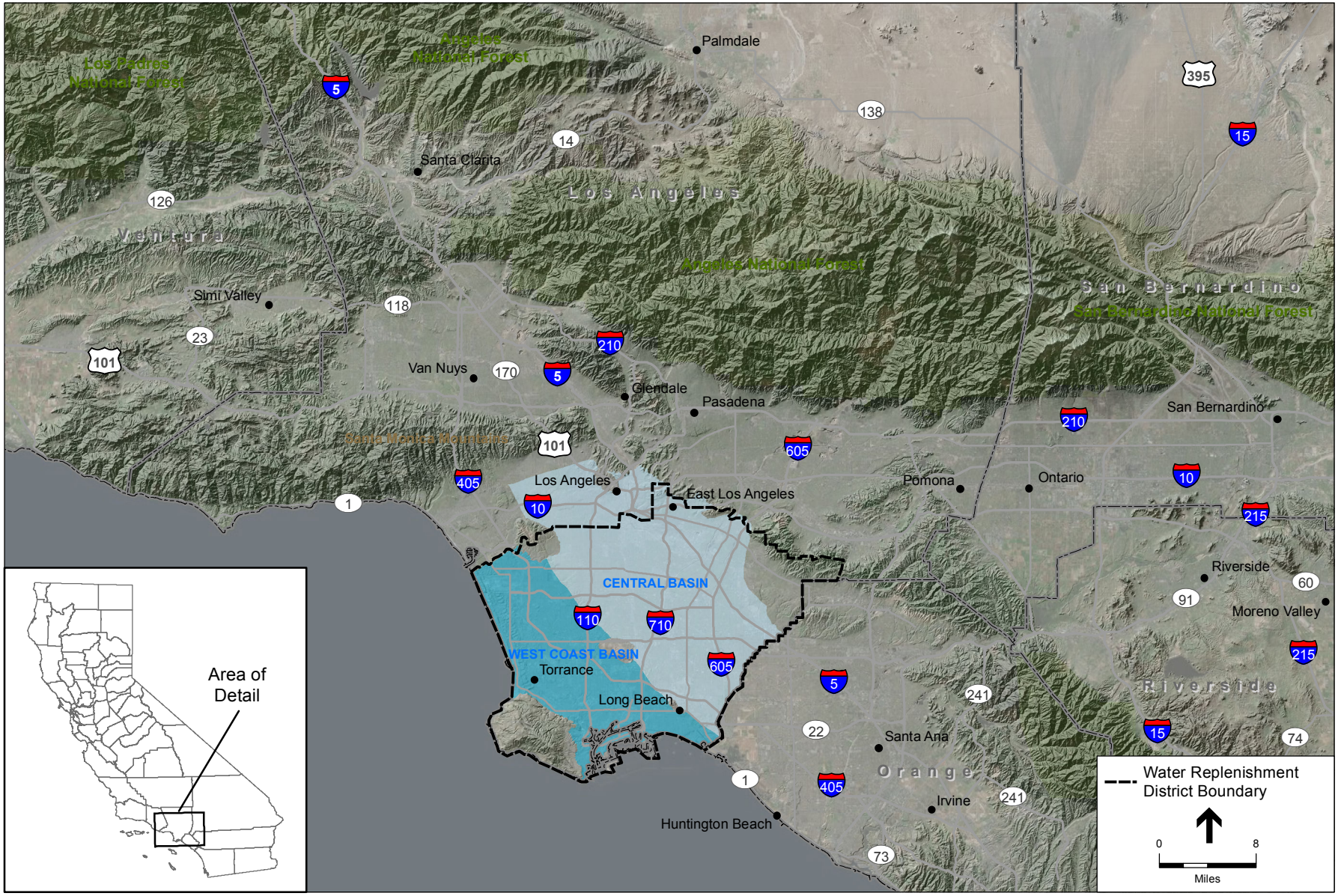
ES.2 Background

The Water Replenishment District of Southern California manages the groundwater resources of the West Coast and Central Basin groundwater basins within its 420 square mile service area, which is home to approximately four million people, over 10 percent of California's population (**Figure ES-1**). These basins supply about 250,000 acre-feet per year (AFY) of groundwater to this population, roughly 40 percent of total water demand in the WRD service area. The remaining water demand within the service area is met directly with imported water supplied by Metropolitan Water District of Southern California (MWD, or Metropolitan), and recycled water supplied locally.

The WRD service area is bounded by the Baldwin, Whittier and Merced Hills to the north, Orange County to the east, and the Pacific Ocean to the south and west. The WRD service area lies entirely within Los Angeles County and serves 43 incorporated cities, including the cities of Los Angeles, Long Beach, Downey and Torrance. The WRD was formed in 1959 in response to over-pumping that was causing wells to run dry and seawater intrusion to contaminate coastal freshwater aquifers. WRD is the only replenishment district in California to be set-up under the provisions of California Water Code Division 18, Section 60000, et. seq. which specifically governs water replenishment districts.

WRD's primary responsibilities are to replenish the West Coast and Central basins sufficiently to meet local water rights and to implement clean water programs. WRD annually purchases approximately 80,000 to 120,000 acre-feet (AF) of water to replenish the groundwater basins, either by spreading water in recharge basins, where the water gradually percolates into the underlying aquifers, or by direct injection into the aquifers using injection wells. The injection wells are used for the dual purpose of groundwater replenishment and prevention of seawater intrusion into the potable freshwater aquifers.

Beginning in 1962, WRD and the County Sanitation Districts of Los Angeles County (LACSD) pioneered the use of recycled water for groundwater recharge. Currently, approximately 50,000 AFY of recycled water from the San Jose Creek Water Reclamation Plant, and Whittier Narrows Water Reclamation Plant, and Pomona Water Reclamation Plant are used for groundwater replenishment (WRD, 2012). WRD operates a number of clean water programs, including detection, prevention and removal of contaminants in the groundwater. In addition, WRD implements programs to monitor groundwater quality, provide wellhead treatment, remediate contamination, and mitigate salt water intrusion.



SOURCE: ESA, 2012.

WRD - Groundwater Basins Master Plan . 120192

Figure ES-1

Regional Project Location

ES.3 Project Description

The Draft Groundwater Basins Master Plan (GBMP) establishes a framework to enhance groundwater replenishment in the Central and West Coast basins, increase the reliability of groundwater supplies, improve and protect groundwater quality, and accommodate growing potable water demands. The GBMP identifies and evaluates specific projects and management strategies that would increase replenishment and beneficial use of recycled water and captured storm water. The increased replenishment would require increased use of existing spreading grounds, injection wells, and recovery facilities, expanding or upgrading recycled water treatment facilities, and the installation of new water infrastructure including injection and extraction wells, conveyance pipelines, and pump stations.

The projects and management strategies in the Draft GBMP are organized around two target levels of future groundwater replenishment and extraction, referred to as Concept A and Concept B. Concept A provides for replenishment needed to meet the existing adjudicated water rights within both groundwater basins. Concept B would provide for additional groundwater basin storage and extraction above current adjudicated levels. The Draft GBMP uses a stepwise approach to developing additional water supplies to meet these two concepts through enhanced replenishment and extraction from the Basins. The Draft GBMP develops and evaluates projects that could be implemented to satisfy these goals, firstly of Concept A and subsequently of Concept B.

The projects and management strategies proposed in the Draft GBMP for Concept A and Concept B would be implemented primarily within the WRD service area. Preliminary locations for individual projects are specified in the Draft GBMP and this Draft PEIR. The projects are grouped generally within four geographic regions of the WRD service area: the northern portion of the West Coast Basin, the southern portion of the West Coast Basin, the Montebello Forebay in the Central Basin, and the Los Angeles River and Forebay in the Central Basin.

ES.4 Project Objectives

The Draft GBMP provides an overall plan for future management of the West Coast Basin and Central Basin to meet existing replenishment requirements and evaluates the potential to increase the use of local groundwater supplies to meet overlying demands beyond current capabilities. The Draft GBMP identifies several approaches to enhance utilization of both basins by strategically locating and managing groundwater pumping and extraction to increase and optimize the long-term, sustainable replenishment and extraction of groundwater. These approaches are intended to satisfy objectives for both Concept A and Concept B.

The primary objectives of the proposed project are to:

- Provide adequate local replenishment water supplies to meet the future needs of groundwater pumpers
- Improve the reliability of the replenishment supplies by reducing and eventually eliminating the current use of imported water for basin replenishment

- Improve groundwater quality
- Enhance the ability of both basins to sustainably store and deliver water supplies

The projects and management strategies in the Draft GBMP are organized around two target levels of future groundwater replenishment and extraction: First, meet the water rights and adjudicated pumping limits (Concept A), and second, provide for additional groundwater basin storage and extraction above current adjudicated levels (Concept B). Phasing of projects would allow WRD to meet near-term pumping needs while reserving the potential to expand and meet pumping demands in accordance with the recent Judgment Amendments (see Chapter 2 for more details).

Concept A: Meet Full Water Rights

The adjudicated extraction limit for the West Coast Basin is 64,468.25 AFY and for the Central Basin is 217,367 AFY. It is WRD's responsibility to ensure these limits can be extracted by the water rights holders. Management actions and projects that allow for basin replenishment and extraction up to the current adjudicated limits are developed under Concept A. WRD would need to replenish approximately 40,000 AFY on average in order to meet the requirements for extraction of 64,468 AFY in the West Coast Basin. Approximately 146,000 AFY would need to be replenished in the Central Basin in order to meet the requirements for extraction of 217,367 AFY. WRD would need to replenish an additional 18,000 AFY in the West Coast Basin and 12,000 AFY in the Central Basin relative to existing conditions in order to allow for extractions up to the adjudicated limits.

Concept B: Basin Augmentation

The recent Judgment amendments for the West Coast Basin and Central Basin allow basin stakeholders to recharge above existing replenishment requirements and extract a similar volume of groundwater above the adjudicated extraction limits. The extraction limits are tied to the physical basin capacities as well as supply limitations for replenishment. Concept B would provide added replenishment for extraction up to 30,000 AFY above the current West Coast Basin adjudication, or a total of 94,468 AFY. In the Central Basin, up to 103,250 AFY of additional replenishment above the current APA would support the target extraction volume of up to 320,617.

ES.5 Summary of Impacts

Table ES-1 presents a summary of the impacts and mitigation measures identified for the GBMP. The complete impact statements and mitigation measures are presented in Chapter 4. The level of significance for each impact was determined using significance criteria (thresholds) developed for each category of impacts; these criteria are presented in the appropriate sections of Chapter 4. Significant impacts are those adverse environmental impacts that meet or exceed the significance thresholds; less-than-significant impacts would not exceed the thresholds. Table ES-1 indicates the measures that will avoid, minimize, or otherwise reduce significant impacts to a less-than-significant level.

There is potential for hazardous waste sites enumerated under Government Code 65962.5 to occur within the proposed project boundary. However, mitigation measures have been incorporated in this Draft PEIR to avoid or minimize impacts associated with hazardous waste to less than significant levels. Potentially-significant temporary impacts to air quality and noise have been identified at the program level due to air emissions, noise, and vibration resulting from construction activities for certain GBMP projects. However, as stated in this Draft PEIR, the identification of potentially-significant program-level impacts does not preclude the finding of future less-than-significant impacts for individual GBMP projects.

ES.6 Project Alternatives

An EIR must describe a range of reasonable alternatives to the proposed project or alternative project locations that could feasibly attain most of the basic project objectives and would avoid or substantially lessen any of the significant environmental impacts to the proposed project. The alternatives analysis must include the "No Project Alternative" as a point of comparison. The No Project Alternative includes existing conditions and reasonably foreseeable future conditions that would exist if the proposed project were not approved (CEQA Guidelines §15126.6).

In the development of the Draft GBMP, WRD employed an alternatives screening process to determine which projects or combination of projects would be most effective in meeting the replenishment and extraction goals in both the West Coast and Central basins for both Concepts A and B. The process began with the definition of GBMP goals and the establishment of current basin operations. System constraints were identified, and scenarios to achieve the GBMP goals in each basin were developed given the acknowledged constraints. WRD then identified specific sources of replenishment water for replacement of imported water, focusing on recycled water and storm water. Projects and management actions were developed that could provide the recycled water and storm water to achieve the goals in each basin.

The different scenarios for Concept A and B were modeled using the USGS MODFLOW program. The scenarios were comprised of different combinations of GBMP projects and management actions. Seven different combinations of the scenarios were modeled to assess various impacts to basin operating conditions. The scenario combinations simulated groundwater levels and cumulative groundwater storage in the basins in response to differing water replenishment and pumping conditions of each scenario. The results of the modeling indicated that basins were reasonably balanced across the range of operating conditions represented by the GBMP scenarios over the 40-year simulation period. The projects that comprised the scenario combinations are described in Chapter 3 and analyzed at a programmatic level in Chapters 4, 5, and 6 of this PEIR.

The alternatives analysis compares the Draft GBMP to the No Project Alternative in Chapter 7 of this PEIR. The analysis concludes that the No Project Alternative would result in similar environmental impacts to the proposed GBMP; however, given that fewer new facilities would be built, such impacts would occur in fewer locations throughout the service area. The No Project Alternative would not necessarily avoid or lessen potentially significant impacts to air quality and

noise associated with construction-related activities. Similar types of construction activities may still occur under the No Project Alternative.

In accordance with CEQA, an environmentally-superior alternative shall be identified. The No Project Alternative would meet most of the project objectives and would result in slightly fewer impacts as compared to the proposed project. Thus, the No Project Alternative would be considered the environmentally-superior alternative to the proposed project. Section 15126.6(e)(2) of the *CEQA Guidelines* requires that if the environmentally-superior alternative is the no-project alternative, an EIR shall identify an environmentally-superior alternative among the other alternatives. Thus, WRD has determined that the proposed GBMP is the environmentally-superior and preferred alternative.

ES.7 Known Areas of Controversy and Issues of Concern

Pursuant to Section 15123(b)(2) of the *CEQA Guidelines,* a lead agency is required to include areas of controversies raised by agencies and the public during the public scoping process in the EIR. Areas of controversy have been identified for the GBMP based on comments made during the 30-day public review period in response to information published in the NOP. Commenting parties have requested more detailed information on baseline conditions in the West Coast and Central Basins, specifically related to pumper utilization, safe yield, and current storage space available. Commenting parties have expressed concern regarding transparency of the groundwater modeling system, specifically related to validity of groundwater replenishment levels and associated risks of rising levels on surrounding communities.

Commenting parties have requested more specific information on facilities proposed as part of the GBMP, such as location, size, and description of proposed wells, pipelines, pump stations, spreading basins, and treatment plant upgrades. Concerns also have been raised regarding the legitimacy of WRD as lead agency for the proposed project and the proposed project's effects on the California Department of Transportation (Caltrans) I-105 Freeway dewatering facility. Comments requested that the EIR address potential impacts from recharge activities on current groundwater levels and underground utilities located in the I-105 freeway area. These issues have been considered during preparation of this Draft PEIR.

ES.8 Significant Irreversible Environmental Changes

CEQA Guidelines (CCR, Section 15126.2(c)) requires identification of potential significant, irreversible environmental changes that could result from the implementation of the Draft GBMP. Examples of such changes include the commitment of nonrenewable resources to uses that future generations will not be able to reverse, irreversible damage that may result from accidents associated with a project, or irretrievable commitment of resources. Although the proposed GBMP projects would require resources (materials, labor, and energy) they do not represent a substantial irreversible commitment of resources. In accordance with the Recycled Water Policy and the Governor's recent drought proclamations, implementation of the Draft GBMP is both necessary and beneficial because it reduces reliance on limited potable water supplies by

increasing the use of recycled water in the Central Basin and West Coast Basin in a manner that preserves beneficial uses. In addition, recycled water is a renewable resource, and therefore, the implementation of the Draft GBMP would not result in an irretrievable commitment of nonrenewable resources or significant irreversible environmental changes in the Central Basin or West Coast Basin.

ES.9 Organization of this PEIR

This Draft PEIR is organized into the following chapters and appendices:

- **Executive Summary.** This chapter summarizes the contents and conclusions of the Draft PEIR.
- **Chapter 1, Introduction.** This chapter presents the CEQA process and the purpose of the PEIR.
- **Chapter 2, Project Background.** This chapter presents background information on WRD, existing facilities and operations, and the process of developing the GBMP.
- **Chapter 3, Project Description.** This chapter provides an overview of the proposed project, describes the need for and objectives of the proposed project, and provides detail on the characteristics of the proposed project.
- **Chapter 4, Environmental Setting, Impacts and Mitigation Measures.** This chapter describes the environmental setting and identifies impacts of the proposed project for each of the following environmental resource areas: Aesthetics; Air Quality; Biological Resources; Cultural Resources; Geology, Soils, and Seismicity; Greenhouse Gas Emissions; Hazards and Hazardous Materials; Surface Hydrology; Groundwater and Water Quality; Land Use and Planning; Noise; Transportation and Traffic; Utilities and Energy; and Environmental Justice. Measures to mitigate significant impacts of the proposed project are presented for each resource area.
- **Chapter 5, Cumulative Impacts.** This chapter describes the cumulative impacts of the proposed project together with past, current, and probable future projects within the region.
- **Chapter 6, Growth Inducement.** This chapter describes the potential for the proposed project to induce growth.
- **Chapter 7, Alternatives Analysis.** This chapter presents an overview of the alternatives development process, describes the alternatives to the proposed project that were considered, and describes potential impacts of feasible alternatives relative to those of the proposed project.
- **Chapter 8, Report Preparers.** This chapter identifies authors involved in preparing this Draft DEIR, including persons and organizations consulted.

TABLE ES-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR GBMP

Environmental Impact	Mitigation Measures	Significance Determination
Aesthetics		
4.1-1: Implementation of proposed aboveground facilities could introduce contrasting elements into the built environment that would have an adverse effect on a scenic vista.	**AES-1:** Aboveground buildings/structures shall be designed to be consistent with the aesthetic qualities of existing structures in the vicinity to minimize contrasting features. **AES-2:** During project design, a landscape plan shall be prepared for aboveground facilities that restores disturbed areas and minimizes effects to scenic vistas.	Less than Significant with Mitigation
4.1-2: Implementation of proposed facilities could change the existing visual character or quality of project sites and their surroundings.	**AES-1, AES-2** **AES-3:** After construction of GBMP project is complete, disturbed areas, including pipeline alignments, construction easements, and staging areas, shall be restored similar to preconstruction conditions.	Less than Significant with Mitigation
4.1-3: The proposed projects would introduce new source of light and glare that would adversely affect daytime and nighttime views.	**AES-4:** Lighting used during nighttime construction shall be shielded and pointed away from surrounding light-sensitive land uses. **AES-5:** All new permanent exterior lighting associated with proposed project components shall be shielded and directed downward to avoid any light spill onto neighboring lands or into nighttime skies.	Less than Significant with Mitigation
Air Quality		
4.2-1: The project could conflict with or obstruct implementation of the applicable air quality plan.	None required	Less than Significant
4.2-2: The project could violate any air quality standard or contribute substantially to an existing or projected air quality violation.	**Measure AQ-1:** The following mitigation measures shall be incorporated to minimize emissions of NOx associated with construction activities for the proposed project: • Construction activities shall require the use of 2010 and newer diesel haul trucks (e.g., material delivery trucks and soil import/export) to the extent feasible. Under conditions where it is determined that 2010 model year or newer diesel trucks are not readily available or obtainable for a project, the implementing agency shall be required to provide this evidence to WRD and shall instead use trucks that meet USEPA 2007 model year NOx emissions requirements. • Off-road diesel-powered construction equipment greater than 50 horsepower shall meet Tier 3 emissions standards at a minimum and the Tier 4 where available. Under conditions where it is determined that equipment meeting Tier 4 emission standards are not readily available or obtainable for a project, the implementing agency shall be required to provide this evidence to WRD and shall instead use USEPA Tier 3 equipment.	Significant and Unavoidable with Mitigation for construction; Less than Significant for operation

TABLE ES-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR GBMP

Environmental Impact	Mitigation Measures	Significance Determination
	Measure AQ-2: The implementing agency for each individual GBMP project shall require by contract specifications that: • Construction-related equipment, including heavy-duty equipment, motor vehicles, and portable equipment, shall be turned off when not in use to avoid excessive idling. • Construction operations shall minimize use of diesel-powered generators and rely on the electricity infrastructure where feasible. • Construction trucks shall be routed away from congested streets or sensitive receptor areas where feasible.	
4.2-3: The project could result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors).	**AQ-1, AQ-2**	Significant and Unavoidable with Mitigation for construction; Less than Significant for operation
4.2-4: The project could expose sensitive receptors to substantial pollutant concentrations.	**Measure AQ-3:** Prior to approval of an individual GBMP project, a project-specific LST analysis that identifies the resulting construction emissions shall be prepared using either SCAQMD's LST screening tables (for projects that are less than five acres) or dispersion modeling (for projects that exceed five acres in size). Where it is determined that construction emissions would exceed the applicable LSTs or the most stringent applicable federal or state ambient air quality standards, the GBMP project shall reduce its daily construction intensity (e.g., reducing the amount of equipment used daily, reducing the amount of soil graded/excavated daily, etc.) to a level where the GBMP project's construction emissions would no longer exceed SCAQMD's LSTs or result in pollutant emissions that would cause or contribute to an exceedance of the most stringent applicable federal or state ambient air quality standards.	Less than Significant with Mitigation
4.2-5: The proposed project could create objectionable odors affecting a substantial number of people.	**AQ-4:** All new or upgraded water treatment facilities associated with the proposed project shall prepare and implement an Odor Control Maintenance and Monitoring Plan that would define a schedule for the regular maintenance of the facility's odor control equipment, a schedule for odor monitoring along the treatment facility's property boundary, and establish a protocol for handling and resolving odor complaints.	Less than Significant with Mitigation
Biological Resources		
4.3-1: Activities associated with the construction of the proposed project could result in substantial adverse effects, either directly or through habitat modifications, on wildlife species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS.	**BIO-1:** Prior to ground disturbing activities in areas that could support sensitive biological resources, a habitat assessment shall be conducted by a qualified biologist to determine the potential for special-status wildlife species to occur within affected areas. If the habitat assessment determines that a special-status species has the potential to be present	Less than Significant with Mitigation

TABLE ES-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR GBMP

Environmental Impact	Mitigation Measures	Significance Determination
	within a minimum of 500 feet of the construction zone, a focused survey shall be conducted by a qualified biologist prior to project implementation to determine presence or absence of special-status species. **BIO-2:** If a special-status wildlife species is determined present or potentially present within the limits of construction activities, a qualified biologist shall conduct pre-construction surveys of proposed work zones and the 500-foot buffer around each area within 14 days prior to ground disturbing activities. Any potential habitat capable of supporting a special-status wildlife species, such as burrows, shall be flagged for avoidance, as necessary; any additional habitat features, if any, shall also be identified and flagged as necessary. **BIO-3:** If avoidance of special-status species is not feasible, implementing agencies shall consult with the appropriate regulating agency (USFWS or CDFW) to determine a strategy for compliance with the Endangered Species Act including development of mitigation and/or compensation for the impact. **BIO-4:** Every effort shall be made to avoid potential impacts to special-status wildlife species by eliminating construction activities to the greatest extent possible within areas where those species are detected through surveys. Tunneling or jack and bore construction methods under drainages that may support listed special-status wildlife species shall be recommended in areas where those species have the potential to occur or where presence has been confirmed. Similarly, silt fencing or similar impermeable barriers to exclude small wildlife species from entering the active work areas shall be installed around work areas that occur within or adjacent to undisturbed habitats, or near areas of documented occurrences of special-status wildlife. Such impermeable barriers shall be verified by a qualified biologist prior to initiating construction activities. **BIO-5**: All construction areas, staging areas, and right-of-ways shall be staked, flagged, fenced, or otherwise clearly delineated to restrict the limits of construction to the minimum necessary near areas that may support special-status wildlife species as determined by a qualified biologist.	
4.3-2: Activities associated with the construction of the proposed project could result in adverse impacts to special-status plant species.	**BIO-6:** Prior to construction in areas that could support special status plants, a qualified botanist shall conduct a pre-construction floristic inventory and focused rare plant survey of project areas to determine and map the location and extent of special-status plant species populations within disturbance areas. This survey shall occur during the typical blooming periods of special-status plants with the potential to occur. The plant survey shall follow the CDFW Protocols for Surveying	Less than Significant with Mitigation

TABLE ES-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR GBMP

Environmental Impact	Mitigation Measures	Significance Determination
	and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities (November 24, 2009). **BIO-7:** The limits of construction shall be staked, flagged, fenced, or otherwise clearly delineated to avoid and minimize impacts on adjacent habitats that may support special-status plant species. **BIO-8:** To the extent feasible, the implementing agencies shall avoid and/or reduce the footprint of construction and staging areas in areas having potential occurrences of special-status plant species. **BIO-9:** If temporary construction-related impacts to special-status plant populations are identified within a disturbance area, the implementing agencies shall prepare and implement a special-status species salvage and replanting plan. The salvage and replanting plan shall include measures to salvage, replant, and monitor the disturbance area until native vegetation is re-established under the direction of CDFW and USFWS.	
4.3-3: Activities associated with the construction of the proposed project could result in adverse impacts to sensitive natural communities.	None required	Less than Significant
4.3-4: Activities associated with the construction of the proposed project could result in adverse impacts on riparian or wetland habitats.	**BIO-10:** Prior to construction, a qualified wetland delineator shall be retained to conduct a formal wetland delineation in areas where potential jurisdictional resources (i.e., wetlands or drainages) may be affected by the project. If jurisdictional resources are identified in the project area and would be directly or indirectly impacted by individual projects, the qualified wetland delineator shall prepare a jurisdictional delineation report outlining mitigation and compensation requirements to be implemented prior to construction. **BIO-11:** Proposed projects shall avoid impacting previously undisturbed areas where possible. This would include employing tunneling or jack and bore methods under drainages if practicable. The construction zone(s) shall be modified if feasible to minimize disturbance of any wetland or drainage. **BIO-12:** Where jurisdictional wetlands and other waters cannot be avoided, a restoration plan shall be prepared that provides for replanting and monitoring for a minimum three-year period following construction to ensure riparian and/or wetland habitat is re-established.	Less than Significant with Mitigation
4.3-5: Activities associated with the construction of the proposed project could interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, such as birds and bats, or impede the use of native wildlife nursery sites.	**BIO-13:** If construction and vegetation removal is proposed between February 1 and August 31, then a qualified biologist shall conduct a pre-construction survey for breeding and nesting birds within 500-feet of the construction limits to determine and map the location and extent of breeding birds that could be affected by the project. Active nest sites located during the pre-construction surveys shall be avoided and a non-	Less than Significant with Mitigation

TABLE ES-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR GBMP

Environmental Impact	Mitigation Measures	Significance Determination
	disturbance buffer zone shall be established sufficient to avoid demonstrable harassment of the nesting birds. Nest sites shall be avoided until the adults and young are no longer reliant on the nest site for survival as determined by a qualified biologist. **BIO-14:** All active bird nest buffer areas shall be clearly demarcated with stakes, flag, or fence material. The installation of buffer areas shall be verified by a qualified biologist prior to the initiation of ground disturbance activities. **BIO-15:** A qualified biologist shall conduct a survey for bat roost sites prior to the initiation of any construction activities in areas where potential roost sites may occur, such as abandoned structures, bridges, or hollow trees. If a bat roost is identified, a non-disturbance buffer zone shall be established sufficient to avoid demonstrable harassment by a qualified biologist or as otherwise determined in consultation with the CDFW.	
4.3-6: Activities associated with the construction of the proposed project could conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.	**BIO-16:** If trees could be impacted by project construction, an arborist shall conduct a tree survey. If any Oak trees or other protected trees will be impacted by the proposed project, the implementing agency shall obtain any required County or City permits as directed by the arborist.	Less than Significant with Mitigation
4.3-7: Activities associated with the construction of the proposed project could conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan.	**BIO-1 through BIO-9**	Less than Significant with Mitigation
Cultural Resources		
4.4-1: The proposed project could impact known and/or unknown cultural resources, including prehistoric and historic archaeological sites, historic architectural resources, and Native American sacred sites.	**CUL-1a:** For project components that require ground disturbance, the implementing agency shall conduct a cultural resources records search at the appropriate information center. A field survey will be conducted where deemed appropriate by a qualified archaeologist. The qualified archaeologist shall document the cultural records assessment and recommend whether additional investigation or monitoring is warranted. **CUL-1b:** For project components that affect existing structures that are 50 years old or greater, the implementing agency shall determine the need for a project-specific historic architectural study. If warranted, an architectural historian shall identify and evaluate potentially affected historic resources (eligible for the National Register, California Register, or local designation) prior to project implementation. **CUL-1c:** The implementing agency shall avoid impacts, if feasible, on identified cultural resources that are eligible for listing in the National Register, California Register, or local designation, or that qualify as a unique archaeological resource under CEQA, including prehistoric and	Less than Significant with Mitigation

TABLE ES-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR GBMP

Environmental Impact	Mitigation Measures	Significance Determination
	historic archaeological sites, locations of importance to Native Americans, human remains, and historical buildings, structures and landscapes. Methods of avoidance may include, but should not be limited to project re-route, re-design, or identification of protection measures such as capping or fencing. If avoidance is determined not to be feasible, then a qualified archaeologist shall develop and implement a cultural resources treatment plan. The treatment plan shall include provisions for analysis of data in a regional context, curation of artifacts and data at an approved facility, and dissemination of prepared reports.	
4.4-2: The proposed project could impact human remains.	**CUL-2:** If human remains are encountered unexpectedly during construction excavation and grading activities, State Health and Safety Code Section 7050.5 requires that no further disturbance shall occur until the County Coroner has made the necessary findings as to origin and disposition pursuant to PRC Section 5097.98. If the remains are determined to be of Native American descent, the coroner has 48 hours to notify the Native American Heritage Commission (NAHC). The NAHC will then identify the designated Most Likely Descendent of the deceased Native American, who will engage in consultation to determine the disposition of the remains.	Less than Significant with Mitigation
4.4-3: The proposed project could impact known and/or unknown paleontological resources.	**CUL-3:** For projects implemented under the GBMP that involve ground disturbance, the implementing agency shall determine the necessity of conducting a study of the project area(s) based on the potential sensitivity of the project site for paleontological resources. If deemed necessary, the paleontologist shall conduct a paleontological resources inventory designed to identify potentially significant resources. The paleontologist shall provide recommendations regarding additional investigation or monitoring activities.	Less than Significant with Mitigation
Geology, Soils, and Seismicity		
4.5-1: The proposed project could locate new facilities in areas prone to strong seismic ground shaking or liquefaction, which could expose people or structures to potential risk of loss, injury or death.	**GEO-1:** Prior to construction of each GBMP Project, a design-level geotechnical investigation, including collection of site specific subsurface data if appropriate, shall be completed. The geotechnical evaluation shall identify all potential seismic hazards including fault rupture, and characterize the soil profiles, including liquefaction potential and expansive soil potential. The geotechnical investigation shall recommend site-specific design criteria to mitigate for seismic hazards, such as special foundations and structural setbacks, and these recommendations shall be incorporated into the design of individual proposed projects. **GEO-2**: WRD shall continue groundwater level monitoring throughout the West Coast Basin and Central Basin to identify areas of elevated groundwater levels. WRD and the Watermaster Storage Panel shall	Less than Significant with Mitigation

TABLE ES-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR GBMP

Environmental Impact	Mitigation Measures	Significance Determination
	ensure that, where necessary, future groundwater recharge projects in the Central Basin are designed with groundwater monitoring capabilities sufficient to evaluate and minimize impact of shallow groundwater to habitable structures in areas with liquefiable soils.	
4.5-2: The proposed project could result in substantial soil erosion or the loss of topsoils.	None required	Less than Significant
4.5-3: The proposed project could be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in onsite or offsite soil creep, landslides, lateral spreading, settlement, subsidence or soil corrosion.	**GEO-3:** In conjunction with Mitigation Measures GEO-1, prior to construction and where appropriate, the design-level geotechnical investigation shall identify potential geologic hazards, including sinkholes, subsidence, and soil corrosivity, and characterize the soil profiles for their potential to lead to the aforementioned hazards. The geotechnical investigation shall recommend site-specific design criteria to mitigate for geologic hazards, such as avoidance of problem areas and special foundations and structural setbacks. These recommendations shall be incorporated into the design of individual proposed projects. **GEO-4**: WRD shall continue to monitor groundwater levels throughout the Central Basin to identify where groundwater levels in the Central Basin reach historically low levels. If monitoring data show that groundwater levels have reached historically low levels in areas susceptible to subsidence, WRD and the Watermaster Storage Panel shall work with implementing agencies reduce pumping in these areas to prevent subsidence from occurring.	Less than Significant with Mitigation
4.5-4: The proposed project could be located on expansive soil that creates substantial risks to life or property.	**GEO-1**	Less than Significant with Mitigation
Greenhouse Gas Emissions		
4.6-1: The project could generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment.	None required; Implementation of Mitigation Measure UTIL-3 would further reduce less-than-significant impact.	Less than Significant
4.6-2: The project could conflict with an applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of GHGs.	None required.	Less than Significant.
Hazards and Hazardous Materials		
4.7-1: The proposed project would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.	None required	Less than Significant
4.7-2: The proposed project could 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.	**HAZ-1: Contingency Plan for Contaminated Soil or Groundwater.** Prior to commencement of construction requiring excavation, the implementing agency shall require its construction contractor to consult	Less than Significant with Mitigation

TABLE ES-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR GBMP

Environmental Impact	Mitigation Measures	Significance Determination
	with appropriate regulatory agencies to prepare a Contingency Plan that outlines how to dispose of any contaminated soil or groundwater that may be encountered during construction. If contaminated soil and/or groundwater are encountered or if suspected contamination is encountered during project construction, work shall be halted in the area, and the Contingency Plan shall be implemented. **HAZ-2: Hazardous Materials Management Spill Prevention and Control Plan.** Before commencement of construction activities requiring the storage of hazardous materials on site, the implementing agency shall require its construction contractor to prepare a Hazardous Materials Management Spill Prevention and Control Plan that includes a project-specific contingency plan for hazardous materials and waste operations. The Plan shall be applicable to all construction activities, and shall establish policies and procedures according to federal and California OSHA regulations for hazardous materials. Elements of the Plan shall include, but not be limited to the following: • A discussion of hazardous materials management, including delineation of hazardous material storage areas, access and egress routes, waterways, emergency assembly areas, and temporary hazardous waste storage areas; • Notification and documentation of procedures; and • Spill control and countermeasures, including employee spill prevention/response training.	
4.7-3: Construction of the proposed project could emit hazardous emissions or handle hazardous or acutely hazardous material, substances, or waste within one-quarter mile of an existing or proposed school.	**HAZ-1, HAZ-2, TR-1, TR-6** (See Chapter 4.13, Transportation and Traffic)	Less than Significant with Mitigation
4.7-4: Operation of the proposed treatment facilities could emit hazardous emissions or handle hazardous or acutely hazardous material, substances, or waste within one-quarter mile of an existing or proposed school.	None required	Less than Significant
4.7-5: The proposed project could be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, could create a significant hazard to the public or the environment.	**HAZ-1, HAZ-2** **HAZ-3: Conduct Environmental Site Assessments.** Prior to the initiation of any construction requiring ground-disturbing activities, the implementing agencies shall complete Phase I Environmental Site Assessments (ESA) for soil and groundwater contamination in the project areas. The recommendations set forth in the Phase I ESA shall be implemented to the satisfaction of applicable agencies before and during construction. If the Phase I ESA indicates the potential for hazardous concentrations of contamination within the construction zone, Phase II studies will be completed before construction begins.	Less than Significant with Mitigation

TABLE ES-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR GBMP

Environmental Impact	Mitigation Measures	Significance Determination
	Phase II studies shall include soil and groundwater sampling and analysis for anticipated contaminants. The Phase II sampling is intended to identify how to dispose of any potentially harmful material from excavations, and to determine if construction workers need specialized personal protective equipment.	
4.7-6: The proposed project would be located within two miles of Los Angeles International Airport and could result in a safety hazard for people residing or working in the project area.	None required	Less than Significant
4.7-7: Construction of the proposed project could impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.	None required	Less than Significant
Surface Hydrology and Water Quality		
4.8-1: During construction of proposed facilities pollutants could be introduced to surface waters via runoff from construction sites and violate water quality standards or waste discharge requirements.	None required	Less than Significant
4.8-2: Operation of projects that divert storm water from rivers could affect water quality downstream	None required	Less than Significant
4.8-3: The placement of new aboveground project facilities could alter the existing drainage patterns of project sites and affect erosion, siltation, or flooding.	**HYDRO-1: Implementation of a Grading and Drainage Plan**. Prior to construction of project facilities, the implementing agencies shall prepare a grading and drainage plan that identifies anticipated changes in flow that would occur on site and minimizes any potential increases in discharge, erosion, or sedimentation potential in accordance with applicable regulations and requirements for the County of Los Angeles and/or the city in which the facility would be located. In addition, all new drainage facilities shall be designed in accordance with standards and regulations set forth in the Hydrology Manual of the Los Angeles County Department of Public Works. The plan shall identify and implement retention basins, best management practices, and other measures to ensure that potential increases in storm water flows and erosion would be minimized, in accordance with local requirements.	Less than Significant with Mitigation
4.8-4: The proposed GBMP projects would potentially locate new facilities within a 100-year flood hazard area where flood flows could be impeded.	None required	Less than Significant
4.8-5: The proposed project could expose structures to a significant risk of loss, including flooding as a result of the failure of a levee or dam.	None required	Less than Significant
4.8-6: Proposed facilities in the West Coast Basin could be located in tsunami inundation areas or seiche hazard areas, potentially exposing structures to significant risk of loss.	None required	Less than Significant

TABLE ES-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR GBMP

Environmental Impact	Mitigation Measures	Significance Determination
Groundwater		
4.9-1: Implementation of GBMP projects could affect groundwater quality.	**GW-Q1:** WRD and implementing agencies shall continue to conduct groundwater quality monitoring near seawater barrier injection wells for Concept A projects. Monitored constituents shall include, but not be limited to, those required by the RWQCB recycled water permits. The monitoring results shall be made publically available. **GW-Q2:** The Watermaster Storage Panel shall ensure that implementing agencies of Concept B projects follow the review and approval provisions described in the Judgment and that adequate monitoring is provided to ensure no material physical harm. **GW-Q3**: In the event that groundwater monitoring detects elevated concentrations of TDS, wastewater indicator contaminants, naturally occurring contaminants, or other legacy contaminants, WRD and the Watermaster Storage Panel shall ensure that implementing agencies coordinate measures to protect drinking water quality that could include AWT system modifications, injection system modifications, production wellhead treatment, blending of injection water with other water sources, production well relocation, or provision of alternative water supplies to the affected water purveyor. **GW-Q4:** WRD and the Watermaster Storage Panel shall ensure that implementing agencies monitor travel times between injection locations and production wells as required by the RWQCB. If monitoring determines that retention times are insufficient to meet permit requirements, WRD and the Watermaster Storage Panels shall coordinate with implementing agencies to inactivate affected wells until recharge activities can be managed to restore appropriate retention times. **GW-Q5:** WRD shall continue to conduct groundwater quality monitoring near the MFSG and ABP. Monitored constituents shall include, but not be limited to, those required by the RWQCB recycled water permits including TDS, metals, and wastewater indicator constituents. The monitoring results will be made publically available. **GW-Q6:** WRD and the Watermaster Storage Panel shall require that future groundwater recharge projects are designed with groundwater monitoring capabilities sufficient to evaluate water quality in proximity to the recharge areas. The groundwater monitoring program will be approved by the RWQCB or SWRCB DDW. **GW-Q7:** WRD and the Watermaster Storage Panel shall ensure that groundwater levels are monitored and managed in areas of known contamination to avoid mobilizing naturally occurring and/or anthropogenic contaminants.	Less than Significant with Mitigation

TABLE ES-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR GBMP

Environmental Impact	Mitigation Measures	Significance Determination
4.9-2: Implementation of GBMP projects could affect groundwater storage and groundwater levels.	**GW-L1:** Prior to installing new injection or extraction well fields for Concept B projects, WRD and the Watermaster Storage Panel shall ensure that implementing agencies conduct groundwater modeling near the affected areas sufficient to estimate extraction and injection capacities at specific locations and to avoid impacts to neighboring production well operations. **GW-L2:** WRD shall continue to monitor groundwater levels throughout the West Coast Basin and Central Basin to identify areas of elevated groundwater levels. WRD and the Watermaster Storage Panel shall ensure that, where necessary, future Concept B groundwater recharge projects are designed with groundwater monitoring capabilities sufficient to evaluate and minimize impacts of shallow groundwater on subsurface and surface infrastructure.	Less than Significant with Mitigation
Land Use		
4.10-1: Proposed facilities in the West Coast Basin would be located within the LAX airport influence area (AIA) and could conflict with the Los Angeles County Airport Land Use Plan policies.	**LU-1:** For project components occurring within an AIA, the implementing agencies shall submit their proposed project plans to the Los Angeles County ALUC for review and comment prior to final design.	Less than Significant with Mitigation
4.10-2: Proposed project facilities may be incompatible with neighboring land uses or conflict with local zoning ordinances.	**LU-2:** Implementing agencies shall conduct siting studies to determine the most suitable locations to place facilities, taking into consideration surrounding land uses. Siting studies shall consider existing and planned land uses in the vicinity of the project. Projects shall be located in areas with compatible neighboring land uses wherever possible. **LU-3:** Implementing agencies shall obtain encroachment permits, easements, conditional use permits (CUPs), or variances as required from local agencies with jurisdiction over project sites, as required. Implementing agencies shall comply with all terms and conditions of such permits.	Less than Significant with Mitigation
Noise		
4.11-1: The short-term construction activities associated with the proposed project could 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.	**NOISE-1:** The implementing agencies shall implement the following measures during construction: • Include design measures where feasible to reduce the construction noise levels if necessary to comply with local noise ordinances. These measures may include, but are not limited to, the erection of noise barriers/curtains, use of advanced or state-of-the-art mufflers on construction equipment, and/or reduction in the amount of equipment that would operate concurrently at the construction site. • Place noise and groundborne vibration-generating construction activities whose specific location on a construction site may be flexible (e.g., operation of compressors and generators, cement	Significant and Unavoidable with Mitigation

TABLE ES-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR GBMP

Environmental Impact	Mitigation Measures	Significance Determination
	mixing, general truck idling) as far as possible from the nearest noise- and vibration-sensitive land uses such as residences, schools, and hospitals. • Minimize the effects of equipment with the greatest peak noise generation potential via shrouding or shielding to the extent feasible. Examples include the use of drills, pavement breakers, and jackhammers. • Locate stationary construction noise sources as far from adjacent noise-sensitive receptors as possible, and require that these noise sources be muffled and enclosed within temporary sheds, insulation barriers if necessary to comply with local noise ordinances.. • Provide noise shielding and muffling devices on construction equipment per the manufacturer's specifications. • If construction is to occur near a school, the construction contractor shall coordinate the with school administration in order to limit disturbance to the campus. Efforts to limit construction activities to non-school days shall be encouraged. • For major construction projects, identify a liaison for surrounding residents and property owners to contact with concerns regarding construction noise and vibration. The liaison's telephone number(s) shall be prominently displayed at construction locations. • For major construction projects, notify in writing all landowners and occupants of properties adjacent to the construction area of the anticipated construction schedule at least two weeks prior to groundbreaking. **NOISE-2:** For construction activities during non-standard working hours or hours that are not exempt from compliance with applicable city or county noise ordinances (e.g., 24-hour well drilling), the implementing agency will secure a noise waiver from the appropriate jurisdiction if available. **NOISE-3:** Injection and extraction wells shall be located as far from sensitive receptors as feasible. If new wells are to be constructed in the immediate vicinity of sensitive receptors, construction specification requirements shall include installation and maintenance of a temporary noise barrier (e.g. engineered sound wall or noise blanket) during 24-hour construction activities, to the extent feasible if necessary to comply with local noise ordinances. Specifications shall include use of appropriate materials that shall be installed to a height that intercepts the line of sight between the construction site and sensitive receptors in	

TABLE ES-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR GBMP

Environmental Impact	Mitigation Measures	Significance Determination
	order to achieve maximum attenuation in an attempt to decrease construction area noise to as close as ambient noise levels as possible.	
4.11-2: The long-term operational activities associated with the proposed project could 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.	**NOISE-4:** The implementing agencies shall require that all GBMP-related aboveground facilities that include stationary noise generating equipment (such as emergency generators, blowers, pumps, motors, etc.) minimize their audible noise levels by locating equipment away from noise-sensitive receptor areas, installing proper acoustical shielding for the equipment, and incorporating the use of parapets into building design to meet the applicable city or county noise level requirements at neighboring property lines.	Less than Significant with Mitigation
4.11-3: Project construction could expose persons and structures to excessive ground-borne vibration.	**NOISE-5:** The implementing agencies shall require the construction contractor(s) to implement the following measure: • Ensure that the operation of construction equipment that generates high levels of vibration including, but not limited to, large bulldozers, loaded trucks, and drilling rigs, is minimized within 45 feet of existing residential structures and 35 feet of institutional structures (e.g., schools) during construction of the various GBMP projects. Use of small rubber-tired bulldozers shall be encouraged within these areas during grading operations to reduce vibration effects. **NOISE-6:** Approval of construction permits shall ensure that where a GBMP project would be constructed adjacent to an existing or potential historic building, the implementing agency shall require by contract specifications that a certified structural engineer be retained to submit evidence that the operation of vibration-generating equipment associated with the construction activities would not result in any structural damage to the adjacent historic building. Contract specifications shall be included in the construction documents for the applicable GBMP project development.	Significant and Unavoidable with Mitigation
4.11-4: Operation of proposed GBMP projects, particularly treatment facilities, could increase ambient noise levels at nearby sensitive land uses.	Implement Mitigation Measures NOISE-3.	Less than Significant with Mitigation
4.11-5: Construction of proposed GBMP projects could increase ambient noise levels at nearby sensitive land uses.	Implement Mitigation Measures NOISE-1 through NOISE-3.	Significant and Unavoidable with Mitigation
4.11-6: Operation of project facilities within the boundaries of the land use plan of Los Angeles International Airport would not expose employees to excessive airport-related noise levels.	None Required	Less than Significant
4.11-7: The proposed project would not expose people residing or working in the project area to excessive noise levels associated with a private airstrip.	None Required	No Impact

TABLE ES-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR GBMP

Environmental Impact	Mitigation Measures	Significance Determination
Transportation and Traffic		
4.12-1: Implementation of the proposed project could increase traffic volume on local roadways and affect circulation.	**TR-1:** The implementing agency's construction contractor shall prepare and implement a Traffic Control/Traffic Management Plan subject to approval by appropriate local jurisdictions prior to construction. The plan shall include protocols for traffic control, work hours, notifications, emergency responder communication, local access and other provisions as applicable. **TR-2:** The implementing agencies shall identify all roadway locations where special construction techniques (e.g., horizontal boring, directional drilling or night construction) could be used to minimize impacts to traffic flow, and implement such techniques when feasible. **TR-3:** The implementing agencies shall develop circulation and detour plans to minimize impact to local street circulation, including bikeways. This may include the use of signing and flagging to guide vehicles and cyclists through and/or around the construction zone. **TR-4:** The implementing agencies shall encourage construction crews to park at staging areas to limit lane closures in the public right-of-way. **TR-5:** Peak travel periods shall be avoided where possible when implementing partial road closures. **TR-6:** The implementing agencies shall consult with nearby school districts at least one month prior to construction to coordinate bus stop relocations (if necessary), alternative busing routes, alternative Safe Routes to School programs, and other circulation provisions to reduce potential interruption of student transit services.	Less than Significant with Mitigation
4.12-2: Implementation of the proposed project could conflict with the Los Angeles County Congestion Management Program.	None required	Less than Significant
4.12-3: Construction activities could disrupt access to public transit, bicycle, or pedestrian facilities.	**TR-7:** Implementing agencies shall require the construction contractor to consult with local jurisdictions if bicycle or pedestrian facilities would be directly affected by construction activities. If required, the construction contractor shall develop circulation and detour plans to minimize impacts to bikeways and pedestrian facilities. This may include the use of signing and flagging to guide vehicles, cyclists, and pedestrians through and/or around the construction zone. After construction is complete, implementing agencies shall ensure that bicycle or pedestrian facilities are restored to pre-construction conditions. **TR-8:** Implementing agencies shall require the construction contractor to consult and coordinate with Metro and/or other local transit agencies at least one month prior to construction of pipelines within roadways	Less than Significant with Mitigation

TABLE ES-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR GBMP

Environmental Impact	Mitigation Measures	Significance Determination
	that coincide with bus routes, to determine whether construction of the proposed project would affect bus stop locations or otherwise disrupt public transit routes. A plan shall be developed to relocate bus stops or reroute buses to avoid disruption of transit service.	
4.12-4: Construction activities in roadways could obstruct emergency access.	**TR-1**	Less than Significant with Mitigation
4.12-5: Construction activities in roadways could introduce hazards to passing motorists.	None required	Less than Significant
Utilities, Public Services and Energy		
4.13-1: The proposed project includes operation of wastewater facilities that could exceed wastewater treatment requirements of the Los Angeles Regional Water Quality Control Board.	None required	Less than Significant
4.13-2: The proposed project could result in the construction or expansion of storm water drainage facilities to accommodate storm water runoff.	**AES-1** (See Chapter 4.1), **HYDRO-1** (See Chapter 4.8)	Less than Significant with Mitigation
4.13-3: The proposed project would require additional water resources to achieve replenishment goals of the GBMP.	None required	Less than Significant
4.13-4: Construction activities associated with the proposed project would generate solid waste that could increase the demand for landfill capacity.	**UTIL-1:** Project facility design and construction methods that produce less waste or that produce waste that could be recycled or reused more readily, shall be encouraged. **UTIL-2:** The contractor shall be required to describe plans for recovering, reusing, and recycling wastes produced through construction, demolition, and excavation activities described in the construction specifications.	Less than Significant with Mitigation
4.13-5: Operation of the proposed project would require additional power that could affect local and regional energy supplies.	**UTIL-3**: Implementing agencies shall require the use of energy efficient equipment, including pumps, conveyance features, and lighting in new facilities and treatment plants. The proposed facilities, including pumps, injection and extraction wells, and treatment plants, shall be designed and operated to shift energy demands to off-peak periods wherever possible.	Less than Significant with Mitigation
Environmental Justice		
4.14-1: The proposed new Satellite AWTF could disproportionately affect the health or environment of minority or low income populations.	None required	Less than Significant
Cumulative Impacts		

TABLE ES-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR GBMP

Environmental Impact	Mitigation Measures	Significance Determination
Noise: Construction of proposed GBMP projects could contribute to a cumulatively significant incremental increase in ambient noise conditions.	**CUM-1**: Implementing agencies shall coordinate project construction activities with other municipalities (e.g., City of Los Angeles, County of Los Angeles, and the 17 municipalities through which GBMP projects traverse) and agencies (e.g., Caltrans, Central Basin MWD, West Basin MWD) in the project area in Los Angeles County. Phasing of project construction shall be coordinated to minimize cumulative impacts to noise, traffic, and roadway circulation.	Less than Significant with Mitigation
Transportation and Traffic: Construction of proposed GBMP projects could contribute to a cumulatively significant incremental impact to traffic and circulation.	Implement Mitigation Measure **CUM-1.**	Less than Significant with Mitigation

CHAPTER 1
Introduction

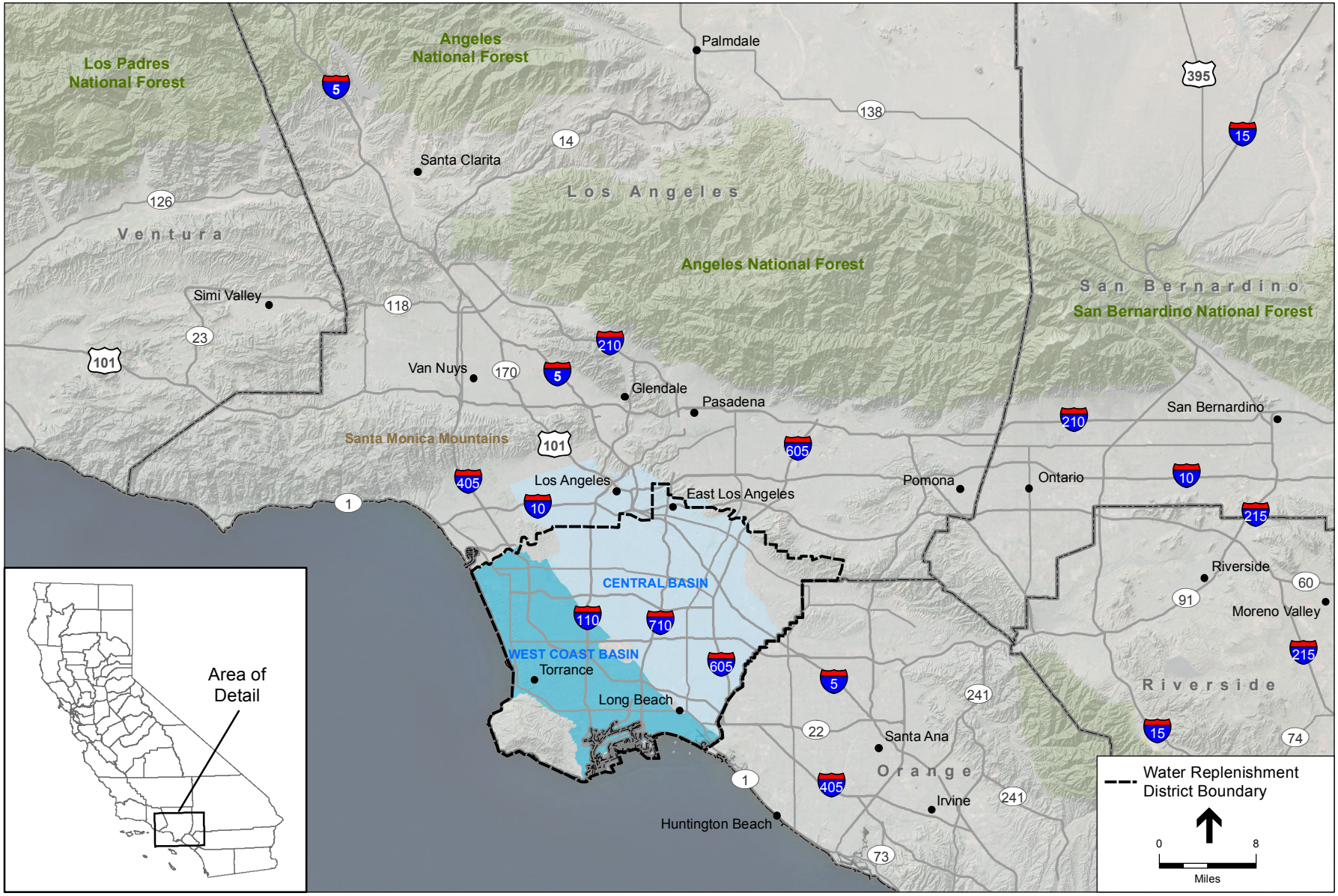
1.1 Purpose of the EIR

The Water Replenishment District of Southern California (WRD) has developed the Draft Groundwater Basins Master Plan (GBMP, or proposed project) to provide a single reference document for the entities responsible for managing and maintaining the West Coast and Central groundwater basins (**Figure 1-1**). The GBMP establishes a framework to enhance groundwater replenishment in the West Coast and Central basins, increase the reliability of groundwater water supplies, improve and protect groundwater quality, and accommodate growing potable water demands (CH2M, 2012).

As the lead agency, WRD has prepared this Draft Program Environmental Impact Report (PEIR) to provide the public, trustee agencies, and responsible agencies with information about the potential effects on the local and regional environment associated with the implementation of the GBMP. This Draft PEIR has been prepared in compliance with the California Environmental Quality Act (CEQA) of 1970 (as amended), codified at California Public Resources Code Sections 21000 et. Seq. and the State *CEQA Guidelines* in the Code of Regulations, Title 14, Division 6, Chapter 3.

As described in Section 15121(a) of the *CEQA Guidelines*, this PEIR is intended to serve as an informational document for public agency decision makers. Accordingly, this PEIR has been prepared to identify and disclose the significant environmental effects of the proposed project, identify mitigation measures to minimize significant effects, and consider reasonable project alternatives. The environmental impact analyses in this PEIR are based on a variety of sources, including agency consultation, technical studies, and field surveys.

The Draft GBMP was prepared in July 2012 by WRD and is currently being revised to reflect changes in existing conditions. Once this PEIR is certified by the WRD Board of Directors, the GBMP will be finalized and adopted by WRD. All documentation related to the Draft GBMP and this Draft PEIR is available at the WRD offices located at 4040 Paramount Blvd, Lakewood, CA 90712.



SOURCE: ESA, 2012.

WRD - Groundwater Basins Master Plan . 120192

Figure 1-1

Regional Location

1.2 Intended Use of the EIR

The proposed project is a multi-agency, multi-jurisdictional project that would be implemented collectively by WRD and other partner agencies that were consulted during development of the GBMP, including West Basin Municipal Water District, Central Basin Municipal Water District, Sanitation Districts of Los Angeles County, City of Los Angeles, City of Long Beach, and Los Angeles County Department of Public Works, Flood Control District. According to CEQA, when a project is to be carried out by multiple public agencies, one agency is selected to be the lead agency and the other agencies are designated as responsible agencies (*CEQA Guidelines* §15050(a)). The decision-making bodies of the lead agency and responsible agencies are required to consider the environmental impact report (EIR) prior to acting upon or approving the project (*CEQA Guidelines* §15050(b)). For purposes of this PEIR, WRD is the Lead Agency, and the partner agencies are the Responsible Agencies. WRD and the Responsible Agencies intend to use this PEIR and any subsequent environmental documentation to consider implementation of the GBMP.

Section 15168 of the *CEQA Guidelines* states that a program EIR may be employed to evaluate a plan or program that has multiple components or addresses a "series of actions that can be characterized as one large project" and are related either:

- Geographically,
- As logical parts in the chain of contemplated action,
- In connection with the issuance of rules, regulations, plans or other general criteria to govern the conduct of a continuing program, or
- As individual activities carried out under the same authorizing statutory or regulatory authority and having generally similar environmental effects which can be mitigated in similar ways.

The use of a PEIR can provide the following advantages:

- Provide an occasion for a more exhaustive consideration of effects and alternatives than would be practical in an EIR on individual action,
- Ensure consideration of cumulative impacts that might be slighted in a case-by-case analysis,
- Avoid duplicative reconsideration of basic policy considerations
- Allow the Lead Agency to consider broad policy alternatives and program-wide mitigation measures at an early time when the agency has greater flexibility to deal with basic problems or cumulative impacts, and
- Allow reduction in paperwork.

This PEIR has been prepared for the GBMP to provide an analysis of the broad environmental effects of the proposed project. The PEIR analysis is not intended to focus on the site-specific impacts of construction and operation of each management strategy or project included in the GBMP. Rather, this PEIR serves as a first-tier environmental document that focuses on the overall effects of implementing the proposed GBMP.

1.3 CEQA Environmental Review Process

1.3.1 CEQA Process Overview

The basic purposes of CEQA are to (1) inform decision makers and the public about the potential, significant environmental effects of proposed activities, (2) identify the ways that environmental effects can be avoided or significantly reduced, (3) prevent significant, avoidable environmental effects by requiring changes in projects through the use of alternatives or mitigation measures when feasible, and (4) disclose to the public the reasons why an implementing agency may approve a project even if significant unavoidable environmental effects are involved.

An EIR uses a multidisciplinary approach, applying social and natural sciences to make a qualitative and quantitative analysis of all the foreseeable environmental impacts that a proposed project would exert on the surrounding area. As stated in *CEQA Guidelines* Section 15151:

> *An EIR should be prepared with a sufficient degree of analysis to provide decision makers with information which enables them to make a decision which intelligently takes account of environmental consequences. An evaluation of the environmental effects of a proposed project need not be exhaustive, but the sufficiency of an EIR is to be reviewed in the light of what is reasonably feasible.*

This PEIR has been prepared to comply with CEQA regulations and is to be used by local regulators and the public in their review of the potential environmental impacts of the proposed project and alternatives, and mitigation measures that would minimize or avoid the potential environmental effects. WRD will consider the information presented in this PEIR, along with other factors, prior to approving the GBMP.

1.3.2 Notice of Preparation and Public Scoping

Pursuant to Section 15082 of *CEQA Guidelines*, the lead agency is required to send a Notice of Preparation (NOP) stating that an EIR will be prepared to the State Office of Planning and Research (OPR), responsible and trustee agencies, and federal agencies involved in funding or approving the project. The NOP must provide sufficient information in order for responsible agencies to make a meaningful response. At a minimum, the NOP must include a description of the project, location of the project, and probable environmental effects of the project (*CEQA Guidelines* Section 15082(a)(1)). Within 30 days after receiving the NOP, responsible and trustee agencies and OPR shall provide the lead agency with specific detail about the scope and content of the environmental information related to that agency's area of statutory responsibility that must be included in the draft EIR (*CEQA Guidelines* Section 15082(b)).

On September 14, 2012, a NOP for the proposed project was submitted to the Los Angeles County Clerk and OPR, and distributed to Responsible and Trustee Agencies and other interested parties for a 30-day review period that ended October 15, 2012. **Appendix A** includes a copy of the NOP and includes a report containing summaries of the comments received during the scoping meeting, as well as submitted written comments on the NOP. The NOP was mailed to approximately 210 interested parties, including local, state, and federal agencies and groups or individuals who had expressed interest in the project. Copies of the NOP were made available for public review on the WRD website (http://www.wrd.org) and at the WRD offices located at 4040 Paramount Drive, Lakewood, CA 90712. Comments on the NOP were received from the following agencies: California Department of Transportation, District 7; Metropolitan Water District of Southern California; Cities of Cerritos, Downey, and Signal Hill (Aleshire & Wynder LLP), Los Angeles County Department of Public Works; Los Angeles County Sanitation District; Southern California Association of Governments.

Pursuant to *CEQA Guidelines* Section 15083, a lead agency may initiate public consultation regarding potential environmental impacts associated with the proposed project. If a project is determined to have statewide, regional, or areawide significance, the lead agency is required to conduct at least one scoping meeting to gauge the range of actions to be analyzed in the draft EIR pursuant to *CEQA Guidelines* Section 15206. The Southern California Association of Governments identified the proposed project as regionally significant per Sections 15206 and 15125 (see NOP comment letter in Appendix A). WRD held one public scoping meeting on September 27, 2012, during the 30-day NOP public review period, at their District Offices at 4040 Paramount Drive, Lakewood, CA 90712. WRD placed one public notice advertising the scoping meeting and announcing the availability of the NOP in the *Los Angeles Times* on September 20, 2012 (see Appendix A).

1.3.3 Draft PEIR

As described previously, a PEIR can be prepared on a series of related actions characterized as one large project or program (*CEQA Guidelines* Section 15168(a)). Prior to implementation, each action in the program must be evaluated to determine if additional environmental documentation is required (*CEQA Guidelines* Section 15168(c)). If the environmental effects resulting from an action are fully covered by the analysis in the PEIR and no new mitigation measures are required, then the action is within the scope of the PEIR and no additional environmental documentation is necessary (*CEQA Guidelines* Section 15168(c)(2)). If an action would result in environmental effects not included in the PEIR then additional environmental documentation – such as a Negative Declaration, Mitigated Negative Declaration, or EIR – would be required (*CEQA Guidelines* Section 15168(c)(1)). The mitigation measures developed in a PEIR may be incorporated into subsequent environmental documents (*CEQA Guidelines* Section 15168(c)(3)).

The environmental issues addressed in this Draft PEIR were established through review of environmental documentation developed for the project, environmental documentation for nearby projects, and public and agency responses to the Notice of Preparation (NOP). This Draft PEIR provides an analysis of reasonably foreseeable impacts associated with the construction and operation of potential projects described in the GBMP. The environmental baseline for

determining potential impacts is the date of publication of the NOP for the proposed project (*CEQA Guidelines* Section 15125(a)). Unless otherwise indicated, the environmental setting for each resource assessed in this PEIR describes the existing conditions as of September 2012. The impact analysis is based on changes to existing conditions that result due to implementation of the proposed project.

Other CEQA Requirements

In accordance with the *CEQA Guidelines* Section 15126, this Draft PEIR describes the proposed project and the existing environmental setting, indentifies short-term, long-term, and cumulative environmental impacts associated with all phases of project implementation, identifies mitigation measures for significant impacts, analyzes potential growth-inducing impacts, and provides an analysis of alternatives. Significance criteria have been developed for each environmental resource analyzed in this Draft PEIR. The significance criteria are defined at the beginning of each impact analysis section, and are categorized as follows:

- **Significant and Unavoidable:** mitigation might be recommended but impacts are still significant;
- **Less than Significant with Mitigation:** potentially significant impact but mitigated to a less-than-significant level;
- **Less than Significant:** mitigation is not required under CEQA but may be recommended; or
- **No Impact**.

Significant Environmental Effects

In accordance with the *CEQA Guidelines* Section 15126, an EIR shall discuss significant environmental effects that cannot be avoided if the project is implemented. This Draft PEIR assesses these impacts in Chapters 4, 5, and 6. Potentially-significant temporary impacts to air quality and noise have been identified at the program level due to air emissions, noise, and vibration resulting from construction activities for certain GBMP projects. However, as stated in this Draft PEIR, the identification of potentially-significant program-level impacts does not preclude the finding of future less-than-significant impacts for individual GBMP projects.

Significant Irreversible Environmental Changes

In accordance with the *CEQA Guidelines* Section 15126, an EIR shall discuss uses of nonrenewable resources that may be irreversible if a large commitment of such resources makes removal or nonuse thereafter unlikely. Implementation of the proposed project would result in both short and long term commitments of natural resources.

Construction and operation of the proposed project will require the use and consumption of nonrenewable resources, such as steel and other metals. Renewable resources, such as lumber and other wood byproducts, will also be used. Unlike renewable resources, nonrenewable resources cannot be regenerated over time. Construction of facilities would require the commitment of a

relatively small amount of building materials. The small quantity of building materials used during implementation of proposed projects would not result in a significant impact because these types of resources are anticipated to be in adequate supply into the foreseeable future.

Energy will be consumed during both construction and operation of the proposed project. Nonrenewable resources and energy would also be consumed during the manufacturing and transportation of building materials, preparation of the site, and construction and site restoration activities. The projects would not result in the wasteful, inefficient or unnecessary consumption of energy during construction or operation. The proposed project would result in the irretrievable and irreversible commitment of energy resources in the form of diesel fuel, gasoline and electricity during construction and operation. However, these types of resources are anticipated to be in adequate supply into the foreseeable future, and in general, the production and use of recycled water is more energy efficient than imported water. Since the GBMP would decrease reliance on imported water by offsetting its use for replenishment with recycled water, the proposed project would reduce the energy requirement otherwise associated with the use of imported water for replenishment. (See Chapter 4.13 of this Draft PEIR for additional information.) Therefore, impacts due to these irretrievable and irreversible commitments of resources are not considered significant.

Known Areas of Controversy and Issues of Concern

Pursuant to Section 15123(b)(2) of the *CEQA Guidelines*, a lead agency is required to include areas of controversies raised by agencies and the public during the public scoping process in the EIR. Areas of controversy have been identified for the GBMP based on comments made during the 30-day public review period in response to information published in the NOP. Commenting parties have requested more detailed information on baseline conditions in West Coast and Central Basins, specifically related to pumper utilization, safe yield, and current storage space available. Commenting parties have expressed concern regarding transparency of the groundwater modeling system, specifically related to validity of groundwater replenishment levels and associated risks of rising levels on surrounding communities.

Commenting parties have requested more specific information on facilities proposed as part of the GBMP, such as location, size, and description of proposed wells, pipelines, pump stations, spreading basins, and treatment plant upgrades. Concerns also have been raised regarding the legitimacy of WRD as lead agency for the proposed project and the proposed project's effects on the California Department of Transportation (Caltrans) I-105 Freeway dewatering facility. Comments requested that the EIR address potential impacts from recharge activities on current groundwater levels and underground utilities located in the I-105 freeway area.

1.3.4 Public Review

In accordance with *CEQA Guidelines* Section 15105, the Draft PEIR has been submitted to the OPR State Clearinghouse for review by state agencies and, as such, is available for public review and comment for a 60-day review period. The Draft PEIR or a Notice of Availability has been circulated to federal, state, and local agencies and interested parties, who may wish to review and issue comments on its contents. All comments should be directed to:

Jason Weeks
Water Replenishment District of Southern California
4040 Paramount Drive
Lakewood, CA 90712
jweeks@wrd.org
(562) 921-5521

During the 60-day review period, the WRD will conduct one public meeting open to the general public to answer questions and receive oral comments on the Draft PEIR. The meeting will be held at the following location:

Water Replenishment District of Southern California
4040 Paramount Drive
Lakewood, CA 90712

All oral and written comments received on the Draft PEIR will be responded to and included in the Final PEIR. Comments on the Draft PEIR must be received by 5:00 p.m. on the last day of the 60-day review period unless WRD grants an extension.

1.3.5 Final PEIR Publication and Certification

Once the Draft PEIR public review period has ended, WRD will prepare written responses to all comments. The Final PEIR will be comprised of the Draft PEIR, responses to comments received on the Draft PEIR, and any changes or corrections to the Draft PEIR that are made as part of the responses to comments. As the Lead Agency, WRD has the option to make the Final PEIR available for public review prior to considering the project for approval (*CEQA Guidelines* §15089(b)). The Final PEIR must be available to commenting agencies at least 10 days prior to certification (*CEQA Guidelines* §1508i(b)).

Prior to considering the project for approval, WRD will review and consider the information presented in the Final PEIR and will certify that the Final PEIR has been adequately prepared in accordance with CEQA. Once the Final PEIR is certified, WRD's Board of Directors may proceed to consider project approval (*CEQA Guidelines* §15090, §15096(f)). Prior to approving the proposed project, WRD must make written Findings and adopt Statements of Overriding Considerations (SOC) for each unmitigated significant environmental effect identified in the Final PEIR (if any) in accordance with Section 15091 of the *CEQA Guidelines*. The SOC will be included in the record of the project's approval and mentioned in the Notice of Determination (NOD) following *CEQA Guidelines* Section 15093(c). Pursuant to Section 15094 of the *CEQA Guidelines*, WRD will file a NOD with the State Clearinghouse and Los Angeles County Clerk within five working days of project approval.

1.3.6 Mitigation Monitoring and Reporting Program

CEQA Guidelines Section 21081.6(a) requires lead agencies to "adopt a reporting and mitigation monitoring program for the changes to the project which it has adopted or made a condition of project approval in order to mitigate or avoid significant effects on the environment." Throughout the Draft PEIR, mitigation measures are clearly identified and presented in language that will facilitate establishment of a monitoring and reporting program. Any mitigation measures adopted by WRD will be included in a Mitigation Monitoring and Reporting Program (MMRP) to verify compliance. The MMRP will be included with the Final PEIR.

1.4 PEIR Organization

This Draft PEIR is organized into the following chapters and appendices:

- **Executive Summary.** This chapter summarizes the contents and conclusions of the Draft PEIR.
- **Chapter 1, Introduction.** This chapter presents the CEQA process and the purpose of the PEIR.
- **Chapter 2, Project Background.** This chapter presents background information on WRD, existing facilities and operations, and the process of developing the GBMP.
- **Chapter 3, Project Description.** This chapter provides an overview of the proposed project, describes the need for and objectives of the proposed project, and provides detail on the characteristics of the proposed project.
- **Chapter 4, Environmental Setting, Impacts, and Mitigation Measures.** This chapter describes the environmental setting and identifies impacts of the proposed project for each of the following environmental resource areas: Aesthetics; Air Quality; Biological Resources; Cultural Resources; Geology, Soils, and Seismicity; Greenhouse Gas Emissions; Hazards and Hazardous Materials; Surface Hydrology; Groundwater and Water Quality; Land Use and Planning; Noise; Transportation and Traffic; Utilities and Energy; and Environmental Justice. Measures to mitigate significant impacts of the proposed project are presented for each resource area.
- **Chapter 5, Cumulative Impacts.** This chapter describes the cumulative impacts of the proposed project together with past, current, and probable future projects within the region.
- **Chapter 6, Growth Inducement.** This chapter describes the potential for the proposed project to induce growth.
- **Chapter 7, Alternatives Analysis.** This chapter presents an overview of the alternatives development process, describes the alternatives to the proposed project that were considered, and describes potential impacts of feasible alternatives relative to those of the proposed project.
- **Chapter 8, Report Preparation.** This chapter identifies authors involved in preparing this Draft DEIR, including persons and organizations consulted.

1.5 References – Project Description

CH2M Hill, 2012. *Draft Groundwater Basins Master Plan*. Prepared for the Water Replenishment District of Southern California, in association with RMC, July 2012.

CHAPTER 2
Program Background

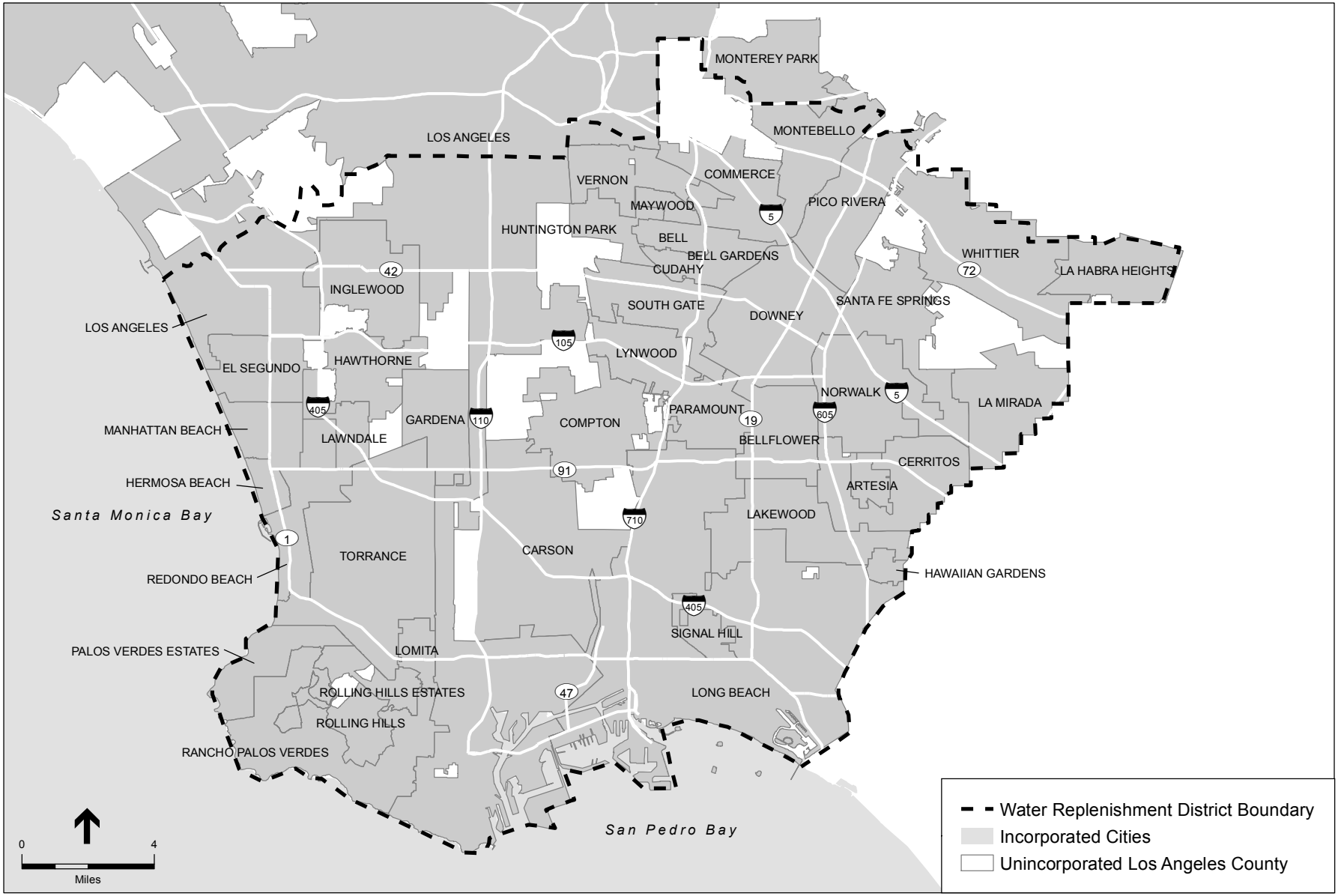
2.1 WRD History

The Water Replenishment District of Southern California manages the groundwater resources of the West Coast Basin (WCB) and Central Basin (CB) within a 420 square mile service area (**Figure 2-1**). This area is home to approximately four million people, over 10 percent of California's population. These basins supply about 250,000 acre-feet per year (AFY) of groundwater to this population, roughly 40 percent of total water demand in the WRD service area. The remaining water demand within the service area is met directly with imported water supplied by Metropolitan Water District of Southern California (MWD, or Metropolitan), and recycled water supplied locally.

The WRD service area is bounded by the Baldwin, Whittier and Merced Hills to the north, Orange County to the east, and the Pacific Ocean to the south and west. The WRD service area lies entirely within Los Angeles County and serves 43 incorporated cities, including the cities of Los Angeles, Long Beach, Downey and Torrance. The WRD was formed in 1959 in response to over-pumping that was causing wells to run dry and seawater intrusion to contaminate coastal freshwater aquifers. WRD is the only replenishment district in California to be set-up under the provisions of California Water Code Division 18, Section 60000, et. seq. which specifically governs water replenishment districts.

WRD's primary responsibilities are to replenish the WCB and CB sufficiently to meet local water rights and to implement clean water programs. WRD annually purchases approximately 80,000 to 120,000 acre-feet (AF) of water to replenish the groundwater basins, either by spreading water in recharge basins, where the water gradually percolates into the underlying aquifers, or by direct injection into the aquifers using injection wells. The injection wells are used for the dual purpose of groundwater replenishment and prevention of seawater intrusion into the potable freshwater aquifers.

Beginning in 1962, WRD and the County Sanitation Districts of Los Angeles County (LACSD) pioneered the use of recycled water for groundwater recharge. Currently, approximately 50,000 AFY of recycled water from the San Jose Creek Water Reclamation Plant and Whittier Narrows Water Reclamation Plant are used for groundwater replenishment (WRD, 2012). WRD operates a number of clean water programs, including detection, prevention and removal of contaminants in the groundwater. In addition, WRD implements programs to monitor groundwater quality, provide wellhead treatment, remediate contamination, and mitigate salt water intrusion.



SOURCE: ESA, 2012.

WRD - Groundwater Basins Master Plan . 120192

Figure 2-1

Cities within WRD Service Area

2.1.1 Central Basin and West Coast Basin Adjudication

In the early 1960s, groundwater rights were adjudicated in both the West Coast and Central basins, because annual pumping had exceeded the natural safe yield of the basins as determined by the State Department of Water Resources. As a result of the excessive pumping, groundwater levels had declined, groundwater was lost from storage, and seawater had intruded into the coastal aquifers. To remedy this problem, the courts issued Judgments that adjudicated the two basins to limit pumping. The West Coast Basin adjudication of pumping rights set total maximum annual groundwater pumping at 64,468 AFY. The Central Basin adjudication of pumping rights was set at a total maximum of 267,900 AFY, although the Judgment set a lower allowable pumping allocation (APA) of 217,367 AFY (approximately 80% of the maximum pumping rights) to impose stricter control.

The adjudicated pumping amounts are greater than the natural replenishment of the groundwater basins, creating an annual deficit or annual overdraft. WRD is enabled under the California Water Code to purchase and recharge additional water to make up the overdraft, which is known as artificial replenishment or managed aquifer recharge. WRD has the authority to levy a replenishment assessment on all pumping within the District to raise the funds necessary to purchase the artificial replenishment water and to pay for projects and programs necessary for replenishment and groundwater quality management activities. To more efficiently manage the West Coast and Central basins and allow flexibility for basin pumpers, the Judgments established provisions for carryover of unused annual pumping rights in any given year and an exchange pool wherein water rights not used by one party can be made available to another.

In 2009, motions were filed in court to amend both basin Judgments to allow additional water storage. The amendments include provisions that would allow implementation of water augmentation projects whereby recharge and extraction volumes could be matched within an established timeframe that would allow pumping beyond adjudicated rights, essentially increasing the recharge and extraction capacities of the basins. The Judgment amendment allows for increased optimization of the West Coast Basin and Central Basin operations and provides for a more reliable and cost-effective water supply for the region.

In December 2013 and December 2014, the Central Basin and West Coast Basin Judgments were amended, declaring water rights and providing provisions for the storage and extraction of stored water. The amendments enable large-scale changes in the management practices within the basins, which are expected to enhance opportunities to develop recycled water for recharge and improve the capability to utilize the basins' storage for conjunctive use. "Conjunctive use" refers to coordinating the management of surface water and groundwater to improve the overall reliability of water supply (Pacific Institute, 2011).

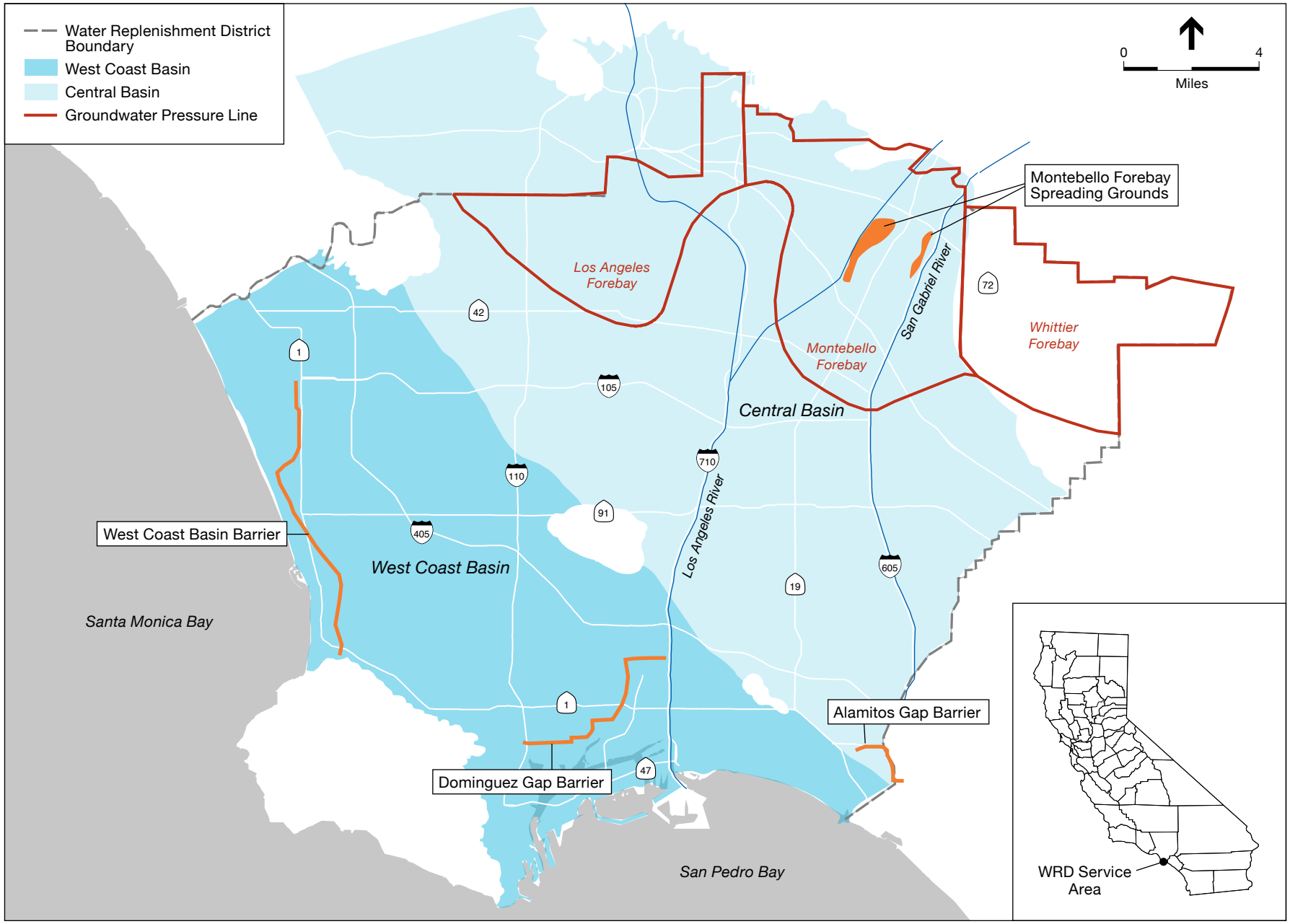
As a result of the Judgment amendments, the Watermaster in each basin is now comprised of three constituent entities: 1) Administrative Body, 2) Water Rights Panel, and 3) Storage Panel. WRD was designated as the Administrative Body for both basins and is responsible for preparing the annual *Watermaster Service* reports and submitting them to the Water Rights Panels. The Water Rights Panels (comprised of water rights holders) are responsible for enforcement of water rights and for submitting the final *Watermaster Service* reports to the Superior Court of the State of California for filing. The Storage Panels, comprised of the WRD Board of Directors and the Water Rights Panels, are responsible for reviewing and approving storage and augmentation projects that require the construction of new facilities.

2.2 Existing Groundwater Replenishment and Facilities

2.2.1 Central Basin

Groundwater replenishment in the Central Basin is achieved via surface spreading at the Whittier Narrows Dam and Montebello Forebay Spreading Grounds (MFSG), infiltration in the Lower San Gabriel River, and via direct injection at the Alamitos Gap Barrier Project (see **Figure 2-2**). The MFSG consists of two separate facilities located downstream of the Whittier Narrows Dam: the Rio Hondo Coastal Spreading Grounds, adjacent to the Rio Hondo, and the San Gabriel Coastal Spreading Grounds, adjacent to the San Gabriel River channel. The Rio Hondo Coastal Spreading Grounds consists of off-channel facilities and the San Gabriel Coastal Spreading Grounds consists of both off-channel spreading grounds and unlined portions of the river. The MFSG is owned and operated by the Los Angeles County Flood Control District (LACFCD) for the purposes of storm water conservation and flood control. These spreading grounds have been used to recharge storm water since 1938-1939. Imported water was added in the 1950s, and recycled water in the 1960s, to maximize replenishment of the Central Basin. Currently, the MFSG is limited to a recycled water contribution (RWC) of 45 percent averaged over a 10 year period, when considering recharge of tertiary-treated recycled water relative to total basin recharge.

The Alamitos Gap Barrier Project is a seawater intrusion barrier that injects imported water (provided by the City of Long Beach) and advanced-treated recycled water (provided by the Long Beach Water Reclamation Plant) into 43 wells located along the coastal border between Los Angeles and Orange Counties. It has been in operation since 1964. The barrier system is owned, operated, and maintained by the Los Angeles County Department of Public Works (LACDPW).



SOURCE: ESA, 2012.

WRD - Groundwater Basins Master Plan . 120192

Figure 2-2
Existing Replenishment Facilities

2.2.2 West Coast Basin

Groundwater replenishment in the West Coast Basin is performed exclusively through injection at two seawater intrusion barrier systems. In addition, some replenishment water travels from spreading grounds in the Central Basin to the West Coast Basin from groundwater movement across the Newport-Inglewood Fault Zone. The West Coast Basin Barrier Project consists of over 150 injection wells located along the west coast of the Los Angeles County Coastal Plain south of Los Angeles International Airport. It has been in operation since 1953 and utilizes both imported and advanced-treated recycled water provided by the West Basin Municipal Water District. The Dominguez Gap Barrier Project consists of 41 injection wells spaced over four miles along the Dominguez Channel. It has been in operation since 1969 and also utilizes both potable and recycled water provided by the City of Los Angeles. Both barrier systems are shown in **Figure 2-1**. The barrier systems are also owned, operated, and maintained by LACDPW similar to the Alamitos Gap Barrier Project.

2.3 Replenishment Water Sources

Three sources of replenishment water are available to WRD: imported water, recycled water and storm water. Imported water from the State Water Project and the Colorado River Aqueduct delivered by the Metropolitan Water District of Southern California (Metropolitan) has historically been available for spreading at the MFSG and for the injection well systems. Storm water from the San Gabriel and Rio Hondo rivers is currently captured and used for recharge at the MFSG.

Since the 1960s, tertiary-treated recycled water has been spread at the MFSG, supplied by LACSD's Whittier Narrows Water Reclamation Plant (WRP), San Jose Creek WRP, and Pomona WRP. The Whittier Narrows WRP and Pomona WRP each have a capacity of 15 million gallons per day (mgd) of tertiary treated recycled water, and the San Jose Creek WRP has a capacity of up to 100 mgd. The Los Coyotes WRP located south of the narrows has a capacity of up to 37.5 mgd of tertiary-treated recycled water that is currently discharged to the San Gabriel River or used for non-potable reuse. The Long Beach WRP has a capacity of up to 25 mgd. Approximately 8 mgd is provided advanced treatment and used as source water for the Alamitos Gap Barrier Project.

In the West Coast Basin, the Hyperion Treatment Plant operated by the City of Los Angeles provides secondary-treated water to the Edward C. Little Water Reclamation Facility (WRF), which treats 17 mgd with advanced treatment for use in the West Coast Basin Barrier Project . The City of Los Angeles also operates the Terminal Island WRP that provides approximately 5 mgd of advanced treated water for the Dominguez Gap Barrier Project .

Currently, regulations limit the amount of recycled water for use in replenishment, and so recycled water is blended with storm water and imported water for recharging at the MFSG. The amount of recycled water used varies seasonally and annually depending on availability, and

depends on the fluctuating capacity of the MFSG and the availability of storm water and imported water for blending purposes.

2.3.1 Definitions

Recycled water is defined as water which, "as a result of treatment of waste, is suitable for a direct beneficial use or a controlled use that would not otherwise occur and is therefore considered a valuable resource" (California Water Code Section 13050). The use of recycled water throughout the State of California is governed by the Water Recycling Criteria in the California Code of Regulations Title 22 (22 CCR), Division 4, Chapter 3. According to the Water Recycling Criteria, recycled water can be used for groundwater replenishment, irrigation, impoundments, cooling, and other purposes including but not limited to flushing toilets, industrial processes, structural fire fighting, mixing concrete, dust control on roads and streets, and cleaning roads and sidewalks (22 CCR §§60301-§60307; §60320.100 et seq.;§60320.200 et seq.). The Water Recycling Criteria also define and designate the minimum level of treatment required for each type of beneficial use of recycled water. Typical levels of treatment include disinfected secondary recycled water, disinfected tertiary recycled water, and advanced treated water.

Recycled water undergoes primary, secondary and tertiary treatment at wastewater treatment plants. During primary treatment, large solids are removed. Secondary treatment uses bacteria to remove approximately 90% to 95% of the remaining solids and uses a disinfectant, such as chlorine, to destroy bacteria, viruses, and other pathogens. Tertiary treatment includes filtration prior to disinfection. Beyond tertiary treatment, additional advanced treatment uses new technology to produce purified recycled water. The treatment processes duplicate and accelerate nature's own purifying actions.

There are additional requirements governing the use of recycled water for groundwater replenishment. Such projects are defined as Groundwater Recharge Replenishment Projects (GRRPs) when the target groundwater basin is designated in a Water Quality Control Plan as a source of municipal and domestic water supply (22 CCR §60301.390). For a GRRP, "recharge water" is defined as the combination of recycled water and other diluent non-recycled water used for groundwater replenishment. Additional requirements for GRRPs include but are not limited to determination of retention time (minimum period of time recharged water must remain underground), determination of diluent water percentage or ratio, monitoring and operation plans, and wastewater source control (22 CCR §60320.100 et seq.;§60320.200 et seq.).

2.4 Existing Water Pumpers

Existing pumpers in the West Coast Basin and Central Basin are comprised of both private and public entities, representing investor-owned utilities, Los Angeles County, municipalities, mutual water companies, oil companies, private entities, school districts, special districts, and the State of California. Within the Central Basin there are 128 pumpers with water rights and in the West Coast Basin there are 56 pumpers with water rights.

2.5 WRD Projects and Programs

WRD has implemented a variety of projects and programs to manage both groundwater replenishment and groundwater quality in the West Coast and Central basins. Existing WRD programs and facilities are described below.

2.5.1 Water Independence Now

WRD's Water Independence Now (WIN) program seeks independence from imported water for groundwater replenishment. WRD has pursued this goal through recent infrastructure projects that increase storm water retention, such as the Interconnection Pipeline between the San Gabriel and the Rio Hondo Spreading Grounds, the expansion of the Whittier Narrows Conservation Pool, and the installation of rubber dams along the San Gabriel River. In addition, the following two projects provide recycled water to offset imported water for groundwater replenishment.

Groundwater Improvement Reliability Project (GRIP)

WRD is in the process of constructing the Groundwater Improvement Reliability Project (GRIP). GRIP will replace the current use of 21,000 AFY of imported water at the MFSG with a combination of both tertiary-treated and advanced-treated recycled water for groundwater replenishment. Approximately 11,000 AFY of tertiary-treated recycled water produced by LACSD's San Jose Creek WRP will be conveyed to the MFSG for recharge via an existing underground outfall pipeline. In addition, WRD will construct an advanced water treatment (AWT) plant to produce 10,000 AFY of AWT recycled water for recharge at the MFSG. This AWT recycled water will be conveyed to the MFSG for recharge using the existing underground outfall pipeline referenced above.

Leo J. Vander Lans Advanced Water Treatment Facility Project

WRD constructed the Leo J. Vander Lans Advanced Water Treatment Facility in 2005 to augment injection water supplies to the Alamitos Gap Barrier Project. The facility receives treated water from the LACSD's Long Beach WRP and provides additional microfiltration, reverse-osmosis, and ultraviolet light treatments. The plant is designed to export roughly 8,000 AFY to the Alamitos Gap Barrier Project to provide 100 percent of the water for the barrier.

2.5.2 Robert W. Goldsworthy Desalter Project

WRD constructed the Robert W. Goldsworthy Desalter project in the City of Torrance and it has been operating since 2002. The Goldsworthy Desalter is designed to treat brackish groundwater from the saline plume that was stranded inland of the West Coast Basin Barrier Project after the barrier became operational in the 1950s and 1960s. The desalter's treatment capacity is about 2.5 mgd and is currently being expanded to 5.0 mgd. The final product water from this facility is

delivered to the City of Torrance's distribution system for potable use. The City of Torrance is responsible for operation and maintenance of the Desalter under contract with WRD.

2.5.3 Recycled Water Program

WRD has been using recycled water for groundwater recharge for surface spreading at the MFSG since 1962 and injection at seawater intrusion barriers since 1994. In partnership with other agencies, WRD continues to investigate the efficacy of soil aquifer treatment during recharge to characterize the percolation process and quantify the filtering and purification properties of the soil. Monitoring is specifically aimed at filtering out nitrogen, organic carbon, and chemicals of emerging concern (CECs), such as pharmaceuticals and endocrine disrupting chemicals. WRD also conducts tracer tests to track the movement of water from the spreading grounds.

2.5.4 Groundwater Quality Program

In an ongoing effort to address any water quality issues that affect the WRD's projects and the pumpers' facilities, WRD monitors and evaluates drinking water regulations and legislation under its Groundwater Quality Program. WRD assesses regulatory and legislative proposals, and if concerns arise, partners with other interested agencies to resolve them in early phases of regulatory and legislative processes. Additionally, WRD constantly monitors water quality compliance in production wells, monitoring wells, and spreading and injection waters under this program. If any waters are found noncompliant with standards, District staff investigate to determine the cause, recommend a variety of action plans, and subsequently implement the best course of action to achieve compliance.

2.5.5 Geographic Information System (GIS)

The WRD maintains an extensive in-house GIS database that includes a variety of data for its service area. GIS is an important tool in the District's basin planning and management system, providing a variety of spatial information from well locations, groundwater elevations, and flow models. This data is obtained from the WRD's Regional Groundwater Monitoring Program, permit compliance monitoring, and water quality data from the California Department of Public Health.

2.5.6 Regional Groundwater Monitoring Program

WRD's Regional Groundwater Monitoring Program maintains data that WRD has collected over the last half-century for groundwater basin management purposes. Program data is pulled from a network of roughly 300 WRD and USGS-installed monitoring wells at over 50 locations throughout the District's service area in addition to water purveyor's groundwater production wells.

WRD's Hydrogeologic Conceptual Model is an effort to better characterize the conditions of the groundwater basins, and involves intensive data analysis of information gathered from monitoring and production wells, historical information, and oil wells. Ultimately, the goal is to enfold this information into the District's GIS database to create more accurate models of the aquifers and significantly improve understanding of groundwater in the region.

2.5.7 Safe Drinking Water Program (SDWP)

The District's SDWP has been in operation since 1991 to promote the clean up and remediation of groundwater at specific wells. SDWP programs are enacted via direct input and coordination with well owners. By installing wellhead treatment facilities at existing production wells, WRD hopes to extract contaminants, such as VOCs, from the groundwater supply and deliver the treated extracted water for potable use. The treatment and removal of anthropogenic (man-made) contaminants is classified by WRD as Priority A Projects, while the treatment of naturally occurring contaminants is classified as Priority B.

2.6 Master Planning Process

The Draft GBMP was developed in two phases: Phase I developed alternatives and Phase 2 conducted groundwater modeling and economic assessments of the various alternatives to develop the most feasible, cost-effective approach to groundwater basin management. The GBMP is being developed as a tool for local stakeholders including local pumpers, water wholesalers, and recycled water purveyors to maximize the beneficial use of the groundwater resources underlying southern Los Angeles County. WRD hosted three workshops in 2011 to encourage stakeholder involvement in the development of the plan. Several additional meetings with Central Basin stakeholders were held following these initial workshops to provide information and receive input. The Draft GBMP was prepared in July 2012 by WRD and is currently being revised to reflect changes in existing conditions. Once this PEIR is certified by WRD Board of Directors, the GBMP will be finalized and adopted by WRD.

2.7 References – Background

Pacific Institute, 2011. *Improving Water Management through Groundwater Banking: Kern County and the Rosedale-Rio Bravo Water Storage District.* Pacific Institute Farm Water Success Stories: Groundwater Banking.

CHAPTER 3
Program Description

3.1 Introduction

The Draft Groundwater Basins Master Plan (GBMP) establishes a framework to enhance groundwater replenishment in the West Coast and Central basins, increase the reliability of groundwater supplies, improve and protect groundwater quality, and accommodate growing potable water demands. The GBMP identifies and evaluates specific projects and management strategies that would increase replenishment and beneficial use of recycled water and captured storm water. The increased replenishment would require increased utilization of existing spreading grounds, injection wells, and recovery facilities, expanding or upgrading recycled water treatment facilities, and the installation of new water infrastructure including injection and extraction wells, conveyance pipelines, and pump stations.

The projects and management strategies in the Draft GBMP are organized around two target levels of future groundwater replenishment and extraction, referred to as Concept A and Concept B. Concept A provides for replenishment needed to meet the existing adjudicated water rights within both groundwater basins. Concept B would provide for additional groundwater basin storage and extraction above current adjudicated levels. The Draft GBMP uses a stepwise approach to developing additional water supplies to meet these two concepts through enhanced replenishment and extraction utilization of the Basins. The Draft GBMP develops and evaluates projects that could be implemented to satisfy these goals, firstly of Concept A and subsequently of Concept B.

The Draft GBMP is intended to be a starting point for basin-wide planning. The Draft GBMP is not intended to be a capital improvement program, nor does it address any of the institutional, financial, regulatory, or legal issues that might be associated with implementation of the identified projects or alternatives. Rather, the Draft GBMP provides technical analysis of what might be possible to enhance utilization of the West Coast and Central groundwater basins for local and regional benefits. Complementing stakeholder outreach conducted during the preparation of the Draft GBMP, WRD intends to use the CEQA process to formally vet the Draft GBMP alternatives and further open dialogue about these potential opportunities. The determination of the relative value of these opportunities will stem from such dialogue. WRD's intent is to facilitate these discussions with the preparation of this Draft GBMP Program EIR.

3.2 GBMP Location

The projects and management strategies proposed in the Draft GBMP for Concept A and Concept B would be implemented primarily within the WRD service area. The WRD service area is located in the Los Angeles Basin as shown previously in Figure 1-1. It encompasses 420 square miles and includes both the West Coast Basin and Central Basin. The service area borders Orange County on the southeastern side, the Main San Gabriel Basin on the northeastern side, the Hollywood and Santa Monica Subbasins on the northern side, the Santa Monica Bay on the western side, and San Pedro Bay on the southern side.

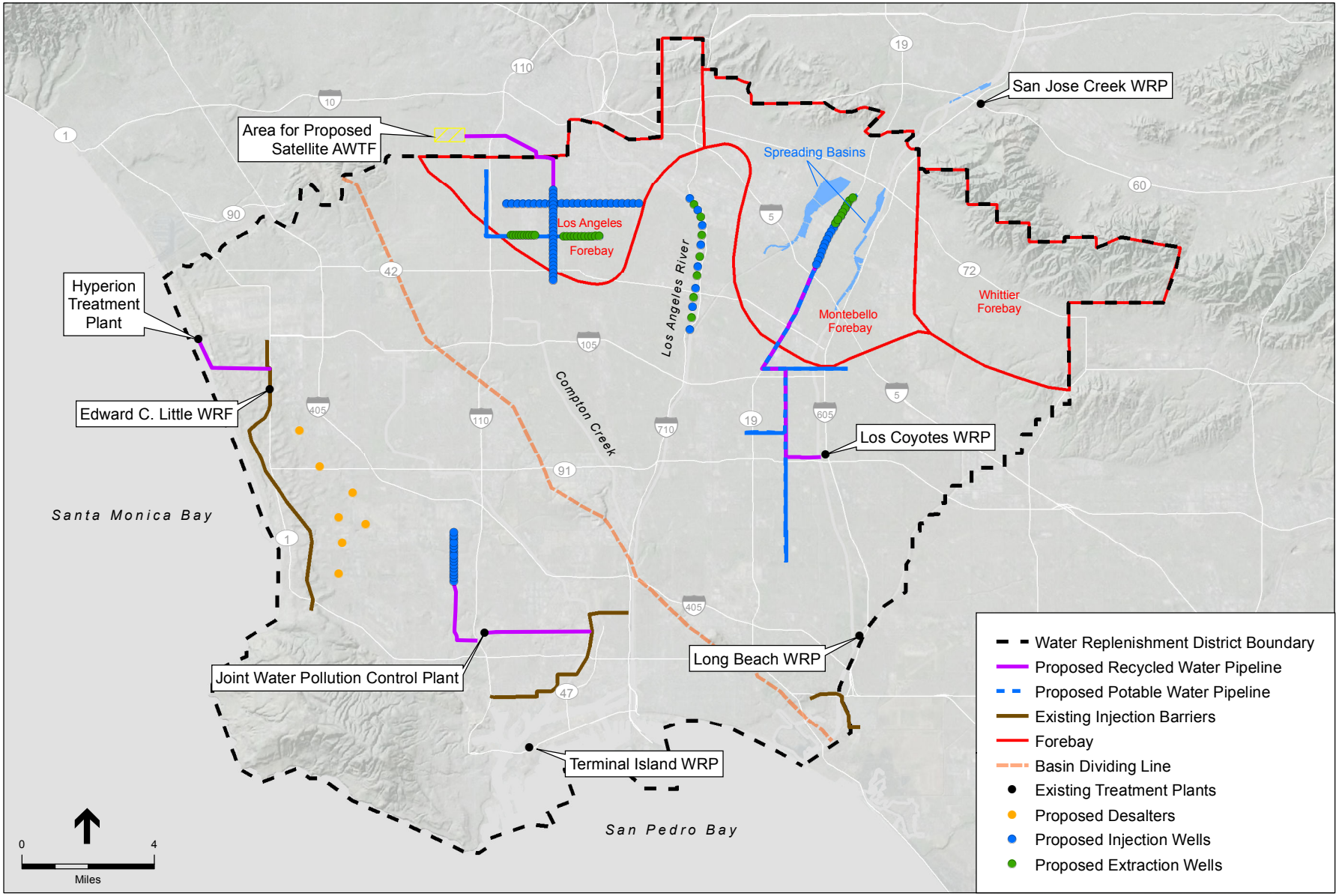
Individual project locations are specified in the Draft GBMP. **Figure 3-1** provides general geographic location for the proposed projects, with additional maps showing greater detail in the **Map Atlas** included as **Appendix B**. The projects are grouped generally within four geographic regions of the WRD service area: the northern portion of the West Coast Basin, the southern portion of the West Coast Basin, the Montebello Forebay in the Central Basin, and the Los Angeles River and Forebay in the Central Basin. **Table 3-1** lists the cities within these general geographic areas that would be affected by proposed aboveground facilities.

TABLE 3-1
GENERAL GEOGRAPHIC LOCATIONS FOR PROPOSED PROJECTS

General Geographic Project Locations	Cities
West Coast Basin – North	Los Angeles, El Segundo
West Coast Basin – South	Los Angeles, Carson, Unincorporated Los Angeles County
Central Basin – Montebello Forebay	Los Angeles, Huntington Park, Vernon, Bell, Cudahy, South Gate, Maywood, Unincorporated Los Angeles County
Central Basin – Los Angeles Forebay/River	Bellflower, Downey, Pico Rivera, Industry, Cerritos, Norwalk, Lakewood, Long Beach, Unincorporated Los Angeles County

3.3 Need for the GBMP

The overall potable water demand of the urbanized areas within the Central Basin and West Coast Basin is approximately 625,000 AFY. This demand is met either by pumping groundwater or by imported water supplied by the Metropolitan Water District of Southern California (Metropolitan, or MWD) or the City of Los Angeles. The availability of low priced potable water from Metropolitan in the last 30 or 40 years has caused pumping within the WRD service area to be below the adjudicated levels. During water years 2000 to 2009, average annual pumping in the West Coast Basin has been 42,000 AFY, which is approximately two-thirds of adjudicated rights, or about 22,500 AFY less than the adjudicated limit of 64,468 AFY (**Table 3-2**). Similarly, in the Central Basin, average annual pumping has been 195,500 AFY, which also is about 22,000 AFY less than the adjudicated limit of 217,367 AFY (Table 3-2).



SOURCE: ESA, 2012.

WRD - Groundwater Basins Master Plan . 120192

Figure 3-1

Proposed Geographic Locations of GBMP Projects

In recent years, WRD has provided replenishment sufficient to augment natural recharge and meet the overlying groundwater demands. However, as costs of imported water continue to increase in the future, pumpers will likely increase use of groundwater to meet local demands. WRD is responsible for ensuring that groundwater replenishment is sufficient to accommodate the additional 44,500 AFY of future extraction in the West Coast and Central basins that is allowed under the existing adjudicated rights. If pumping increases to the full adjudicated limit and alternative sources for basin replenishment are not pursued, WRD would be responsible for replenishing an additional 30,000 AFY, of which 25,500 AFY would be imported water.[1] The Draft GBMP identifies projects that could provide increased replenishment with locally developed supplies rather than imported water.

TABLE 3-2
ARTIFICIAL REPLENISHMENT IN WRD SERVICE AREA BY BASIN
(acre-feet per year, 10-year average, Water Years 2000-2009)

	West Coast Basin	Central Basin
Existing APA or Water Rights	64,468	217,367
Existing Artificial Replenishment by WRD	22,000	134,000
Additional Replenishment Required for Concept A	**18,000**	**12,000**
Total Artificial Replenishment To Support Concept A	**40,000**	**146,000**
Additional Replenishment Required for Concept B	**30,000**	**103,250**
Total Artificial Replenishment to Support Concept A + B	**70,000**	**249,250**

Source: GBMP; CH2M 2012.

The cost of imported water is affected by numerous factors including increasing demands, reduced supplies and rising energy costs. Water-related energy use consumes 19 percent of the state's electricity (CEC, 2005). For southern California, when considering the total water use cycle, water conveyance consumes the greatest amount of electricity, when compared to treatment and distribution (CEC, 2005). Furthermore, the reliability of imported water deliveries has been negatively affected by reductions in State Water Project water deliveries due to hydrologic and environmental conditions, reductions in Colorado River supplies available to California (due to the implementation of the "Law of the River"), and locally and regionally dry conditions that affect storage and availability of supplies on a year-to-year basis. In addition, the

[1] To pump the full adjudication of the West Coast Basin, an additional 18,000 afy of artificial replenishment will be needed, and to pump the full APA in the Central Basin, an additional 12,000 afy will be needed. Of that, existing facilities can provide an additional 4,500 afy (i.e., 1,000 afy from ECLWRF, 1,500 afy from TIWRP and 2,000 afy from LVLWTF); thus WRD would need to secure an estimated total of 25,500 AFY of additional replenishment to meet the long-term future pumping demands in the West Coast and Central Basins

reliability of water supplies in the future will be affected by such factors as climate change, which may alter precipitation patterns, as well as natural disasters or infrastructure system failures that could significantly affect deliveries. As a result of the uncertainties in imported water supplies and potentially significant increases in the cost of imported water, local pumpers are likely to increase groundwater pumping.

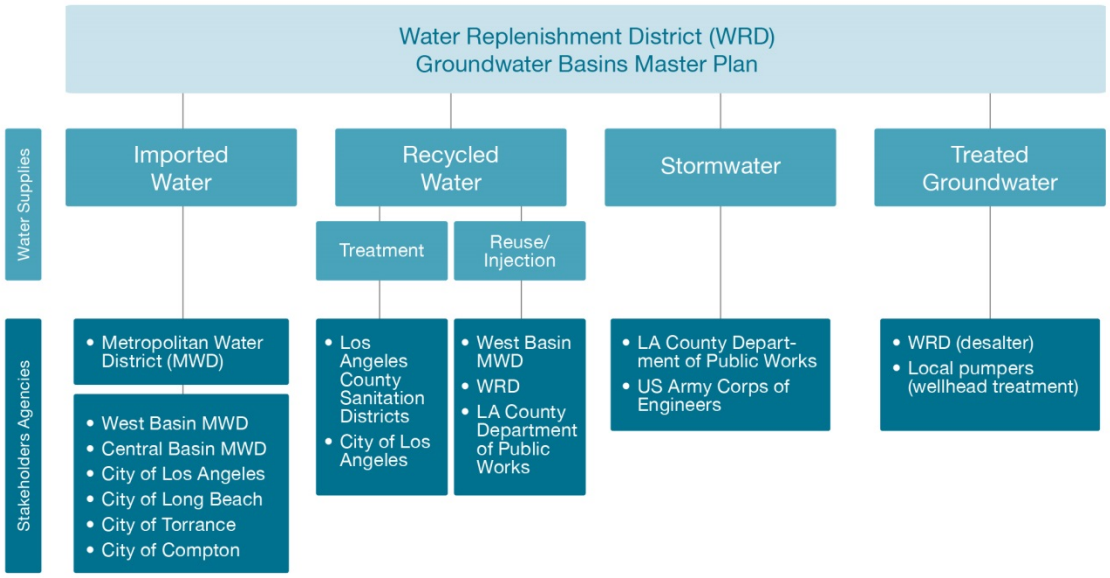
Efforts to reduce reliance on imported water have already been initiated throughout the WRD service area. WRD has adopted the Water Independence Now (WIN) initiative which promotes increased conservation, increased use of recycled water, enhanced storage of water in groundwater basins to protect against drought and emergency water supply interruptions, and improved protection of local groundwater resources. The West Basin Municipal Water District is implementing their Water Reliability 2020 Program that is designed to reduce imported water use from 66 to 33 percent by the year 2020 by increasing recycling and conservation efforts, increasing educational programs about conservation, and developing an ocean water desalination program. In addition, the City of Los Angeles has developed an Integrated Resources Plan (IRP) and subsequent Recycled Water Master Planning Documents that promotes reduced reliance on imported water.

The Draft GBMP provides a strategic vision for minimizing and ultimately eliminating the use of imported water for replenishment of the West Coast Basin and Central Basin. Part of this vision is the development and utilization of groundwater storage capacities within the service area that could provide water beyond the currently adjudicated amounts for future water supply. The GBMP considers this future water supply development for the region as Concept B. Concept B would go beyond the WRD's primary replenishment responsibilities and increase the use of local groundwater to meet overlying potable water demands in its service area. This goal is consistent with the WIN initiative to decrease dependence on imported water for the entire region.

As shown in **Figure 3-2**, the Draft GBMP integrates multiple stakeholders toward the common goal of increasing local water supplies. Independently, the stakeholders would not be able to implement water supply improvement projects that span multiple jurisdictions or are beyond their area of expertise or authorized mandate. The GBMP provides a menu of projects to achieve water supply objectives that benefit multiple water providers and users.

Individual projects identified in the Draft GBMP would be implemented in conjunction with other local agencies listed below, which would be considered Responsible Agencies under CEQA:

- Water Replenishment District of Southern California
- West Basin Municipal Water District
- Central Basin Municipal Water District
- Sanitation Districts of Los Angeles County
- City of Los Angeles
- City of Long Beach
- Los Angeles County Department of Public Works, Flood Control District



WRD-Central and West Coast Groundwater Basins Master Plan / 120192

Figure 3-2
GBMP Stakeholder Agencies

Finally, the Draft GBMP is consistent with SB 1386 passed by the California State legislature in 2012 that establishes WRD with the sole authority to manage storage opportunities within the West Coast and Central Basins of Los Angeles County. WRD spans multiple jurisdictions overlying common groundwater resources and is authorized to manage the resource for common water supply and storage purposes. The GBMP provides a planning vision to accomplish this goal.

3.4 GBMP Objectives

The Draft GBMP provides an overall plan for future management of the West Coast Basin and Central Basin to meet existing replenishment requirements and evaluates the potential to increase the use of local groundwater supplies to meet overlying demands beyond current capabilities. The Draft GBMP identifies several approaches to enhance utilization of both basins by strategically locating and managing groundwater pumping and extraction to increase and optimize the long-term, sustainable replenishment and extraction of groundwater. These approaches are intended to satisfy objectives for both Concept A and Concept B.

The primary objectives of the proposed project are to:

- Provide adequate local replenishment water supplies to meet the future needs of groundwater pumpers
- Improve the reliability of the replenishment supplies by reducing and eventually eliminating the current use of imported water for basin replenishment
- Improve groundwater quality

- Enhance the ability of both basins to sustainably store and deliver water supplies

3.5 GBMP Description

This section further explains the Draft GBMP Concepts and describes the components that may be implemented to meet the objectives stated above. The projects and management strategies in the Draft GBMP are organized around two target levels of future groundwater replenishment and extraction: First, meet the water rights and adjudicated pumping limits (Concept A), and second, provide for additional groundwater basin storage and extraction above current adjudicated levels (Concept B). Phasing of projects would allow WRD to meet near-term pumping needs while reserving the potential to expand and meet pumping demands in accordance with the recent Judgment Amendments (see Chapter 2).

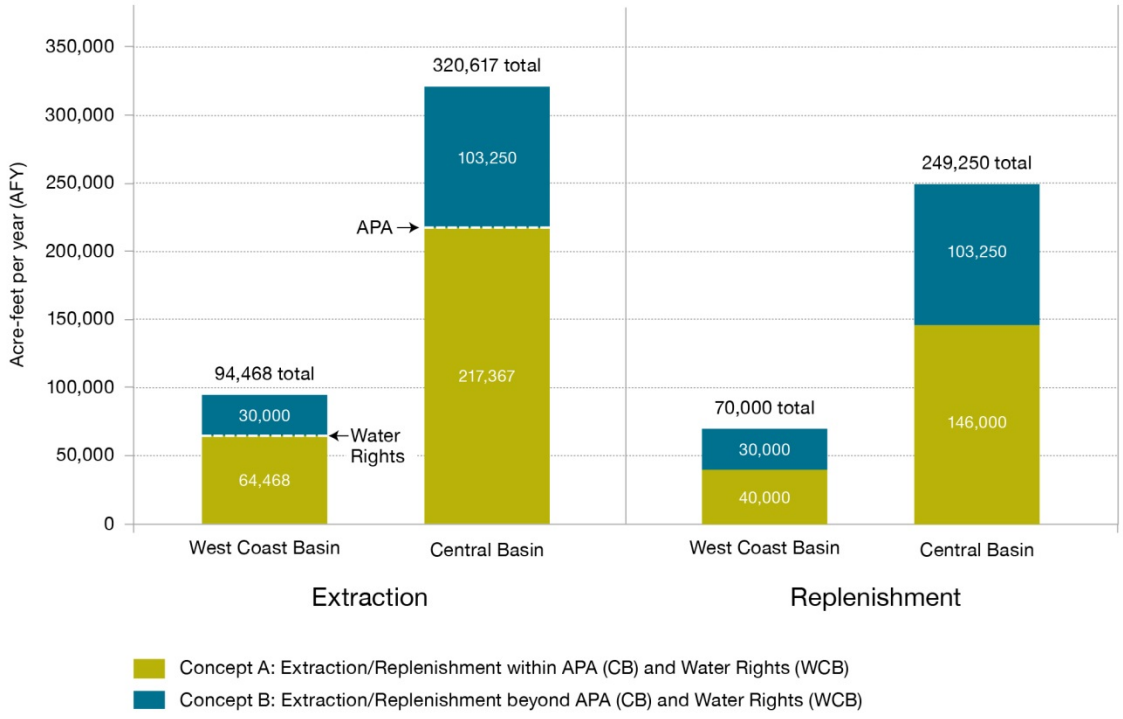
3.5.1 GBMP Water Replenishment Goals

Concept A: Meet Full Water Rights

The adjudicated extraction limit for the West Coast Basin is 64,468 AFY and for the Central Basin is 217,367 AFY. It is WRD's responsibility to ensure these limits can be extracted by the water rights holders. Management actions and projects that allow for basin replenishment and extraction up to the current adjudicated limits are developed under Concept A. WRD would need to replenish approximately 40,000 AFY on average in order to meet the requirements for extraction of 64,468 AFY in the West Coast Basin (Table 3-2). Approximately 146,000 AFY would need to be replenished in the Central Basin in order to meet the requirements for extraction of 217,367 AFY (GBMP, CH2M, 2012). WRD would need to replenish an additional 18,000 AFY in the West Coast Basin and 12,000 AFY in the Central Basin relative to existing conditions in order to allow for extractions up to the adjudicated limits (Table 3-2). **Figure 3-3** and Table 3-2 identify extraction and replenishment goals for both the West Coast Basin and Central Basin.

Concept B: Basin Augmentation

The recent Judgment amendments for the West Coast Basin and Central Basin allow basin stakeholders to recharge above existing replenishment requirements and extract a similar volume of groundwater above the adjudicated extraction limits. The extraction limits are tied to the physical basin capacities as well as supply limitations for replenishment. Concept B would provide added replenishment for extraction up to 30,000 AFY above the current West Coast Basin adjudication, or a total of 94,468 AFY (Table 3-2, Figure 3-3). In the Central Basin, up to 103,250 AFY of additional replenishment above the current APA would support the target extraction volume of up to 320,617 (Table 3-2, Figure 3-3).



WRD-Central and West Coast Groundwater Basins Master Plan / 120192

Figure 3-3
Extraction and Replenishment Goals for the West Coast and Central Basins

3.5.2 GBMP Water Replenishment Components

The following components are the categorical building blocks for the array of projects and management strategies that may be implemented to achieve the objectives of Concept A and Concept B planning conditions. These components consist of replenishment water supplies, recharge mechanisms, and pumping patterns as shown in **Figure 3-4**.

Replenishment Supplies

Recycled Water

In the Central Basin, additional recycled water may be developed from LACSD's San Jose Creek WRP and Los Coyotes WRP. WRD also recently expanded the Leo J. Vander Lans Water Treatment Facility (WTF), which currently treats recycled water produced by LACSD's Long Beach WRP and may be supplemented by source water from the Los Coyotes WRP. Full utilization of San Jose Creek WRP and Los Coyotes WRP flows could provide up to an additional 45,770 AFY of recycled water for replenishment through surface spreading and injection in the Montebello Forebay. In addition, opportunities exist to construct a new satellite advanced water treatment facility (AWTF) to produce high quality recycled water for injection into the Los Angeles Forebay.

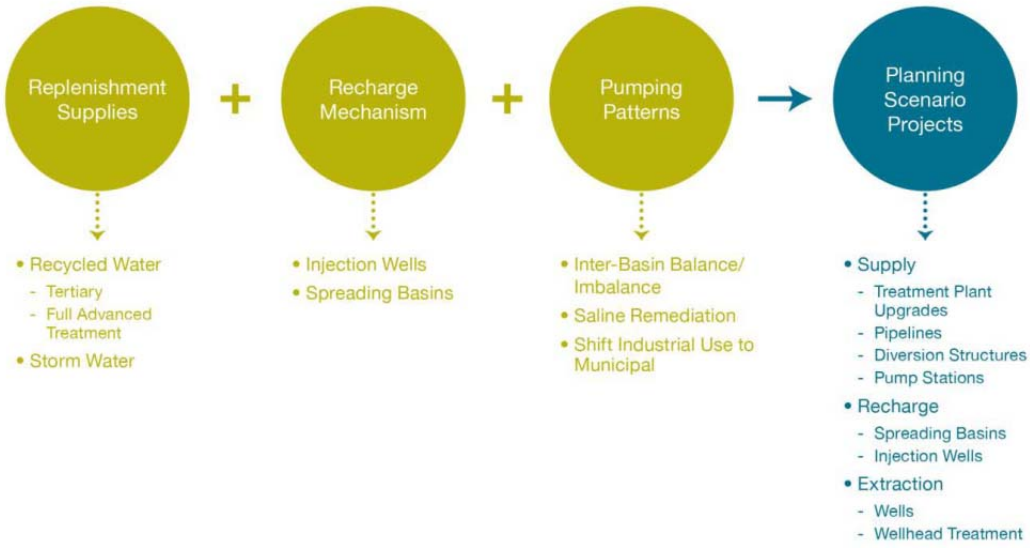


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Figure 3-4
GBMP Water Supplies, Recharge Mechanisms, and Pumping Patterns

In the West Coast Basin area, opportunities exist to use available recycled water supplies from the City of Los Angeles' Hyperion Treatment Plant, as well as LACSD's Joint Water Pollution Control Plant (JWPCP) (Figure 3-1). Additional recycled water may be developed from expansion of West Basin Municipal Water District's (WBMWD) Edward C. Little Water Reclamation Facility (E.C. Little WRF). These supplies could provide up to an additional 48,000 AFY of recycled water for injection at the barrier projects and proposed new injection wells, allowing for pumping up to the basin water rights of 64,468 AFY and beyond by as much as 30,000 AFY. **Table 3-3** summarizes the existing wastewater treatment plants that could supply recycled water for increased groundwater replenishment in both basins.

Storm Water

The GBMP includes additional storm water recharge capacity within the Montebello Forebay and in the Los Angeles Forebay in the Central Basin. Additional storm water could be captured from the San Gabriel River and recharged at the existing MFSG. It is estimated that up to 55,000 AFY on average could be available in the San Gabriel River (GBMP; CH2M, 2012). Additional storm water could be captured from the Los Angeles River as well and recharged through new proposed facilities (Figure 3-1). It is estimated that up to 5,000 AFY on average of wet season storm flow could be available in the Los Angeles River.

TABLE 3-3
TREATMENT PLANTS PRODUCING RECYCLED WATER WITHIN THE WRD SERVICE AREA

Acronym	Plant Name	Location	Production	Capacity	Operator
CRWRF	Juanita Millender-McDonald Carson Regional Water Reclamation Facility	Carson	5.9 MGD	5.9 MGD	West Basin MWD
ECLWRF	Edward C. Little Water Reclamation Facility	El Segundo	40 MGD	40 MGD	West Basin MWD
HTP	Hyperion Treatment Plant	Playa del Rey	350 MGD	450 MGD	City of LA DPW
TIWRP	Terminal Island Water Reclamation Plant	San Pedro	4 MGD	5 MGD	City of LA DPW
LBWRP	Long Beach Water Reclamation Plant	Long Beach	18 MGD	25 MGD	LACSD
LCWRP	Los Coyotes Water Reclamation Plant	Cerritos	26 MGD	37.5 MGD	LACSD
JWPCP	Joint Water Pollution Control Plant	Carson	300 MGD	400 MGD	LACSD
LVLWTF	Leo J. Vander Lans Water Treatment Facility	Long Beach	8 MGD	8 MGD	WRD
SJCWRP	San Jose Creek Water Reclamation Plant	LA County (unincorporated)	70 MGD	100 MGD	LACSD
POWRP	Pomona Water Reclamation Plant	Pomona	15 MGD	15 MGD	LACSD
WNWRP	Whittier Narrows Water Reclamation Plant	El Monte	15 MGD	15 MGD	LACSD

SOURCES: http://www.lacsd.org/wastewater/wwfacilities; http://www.lasewers.org/treatment_plants; http://lbwater.org/water-reuse; http://www.westbasin.org; http://www.wrd.org.

Recharge Mechanisms

Recharge mechanisms available within the WRD service area include spreading grounds and injection wells. Due to localized geology and soil conditions, spreading is only an option for the Central Basin; in the West Coast Basin, the subsurface formations preclude surface spreading. Figure 3-1 shows the boundaries of the Montebello Forebay and Los Angeles Forebay in the Central Basin. Within these forebay areas, surface spreading to directly recharge to the potable aquifer is possible. Outside of the forebay areas, only direct injection can be used to recharge the potable aquifers.

The primary spreading area in the Central Basin is the MFSG. The MFSG have been in service since the late 1930s and have provided groundwater recharge using storm water and recycled water along the Rio Hondo and San Gabriel Rivers for over 50 years. The Draft GBMP includes

utilization of the existing basins at the MFSG, potential development of new percolation facilities along the Los Angeles River in the Los Angeles Forebay, and potential development of new injection wells throughout the Central Basin. The GBMP does not include changes to operation of the ABP injection wells.

In the West Coast Basin, direct injection is currently used to recharge the groundwater basin in addition to preventing seawater intrusion. As shown in Figure 3-1, direct injection facilities are currently located at the West Coast Basin Barrier Project (WCBBP) and the Dominguez Gap Barrier Project (DGBP). The Draft GBMP includes utilization of these barrier projects to increase replenishment opportunities as well as development of new injection wells in the West Coast Basin.

Pumping Patterns and Aquifer Storage

The amount of aquifer storage capacity available for recharge in certain areas partially depends on the level of pumping. For example, increased pumping within the Montebello Forebay may provide more seasonal storage capacity. In addition, some groundwater that currently is used for industrial and municipal applications could be replaced with recycled water, freeing up groundwater resources for other potable uses. Imported water also could be provided to groundwater rights holders in-lieu of pumping to create in-lieu replenishment. The Draft GBMP evaluates opportunities to modify pumping patterns in specific geographic locations to increase the overall beneficial uses of the groundwater basin.

In addition, the Draft GBMP evaluates the effects of pumping patterns on adjudicated storage for Concept B. The recent Judgment Amendments determined that there is available space which has not been optimally utilized for basin management and for storage. In the Central Basin, the Court has determined there is 330,000 acre-feet (AF) of space available for groundwater storage, known as "Available Dewatered Space." This Available Dewatered Space includes 220,000 AF of Adjudicated Storage Capacity plus 110,000 AF of Basin Operating Reserve for WRD. In the West Coast Basin, the Court has determined there is 120,000 acre-feet (AF) of Available Dewatered Space, composed of 70,900 AF of Adjudicated Storage Capacity and 49,100 AF of Basin Operating Reserve.

The Adjudicated Storage Capacity in both basins is available to existing groundwater rights holders, which have a priority right to store water in Individual Storage Accounts and Community Storage. Such storage accounts can be filled through replenishment of "wet water" (i.e., actual recharge at a physical facility) or, alternatively through the conversion of annual pumping rights into storage. Previously, a certain percentage of groundwater not pumped during a given year could be carried over to subsequent years for pumping (known as "Carryover"), but now such Carryover can be used to fill storage accounts (known as "Carryover Conversion"). Thus, through a combination of recharge mechanisms and pumping patterns, the Draft GBMP evaluates scenarios that use the Available Dewatered Space as operational storage in the short term to meet replenishment goals for existing APAs under Concept A and conjunctive uses under Concept B, as well as scenarios that allow for the accumulation of long-term storage in Individual Storage Accounts and Community Storage.

3.5.3 Planning Scenario Projects

The preliminary locations of the GBMP projects described below, and summarized in **Table 3-5** on page 3-15, can be found in the **Map Atlas** provided in **Appendix B**.

West Coast Basin

Concept A

Under Concept A, the Draft GBMP identifies management strategies and projects that would provide additional replenishment of approximately 18,000 AFY to support pumping at the level of existing water rights (64,468 AFY). The principal management strategies for the West Coast Basin under Concept A include the following:

- Increase replenishment at existing barriers.
- Increase pumping up to adjudicated rights at existing wells or new extraction facilities in the vicinity of existing wells.
- Shift oil refineries from current groundwater pumping to recycled water so that rights can be leased/transferred and municipal purveyors can increase groundwater pumping for potable use.
- Adjust pumping patterns to maximize containment and removal of saline plumes.

Increased Injection of Recycled Water (Projects W0 and W1)

At the WCBBP, during water years 2000-2009 approximately 16,000 AFY was injected into the barrier. The replenishment water was a combination of imported water and recycled water from West Basin's E.C. Little WRF. As described in Chapter 2, the recycled water contribution at the WCBBP has been increasing from 50-percent to 100-percent RWC. The Draft GBMP assumes that starting in the year 2015, a total of 17,000 AFY of recycled water would be injected at the WCBBP at 100 percent RWC (**Table 3-4**).

TABLE 3-4
PROPOSED SEAWATER INTRUSION BARRIER RECYCLED WATER INJECTION INCREASES (AFY)

	Existing Treatment Capacity	Additional Injection under Concept A	Total under Concept A	Additional Injection under Concept B	Total under Concept B
West Coast Basin Barrier Project	17,000	15,500	32,500	7,500	40,000
Dominguez Gap Barrier Project	5,000	2,500	7,500	7,500	13,000

At the DGBP, during water years 2000-2009 approximately 6,000 AFY on average was injected into the barrier. The replenishment water was a blend of imported and advanced treated water from the Terminal Island WRP. The recycled water contribution at the DGBP also has been about 50 percent. The DGBP is expected to follow the transition to 100 percent RWC similar to the

WCBBP. The Draft GBMP assumes that a total of 5,000 AFY of recycled water would be injected at the DGBP (Table 3-4).

The TIWRP is currently undergoing an expansion that would provide additional capacity of 2,500 AFY of advanced treated recycled water for injection at the DGBP under Concept A (Project W0). This TIWRP expansion has already been evaluated in accordance with CEQA. The advanced water treatment facility (AWTF) is currently being constructed onsite at the TIWRP along with a new pipeline between the Terminal Island WRP and DGBP, to convey additional recycled water between the two facilities (Table 3-5; Project W0).

In addition, under Concept A, up to an additional 15,500 AFY of recycled water produced at the E.C. Little WRF would be injected at the WCBBP using existing wells (**Table 3-4**). The existing injection systems have sufficient capacity to accommodate this increased replenishment. However, the E.C. Little WRF would need to increase capacity by 13.8 mgd to provide additional advanced-treated recycled water for injection at the WCBBP (Table 3-5; Project W1). This could be accomplished partially within the existing facility property and partially on adjacent property. Additional source water would need to be conveyed from the City of Los Angeles' Hyperion Treatment Plant to the E.C. Little WRF. To do so, a new pipeline and pump station would be installed between the two facilities as shown schematically in **Figure B-1 (see Appendix B)**. A new pipeline also would be needed to increase capacity to convey water from the E.C. Little WRF to the WCBBP injection wells.

Integral to Projects W0 and W1 is another key management strategy under Concept A that involves shifting industrial groundwater use, particularly for oil refineries, to recycled water instead of replenishment and increased pumping (Draft GBMP Scenario A1a). This strategy would alter groundwater pumping patterns in the West Coast Basin. In order to implement this strategy, first recycled water of sufficient quality and reliability would need to be supplied to the industrial users instead of the pumped groundwater. Such recycled water could be supplied, for example, by municipal recycled water purveyors. In return, the industrial users would lease their groundwater pumping rights to municipal purveyors with existing pumping rights and high imported water use. The Draft GBMP assumes approximately 6,600 AFY of industrial pumping rights currently being used would be redistributed to these municipal purveyors. This 6,600 AFY is currently being pumped from the Long Beach/San Pedro harbor areas. This aspect of the management strategy itself would result in no net increase in groundwater extraction but would alter pumping patterns by shifting the location of groundwater extraction from industrial pumpers, generally located in the Long Beach vicinity, to the municipal pumpers. This management strategy would increase water supplies in the Basin without requiring direct replenishment, as recycled water would be provided to industrial users instead of groundwater. This management strategy may require treatment plant upgrades, as well as pipelines and pump stations to convey recycled water to the industrial uses. The locations of such new facilities would be developed in the future along with groundwater rights lease agreements and recycled water purchase agreements.

In addition, this management strategy includes redistribution of approximately 22,500 AFY of currently unused industrial pumping rights to municipal purveyors, which would increase pumping relative to existing operations. Thus, when combined with 6,600 AFY of redistributed rights, implementation of Projects W0 and W1 may result in a shift in pumping patters up to approximately 29,000 AFY (Draft GBMP, Table 3-2, Scenario A1a). Pumping up to adjudicated rights would occur at existing wells or at new wells in the vicinity of existing wells.

Saline Plume Remediation (Project W2)

Another key management strategy under Concept A is to contain and ultimately remove the saline plume in the Silverado Aquifer. Operation of the barrier projects has effectively curtailed seawater intrusion into the West Coast Basin, however, a residual saline plume remains trapped inland of the barriers and is migrating east. Two treatment facilities currently treat water pumped from the saline plume to potable water standards – WRD's Goldsworthy Desalter and the WBMWD's Brewer Desalter. To remediate the saline plume, additional extraction wells and regional desalters would be constructed as shown conceptually on **Figure B-2 (**see **Appendix B)**. This management strategy may or may not increase groundwater extraction from the Basin, depending on decisions by pumpers to shift existing extraction to new desalter wells or to use these wells to increase pumping. Either way, this management strategy would alter pumping patterns due to groundwater extraction at the new desalter wells. The Draft GBMP assumes three pumpers would shift to the new extraction wells – the City of Torrance, City of Los Angeles and CWSC-Hawthorne – and would use up to 15,000 AFY of desalinated water associated with this strategy (Draft GBMP, Table 3-2, Scenario A1c).

TABLE 3-5
WEST COAST BASIN AND CENTRAL BASIN GBMP STRATEGIES AND PROJECTS: CONCEPT A AND CONCEPT B

Project or Strategy Number	Management Strategy	Concept	Strategy Type	Replenishment Water	New Treatment Facility and Capacity	New Replenishment Volume	Project Locations	Existing Facilities Involved	Map Atlas (Appendix B)	New Treatment Facilities	Brine Disposal	Conveyance (pipeline, pump stations)	New Injection Wells	New Extraction Wells
West Coast Basin – Concept A														
W0	Increase Injection at DGBP; Shift Industrial Pumpers to Recycled Water	A	New Replenishment; Shift Pumping Patterns	Recycled water – AWT	TIWRP 2.2 mgd	2,500 AFY	Los Angeles	TIWRP; DGBP	--	X		X		X
W1	Increase injection at WCBBP; Shift Industrial Pumpers to Recycled Water	A	New Replenishment; Shift Pumping Patterns	Recycled water – AWT	ECLWRF 13.8 mgd	15,500 AFY	El Segundo; Los Angeles	HTP; ECLWRF; WCBBP	Figure B-1	X	X	X		X
W2	Saline Plume Remediation	A	Shift Pumping Patterns; New or Offset Extraction	--		--	Various		Figure B-2	X	X	X		X
West Coast Basin – Concept B														
W0	Increase Injection at DGBP	B	New Replenishment	Recycled water – AWT	TIWRP 4.9 mgd JWPCP 1.8 mgd	7,500 AFY	Los Angeles	TIWRP; JWPCP; DGBP	--	X	X	X		X
W3	Increase injection at WCBBP	B	New Replenishment	Recycled water – AWT	ECLWRF 6.7 mgd	7,500 AFY	El Segundo; Los Angeles	HTP; ECLWRF; WCBBP	Figure B-1	X	X	X		X
W4	Increase Injection at New Inland Wellfield	B	New Replenishment	Recycled water – AWT	JWPCP 13.4 mgd	15,000 AFY	Carson; Los Angeles; Unincorporated Los Angeles County	JWPCP; DGBP	Figure B-3	X	X	X	X	X

Project or Strategy Number	Management Strategy	Concept	Strategy Type	Replenishment Water	New Treatment Facility and Capacity	New Replenishment Volume	Project Locations	Existing Facilities Involved	Map Atlas (Appendix B)	New Treatment Facilities	Brine Disposal	Conveyance (pipeline, pump stations)	New Injection Wells	New Extraction Wells
Central Basin – Concept A														
C0-A	Groundwater Reliability Improvement Program (GRIP)	A	Imported Water Offset	Recycled water - tertiary and AWT	New AWT 10 mgd	--	Industry; Pico Rivera; Unincorporated Los Angeles County	SJCWRP; MFSG	--	X	X	X		
C0-B	Increase Injection of Recycled water at AGBP	A	Imported Water Offset; New Replenishment	Recycled water – AWT	LVLWTF 5 mgd	2,000 AFY	Long Beach	LBWRP; LVLWTF; AGBP	--					
C1	Increase Replenishment at MFSG via Spreading	A	New Replenishment	Recycled water – tertiary	SJCWRP up to 8.9 mgd	5,000 to 10,000 AFY	Industry; Pico Rivera; Unincorporated Los Angeles County	SJCWRP; MFSG	--					X
C2	Increase Replenishment at MFSG via Spreading	A	New Replenishment	Recycled water – AWT	New AWT up to 8.9 mgd	5,000 to 10,000 AFY	Pico Rivera	SJCWRP; MFSG	--	X	X			X
C3	Increase Replenishment at MFSG via Spreading	A	New Replenishment	Recycled water – AWT	LCWRP 4.5 mgd	5,000 AFY	Pico Rivera; Downey; Bellflower; Cerritos	LCWRP; MFSG	Figure B-4	X	X	X	X	X
C4	Increase Replenishment at MFSG via Injection	A	New Replenishment	Recycled water – AWT	LCWRP 4.5 mgd	5,000 AFY	Pico Rivera; Downey; Bellflower; Cerritos	LCWRP; MFSG	Figure B-5	X	X	X	X	X
C5	Los Angeles Forebay Storm Water Aquifer Recharge and Recovery (ARRF)	A	New Replenishment	Storm water	Los Angeles River	5,000 AFY	Vernon; Bell; Cudahy; South Gate	--	Figure B-6				X	X

Project or Strategy Number	Management Strategy	Concept	Strategy Type	Replenishment Water	New Treatment Facility and Capacity	New Replenishment Volume	Project Locations	Existing Facilities Involved	Map Atlas (Appendix B)	New Treatment Facilities	Brine Disposal	Conveyance (pipeline, pump stations)	New Injection Wells	New Extraction Wells
Central Basin – Concept B														
C6	Groundwater Basin Optimization Pipeline	B	Shift Pumping Patterns; New Replenishment; New Extraction	Storm water	San Gabriel River and Rio Hondo	17,000 AFY	Pico Rivera; Downey; Bellflower; Norwalk; Lakewood; Long Beach	MFSG	Figure B-7			X		X
C7	Increase Replenishment at MFSG via Spreading	B	New Replenishment	Recycled water – tertiary	SJCWRP up to 24.6 mgd	27,580 AFY	Pico Rivera; Whittier Narrows area; Unincorporated Los Angeles County	SJCWRP; MFSG	--			X		X
C8	Increase Replenishment at MFSG via Injection	B	New Replenishment	Recycled water – AWT	New AWT up to 7.8 mgd	8,690 AFY	Pico Rivera; Whittier Narrows area; Unincorporated Los Angeles County	SJCWRP; MFSG	Figure B-5	X	X		X	X
C9	Increase Replenishment at MFSG via Injection	B	New Replenishment	Recycled water – AWT	LCWRP up to 8.5 mgd	9,500 AFY	Pico Rivera; Downey; Bellflower; Cerritos	LCWRP; MFSG	Figure B-5	X	X	X	X	X
C10	Injection of Recycled Water in Los Angeles Forebay	B	New Replenishment; New Extraction	Recycled water – AWT	New Satellite AWTP 40.6 mgd	45,500 AFY	Los Angeles; Huntington Park; Vernon; Maywood; Unincorporated Los Angeles County	--	Figure B-8	X	X	X	X	X

Concept B

Under Concept B, the Draft GBMP identifies management strategies and projects that would provide an additional 30,000 AFY for replenishment in the West Coast Basin, increasing overall extraction by 30,000 AFY above water rights, up to a total of 94,468 AFY. The principal management strategies for the West Coast Basin under Concept B include the following:

- Increased injection of recycled water in West Coast Basin Barrier and Dominguez Gap Barrier
- Increase injection using new inland injection well system.
- Increased pumping from existing wells or new extraction facilities in the vicinity of existing wells.

Increased Injection of Recycled Water (Projects W0 and W3)

Under Concept B, additional recycled water could be replenished at existing seawater intrusion barriers. Injection along the DGBP could increase by 7,500 AFY (Project W0) and along the WCBBP by 7,500 AFY (Project W3) beyond Concept A amounts using existing injection well capacity (Table 3-4). Additional source water for the DBGP would be produced at the Terminal Island WRP and at the JWPCP as part of Project W4 below . Additional source water for the WCBBP would be produced at the E.C. Little WRF (or a new offsite facility). . Additional conveyance pipelines and pump stations would be installed to move product water from the treatment plants to the injection wells as shown conceptually in **Figure B-1 and B-3 (see Appendix B)**.

West Coast Basin Inland Injection Well System (Project W4)

Increased replenishment within the West Coast Basin could be accomplished with installation of a new injection well system inland of the existing injection barriers as shown conceptually in **Figure B-3 (see Appendix B)**. The system would be supplied with recycled water produced at a proposed new AWTF at LACSD's JWPCP that would produce up to 17,000 AFY of advanced treated water. The Draft GBMP assumes that 15,000 AFY could be injected into the groundwater basin at the new Inland Injection Well System, and the remaining 2,000 AFY would be used for injection at the DGBP (See Project W0 above). The proposed project would require construction of advanced treatment capacity at the JWPCP, new pipelines, pump stations, and injection wells. Up to 16 new extraction wells with wellhead treatment facilities would be required, as determined by participating pumpers.

Central Basin

Concept A

Under Concept A, additional replenishment of up to 12,000 AFY would be provided to support pumping at APA (217,367 AFY). The principal management strategies for the Central Basin under Concept A include the following:

- Implementation of the Groundwater Reliability Improvement Project (GRIP)
- Increase injection of recycled water at the Alamitos Gap Barrier (AGBP)

- Increased replenishment via spreading at the MFSG or by injection in the Montebello Forebay
- Replenishment in Los Angeles Forebay of storm water from Los Angeles River
- Increased pumping from existing wells or new extraction facilities in the vicinity of existing wells.

Groundwater Improvement Reliability Project (Project C0)

The Draft GBMP includes GRIP, which has already been evaluated under CEQA but not yet built. The cumulative environmental effects of operating GRIP together with other GBMP project are evaluated in this PEIR. As the CEQA Lead Agency, WRD certified the Final Environmental Impact Report (EIR) for GRIP on June 18, 2015. A technical analysis conducted for the GRIP project is also included in this PEIR as **Appendix C**. As described in the Final EIR, GRIP will replace the current use of 21,000 AFY of imported water at the MFSG with a combination of both tertiary-treated and AWT recycled water for groundwater replenishment. Approximately 11,000 AFY of tertiary-treated recycled water produced by LACSD's San Jose Creek WRP will be conveyed to the MFSG for recharge via an existing underground outfall pipeline. In addition, WRD will construct an AWT plant to produce 10,000 AFY of AWT recycled water for recharge at the MFSG. This AWT recycled water will be conveyed to the MFSG for recharge using the existing underground outfall pipeline referenced above.

Increase Injection of Recycled Water at AGBP (Project C0)

At the AGBP, during water years 2000-2009 approximately 6,000 AFY on average was injected into the barrier. The replenishment water was a blend of imported and advanced treated water from LVLWTF. The AGBP is expected to transition to 100 percent RWC similar to the WCBBP. The Draft GBMP assumes that by 2020 a total of 8,000 AFY of recycled water would be injected at the AGBP at 100 percent RWC. The recycled water would be produced at LVLWTF, where there is sufficient existing production capacity. No additional facilities are necessary to produce this advanced treated water.

Increased Replenishment at the Montebello Forebay (Projects C1, C2, C3, C4)

The Draft GBMP includes project that would increase replenishment at the Montebello Forebay either using the existing spreading basins at the MFSG or installation of new injection wells. Currently, approximately 50,000 AFY of tertiary-treated water is conveyed to the MFSG in addition to 57,000 AFY of local runoff and 21,000 AFY of imported water. An additional 10,000 AFY of tertiary-treated or advanced-treated recycled water (or some combination of the two) could be produced at LACSD's San Jose Creek WRP or Los Coyotes WRP to increase replenishment at the Montebello Forebay. Projects C1, C2, C3, and C4 provide the menu of options to accomplish this replenishment.

Project C1 would require no additional facility construction to increase spreading of tertiary recycled water produced at the San Jose Creek WRP. Project C2 would require construction of an AWT facility within the Montebello Forebay to provide water for spreading at the MFSG. For Projects C3 and C4, the conceptual locations of the new treatment facilities at the Los Coyotes WRP, proposed connecting recycled water pipelines, and up to 17 new injection wells are shown

in **Figure B-4 and B-5 (see Appendix B)**. The locations of associated pump stations have not yet been identified.

Los Angeles Forebay Storm Water Aquifer Recharge and Recovery Facility (Project C5)

To increase replenishment in the Central Basin under Concept A, the Draft GBMP describes the Los Angeles Forebay Aquifer Recharge and Recovery Facilities (ARRF) that would divert storm water from the Los Angeles River into spreading basins near the river within an easement along the 710 Freeway. After initial soil aquifer treatment, the recharged water would be extracted from the shallow aquifer and injected into the deeper aquifer of the Los Angeles Forebay to replenish the Central Basin. The Draft GBMP estimates that 5,000 AFY of storm water could be replenished in the Los Angeles Forebay via the ARRF. The proposed ARRF would require new spreading basins, extraction wells, and injection wells, with preliminary locations of such facilities identified in **Figure B-6 (see Appendix B)**.

Concept B

Under Concept B, the Draft GBMP identifies management strategies and projects that would provide an additional 103,250 AFY for replenishment in the Central Basin, allowing for overall extraction to increase above the APA, up to a total of 320,617 AFY. The principal management strategies for the Central Basin under Concept B include the following:

- Increased extraction at Montebello Forebay to increase storm water capture
- Increased replenishment via spreading at the MFSG or by injection in the Montebello Forebay
- Replenishment in Los Angeles Forebay of recycled water with injection wells and extraction wells
- Increased pumping from existing wells or new extraction facilities in the vicinity of existing wells.

Groundwater Basin Optimization Pipeline (Project C6)

Currently, storm water recharge in the MFSG is limited by the availability of storage space in the Montebello Forebay portion of the Central Basin during the winter months. The Draft GBMP proposes the Groundwater Basin Optimization Pipeline (GBOP) that would install new extraction wells within the Montebello Forebay and pump water to users to the south, creating storage capacity for additional storm water capture in the MFSG. The Draft GBMP estimates that an additional 17,000 AFY of storm water that currently flows to the ocean during large storm events could be captured and recharged at the MFSG with the increased storage capacity. The GBOP would require an increase in pumping by 25,000 AFY to reduce elevated groundwater levels and allow for additional storm water recharge during/following high storm flow periods. Project C6 would shift pumping patterns, shifting pumping from elsewhere in the Central Basin to the Montebello Forebay. The project would require installation of up to nine new extraction wells, pipelines and pump stations as conceptually shown in **Figure B-7 (see Appendix B)**. For planning purposes, the Draft GBMP assumes the pumped groundwater would be delivered to four retailers: Santa Fe Springs, Golden State Water Company, Paramount, and Long Beach

Increased Replenishment at the Montebello Forebay (Projects C7, C8, C9)

To increase replenishment of recycled water at the Montebello Forebay under Concept B, the Draft GBMP includes additional replenishment via spreading at the MFSG and via injection at new wells in the Montebello Forebay. As part of Project C7, LACSD would make changes to the existing sewage collection system in the vicinity of the Whittier Narrows WRP and redirect wastewater flow from the JWPCP to the San Jose Creek WRP for treatment to recycled water standards; then the recycled water would be conveyed to the MFSG for recharge. The Draft GBMP estimates that the San Jose Creek WRP has capacity to treat an additional 27,580 AFY of wastewater, and the existing conveyance system also has capacity to deliver the recycled water to the MFSG for spreading. The wastewater flow that is currently treated at JWPCP would be recharged at the Montebello Forebay instead of being discharged via LACSD's existing ocean outfall off the coast of Palos Verdes.

In addition, approximately 18,190 AFY of advanced-treated recycled water would be injected into the Montebello Forebay through new injection wells. As part of Projects C8 and C9, new AWT facilities would be installed at the Montebello Forebay and Los Coyotes WRP, respectively, to produce the advanced-treated water that would be injected at up to 17 new injection wells as shown in **Figure B-5 (see Appendix B)**. No new pipelines would be required for Project C8. For Project C9, the locations of the Los Coyotes WRP and proposed connecting recycled water pipelines are also shown in Figure B-5. The locations of associated pump stations have not yet been identified.

Injection of Recycled Water in the Los Angeles Forebay (Project C10)

The Draft GBMP describes an additional aquifer recharge and recovery project that could replenish the Los Angeles Forebay with recycled water. A new satellite water reclamation facility in eastern Los Angeles could provide up to 45,500 AFY of AWT for replenishment within the Los Angeles Forebay. The new treatment facility would further process wastewater from the City of Los Angeles' HTP collection system. Once the treatment plant is constructed, new pipelines, pump stations, injection wells and extraction wells would be installed as shown conceptually in **Figure B-8 (see Appendix B)**. The project would require up to 50 new injection wells and 21 new extraction wells, along with pipelines connecting the proposed treatment plant to the injection wells and connecting the extraction wells to the LADWP potable water distribution system.

Other possible projects to supply advance-treated recycled water for injection to the Forebay are being considered. Alternative sources of supply for an injection well system would include a system to treat base flow from the Los Angeles River should such a system be compatible with management objectives for the river. Moreover, should a regional system of recycled water be constructed by others that would convey advance-treated water for recharge via injection wells, that system may create a source for injection in the Los Angeles Forebay. The basin-wide effects of such projects are similar: the same conceptual system of injection and extraction would be constructed to increase yield in the basin for regional benefit.

3.6 Project Implementation

3.6.1 Construction Activities

As described above, new treatment facilities, pipelines, pump stations, and injection or production wells would be installed within the WRD service area. Construction activities would involve drilling of additional wells, trenching for new pipelines, and installation of any additional supporting infrastructure. Specific construction equipment lists, material lists, construction methods, construction schedules, and workforce details would be developed in the future as specific projects are planned and designed according to the Management Strategies outlined above. The following provides a general overview of construction equipment, materials, and methods associated with installation of pipelines, pump stations, injection/production wells, and treatment plant expansions.

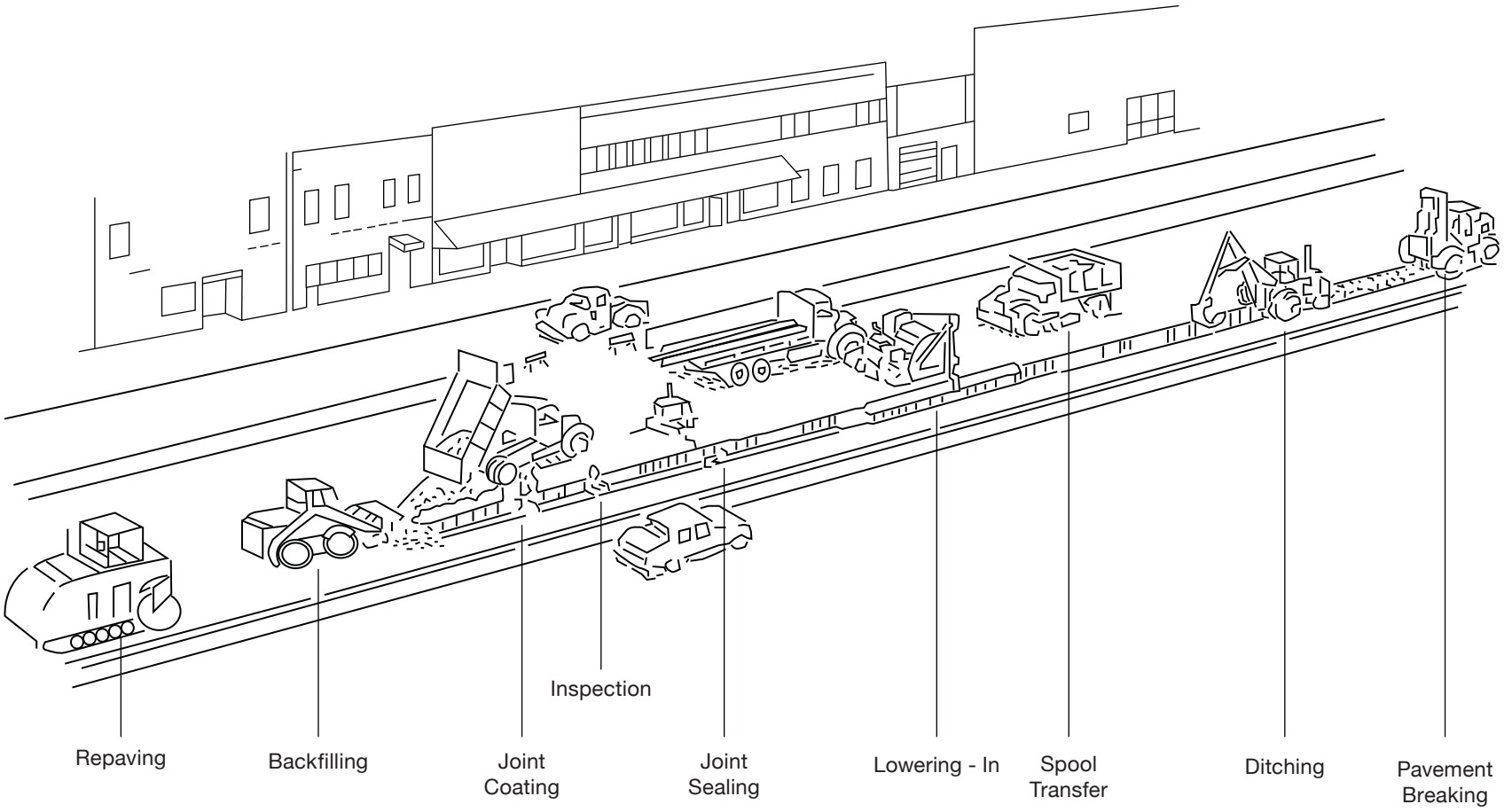
Pipelines

Construction of proposed potable or recycled water pipelines would involve trenching using a conventional cut and cover technique, or jack-and-bore or directional drilling techniques where necessary to avoid sensitive land features or roadway intersections. Dewatering may be required in some locations. Pipelines would be installed primarily within existing roadway rights-of-way to the extent feasible. The trenching technique would include saw cutting of the pavement, trench excavation, pipe installation, backfill operations, and re-surfacing to the original condition. An illustration of typical open trench construction for pipeline installations in city streets is shown in **Figure 3-5**.

Trench width and depth would depend on the size of the pipe to be installed, which would range from 6 to 36 inches. Excavation depths would range between 10 to 15 feet below ground surface. Trench widths would range from 10 to 30 feet depending on pipe diameters. The construction corridor would be wide enough to accommodate the trench and to allow for staging areas and vehicle access. Offsite construction staging areas would be identified by contractors for pipe lay-down, soil stockpiling, and equipment storage. On average 50 to 500 feet of pipeline would be installed per day.

Trenches would be backfilled at the end of each work day or temporarily closed by covering with steel trench plates. The construction equipment needed for pipeline installations generally includes: backhoes, excavators, dump trucks, shoring equipment, steam roller, and plate compactor. Typically, 15 to 20 workers would be required for pipeline installations. Excavated soils would be reused as backfill and otherwise disposed offsite.

Traffic control would be necessary during pipeline construction within city and county roadways. Typically five to 10 workers would be required for traffic control during pipeline installation. Equipment necessary for traffic control includes changeable message signs, delineators, arrow boards, and K-Rails. The traffic control plan for each pipeline project would be coordinated with the applicable jurisdictions, including the local cities, County of Los Angeles, and Caltrans.



SOURCE: CH2MHILL.

WRD Groundwater Basins Master Plan . 120192

Figure 3-5
Typical Open Trench Construction in City Streets

Injection/Production Wells

Construction of injection and production wells would include site preparation, mobilization of equipment to the well site, well drilling, water quality testing, installation of the well casing, gravel packing and finishing with a cement seal. Water discharged during well drilling is conveyed to onsite settling basins and discharged to the storm drain after drilling is complete under a permit from the Regional Water Quality Control Board. Construction equipment typically would include an auger rig, drill rig, small crane, welder, all-wheel drive forklift, pipe trailer, generator, Baker tanks, circulation pits and a backhoe. The duration of the well drilling/testing operation is estimated at approximately three months.

For approximately one month, daily 24-hour drilling would be required. To drill the well, the drill rig must run 24 hours-a-day; otherwise, the walls of the borehole can collapse. Temporary overhead nighttime lighting would be installed during the well drilling period.

Pump Stations

Pump stations would be housed in single-story buildings that may include pump rooms, an electric control room, and a storage room. Construction of pump stations would involve installation of piping and electrical equipment, excavation and structural foundation installation, pump house construction, pump and motor installation, and final site completion. Pump stations would be equipped with portable emergency generator connections and manual transfer switches.

The construction equipment needed for pump station installation generally includes: auger truck, backhoe, boom lift truck, excavator, plate compactor, and scaffolding. Excavated soils would be reused onsite to the extent feasible and otherwise disposed offsite. Concrete would be required for construction of pump station foundations and pads.

Treatment Plant Expansions

Construction phases for treatment plant expansions would consist of site clearing and grading, excavation, construction and installment of treatment buildings and equipment, and site completion. Construction equipment may include the following: backhoe, loader, dump trucks, crew trucks, concrete trucks, crane, personal vehicles, compactor, delivery trucks, and a water truck. Excavated soils would require offsite disposal concrete would be required for construction of foundations, pads, and possibly storm water conveyance.

3.6.2 Operations and Maintenance

Operation of most proposed facilities, such as pump stations, groundwater wells, and recharge basins, would not require daily staffing but rather require only periodic maintenance. Operation of the proposed treatment facilities would require dedicated staff that would commute daily to and from the site.

Operation of the proposed treatment facilities would involve onsite chemical use and storage. Chemicals would be stored in a chemical storage building in aboveground tanks in a dedicated containment area with secondary containment areas to confine accidental spills and prevent exposure to the environment. The containment areas would be sized to accommodate storage tank volumes and sprinkler system operations to prevent accidental spills. Operation of the proposed treatment facilities would require periodic chemical and material deliveries depending on capacities.

3.7 Implementation Considerations

In addition to the Judgment Amendments, advancement of the GBMP projects or alternatives described above will require consideration of the following, as described further below:

- New recycled water regulations
- Recycled water flow availability
- River storm flow availability
- MFSG capacity
- Salt and Nutrient Management Plan (SNMP)
- West Coast Basin Flow and Transport Model revisions
- Public and stakeholder participation process
- Replenishment assessment

3.7.1 Recycled Water Regulations

New recycled water regulations (DPH-14-003E) became effective June 18, 2014 regarding the use of recycled water for groundwater replenishment (both surface and subsurface applications) as specified in California Code of Regulations, Title 22, Division 4, Chapter 3, Water Recycling Criteria. A number of measures to ensure protection of groundwater quality have been revised and updated that could have implications for planning, design, and implementation of GBMP projects, including:

- An industrial pretreatment and pollutant source control program for the wastewater,
- Pathogenic microorganism control,
- Nitrogen compounds control,
- Regulated contaminants and physical characteristics control,
- Diluent water requirements,
- CEC monitoring,

- Demonstration that recycled water is retained underground for a period of time necessary [2]to allow a response time sufficient to identify failure and implement actions necessary for the protection of human health,
- Calculation of the running monthly average recycled water contribution (RWC) based on the total volume of recycled water and credited diluent water that is recharged during the preceding 120 months,
- Chemical monitoring requirements for the recycled water and groundwater,
- Preparation of an Operation Optimization Plan that identifies and describes the operations, maintenance, analytical methods, and monitoring necessary to meet all groundwater recharge regulations,
- Groundwater monitoring well requirements, and
- Reporting to the SWRCB Division of Drinking Water (formerly CDPH) and LARWQCB.

Due to the potential for confusion and duplication of effort between the California Department of Public Health (CDPH) and the RWQCBs, CDPH and the SWRCB signed a Memorandum of Agreement (MOA) in 1996. The MOA delineates responsibilities of each agency in review and approval of recycled water projects. As of July 1, 2014, under the direction of California Governor Jerry Brown, the administration of the Drinking Water Program was transferred from CDPH to the SWRCB to consolidate all major water quality programs within a single department, which will allow the State to better manage and protect water resources and ensure safe drinking water for all Californians. Thus, the State's drinking water and recycled water programs are now regulated under the SWRCB Division of Drinking Water. While the SWRCB Division of Drinking Water regulates public water systems and sets standards for wastewater reuse to protect public health (*Water Recycling Criteria* in Title 22 of the California Code of Regulations), the RWQCB has the permitting and ongoing oversight authority of groundwater recharge projects. SWRCB Division of Drinking Water requirements for permit approval are to be incorporated in the final permit that will be issued by the RWQCB.

Recycled Water Flow Availability

Implementing many of the identified GBMP projects requires a large supply of recycled water for replenishment. Of the regional wastewater treatment plants that are part of the GBMP, the JWPCP and Hyperion Treatment Plant have significant surplus effluent and are most likely to supply recycled water for GBMP projects. The volumes of remaining recycled water supplies included in the GBMP, from treatment plants such as San Jose Creek WRP and Los Coyotes WRP, are currently not being put to beneficial reuse. However, there may be alternate plans for these supplies or commitments to other entities that could impact their availability for GBMP project needs.

[2] Salt and Nutrient Management Plan for the Central Basin and West Coast Basin: http://www.wrd.saltnutrient.com/index.html

Storm Flow Availability

The San Gabriel River/Rio Hondo and Los Angeles River flows considered in the GBMP are based on historical wet-weather conditions. Thus, the GBMP projects that include capture of storm flow assume future hydrological patterns would be relatively similar to historical conditions. The Los Angeles River flows included in the GBMP currently are not captured; therefore it is more likely that these flows would be available for capture and groundwater replenishment relative to incremental increases in storm flow from the San Gabriel River/Rio Hondo. However, countywide programs targeting reduction of storm flows to mitigate downstream water quality impacts, along with climate change impacts, may affect availability of long-term future storm flow in all three rivers, resulting in potentially less available storm flows than identified in the GBMP.

Montebello Forebay Spreading Grounds Capacity

Replenishment of the groundwater basins with storm water provides both water supply as well as dilution credit to meet RWC requirements. The most cost-effective method for capturing and infiltrating large volumes of storm water from the San Gabriel River and Rio Hondo is limited by the available capacity of the existing MFSG. Recharge is typically highest during the wet season when large volumes of stormwater are available from storm events and from subsequent releases from upstream dams. Historical records of recharge at the MFSG were used as the basis of assumptions for potential future recharge capacities during short-term high recharge events and for “normal” operations. As GBMP projects are implemented, additional study of recharge capacity would confirm that the assumed quantities of short-term high recharge rates are possible.

Salt and Nutrient Management Plan (SNMP)

In a partnership led by WRD, the Central Basin and West Coast Basin SNMP was prepared in accordance with the State’s Recycled Water Policy. The SNMP identifies whether it is necessary to reduce salt and/or nutrient loading to either basin in the future. The Draft SNMP identifies all management strategies and projects planned by the stakeholders in the Central Basin and West Coast Basin that would affect salt and nutrients (S/Ns). This includes all projects in the GBMP. The salt loading for GBMP projects that involve replenishment of recycled water would vary based on the replenishment supply mix and the level of treatment applied to recycled water. The GBMP projects utilizing AWT and/or storm water would have lower salt and nutrient loadings than projects that rely more on tertiary effluent. Recommendations from the SNMP would be considered as GBMP projects are developed further for implementation. Overall, findings of the Draft SNMP suggest there is assimilative capacity for S/Ns in the Central Basin and water quality objectives (WQOs) would be achieved as specified in the Basin Plan. For the West Coast Basin, WQOs would be achieved in the future as projects are implemented, in particular remediation of the saline plume.

West Coast Basin Flow and Transport Model

Preliminary simulations of saline plume containment/remediation conducted with the current West Coast Basin groundwater flow and solute transport model indicate significant improvement in basin water quality. WBMWD and WRD are in the process of further calibrating the model for additional simulations of the saline plume associated with GBMP projects. Results of modeling efforts may affect locations of groundwater injection and extraction wells in the West Coast Basin for the Saline Plume Remediation management strategy (Project W2).

Public and Stakeholder Participation

Many West Coast Basin and Central Basin stakeholders have been engaged in the development of the GBMP. Several key opportunities for public and stakeholder participation are converging in the next year or so and can serve to advance the planning reflected in the Draft GBMP to replace imported water use and more fully utilize the groundwater basins. These include the following processes led by WRD:

- GBMP PEIR process
- GRIP Recycled Water Project EIR/EIS process
- SNMP stakeholder process

Replenishment Assessment

Each year, WRD establishes a replenishment assessment (RA) for the ensuing fiscal year (July 1 through June 30) based on the planned purchase of replenishment water as well as projects and programs related to groundwater replenishment and groundwater quality over the next water year (October 1 through September 30). The cost of replenishment water is the most significant component of the RA. Although the costs for proposed GBMP projects currently are not projected as elements of future RAs, any water supply that minimizes the costs of replenishment water, particularly imported water, would be beneficial to reducing future RAs. One of the primary goals of the GBMP is to replace imported water as a replenishment supply. Therefore costs associated with GBMP projects could be measured relative to projected imported water purchase costs, and thus their relative impact on the RA inferred. As the GBMP projects are developed further for implementation, the costs and benefits would be weighed by the implementing agencies. The potential impacts to the RA would be part of each project's implementation and feasibility evaluation process.

3.8 Required Approvals

Adoption of the GBMP would only require WRD approval. Projects identified in the GBMP would require additional approvals, including but not limited to the following:

Approving Agency	Approval
Implementing Agencies	CEQA approval
LA County Department of Public Works Flood Control	CEQA Approval
	Encroachment permit
Local Cities	Encroachment permits
US Army Corps of Engineers	Clean Water Act Section 404 Permit
California Department of Fish and Game	Streambed Alteration Agreement (1602)
Regional Water Quality Control Board	Clean Water Act Section 401 Water Quality Certification
	Waste Discharge Requirements for discharge to waters of the state or to land
	Groundwater Anti-Degradation Analysis
	Water Recycling Requirements
	NPDES permits for discharges to waters of the US
	Groundwater Recharge Recycled Water Project approval

3.9 References – Program Description

California Energy Commission (CEC), 2005. *California's Water-Energy Relationship*. Prepared in Support of the 2005 Integrated Energy Policy Report Proceeding (04-IEPR-01E). Final Staff Report, November 2005, CEC 700-2005-011-SF, 174 pages.

CH2M HILL, 2012. *Draft Groundwater Basins Master Plan*. Prepared for the Water Replenishment District of Southern California, in association with RMC, July 2012.

AECOM, 2015. Recirculated Draft Environmental Impact Report, Groundwater Reliability Improvement Program (GRIP) Recycled Water Project. State Clearinghouse No. 2013020142; Prepared for Water Replenishment District of Southern California; April 2015.

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CHAPTER 4
Environmental Setting, Impacts, and Mitigation Measures

This Draft PEIR is prepared in accordance with CEQA (California Public Resources Code, Section 21000 et seq.), the *CEQA Guidelines* (California Code of Regulations, Title 14, Section 15000 et seq.), and applicable rules and regulations of regional and local entities. This Draft PEIR evaluates the potential environmental impacts associated with the construction and operation of WRD's Draft Groundwater Basins Master Plan (GBMP), or proposed project. This Draft PEIR is intended to serve as an informational document for the public agency decision-makers and the public regarding the proposed project.

4.0.1 Scope of the Environmental Impact Analysis

In accordance with Section 15126 of the *CEQA Guidelines*, Chapter 4 provides an analysis of the direct and indirect environmental effects of the proposed project with respect to existing baseline conditions at the time the Notice of Preparation (NOP) was published (**Appendix A**). The determination of whether an impact is significant has been made based on the physical baseline conditions (*CEQA Guidelines* Section 15125(a)). The proposed project consists of management strategies and projects that would require construction of various water facilities and infrastructure, specifically treatment facilities, pipelines, pump stations, and wells. The specific locations, design, and operations of these facilities have yet to be finalized. As such, the proposed project is evaluated in this Draft PEIR at a programmatic level, in accordance with *CEQA Guidelines* Section 15168. As previously stated in Chapter 1, the Draft PEIR analysis is not intended to focus on the site-specific construction and operation details of each management strategy and project included in the Draft GBMP. Rather, this PEIR serves as a first-tier environmental document that focuses on the effects of implementing the overall GBMP as a plan to provide reliable groundwater supply for future demand.

The following environmental resources are assessed in this chapter in accordance with Appendix F and Appendix G of the *CEQA Guidelines:*

4.1. Aesthetics
4.2. Air Quality
4.3. Biological Resources
4.4. Cultural Resources
4.5. Geology, Soils, and Seismicity

4.6. Greenhouse Gas Emissions
4.7. Hazards and Hazardous Materials
4.8. Surface Hydrology and Water Quality
4.9. Groundwater
4.10. Land Use and Planning
4.11. Noise
4.12. Traffic and Transportation
4.13. Utilities and Energy
4.14. Environmental Justice

Implementation of the proposed Draft GBMP would have no impact on Agriculture and Forestry Resources, Mineral Resources, Population and Housing, Public Services, or Recreation. Explanations of these effects found not to be significant are briefly presented below in Section 4.0.2.

CEQA Guidelines Section 15130 requires that an EIR include an analysis of the cumulative impacts of a project when the project's effect is considered cumulatively considerable. "Cumulatively considerable" means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects (*CEQA Guidelines* Section 15065(a)(3)). The determination of whether a project's impact on cumulative conditions is considerable is based on a number of factors including consideration of applicable public agency standards, consultation with public agencies, and expert opinion. The cumulative environmental effects of the proposed Draft GBMP are discussed in **Chapter 5, Cumulative Impacts**.

The *CEQA Guidelines* (Section 15126.2(d)) require that an EIR include a discussion regarding the potential for project-related growth inducing impacts. As such, the potential for the proposed project to induce population growth is discussed in **Chapter 6, Growth Inducement**. The *CEQA Guidelines* also require that an EIR describe a range of reasonable alternatives to the proposed project or alternative project locations that could feasibly attain most of the basic project objectives and would avoid or substantially lessen any of the significant environmental impacts to the proposed project. The alternatives analysis must also include the "No Project Alternative" as a point of comparison. The No Project Alternative includes existing conditions and reasonably foreseeable future conditions that would exist if the project were not approved (*CEQA Guidelines* Section 15126(d)). The analysis of project alternatives for the Draft GBMP and their impacts, relative to those identified here in Chapter 4, is provided in **Chapter 7, Alternatives Analysis.**

4.0.1 Format of the Environmental Analysis

The GBMP's management strategies and associated projects are designed to achieve the goal of increasing groundwater replenishment supplies, and the reliability of such supplies, to meet future needs of groundwater pumpers. These actions would require the construction of various water facilities and infrastructure as outlined in **Table 3-5** in **Chapter 3**. The format of the

environmental analyses included in this Draft PEIR includes discussion of potential construction and operational impacts associated with these proposed facilities at a programmatic level. The timing, final locations, and design features of most facilities are not known at this time. For purposes of planning, possible facility locations are shown in **Figures B-1 through B-8** in the Map Atlas in **Appendix B**, although such locations may change as projects are designed and implemented. Some GBMP management strategies may involve policy-only action and would not result in ground-disturbing activities or new facilities.

The structure of the assessment of each environmental resource included in this Chapter 4 includes the following:

- Environmental Setting
- Regulatory Framework
- Impacts and Mitigation Measures
- References

Environmental Setting

According to Section 15125(a) of the *CEQA Guidelines*, an EIR must include a description of the existing physical environmental conditions in the vicinity of the proposed project to provide the "baseline condition" against which impacts are compared. The baseline condition relied upon for this PEIR is the physical condition that existed when the NOP for the proposed project was published, September 2012. This baseline is utilized for the analyses contained in this PEIR (**Appendix A**). Descriptions of baseline conditions, generally speaking, are organized geographically, for the West Coast Basin and the Central Basin.

Regulatory Framework

The Regulatory Framework provides a summary of regulations, plans, policies, and laws that are relevant to each issue area at the federal, state, and local levels.

Impacts and Mitigation Measures

This PEIR provides analyses of the broad environmental effects associated with implementing the GBMP. The impact analyses are not intended to focus on the site-specific impacts of construction and operation of each management strategy or project included in the GBMP. Rather, this PEIR serves as a first-tier environmental document that focuses on the overall effects of implementing the proposed GBMP.

CEQA Guidelines Section 15143 states that "[t]he EIR shall focus on the significant effects on the environment. The significant effects should be discussed with emphasis in proportion to their severity and probability of occurrence." The *CEQA Guidelines* further state that: "[t]he degree of specificity required in an EIR will correspond to the degree of specificity involved in the underlying activity which is described in the EIR."

Generally speaking, in this PEIR the discussions of impacts are organized by project facility type, such as treatment facilities, pipelines, pump stations, and wells. Based upon the thresholds of significance provided in Appendix G of the *CEQA Guidelines*, potential impacts associated with construction and operation of each category of facility are assessed and significance determinations are made as defined below. Where necessary, mitigation measures are included to reduce potential impacts to less than significant levels. The impacts discussion also differentiates between impacts associated with implementing management strategies and projects associated with Concept A versus Concept B.

Significance Criteria and Significance Determinations

Significance criteria against which impact assessments are based are included for each environmental resource in accordance with Appendix F and Appendix G of the *CEQA Guidelines*. Based on these criteria, significance determinations are assigned to each impact according to the following categories:

- **Significant and Unavoidable:** mitigation might be recommended but impacts are still significant;
- **Less than Significant with Mitigation:** potentially significant impact but mitigated to a less-than-significant level;
- **Less than Significant:** mitigation is not required under CEQA but may be recommended; or
- **No Impact.**

References

Sources relied upon for each environmental topic analyzed in this Draft PEIR are provided at the end of each section.

4.0.2 Effects Found Not to be Significant

CEQA Guidelines Section 15128 requires a brief discussion of the potential effects determined not to be significant and therefore not discussed in detail in the EIR. This chapter provides a summary of findings for environmental factors not addressed in detail in this PEIR.

Agriculture and Forestry Resources

Land uses within WRD's service area are predominantly residential, commercial, industrial, recreational, and public facilities (Los Angeles County Draft General Plan, 2012). The City of Bell designates small portions of land in the vicinity of Project C5 as Agricultural land use (see Figure F-4 in Appendix F). There are no other designated Agricultural land uses within WRD's service area or specific GBMP project areas. The Agricultural designations are isolated within a highly developed urban context. No proposed project facilities would be constructed on or directly adjacent to these land use designations (see Figures F-4 and F-6 in Appendix F). Furthermore, the Los Angeles County Important Farmland Map does not identity any land in the WRD service area

or GBMP project areas as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance. Therefore, projects associated with implementation of Concept A or B would not convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (California Department of Conservation, 2011) to non-agricultural use. Similarly, no land within WRD's service area is under Williamson Act Contract. As a result, the proposed project would have no impact to agriculture and would not convert agricultural land to non-agricultural use.

WRD's service area, and particularly the GBMP project areas, does not include forest land, timberland, or timberland zoned for timberland production. Therefore the proposed project would not convert any such lands to non-forest use, and no rezoning of forest land, timberland, or timberland zoned for timberland production would occur. The proposed project would have no impacts to agriculture or forestry resources, and no further analysis is warranted in the EIR.

Mineral Resources

WRD's service area includes lands in Los Angeles County that contain known or potentially productive petroleum fields, natural gas, geothermal resources, construction aggregate, and mineral deposits. Four major Mineral Resource Zones are located in Los Angeles County; however neither WRD's service area nor specific project areas associated with GBMP facilities fall within the boundaries of either the Little Rock Creek Fan, Soledad Production Area, Irwindale Production Area, or the Sun Valley Production Area (Division of Mines and Geology, 1999). The latter two production areas are estimated to be near depletion by 2017. As a result, the proposed project would not involve a change to these land use designations and would not result in a loss of known mineral resources or affect the availability of mineral resources that would be valuable locally, to the region, or the State. The proposed project would have no impact to mineral resources, and no further analysis is warranted in the EIR.

Population and Housing

The GBMP would not directly build new housing that would result in an increase in population or create substantial numbers of jobs either due to construction or operation of the proposed projects that would have a noticeable effect on population. Future new staff required to operate proposed facilities are expected to be drawn from existing population. In addition, the GBMP would not displace existing housing or substantial numbers of people due to implementation of the management strategies and projects. The majority of proposed facilities would be located within ROWs, utility easements, or on lands already owned by water and wastewater utility agencies. The new Satellite AWTF that is a component of Project C10 would be built on land already owned or to be purchased by one of the implementing agencies. Thus, it would not be necessary to build replacement housing. The proposed project would have no direct impacts on population and housing, and no further analysis is warranted in the EIR. The GBMP may have indirect effects on population and housing. These potential impacts are analyzed in **Chapter 6, Growth Inducement**.

Public Services

The proposed GBMP includes new groundwater replenishment facilities. The proposed GBMP projects would include new treatment facilities at up to six existing wastewater treatment plants and potentially one new treatment plant. These industrial facilities would require chemicals and hazardous materials onsite, but would be located in various jurisdictions and would not be sufficient to warrant additional emergency response services or providers, such as fire and police protection. As discussed above, the GBMP would not have a direct effect on population or housing. As such, there would be no need for additional school services or park facilities that would otherwise be required to accommodate an increase in local population. Therefore, the proposed project would have no impact to existing public services in the WRD service area, and no further analysis is warranted in the EIR.

Recreation

The proposed GBMP would not affect recreational facilities or recreation activities within WRD's service area. As discussed above, the GBMP would not have a direct effect on population or housing growth. As such, implementation of GBMP projects would not result in an increase in use of existing parks or other recreational facilities relative to existing conditions. There also would be no need to construct additional park or recreational facilities. As a result, there would be no deterioration of existing recreational facilities due to GBMP implementation and no adverse physical effects on the environment associated with constructing new recreational facilities. Therefore, the proposed project would have no impact on recreation, and no further analysis is warranted in the EIR.

References

County of Los Angeles, Los Angeles County Draft General Plan, 2012.

California Department of Conservation, Farmland Mapping and Monitoring Program, *Los Angeles County Important Farmland 2010* (map), September 2011.

4.1 Aesthetics

This section addresses the aesthetic and visual impacts associated with implementation of the proposed project, which includes the construction and operation of existing and proposed facilities to implement the GBMP management strategies. This section includes a description of existing visual resources and aesthetic conditions in the project areas, specifically the physical environment in the vicinity of proposed project facilities, and provides an evaluation of potential effects to visual resources, including scenic vistas, and the visual character of project sites where aboveground facilities are proposed.

4.1.1 Environmental Setting

Regional Setting

Visual resources consist of natural landscapes and scenic views, including landforms, vegetation, and water features, as well as unique elements of the built environment. The proposed project would be located primarily in the Los Angeles Coastal Plain (**Figure 1-1, see Introduction).** The topography of the Los Angeles Coastal Plain provides scenic views from various public vantage points. The major land forms of the Los Angeles Coastal Plain consist of bordering highlands and foothills, older plains and hills, younger alluvial plains, rivers that drain the area, and offshore topography (CH2M Hill, 2012). Key regional visual resources include the Santa Monica Mountains, the San Gabriel Mountains and the Palos Verdes Hills. The general aesthetic and visual character of the project areas consists mostly of developed and urbanized areas. This built environment is dominated by low-lying residential, industrial and commercial buildings with local views of the Santa Monica Mountains, the San Gabriel Mountains, the Palos Verdes Hills, and the Pacific Ocean.

Local Setting

The GBMP includes potential expansion of treatment plants, new conveyance infrastructure (pipelines and pump stations), and new injection and extraction wells. The locations of the project components are described in Chapter 3.0, Project Description and are shown in Appendix B, Figures B-1 through B-8. The visual character of these project areas can be described as follows:

West Coast Basin

The northern portion of the West Coast Basin, where proposed Projects W1, W3, and W4 would be located, includes the City of El Segundo and City of Los Angeles. The City of El Segundo is a coastal city, which contains primarily industrial and suburban residential land uses (City of El Segundo, 1992). Scenic resources visible from the project site include the Palos Verdes Estates Bluffs to the south, the coastal area to the west and the Santa Monica Mountains to the north. The nearest designated scenic highway is State Route (SR) 2 (SR-2), 7 miles to the north. However, SR-23 is located approximately 28 miles north of the project areas and is a considered an eligible state scenic highway.

The southern area of the West Coast Basin, where proposed Projects W1, and W4 would be located, includes the cities of Carson and Los Angeles and unincorporated Los Angeles County. This area is a highly urbanized and includes industrial, commercial and residential land uses. The City of Carson is primarily a manufacturing community. The areas of Carson where the projects are located are generally flat with little topographic relief. The Palos Verdes Estates Bluffs are visible from the City of Carson.

The portions of the City of Los Angeles that are part of the project area include Wilmington area and a neighborhood commonly referred to as the Harbor Gateway, located along I-110. The Harbor Gateway is a two-mile wide north-south corridor located approximately between Vermont Avenue and Figueroa Street north of Interstate 405 (I-405), and Western and Normandie avenues south of I-405. The topography is varied with level areas adjacent to the Port of Los Angeles and hillsides in the Palos Verdes Peninsula (City of Los Angeles, 1999). Scenic resources include the Palos Verdes Estates Bluffs which are visible from the project site. The predominant land use in the community is residential land uses.

The portion of the project area located in unincorporated Los Angeles County is referred to as West Carson. West Carson is an area that is highly urbanized and includes industrial, commercial and residential land uses.

There are no designated scenic highways in the southern West Coast Basin area. The nearest eligible highway is a portion of SR-1 in the Long Beach area. The nearest designated scenic highway to the project site is SR-2, approximately 26 miles north of the City of Carson (Caltrans, 2011).

Central Basin

The proposed Projects C1 through C4 and C6, C8, and C9 would be located in the eastern Central Basin in the Montebello Forebay area, east of I-710, south of SR-60 and west of I-605. The proposed project areas would include the cities of Bellflower, Downey, Pico Rivera, Industry, Cerritos, Norwalk, Lakewood, Long Beach, and unincorporated Los Angeles County. The nearest designated scenic highway to the project site is SR-2, located approximately 20 miles northwest of the project area. SR-39, which intersects with SR-2, is considered an eligible scenic highway as well (Caltrans, 2015). Most of the project areas are developed with residential, commercial and industrial land uses. Scenic resources include the Puente Hills, located south of the City of Industry and north of the City of Whittier and the Whittier Narrows Recreation Area located east of the Puente Hills.

Project C7 would be located outside of the WRD service area in the vicinity of Whittier Narrows WRP. This area is primarily developed with residential, commercial and industrial land uses, as well as some open space. In this general area, existing sewer pipelines within city streets would be modified to bring wastewater to the San Jose Creek WRP. Scenic resources include the Puente Hills and Whittier Narrows Recreation Area.

The proposed Projects C5 and C10 would be located in the western Central Basin in the Los Angeles Forebay/River area, primarily east of I-110, west of I-710 and south of I-10. Some proposed pipelines and the proposed new Satellite AWTF are located just west of I-110. The proposed projects would be located in the cities of Los Angeles, Huntington Park, Vernon, Maywood, Bell, Cudahy, and South Gate. The majority of pipelines included in Project C10 would be located in southeast Los Angeles, in an area that contains mostly residential land uses. The other project areas are generally mixed residential, commercial and industrial land uses.

Scenic resources include the Santa Monica Mountains to the northwest and the San Gabriel Mountains to the northeast and east. The nearest designated scenic highway is SR-2 approximately three and a half miles away, but I-110, which is a historic parkway included in the National Register of Historic Places, begins approximately three miles north of the site.

Light and Glare

There are two types of light intrusion: the first source emanates from the interior of structures and passes through windows, while the second type projects from exterior sources such as parking lot lighting and street lamp lighting. Glare is the result of sunlight or an artificial light source being reflected on a flat surface or reflective exterior coatings. Light and glare can disturb wildlife in natural habitat areas and act as a nuisance to adjacent residential areas and motorists.

Light and glare are typical features of urbanized settings, such as the project areas. The primary sources of light within the project areas are associated with commercial and residential land uses. Car headlights associated with vehicular traffic also contribute to light and glare.

4.1.2 Regulatory Framework

State

State Scenic Highway Program

In 1963, the California legislature created the Scenic Highway Program to protect scenic highway corridors from changes that would diminish the aesthetic value of lands adjacent to the highways. The state regulations and guidelines governing the Scenic Highway Program are found in the Streets and Highways Code, Section 260 et seq. A highway is designated under this program when a local jurisdiction adopts a scenic corridor protection program, applies to the California Department of Transportation (Caltrans) for scenic highway approval, and receives notification from Caltrans that the highway has been designated as a Scenic Highway. When a city or county nominates an eligible scenic highway for official designation, it defines the scenic corridor, which is land generally adjacent to and visible to a motorist on the highway. As described above, there are no officially-designated State scenic highways or eligible State scenic highways within or near the project area (Caltrans, 2010).

Local

General Plans

Although local building and zoning ordinances generally are not applicable to most water and wastewater infrastructure projects (per California Government Code Section 53091(d) and 53091(e)), all available General Plans for jurisdictions in the project areas have been reviewed for policies relevant to the proposed project. Select policies are highlighted below.

Carson (2004)

Policy LU-12.3: Review landscape plans for new development to ensure that landscaping relates well to the proposed land use, the scale of structures, and the surrounding area.

Policy LU-12.5: Improve City appearance by requiring landscaping to screen, buffer and unify new and existing development. Mandate continued upkeep of landscaped areas.

Policy OSC-1.2: Maintain existing landscaping along the City's major streets and expand the landscaping program along other arterial streets throughout the community.

Policy T-7.2: Encourage the aesthetic quality and maintenance of facilities within the City, under the jurisdiction of other agencies.

Cerritos (2004)

Goal CD-2: Create an attractive street environment that will complement private and public properties, create beauty within the public right-of-way, and be comfortable for residents and visitors.

Policy CD-2.15: Work with utility providing agencies to coordinate the design of utility facilities (e.g., substations, pump stations, switching buildings, etc.) to ensure that the facilities fit within the context of their surroundings and do not cause negative visual impacts.

El Segundo (1992)

Objective LU1-1: Preserve and maintain the City's low-medium density residential nature, with low building height profile and character, and minimum development standards.

Huntington Park (1991)

Goal LU 6.0: Improve urban design in Huntington Park to ensure development that is both architecturally and functionally compatible, and to create uniquely identifiable neighborhoods and commercial districts.

Goal UD 6.0: Improve the design quality of the industrial districts and industrial developments throughout the city, and upgrade the visual quality of edge conditions between industrial and residential uses.

Long Beach (1973-2010)

Policy 1.2: Protect and improve the community's natural resources, amenities and scenic values including nature centers, beaches, bluffs, wetlands and water bodies.

Los Angeles, City of (1973-2012)

Land Form and Scenic Vistas Objective: Protect and reinforce natural and scenic vistas as irreplaceable resources and for the aesthetic enjoyment of present and future generations.

South Gate (2009)

Policy CD 6.1 P.7: Iconic, high quality urban design and architecture should be pursued with new projects in all the Districts in order to improve the aesthetics of the City.

Vernon (2015)

Goal LU-1: Promote and maintain manufacturing and other industrial uses as the primary land use within the City

4.1.3 Impacts and Mitigation Measures

Significance Criteria

The criteria used to determine the significance of impacts related to aesthetics are based on Appendix G of the *CEQA Guidelines*. The proposed project would result in a significant impact to aesthetics if it would:

- Have a substantial adverse effect on a scenic vista;
- Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway;
- Substantially degrade the existing visual character or quality of the site and its surroundings; or
- Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.

Impacts Discussion

The Draft GBMP provides a menu of management strategies and projects that may be implemented to meet the goals of Concept A and Concept B as described in Chapter 3. The Draft GBMP includes planning-level details for facilities associated with some management strategies and projects while others are yet to be determined. The following programmatic assessment of impacts to aesthetics is based on the proposed locations of facilities in the GBMP, although these locations are subject to change during the design and development process. Proposed facilities include treatment plant expansions, conveyance facilities, and injection and extraction wells. As management strategies and projects are chosen and implemented, subsequent project-level environmental assessments would determine more specifically the potential impacts to aesthetic resources and whether or not further CEQA documentation is necessary.

State Scenic Highways

As described above, there are no officially-designated State scenic highways or eligible State scenic highways within or near the project area that would be visible from any proposed project location (Caltrans, 2015). As such, none of the proposed projects would be visible from any designated scenic highways. Therefore, the project would not impact scenic resources within a State scenic highway corridor. There would be no impact.

Scenic Vistas

Impact 4.1-1: Implementation of proposed aboveground facilities could introduce contrasting elements into the built environment that would have an adverse effect on a scenic vista. (Less than Significant with Mitigation)

A scenic vista can be described as an expansive view of a highly valued landscape for the benefit of the general public. There are portions of the West Coast Basin and Central Basin that could be characterized as having scenic vistas including undeveloped hillsides, ridgelines, and open space areas that provide a unifying visual backdrop to the urban environment of the Los Angeles Basin. The scenic vistas visible from public vantage points in the project areas include Palos Verdes Estates Bluffs and the Puente Hills. Impacts to scenic vistas can occur when the visible scenic landscape itself is altered or when a new contrasting object is introduced that blocks or obstructs a scenic vista from a particular public vantage point.

Conveyance (Pipelines and Pump Stations)

The construction of conveyance pipelines for the proposed projects associated with Concepts A and B would require temporary ground-disturbance primarily within local roadway rights of way (ROWs). However, the ground-disturbance would be temporary as pipeline installation would progress at a rate of 50 to 500 feet per day. The presence of construction equipment and materials would be visible from public vantage points but would not affect any scenic views or vistas for longer than the temporary construction periods. It is anticipated that pipelines would be located underground and not visible once construction is complete. Therefore construction and operation of the pipelines required for each project in Concept A and B would not permanently affect views or scenic vistas. Impacts would be less than significant.

Although the exact locations of pump stations have not been determined, based on their proposed function and exterior design, they would not significantly affect views or scenic vistas from publically accessible vantage points. Pump station components of projects associated with Concepts A and B typically would be single-story buildings; the project areas where pump stations may be located are generally characterized by urban development. As such, pump stations could be designed to be similar to and compatible with surrounding architecture and neighborhood character, if necessary. With implementation of **Mitigation Measures AES-1** and **AES-2**, pump stations would not be expected to obstruct scenic vistas or views from public vantage points. Impacts would be less than significant with mitigation.

Construction of pump stations would involve excavation, pump station construction, pump and motor installation, and final site completion. Similar to pipeline construction, site disturbance and the presence of construction equipment and materials during construction of pump stations could temporarily introduce contrasting elements into scenic views and vistas. However, given the predominantly urban character of potential pump station sites and the temporary nature of construction, impacts would be considered less than significant.

Injection and Extraction Wells

The proposed injection and extraction wells associated with proposed projects for Concept A and Concept B would generally be underground structures; however portions of the wells could be aboveground. Aboveground structures could vary in size from low-profile vaults to single-story buildings. A majority of the future wells would be located within existing roadway/ROWs or existing facilities, with the exception of the injection and extraction wells for Project C5 (Concept A) located within the Los Angeles River, which is a channelized river through the project area. Although proposed wells could be visible from public vantage points, the wellhead housing likely would be located adjacent to roadways and proximate to land already developed and not expected to obstruct scenic vistas. Additionally, injection and extraction wells located in the Los Angeles River area would be in a channelized area and not expected to obstruct scenic views. Nonetheless, in order to ensure that aboveground well facilities would not introduce contrasting elements into the visual landscape that would obstruct scenic views or vistas, implementation of **Mitigation Measures AES-1** and **AES-2** would ensure that wellhead housing is designed to be compatible with surrounding buildings and neighborhood character and is appropriately screened with vegetation as necessary. **Mitigation AES-2** also requires restoration of disturbed areas. Impacts to scenic vistas would be less than significant with mitigation for both Concept A and Concept B.

Treatment Plants

Treatment plants are industrial facilities. The proposed treatment facilities associated with both Concept A and Concept B, including the proposed Satellite AWTF, would be located in developed, urbanized and industrial areas. With the exception of the Satellite AWTF under Project C10, proposed treatment facilities would be located at or adjacent to existing treatment plants, including ECLWRF, TIWRP, JWPCP, SJCWRP, and LCWRP. If treatment capacity is increased at any of the aforementioned facilities it would occur within the boundaries of the existing treatment plant or near the treatment plant on property acquired for treatment plant expansion. Any new facilities would be next to existing facilities, therefore relative to the current baseline conditions there would be no new impacts to scenic vistas due to expansions or upgrades. Impacts to scenic vistas as a result of the expansion of treatment facilities would be less than significant.

The exact location of the new Satellite AWTF associated with Project C10 (Concept B) is unknown at this time, but would likely be located in the south Los Angeles community within City District 08 (see Figure B-8 in Appendix B). This area is highly urbanized and does not contain topographic relief that provides opportunities for scenic views from public vantage points. Nonetheless, implementation of **Mitigation Measures AES-1** and **AES-2** would ensure any potential impacts to scenic views or vistas are mitigated to less than significant levels.

Mitigation Measures

AES-1: Aboveground buildings/structures shall be designed to be consistent with the aesthetic qualities of existing structures in the vicinity to minimize contrasting features.

AES-2: During project design, a landscape plan shall be prepared for aboveground facilities that restores disturbed areas and minimizes effects to scenic vistas.

Significance Determination: Less than significant with mitigation.

Visual Character

Impact 4.1-2: Implementation of proposed facilities could change the existing visual character or quality of project sites and their surroundings. (Less than Significant with Mitigation)

Construction activities associated with all projects proposed under Concepts A and B would require the use of construction equipment and storage of materials onsite, thus introducing contrasting features into the visual landscape that would affect the visual quality of project sites and/or their surroundings. Contrasting features would include excavated areas, stockpiled soils and other materials generated and stored onsite during construction. However, adverse effects to visual character associated with project construction would be temporary and would be considered less than significant.

Once constructed, the facilities proposed under Concept A and Concept B would be located predominantly in urban areas. Underground facilities, such as pipelines, are not expected to have a permanent effect on visual character of an area. Implementation of **Mitigation Measure AES-3** would ensure disturbed areas are restored to pre-construction to conditions. Aboveground structures within urban areas would be constructed on or adjacent to existing developed and built-up landscapes. Small aboveground wellheads and pump stations would have no significant effect on the visual character of the area. Larger structures, such as single-story housing for wellheads and pump stations and treatment facilities, would be compatible with existing visual character with implementation of **Mitigation Measures AES-1, AES-2** and **AES-3**. **Mitigation Measures AES-1** through **AES-3** would reduce impacts to visual character to a less than significant level for facilities proposed under Concepts A and B.

Mitigation Measures

Implementation of **Mitigation Measures AES-1** and **AES-2**.

AES-3: After construction of GBMP project is complete, disturbed areas, including pipeline alignments, construction easements, and staging areas, shall be restored similar to preconstruction conditions.

Significance Determination: Less than significant with mitigation.

Light and Glare

Impact 4.1-3: The proposed projects would introduce new source of light and glare that would adversely affect daytime and nighttime views. (Less than Significant with Mitigation)

Security lighting used during the construction phase of all GBMP projects may introduce new sources of light and glare to the immediate project areas. Nighttime construction, such as 24-hour drilling required during well construction, would require nighttime lighting that could spill over onto neighboring properties and potentially impact neighboring sensitive receptors, such as residential land uses. However, with implementation of **Mitigation Measure AES-4**, nighttime construction lighting would be shielded and directed away from surrounding light-sensitive land uses. Temporary impacts associated with light and glare during construction activities would be reduced to a less than significant level for both Concept A and B.

Once proposed facilities are constructed under Concepts A and B, significant impacts related to light and glare would occur if there were substantial permanent increases in ambient daytime or nighttime light levels near light-sensitive land uses, such as residential areas. Proposed underground facilities, such as pipelines, would not create a new source of light and glare. Aboveground pump stations, wellheads, and treatment facilities associated with all Concept A and Concept B projects may require new exterior daytime and nighttime lighting for operational and security purposes. Implementation of **Mitigation Measure AES-5**, as described below, would require any permanent exterior lighting on buildings/structures to be shielded and directed downward to avoid light intrusion onto surrounding land uses. Operational impacts associated with light and glare would be reduced to a less than significant level with mitigation for Concept A and Concept B.

Mitigation Measures

> **AES-4:** Lighting used during nighttime construction shall be shielded and pointed away from surrounding light-sensitive land uses.
>
> **AES-5:** All new permanent exterior lighting associated with proposed project components shall be shielded and directed downward to avoid any light spill onto neighboring lands or into nighttime skies.

Significance Determination: Less than significant with mitigation.

TABLE 4.1-1
AESTHETICS IMPACT SUMMARY

	Concept A		Concept B	
Impact	**Impact Determination**	**Mitigation Summary**	**Impact Determination**	**Mitigation Summary**
State Scenic Highways: There are no officially-designated or eligible State scenic highways within or near the project areas.	No impact.	None required	No impact.	None required.
Scenic Vistas: Implementation of proposed aboveground facilities could introduce contrasting elements into the built environment that would have an adverse effect on a scenic vista.	Less than Significant with Mitigation	AES-1 and AES-2	Less than Significant with Mitigation	AES-1 and AES-2
Visual Character: Implementation of proposed facilities could change the existing visual character or quality of project sites and their surroundings.	Less than Significant with Mitigation	AES-1, AES-2, AES-3	Less than Significant with Mitigation	AES-1, AES-2, AES-3
Light and Glare: The proposed projects would introduce new source of light and glare that could adversely affect daytime and nighttime views.	Less than Significant with Mitigation	AES-4, AES-5	Less than Significant with Mitigation	AES-4, AES-5

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4.2 Air Quality

This section provides an overview of existing air quality conditions within the proposed project area and surrounding region, a summary of applicable regulations, and analyses of potential short-term and long-term air quality impacts from implementation of the proposed project. Mitigation measures are recommended as necessary to reduce significant air quality impacts.

4.2.1 Introduction

Climate and Meteorology

The project area is located in the Los Angeles Basin and lies within the South Coast Air Basin (Basin), which is under the jurisdiction of the South Coast Air Quality Management District (SCAQMD). The Basin is a 6,600-square-mile coastal plain bounded by the Pacific Ocean to the southwest and the San Gabriel, San Bernardino, and San Jacinto Mountains to the north and east. The Basin includes the non-desert portions of Los Angeles, Riverside, and San Bernardino counties, and all of Orange County.

The ambient concentrations of air pollutants are determined by the amount of emissions released by sources and the atmosphere's ability to transport and dilute such emissions. Natural factors that affect transport and dilution include terrain, wind, atmospheric stability, and sunlight. Therefore, existing air quality conditions in the area are determined by such natural factors as topography, meteorology, and climate, in addition to the amount of emissions released by existing air pollutant sources.

Atmospheric conditions such as wind speed, wind direction, and air temperature gradients interact with the physical features of the landscape to determine the movement and dispersal of air pollutants. The topography and climate of Southern California combine to make the Basin an area of high air pollution potential. The Basin is a coastal plain with connecting broad valleys and low hills, bounded by the Pacific Ocean to the west and high mountains around the rest of the perimeter. The general region lies in the semi-permanent high-pressure zone of the eastern Pacific, resulting in a mild climate tempered by cool sea breezes with light average wind speeds. The usually mild climatological pattern is disrupted occasionally by periods of extremely hot weather, winter storms, or Santa Ana winds. During the summer months, a warm air mass frequently descends over the cool, moist marine layer produced by the interaction between the ocean's surface and the lowest layer of the atmosphere. The warm upper layer forms a cap over the cool marine layer and inhibits the pollutants in the marine layer from dispersing upward. In addition, light winds during the summer further limit ventilation. Furthermore, sunlight triggers the photochemical reactions which produce ozone. The region experiences more days of sunlight than any other major urban area in the nation except Phoenix (SCAQMD, 2013).

Average temperatures in the Los Angeles Basin are typically highest during August and lowest during either December or January. The annual average maximum temperature can range from 70 degrees Fahrenheit (ºF) in areas located near the coast to 79 ºF in areas located further inland. The annual average minimum temperature ranges from 53 ºF in areas located near the coast to 56 ºF in

areas located further inland. Precipitation is greatest during the winter season from December through February, with February being the wettest month.

4.2.2 Environmental Setting

Criteria Air Pollutants

The California Air Resources Board (CARB) and the United States Environmental Protection Agency (USEPA) currently focus on the following air pollutants as indicators of ambient air quality: ozone, carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), respirable particulate matter with an aerodynamic diameter of 10 micrometers or less (PM_{10}), fine particulate matter with an aerodynamic diameter of 2.5 micrometers or less ($PM_{2.5}$), and lead. The pollutants are referred to as "criteria air pollutants" since they are the most prevalent air pollutants known to be injurious to human health and extensive health-effects criteria documents are available about their effects on human health and welfare. Standards have been established for each criteria pollutant to meet specific public health and welfare criteria set forth in the federal Clean Air Act (CAA). California has generally adopted more stringent ambient air quality standards for the criteria air pollutants (referred to as State Ambient Air Quality Standards, or state standards) and has adopted air quality standards for some pollutants for which there is no corresponding national standard, such as sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particles.

Ozone

Ozone, the main component of photochemical smog, is primarily a summer and fall pollution problem. Ozone is not emitted directly into the air but is formed through a complex series of chemical reactions involving other compounds that are directly emitted. These directly emitted pollutants (also known as ozone precursors) include reactive organic gases (ROGs) or volatile organic compounds (VOCs), and oxides of nitrogen (NO_X). While both ROGs and VOCs refer to compounds of carbon, ROG is a term used by CARB and is identified based on a list of carbon compounds that exempts carbon compounds determined by CARB to be nonreactive. VOC is a term used by USEPA and is identified based on USEPA's separate list of exempted compounds it identifies as having negligible photochemical reactivity. The time period required for ozone formation allows the reacting compounds to spread over a large area, producing regional pollution problems. Ozone concentrations are the cumulative result of regional development patterns rather than the result of a few significant emission sources.

Once ozone is formed, it remains in the atmosphere for one or two days. Ozone is then eliminated through reaction with chemicals on the leaves of plants, attachment to water droplets as they fall to earth ("rainout"), or absorption by water molecules in clouds that later fall to earth with rain ("washout").

Short-term exposure to ozone can irritate the eyes and cause constriction of the airways. In addition to causing shortness of breath, ozone can aggravate existing respiratory diseases such as asthma, bronchitis, and emphysema.

Carbon Monoxide

CO, a colorless and odorless gas, is a relatively non-reactive pollutant that is a product of incomplete combustion and is mostly associated with motor vehicles. When inhaled at high concentrations, CO combines with hemoglobin in the blood and reduces the oxygen-carrying capacity of the blood. This results in reduced oxygen reaching the brain, heart and other body tissues. This condition is especially critical for people with cardiovascular diseases, chronic lung disease, or anemia. CO measurements and modeling were important in the early 1980's when CO levels were regularly exceeded throughout California. In more recent years, CO measurements and modeling have not been a priority in most California air districts due to the retirement of older polluting vehicles, lower emissions from new vehicles, and improvements in fuels.

Nitrogen Dioxide

NO_2 is a reddish-brown gas that is a by-product of combustion processes. Automobiles and industrial operations are the main sources of NO_2. Combustion devices emit primarily nitric oxide (NO), which reacts through oxidation in the atmosphere to form NO_2. The combined emissions of NO and NO_2 are referred to as NOx, which are reported as equivalent NO_2. Aside from its contribution to ozone formation, NO_2 can increase the risk of acute and chronic respiratory disease and reduce visibility. NO_2 may be visible as a coloring component of a brown cloud on high pollution days, especially in conjunction with high ozone levels.

Sulfur Dioxide

SO_2 is a colorless, extremely irritating gas or liquid. It enters the atmosphere as a pollutant mainly as a result of burning high sulfur-content fuel oils and coal, and from chemical processes occurring at chemical plants and refineries. When SO_2 oxidizes in the atmosphere, it forms sulfur trioxide (SO_3). Collectively, these pollutants are referred to as sulfur oxides (SO_X).

Major sources of SO_2 include power plants, large industrial facilities, diesel vehicles, and oil-burning residential heaters. Emissions of SO_2 aggravate lung diseases, especially bronchitis. It also constricts the breathing passages, especially in people with asthma and people involved in moderate to heavy exercise. SO_2 potentially causes wheezing, shortness of breath, and coughing. Long-term SO_2 exposure has been associated with increased risk of mortality from respiratory or cardiovascular disease.

Particulate Matter

PM_{10} and $PM_{2.5}$ consist of particulate matter that is 10 microns or less in diameter and 2.5 microns or less in diameter, respectively (a micron is one-millionth of a meter). PM_{10} and $PM_{2.5}$ represent fractions of particulate matter that can be inhaled into the air passages and the lungs and can cause adverse health effects. Acute and chronic health effects associated with high particulate levels include the aggravation of chronic respiratory diseases, heart and lung disease, and coughing, bronchitis and respiratory illnesses in children. Recent mortality studies have shown an association between morbidity and mortality and daily concentrations of particulate matter in the air. Particulate matter can also damage materials and reduce visibility. One common source of $PM_{2.5}$ is diesel exhaust emissions.

PM_{10} consists of particulate matter emitted directly into the air (e.g., fugitive dust, soot, and smoke from mobile and stationary sources, construction operations, fires, and natural windblown dust) and particulate matter formed in the atmosphere by condensation and/or transformation of SO_2 and ROG. Traffic generates particulate matter emissions through entrainment of dust and dirt particles that settle onto roadways and parking lots. PM_{10} and $PM_{2.5}$ are also emitted by burning wood in residential wood stoves and fireplaces and open agricultural burning. $PM_{2.5}$ can also be formed through secondary processes such as airborne reactions with certain pollutant precursors, including ROGs, ammonia (NH_3), NOx, and SOx.

Lead

Lead is a metal found naturally in the environment and present in some manufactured products. There are a variety of activities that can contribute to lead emissions, which are grouped into two general categories, stationary and mobile sources. On-road mobile sources include light-duty automobiles; light-, medium-, and heavy-duty trucks; and motorcycles.

Emissions of lead have dropped substantially over the past forty years. The reduction before 1990 is largely due to the phase-out of lead as an anti-knock agent in gasoline for on-road automobiles. Substantial emission reductions have also been achieved due to enhanced controls in the metals processing industry. In the Basin, atmospheric lead is generated almost entirely by the combustion of leaded gasoline and contributes less than one percent of the material collected as total suspended particulates.

Toxic Air Contaminants

Concentrations of toxic air contaminants (TACs), or in federal parlance, hazardous air pollutants (HAPs), are also used as indicators of ambient air quality conditions. A TAC is defined as an air pollutant that may cause or contribute to an increase in mortality or in serious illness, or that may pose a hazard to human health. TACs are usually present in minute quantities in the ambient air; however, their high toxicity or health risk may pose a threat to public health even at low concentrations.

According to The California Almanac of Emissions and Air Quality (CARB, 2009), the majority of the estimated health risk from TACs can be attributed to relatively few compounds, the most important being particulate matter from diesel-fueled engines (diesel PM). Diesel PM differs from other TACs in that it is not a single substance, but rather a complex mixture of hundreds of substances. Although diesel PM is emitted by diesel-fueled internal combustion engines, the composition of the emissions varies depending on engine type, operating conditions, fuel composition, lubricating oil, and whether an emission control system is present.

Unlike the other TACs, no ambient monitoring data are available for diesel PM because no routine measurement method currently exists. However, CARB has made preliminary concentration estimates based on a particulate matter exposure method. This method uses the CARB emissions inventory's PM_{10} database, ambient PM_{10} monitoring data, and the results from several studies to estimate concentrations of diesel PM. In addition to diesel PM, the TACs for which data are available that pose the greatest existing ambient risk in California are benzene,

1,3-butadiene, acetaldehyde, carbon tetrachloride, hexavalent chromium, para-dichlorobenzene, formaldehyde, methylene chloride, and perchloroethylene.

Odorous Emissions

Odors are generally regarded as an annoyance rather than a health hazard. However, manifestations of a person's reaction to foul odors can range from psychological (e.g., irritation, anger, or anxiety) to physiological (e.g., circulatory and respiratory effects, nausea, vomiting, and headache). Offensive odors are unpleasant and can lead to public distress generating citizen complaints to local governments. Although unpleasant, offensive odors rarely cause physical harm. The occurrence and severity of odor impacts depend on the nature, frequency, and intensity of the source, wind speed, direction, and the sensitivity of receptors.

Project Area Setting

Existing Air Quality

SCAQMD maintains monitoring stations within district boundaries that monitor air quality and compliance with associated ambient standards. The project area is located in the Los Angeles Basin, which encompasses numerous cities in Los Angeles County. **Table 4.2-1** lists the air quality monitoring stations that are located within or immediately adjacent to the project area, including their locations and pollutants that are monitored by each station.

TABLE 4.2-1
AIR QUALITY MONITORING STATIONS WITHIN AND NEAR PROJECT AREA

Monitoring Station	Station Location	Pollutants Monitored
Los Angeles – LAX	7201 W. Westchester Parkway, Los Angeles, CA 90045	Ozone, NO_2, CO, SO_2, and PM_{10}
North Long Beach	3648 N. Long Beach Boulevard, Long Beach, CA 90807	Ozone, NO_2, CO, SO_2, PM_{10}, and $PM_{2.5}$
Long Beach – 2425 Webster Street	2425 Webster Street, Long Beach CA 90810	Ozone, NO_2, CO, and SO_2
Compton	700 North Bullis Road, Compton, CA 90221	Ozone, NO_2, CO, and $PM_{2.5}$
Pico Rivera	4144 San Gabriel River Parkway, Pico Rivera, CA	Ozone, NO_2, CO, and $PM_{2.5}$
La Habra	621 W. Lambert, La Habra, CA 90631	Ozone, NO_2, and CO

SOURCE: CARB, 2013a.

Historical data from the air quality monitoring stations listed in Table 4.2-1 for the most recent three years (2011 – 2013) are shown in **Table 4.2-2**.

TABLE 4.2-2
AIR QUALITY DATA SUMMARY (2011 – 2014)

Pollutant	Standard[a]	Monitoring Data by Year 2011	2012	2013
Los Angeles – LAX Monitoring Station				
Ozone				
Highest 1 Hour Average (ppm)		0.078	0.106	0.105
Days over State Standard	0.09 ppm	0	1	1
Highest 8 Hour Average (ppm)		0.067	0.075	0.081
Days over National Standard	0.075 ppm	0	0	1
Days over State Standard	0.070 ppm	0	1	1
Carbon Monoxide				
Highest 1 Hour Average (ppm)		1.79	1.51	*
Days over National Standard	35 ppm	0	0	0
Days over State Standard	20 ppm	0	0	0
Nitrogen Dioxide				
Highest 1 Hour Average (ppm)		0.098	0.077	0.078
Days over National Standard	0.100 ppm	0	0	0
Days over State Standard	0.18 ppm	0	0	0
Annual Average (ppm)		0.013	*	*
Days over National Standard	0.053 ppm	0	*	*
Days over State Standard	0.030 ppm	0	*	*
Sulfur Dioxide				
Highest 24 Hour Average (ppm)		0.002	0.002	0.002
Days over National Standard	0.14 ppm	0	0	0
Days over State Standard	0.04 ppm	0	0	0
Particulate Matter (PM_{10})				
Highest 24 Hour Average ($\mu g/m^3$)[b]		41.0	31.0	38.0
Days over National Standard (measured)[c]	150 $\mu g/m^3$	0	0	0
Days over State Standard (measured)[c]	50 $\mu g/m^3$	0	0	0
Annual Average ($\mu g/m^3$)[b]	20 $\mu g/m^3$	21.7	19.8	20.8
North Long Beach Monitoring Station				
Ozone				
Highest 1 Hour Average (ppm)		0.073	0.084	0.092
Days over State Standard	0.09 ppm	0	1	0
Highest 8 Hour Average (ppm)		0.062	0.067	0.071
Days over National Standard	0.075 ppm	0	0	0
Days over State Standard	0.070 ppm	0	0	1
Carbon Monoxide				
Highest 1 Hour Average (ppm)		2.56	2.17	*
Days over National Standard	35 ppm	0	0	0
Days over State Standard	20 ppm	0	0	0

TABLE 4.2-2
AIR QUALITY DATA SUMMARY (2011 – 2014)

Pollutant	Standard[a]	Monitoring Data by Year 2011	2012	2013
North Long Beach Monitoring Station (cont.)				
Nitrogen Dioxide				
Highest 1 Hour Average (ppm)		0.106	0.077	0.067
Days over National Standard	0.100 ppm	1	0	0
Days over State Standard	0.18 ppm	0	0	0
Annual Average (ppm)		*	*	*
Days over National Standard	0.053 ppm	*	*	*
Days over State Standard	0.030 ppm	*	*	*
Sulfur Dioxide				
Highest 24 Hour Average (ppm)		0.004	0.003	0.001
Days over National Standard	0.14 ppm	0	0	0
Days over State Standard	0.04 ppm	0	0	0
Particulate Matter (PM_{10})				
Highest 24 Hour Average ($\mu g/m^3$)[b]		43.0	45.0	37.0
Days over National Standard (measured)[c]	150 $\mu g/m^3$	0	0	0
Days over State Standard (measured)[c]	50 $\mu g/m^3$	0	0	0
Annual Average ($\mu g/m^3$)[b]	20 $\mu g/m^3$	24.2	23.2	23.2
Particulate Matter ($PM_{2.5}$)				
Highest 24 Hour Average ($\mu g/m^3$)[b]		39.7	49.8	47.2
Days over National Standard (measured)[c]	35 $\mu g/m^3$	1	4	2
Annual Average ($\mu g/m^3$)[b]	12 $\mu g/m^3$	*	10.4	11.3
Long Beach – 2425 Webster Street Monitoring Station				
Ozone				
Highest 1 Hour Average (ppm)		0.074	0.080	0.090
Days over State Standard	0.09 ppm	0	0	0
Highest 8 Hour Average (ppm)		0.064	0.067	0.070
Days over National Standard	0.075 ppm	0	0	0
Days over State Standard	0.070 ppm	0	0	0
Carbon Monoxide				
Highest 1 Hour Average (ppm)		3.31	2.57	*
Days over National Standard	35 ppm	0	0	0
Days over State Standard	20 ppm	0	0	0
Nitrogen Dioxide				
Highest 1 Hour Average (ppm)		0.090	0.098	0.081
Days over National Standard	0.100 ppm	0	0	0
Days over State Standard	0.18 ppm	0	0	0
Annual Average (ppm)		0.020	*	0.021
Days over National Standard	0.053 ppm	0	*	0
Days over State Standard	0.030 ppm	0	*	0

TABLE 4.2-2
AIR QUALITY DATA SUMMARY (2011 – 2014)

Pollutant	Standard[a]	Monitoring Data by Year 2011	2012	2013
Long Beach – 2425 Webster Street Monitoring Station (cont.)				
Sulfur Dioxide				
Highest 24 Hour Average (ppm)		0.013	0.004	0.004
Days over National Standard	0.14 ppm	0	0	0
Days over State Standard	0.04 ppm	0	0	0
Compton Monitoring Station				
Ozone				
Highest 1 Hour Average (ppm)		0.082	0.086	0.090
Days over State Standard	0.09 ppm	0	0	0
Highest 8 Hour Average (ppm)		0.066	0.071	0.080
Days over National Standard	0.075 ppm	0	0	1
Days over State Standard	0.070 ppm	0	1	1
Carbon Monoxide				
Highest 1 Hour Average (ppm)		4.67	3.96	*
Days over National Standard	35 ppm	0	0	0
Days over State Standard	20 ppm	0	0	0
Nitrogen Dioxide				
Highest 1 Hour Average (ppm)		0.075	0.079	0.070
Days over National Standard	0.100 ppm	0	0	0
Days over State Standard	0.18 ppm	0	0	0
Annual Average (ppm)		0.018	0.017	0.017
Days over National Standard	0.053 ppm	0	0	0
Days over State Standard	0.030 ppm	0	0	0
Particulate Matter ($PM_{2.5}$)				
Highest 24 Hour Average ($\mu g/m^3$)[b]		35.3	51.2	52.1
Days over National Standard (measured)[c]	35 $\mu g/m^3$	0	1	1
Annual Average ($\mu g/m^3$)[b]	12 $\mu g/m^3$	13.0	11.7	*
Pico Rivera Monitoring Station				
Ozone				
Highest 1 Hour Average (ppm)		0.096	0.106	0.101
Days over State Standard	0.09 ppm	1	5	2
Highest 8 Hour Average (ppm)		0.074	0.075	0.073
Days over National Standard	0.075 ppm	3	1	0
Days over State Standard	0.070 ppm	1	6	3
Carbon Monoxide				
Highest 1 Hour Average (ppm)		2.37	2.16	*
Days over National Standard	35 ppm	0	0	0
Days over State Standard	20 ppm	0	0	0

TABLE 4.2-2
AIR QUALITY DATA SUMMARY (2011 – 2014)

Pollutant	Standard[a]	Monitoring Data by Year 2011	2012	2013
Pico Rivera Monitoring Station (cont.)				
Nitrogen Dioxide				
Highest 1 Hour Average (ppm)		0.091	0.081	0.105
Days over National Standard	0.100 ppm	0	0	1
Days over State Standard	0.18 ppm	0	0	0
Annual Average (ppm)		*	*	*
Days over National Standard	0.053 ppm	*	*	*
Days over State Standard	0.030 ppm	*	*	*
Particulate Matter ($PM_{2.5}$)				
Highest 24 Hour Average ($\mu g/m^3$)[b]		41.2	45.3	29.1
Days over National Standard (measured)[c]	35 $\mu g/m^3$	1	1	0
Annual Average ($\mu g/m^3$)[b]	12 $\mu g/m^3$	12.5	11.9	11.8
La Habra Monitoring Station				
Ozone				
Highest 1 Hour Average (ppm)		0.095	0.100	0.104
Days over State Standard	0.09 ppm	1	3	2
Highest 8 Hour Average (ppm)		0.075	0.078	0.078
Days over National Standard	0.075 ppm	0	2	1
Days over State Standard	0.070 ppm	3	4	2
Carbon Monoxide				
Highest 1 Hour Average (ppm)		2.16	2.37	*
Days over National Standard	35 ppm	0	0	0
Days over State Standard	20 ppm	0	0	0
Nitrogen Dioxide				
Highest 1 Hour Average (ppm)		0.070	0.068	0.085
Days over National Standard	0.100 ppm	0	0	0
Days over State Standard	0.18 ppm	0	0	0
Annual Average (ppm)		*	*	*
Days over National Standard	0.053 ppm	*	*	*
Days over State Standard	0.030 ppm	*	*	*

ppm = parts per million; $\mu g/m^3$ = micrograms per cubic meter; * = insufficient data available to determine value.
* = Insufficient data available to determine the value.
[a] Generally, state standards and national standards are not to be exceeded more than once per year.
[b] Concentrations and averages represent federal statistics. State and federal statistics may differ because of different sampling methods.
[c] Measurements are usually collected every six days. Days over the standard represent the measured number of days that the standard has been exceeded.

SOURCE: CARB, 2013a.

Both CARB and USEPA use the type of monitoring data shown in Table 4.2-2 to designate areas according to their attainment status for criteria air pollutants. The purpose of these designations is to identify the areas with air quality problems and thereby initiate planning efforts for

improvement. The three basic designation categories are nonattainment, attainment, and unclassified. Unclassified is used in an area that cannot be classified on the basis of available information as meeting or not meeting the standards. In addition, the California designations include a subcategory of nonattainment-transitional, which is given to nonattainment areas that are progressing and nearing attainment. The current attainment status for the Basin is provided in **Table 4.2-3**.

TABLE 4.2-3
SOUTH COAST AIR BASIN ATTAINMENT STATUS

	Attainment Status	
Pollutant	**California Standards**	**Federal Standards**
Ozone	Nonattainment	Extreme Nonattainment
CO	Attainment	Unclassified/ Attainment
NO_2	Attainment	Unclassified/ Attainment
SO_2	Attainment	Attainment
PM_{10}	Nonattainment	Attainment
$PM_{2.5}$	Nonattainment	Nonattainment

SOURCE: CARB, 2013b; USEPA, 2014.

Sensitive Receptors

Land uses such as schools, children's daycare centers, hospitals, and convalescent homes are considered to be more sensitive to poor air quality than the general public because the population groups associated with these uses have increased susceptibility to respiratory distress. In addition, residential uses are considered more sensitive to air quality conditions than commercial and industrial uses, because people generally spend longer periods of time at their residences, resulting in greater exposure to ambient air quality conditions. Recreational land uses are considered moderately sensitive to air pollution. Exercise places a high demand on respiratory functions, which can be impaired by air pollution, even though exposure periods during exercise are generally short. In addition, noticeable air pollution can detract from the enjoyment of recreation.

As the project area is located within the Los Angeles Basin, which consists of numerous cities in Los Angeles County, it is likely that some of the various project components consisting of pipelines, pump stations, injection/production wells, and new and/or upgraded water treatment facilities would be located in proximity to sensitive land uses such as residences, schools, hospitals, daycare centers, etc. As implementation of the project proceeds, specific sensitive receptors will be identified and evaluated on a project-by-project basis during subsequent CEQA and environmental permit processes.

4.2.3 Regulatory Framework

The project area is located in the western portion of the Basin. Air quality in the project area is regulated by USEPA, CARB, and SCAQMD. In addition, the numerous cities encompassed by the project area all have their own respective city general plans, many of which may contain an Air Quality Element that establishes a policy foundation to implement local air quality improvement measures. As implementation of the project proceeds, specific policies and objectives pertaining to air quality from applicable city general plans will be identified and evaluated on a project-by-project basis during subsequent CEQA environmental processes.

USEPA

Criteria Air Pollutants

At the federal level, USEPA has been charged with implementing national air quality programs. USEPA's air quality mandates are drawn primarily from the federal Clean Air Act (CAA), which was enacted in 1970. The most recent major amendments to the CAA were made by Congress in 1990.

The CAA requires USEPA to establish National Ambient Air Quality Standards (NAAQS). USEPA has established primary and secondary NAAQS for the following "criteria air pollutants": ozone, CO, NO_2, SO_2, PM_{10}, $PM_{2.5}$, and lead. **Table 4.2-4** shows the NAAQS for these pollutants.

The CAA also requires each state to prepare an air quality control plan, referred to as a state implementation plan (SIP). The CAA Amendments of 1990 (CAAA) added requirements for states with nonattainment areas to revise their SIPs to incorporate additional control measures to reduce air pollution. The SIP is modified periodically to reflect the latest emissions inventories, planning documents, and rules and regulations of the air basins, as reported by their jurisdictional agencies. USEPA is responsible for reviewing all SIPs to determine whether they conform to the mandates of the CAA and its amendments, and to determine whether implementing the SIPs will achieve air quality goals. If USEPA determines a SIP to be inadequate, a federal implementation plan that imposes additional control measures may be prepared for the nonattainment area. If an approvable SIP is not submitted or implemented within the mandated time frame, sanctions may be applied to transportation funding and stationary sources of air pollution in the air basin.

USEPA also has regulatory and enforcement jurisdiction over emission sources beyond state waters (outer continental shelf), and those that are under the exclusive authority of the federal government, such as aircraft, locomotives, and interstate trucking. USEPA's primary role at the state level is to oversee state air quality programs. USEPA sets federal vehicle and stationary source emissions standards and provides research and guidance in air pollution programs.

TABLE 4.2-4
AMBIENT AIR QUALITY STANDARDS FOR CRITERIA POLLUTANTS

Pollutant	Averaging Time[a]	State Standard	National Standard	Pollutant Health and Atmospheric Effects	Major Pollutant Sources
Ozone	1 hour 8 hours	0.09 ppm 0.07 ppm[b]	--- 0.075 ppm	High concentrations can directly affect lungs, causing irritation. Long-term exposure may cause damage to lung tissue.	Formed when ROG and NO_X react in the presence of sunlight. Major sources include on-road motor vehicles, solvent evaporation, and commercial / industrial mobile equipment.
Carbon Monoxide (CO)	1 hour 8 hours	20 ppm 9.0 ppm	35 ppm 9 ppm	Classified as a chemical asphyxiant, carbon monoxide interferes with the transfer of fresh oxygen to the blood and deprives sensitive tissues of oxygen.	Internal combustion engines, primarily gasoline-powered motor vehicles.
Nitrogen Dioxide (NO_2)	1 hour Annual Arithmetic Mean	0.18 ppm 0.030 ppm	0.100 ppm 0.053 ppm	Irritating to eyes and respiratory tract. Colors atmosphere reddish-brown.	Motor vehicles, petroleum refining operations, industrial sources, aircraft, ships, and railroads.
Sulfur Dioxide (SO_2)	1 hour 3 hours 24 hours Annual Arithmetic Mean	0.25 ppm --- 0.04 ppm ---	75 ppb 0.50 ppm 0.14 ppm 0.03 ppm	Irritates upper respiratory tract; injurious to lung tissue. Can yellow the leaves of plants, destructive to marble, iron, and steel. Limits visibility and reduces sunlight.	Fuel combustion, chemical plants, sulfur recovery plants, and metal processing.
Respirable Particulate Matter (PM10)	24 hours Annual Arithmetic Mean	50 µg/m^3 20 µg/m^3	150 µg/m^3 ---	May irritate eyes and respiratory tract, decreases in lung capacity, cancer and increased mortality. Produces haze and limits visibility.	Dust and fume-producing industrial and agricultural operations, combustion, atmospheric photochemical reactions, and natural activities (e.g., wind-raised dust and ocean sprays).
Fine Particulate Matter (PM2.5)	24 hours Annual Arithmetic Mean	--- 12 µg/m^3	35 µg/m^3 12.0 µg/m^3	Increases respiratory disease, lung damage, cancer, and premature death. Reduces visibility and results in surface soiling.	Fuel combustion in motor vehicles, equipment, and industrial sources; residential and agricultural burning; Also, formed from photochemical reactions of other pollutants, including NO_X, sulfur oxides, and organics.
Lead (Pb)	30 Day Average Calendar Quarter Rolling 3-Month Average	1.5 µg/m^3 --- ---	--- 1.5 µg/m^3 0.15 µg/m^3	Disturbs gastrointestinal system, and causes anemia, kidney disease, and neuromuscular and neurological dysfunction (in severe cases).	*Present source:* lead smelters, battery manufacturing and recycling facilities. Past source: combustion of leaded gasoline.
Hydrogen Sulfide	1 hour	0.03 ppm	No National Standard	Nuisance odor (rotten egg smell), headache and breathing difficulties (higher concentrations)	Geothermal power plants, petroleum production and refining
Sulfates (SO_4)	24 hour	25 µg/m^3	No National Standard	Decrease in ventilatory functions; aggravation of asthmatic symptoms; aggravation of cardio-pulmonary disease; vegetation damage; degradation of visibility; property damage.	Industrial processes.
Visibility Reducing Particles	8 hour	Extinction of 0.23/km; visibility of 10 miles or more	No National Standard	Reduces visibility, reduced airport safety, lower real estate value, and discourages tourism.	See $PM_{2.5}$.

TABLE 4.2-4
AMBIENT AIR QUALITY STANDARDS FOR CRITERIA POLLUTANTS

Pollutant	Averaging Time[a]	State Standard	National Standard	Pollutant Health and Atmospheric Effects	Major Pollutant Sources
Vinyl Chloride	24 hour	0.01 ppm	No National Standard	Short-term exposure to high levels of vinyl chloride in the air can cause dizziness, drowsiness, and headaches. Long-term exposure through inhalation and oral exposure can cause liver damage. Cancer is a major concern from exposure to vinyl chloride via inhalation. Vinyl chloride exposure has been shown to increase the risk of angiosarcoma, a rare form of liver cancer in humans.	Polyvinyl chloride (PVC) plastic and vinyl products.

ppm = parts per million; ppb = parts per billion; $\mu g/m^3$ = micrograms per cubic meter.
[a] The averaging time is the interval of time over which the sample results are reported.
[b] This concentration was approved by CARB on April 28, 2005 and became effective May 17, 2006.

SOURCE: CARB, 2013c.

In June 2004, USEPA finalized the adoption of a comprehensive national program/rule to reduce emissions from off-road diesel engines used primarily in construction, agricultural, and industrial applications by integrating engine and fuel controls as a system to gain the greatest emission reductions. Specifically, USEPA adopted new emission standards for off-road diesel engines and sulfur reductions in off-road diesel fuel aimed at dramatically reducing harmful emissions and helping states and local areas that have been designated as 8-hour ozone non-attainment areas to improve their air quality. The new engine standards, which are based on the use of advanced exhaust emission control devices, began to take effect in 2008 and would continue to be phased in until 2015. USEPA estimates particulate matter reductions of 95 percent, NOx reductions of 90 percent, and the virtual elimination of SOx from off-road engines that meet the new standards. Because the emission control devices in the off-road diesel engines could potentially be damaged by sulfur, USEPA also targeted the reduction of sulfur levels in off-road diesel fuel as part of its rule. The rule aimed to reduce off-road diesel fuel sulfur levels by 99 percent, resulting in an Ultra Low Sulfur Diesel (ULSD) fuel that has a maximum sulfur concentration of 15 parts per million (ppm). The phase-in of fuel controls to reduce the sulfur levels in off-road diesel fuel began in 2007.

With respect to on-road diesel engines, USEPA promulgated the Heavy-Duty Highway Rule in 2007, which aims to reduce emissions from on-road, heavy-duty diesel trucks by establishing a series of increasingly strict emission standards for new engines. Manufacturers are required to produce new diesel vehicles that meet PM and NOx emission standards beginning with model year 2007.

Hazardous Air Pollutants

USEPA has programs for identifying and regulating HAPs. The first National Emission Standards for Hazardous Air Pollutants (NESHAPs) were originally required by the CAA in 1970, which

were developed for sources and source categories of HAPs that were determined to pose adverse risk to human health. The USEPA Administrator was directed to set risk-based NESHAPs at a level that provided an ample margin of safety to protect the public health from HAPs. Subsequently, in §112(d) of the 1990 CAAA, Congress directed USEPA to develop technology-based standards to further regulate HAPs. As opposed to the original conception of NESHAPs as a risk-based standard, the technology-based NESHAPS were established according to Maximum Achievable Control Technology (MACT) requirements. The MACT NESHAP standards differed for major sources than for area sources of HAPs. Major sources are defined as stationary sources with potential to emit more than 10 tons per year (tpy) of a single HAP or more than 25 tpy of any combination of HAPs; all other sources are considered area sources. §112(f) of the 1990 CAAA also specified that USEPA determine whether or not to promulgate additional NESHAP standards beyond the MACT within 8 years after promulgation of the MACT standard (but within 9 years after promulgation of the 2-year MACT source categories). Thus, USEPA is required to evaluate the NESHAPs developed according to the MACT standards for any "residual risk" with 8 years of promulgation. If the "residual risk" for a source category does not protect public health with "an ample margin of safety", then USEPA must promulgate health-based standards for that source category to further reduce HAP emissions.

The CAAA also required USEPA to promulgate vehicle or fuel standards containing reasonable requirements that control toxic emissions of, at a minimum, benzene and formaldehyde. Performance criteria were established to limit mobile-source emissions of toxics, including benzene, formaldehyde, and 1,3-butadiene. In addition, Section 219 required the use of reformulated gasoline in selected areas with the most severe ozone nonattainment conditions to further reduce mobile-source emissions.

CARB

Criteria Air Pollutants

CARB, a department of the California Environmental Protection Agency, oversees air quality planning and control throughout California. CARB is responsible for coordination and oversight of state and local air pollution control programs in California and for implementation of the California Clean Air Act (CCAA). The CCAA, which was adopted in 1988, requires CARB to establish the California Ambient Air Quality Standards (CAAQS). CARB has established CAAQS for sulfates, hydrogen sulfide, vinyl chloride, visibility-reducing particulate matter, and the above-mentioned criteria air pollutants. Applicable CAAQS are shown in Table 4.2-4.

The CCAA requires all local air districts in the state to endeavor to achieve and maintain the CAAQS by the earliest practical date. The act specifies that local air districts shall focus particular attention on reducing the emissions from transportation and area-wide emission sources, and provides districts with the authority to regulate indirect sources.

Among CARB's other responsibilities are overseeing compliance by local air districts with California and federal laws; approving local air quality plans; submitting SIPs to USEPA; monitoring air quality; determining and updating area designations and maps; and setting

emissions standards for new mobile sources, consumer products, small utility engines, off-road vehicles, and fuels.

CARB's On-Road Heavy-Duty Diesel Vehicle (In-Use) Regulation requires the phase-in of 2010 model year engines or equivalent by January 1, 2023. As the 2010 model year engines or equivalent would be gradually phased in over time in California, these engines may not always be readily available for the construction activities associated with the proposed project. As such, under these circumstances the USEPA 2007 model year NOx emissions standards, which were scheduled to be phased-in for heavy-duty highway engines between 2007 and 2010, would be used instead.

Toxic Air Contaminants

Air quality regulations also focus on TACs. In general, for those TACs that may cause cancer, there is no concentration that does not present some risk. In other words, there is no safe level of exposure. This contrasts with the criteria air pollutants, for which acceptable levels of exposure can be determined and for which the ambient standards have been established. Instead, USEPA and CARB regulate HAPs and TACs, respectively, through statutes and regulations that generally require the use of the MACT or best available control technology (BACT) for toxics and to limit emissions. These statutes and regulations, in conjunction with additional rules set forth by the districts, establish the regulatory framework for TACs.

TACs in California are regulated primarily through the Tanner Air Toxics Act (Assembly Bill [AB] 1807 [Chapter 1047, Statutes of 1983]) and the Air Toxics Hot Spots Information and Assessment Act (Hot Spots Act) (AB 2588 [Chapter 1252, Statutes of 1987]). AB 1807 sets forth a formal procedure for CARB to designate substances as TACs. This includes research, public participation, and scientific peer review before CARB can designate a substance as a TAC. To date, CARB has identified more than 21 TACs and adopted USEPA's list of HAPs as TACs. Most recently, diesel PM was added to the CARB list of TACs. Once a TAC is identified, CARB then adopts an airborne toxics control measure (ATCM) for sources that emit that particular TAC. If there is a safe threshold for a substance at which there is no toxic effect, the control measure must reduce exposure below that threshold. If there is no safe threshold, the measure must incorporate BACT to minimize emissions.

The Air Toxics Hot Spots Information and Assessment Act requires existing facilities emitting toxic substances above a specified level to prepare a toxic-emission inventory, prepare a risk assessment if emissions are significant, notify the public of significant risk levels, and prepare and implement risk reduction measures.

CARB published the *Air Quality and Land Use Handbook: A Community Health Perspective* (Handbook), which provides guidance concerning land use compatibility with TAC sources (CARB, 2005). Although it is not a law or adopted policy, the Handbook offers advisory recommendations for the siting of sensitive receptors near uses associated with TACs, such as freeways and high-traffic roads, commercial distribution centers, rail yards, ports, refineries, dry cleaners, gasoline stations, and industrial facilities, to help keep children and other sensitive populations out of harm's way.

SCAQMD

Criteria Air Pollutants

SCAQMD attains and maintains air quality conditions in the Basin through a comprehensive program of planning, regulation, enforcement, technical innovation, and promotion of the understanding of air quality issues. The clean air strategy of SCAQMD includes preparation of plans for attainment of ambient air quality standards, adoption and enforcement of rules and regulations concerning sources of air pollution, and issuance of permits for stationary sources of air pollution. SCAQMD also inspects stationary sources of air pollution and responds to citizen complaints; monitors ambient air quality and meteorological conditions; and implements programs and regulations required by the CAA, CAAA, and CCAA. Air quality plans applicable to the proposed project are discussed below.

Air Quality Management Plan

SCAQMD and the Southern California Association of Governments (SCAG) are responsible for preparing the air quality management plan (AQMP), which addresses federal and state CAA requirements. The AQMP details goals, policies, and programs for improving air quality in the Basin.

The 2012 AQMP was adopted by the SCAQMD Governing Board on December 12, 2012. The purpose of the 2012 AQMP for the Basin is to set forth a comprehensive and integrated program that will lead the region into compliance with the federal 24-hour $PM_{2.5}$ air quality standard, and to provide an update to the Basin's commitment towards meeting the federal 8-hour ozone standards. The AQMP would also serve to satisfy recent USEPA requirements for a new attainment demonstration of the revoked 1-hour ozone standard, as well as a vehicle miles travelled (VMT) emissions offset demonstration.[1] Specifically, once approved by CARB, the AQMP would serve as the official SIP submittal for the federal 2006 24-hour $PM_{2.5}$ standard, for which USEPA has established a due date of December 14, 2012.[2] In addition, the AQMP updates specific new control measures and commitments for emissions reductions to implement the attainment strategy for the 8-hour ozone SIP. The 2012 AQMP sets forth programs which require integrated planning efforts and the cooperation of all levels of government: local, regional, state, and federal. Currently, SCAQMD staff has already begun initiating an early development process for the 2015 AQMP.

SCAQMD Rules and Regulations

All projects are subject to SCAQMD rules and regulations in effect at the time of construction. Specific rules applicable to the construction anticipated under the proposed project would include the following:

1 Although the federal 1-hour ozone standard was revoked in 2005, the USEPA has proposed to require a new 1-hour ozone attainment demonstration in the South Coast extreme ozone nonattainment area as a result of a recent court decision. Although USEPA has replaced the 1-hour ozone standard with a more health protective 8-hour standard, the CAA anti-backsliding provisions require that California have approved plans for attaining the 1-hour standard.

2 Although the 2012 AQMP was approved by the SCAQMD Board on December 7, 2012, the plan did not get submitted to the USEPA by December 14, 2012 as it first required approval from CARB. The 2012 AQMP was subsequently approved by CARB on January 25, 2013, and as of February 13, 2013 the plan has been submitted by CARB to the USEPA.

Rule 401 – Visible Emissions. This rule is intended to prevent the discharge of pollutant emissions from an emissions source that results in visible emissions. Specifically, the rule prohibits the discharge of any air contaminant into the atmosphere by a person from any single source of emission for a period or periods aggregating more than 3 minutes in any 1 hour that is as dark or darker in shade than that designated No. 1 on the Ringelmann Chart, as published by the United States Bureau of Mines.

Rule 402 – Nuisance. This rule is intended to prevent the discharge of pollutant emissions from an emissions source that results in a public nuisance. Specifically, this rule prohibits any person from discharging quantities of air contaminants or other material from any source such that it would result in an injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public. Additionally, the discharge of air contaminants would also be prohibited where it would endanger the comfort, repose, health, or safety of any number of persons or the public, or that cause, or have a natural tendency to cause, injury or damage to business or property. This rule does not apply to odors emanating from agricultural operations necessary for the growing of crops or the raising of fowl or animals.

Rule 403 – Fugitive Dust. This rule is intended to reduce the amount of particulate matter entrained in the ambient air as a result of anthropogenic (human-made) fugitive dust sources by requiring actions to prevent, reduce, or mitigate fugitive dust emissions. Rule 403 applies to any activity or human-made condition capable of generating fugitive dust, and requires best available control measures to be applied to earth moving and grading activities.

Toxic Air Contaminants

At the local level, air pollution control or management districts may adopt and enforce CARB control measures. Under SCAQMD Regulation XIV (Toxics and Other Non-Criteria Pollutants), and in particular Rule 1401 (New Source Review), all sources that possess the potential to emit TACs are required to obtain permits from SCAQMD. Permits may be granted to these operations if they are constructed and operated in accordance with applicable regulations, including new source review standards and air toxics control measures. SCAQMD limits emissions and public exposure to TACs through a number of programs. SCAQMD prioritizes TAC-emitting stationary sources based on the quantity and toxicity of the TAC emissions and the proximity of the facilities to sensitive receptors. As none of the proposed GBMP strategies and projects would involve TAC-emitting stationary sources, no permits from SCAQMD would be required for operation of the proposed GBMP projects.

The Air Toxics Control Plan (March 2000, revised March 26, 2004) is a planning document designed to examine the overall direction of SCAQMD's air toxics control program. It includes development and implementation of strategic initiatives to monitor and control air toxics emissions. Control strategies that are deemed viable and are within SCAQMD's jurisdiction will each be brought to the SCAQMD Board for further consideration through the normal public review process. Strategies that are to be implemented by other agencies will be developed in a cooperative effort, and the progress will be reported back to the Board periodically.

In September 2008 the SCAQMD completed the Multiple Air Toxics Exposure Study III (MATES III). MATES III is a monitoring and evaluation study conducted in the Basin and is a follow up to previous air toxics studies. The study consists of several elements including a monitoring program, an updated emissions inventory of toxic air contaminants, and a modeling effort to characterize risk across the Basin. The study focuses on the carcinogenic risk from exposure to air toxics. However, it does not estimate mortality or other health effects from particulate exposures. MATES III shows that within the WRD service area, the highest estimated carcinogenic risk is 3,692 in a million near the Port of Long Beach. These model estimates were based on monitoring data collected at ten fixed sites within the Basin. As of June 2012, SCAQMD began conducting the MATES IV.

County of Los Angeles

General Plan

The Conservation and Open Space Element of the 1980 County of Los Angeles General Plan sets the policy direction for management of the County's natural resources, including air quality. The specific policies in the County General Plan related to improving air quality include:

Policy 1: Actively support strict air quality regulations for mobile and stationary sources, and continued research to improve air quality. Promote vanpooling, carpooling and improved public transportation.

Policy 2: Support the conservation of energy and encourage the development and utilization of new energy sources including geothermal, thermal waste, solar, wind and ocean-related sources.

Policy 3: Promote the use of solar energy to the maximum extent possible.

The Air Quality Element of the Draft 2014 County of Los Angeles General Plan summarizes air quality issues and outlines goals and policies that will improve air quality and reduce greenhouse gas emissions. These specific policies include:

Policy AQ 1.1: Minimize health risks to people from industrial toxic or hazardous air pollutant emissions, with an emphasis on local hot spots, such as existing point sources affecting immediate sensitive receptors.

Policy AQ 1.2: Encourage the use of low or no volatile organic compound (VOC) emitting materials.

Policy AQ 1.3: Reduce particulate inorganic and biological emissions from construction, grading, excavation, and demolition to the maximum extent feasible.

Policy AQ 1.4: Work with local air quality management districts to publicize air quality warnings, and to track potential sources of airborne toxics from identified mobile and stationary sources.

Policy AQ 2.1: Encourage the application of design and other appropriate measures when siting sensitive uses, such as residences, schools, senior centers, daycare centers, medical facilities, or parks with active recreational facilities within proximity to major sources of air pollution, such as freeways.

Policy AQ 2.2: Participate in, and effectively coordinate the development and implementation of community and regional air quality programs.

Policy AQ 3.1: Facilitate the implementation and maintenance of the Community Climate Action Plan to ensure that the County reaches its climate change and greenhouse gas emission reduction goals.

Policy AQ 3.2: Reduce energy consumption in County operations by 20 percent by 2015.

Policy AQ 3.3: Reduce water consumption in County operations.

Policy AQ 3.4: Participate in local, regional and state programs to reduce greenhouse gas emissions.

Policy AQ 3.5: Encourage maximum amounts of energy conservation in new development and municipal operations.

Policy AQ 3.6: Support and expand urban forest programs within the unincorporated areas.

City General Plans

The numerous cities encompassed by the WRD service area all have their own respective city general plans, some of which may contain policies that address air quality. As implementation of the project proceeds, specific policies and objectives pertaining to air quality from applicable city general plans will be identified and evaluated on a project-by-project basis during subsequent CEQA environmental processes.

4.2.4 Thresholds of Significance

Significance Criteria

According to Appendix G of the *CEQA Guidelines*, a project would have a significant adverse effect on air quality resources if it would:

- Conflict with or obstruct implementation of the applicable air quality plan;
- Violate any air quality standard or contribute substantially to an existing or projected air quality violation;
- 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);
- Expose sensitive receptors to substantial pollutant concentrations; or

- Create objectionable odors affecting a substantial number of people.

As stated in Appendix G of the *CEQA Guidelines*, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the above determinations. As such, the significance thresholds and analysis methodologies in SCAQMD's *CEQA Air Quality Handbook* are used in evaluating project impacts. The SCAQMD has established daily mass thresholds for regional pollutant emissions, which are shown in **Table 4.2-5**.

TABLE 4.2-5
SCAQMD REGIONAL AIR QUALITY SIGNIFICANCE THRESHOLDS

	Mass Daily Thresholds (lbs/day)	
Pollutant	**Construction**	**Operations**
Oxides of Nitrogen (NO_X)	100	55
Reactive Organic Gases (ROG)	75	55
Respirable Particulate Matter (PM_{10})	150	150
Fine Particulate Matter ($PM_{2.5}$)	55	55
Oxides of Sulfur (SO_X)	150	150
Carbon Monoxide (CO)	550	550
Lead[a]	3	3
TACs (including carcinogens and non-carcinogens	Maximum Incremental Cancer Risk: ≥ 10 in 1 million Cancer Burden: > 0.5 excess cancer cases (in areas ≥ 1 in 1 million) Chronic & Acute Hazard Index: ≥ 1.0 (project increment)	

[a] As the proposed project would not involve the development of any major lead emissions sources, lead emissions would not be analyzed further in the EIR.

SOURCE: SCAQMD, 2011.

4.2.5 Impacts and Mitigation Measures

Impact 4.2-1: The project could conflict with or obstruct implementation of the applicable air quality plan. (Less than Significant)

In preparation of the AQMP, SCAQMD along with SCAG use land use designations contained in General Plan documents to forecast, inventory, and allocate regional emissions from land use and development-related sources. For purposes of analyzing consistency with the AQMP, projects that are consistent with the regional population, housing, and employment forecasts identified by SCAG are considered to be consistent with the AQMP growth projections, since the forecast assumptions by SCAG forms the basis of the land use and transportation control portions of the AQMP. Additionally, since SCAG's regional growth forecasts are based upon, among other things, land uses designated in general plans, a project that is consistent with the land use designated in a city's general plan would also be consistent with SCAG's regional forecast projections, and thus also with the AQMP growth projections..

The primary objectives of the proposed project are to: 1) provide adequate replenishment water supplies to meet the future needs of groundwater pumpers in the Central and West Coast Basins; 2) improve the reliability of the replenishment supplies by reducing and eventually eliminating the current use of imported water for basin replenishment; 3) improve groundwater quality; and 4) enhance the ability of the Central and West Coast Basins to sustainably store and deliver water supplies. The project would require a small number of new employees at the proposed new treatment plants, which would result in a minimal increase in operational vehicular trips. Trips for chemical deliveries to the plants would also represent a minimal increase in operational vehicular trips. However, the project would not introduce additional population density or introduce a new land use that would attract excessive vehicle trips to the project area. As a result, implementation of the project would not result in the exceedance of the growth assumptions that have been anticipated in the AQMP. Therefore, the proposed project would not conflict with the AQMP, and this impact would be less than significant.

Significance after Mitigation: Less than significant.

Impact 4.2-2: The project could violate any air quality standard or contribute substantially to an existing or projected air quality violation. (Significant and Unavoidable)

Construction

For purposes of this analysis, construction activities associated with the proposed project are expected to begin in 2015 and would be completed over a 20-year period in 2035. Development of the proposed GBMP projects, which includes pipelines, pump stations, injection/production wells, and new and/or upgraded treatment facilities. Construction activities associated with each GBMP project within the project area would generate pollutant emissions from the following construction activities: (1) site preparation, grading, and excavation; (2) construction workers traveling to and from construction site; (3) delivery and hauling of construction supplies to and debris from the construction site; (4) fuel combustion by on-site construction equipment; (5) building/structure construction; and (6) application of architectural coatings and paving.

These construction activities would temporarily create emissions of dust, fumes, equipment exhaust, and other air contaminants. Construction activities involving site preparation and grading would primarily generate PM_{10} emissions. Mobile source emissions (use of diesel-fueled equipment onsite, and traveling to and from a construction site) would primarily generate NOx emissions. Asphalt paving and the application of architectural coatings, where necessary, would primarily result in the release of ROG emissions. The amount of emissions generated on a daily basis would vary, depending on the intensity and types of construction activities occurring at the same time.

It is expected that construction of GBMP projects would occur intermittently throughout the 20-year implementation period. Construction impacts would be short-term and limited to the period of time when construction activities are taking place. Each future GBMP project would be subject to environmental review by implementing agencies on a case-by-case basis and would include a determination of whether construction-related emissions would exceed SCAQMD's applicable

significance thresholds. The maximum daily construction emissions will be estimated in the future on a project-specific basis. If necessary, mitigation measures to minimize air emissions and reduce potentially significant impacts would be implemented in accordance with regulatory requirements. Daily construction emissions would be compared to suggested thresholds of the SCAQMD. The SCAQMD monitors air quality conditions in the South Coast Air Basin, which includes the WRD service area, through a comprehensive program of planning, regulation, enforcement, technical innovation, and promotion of the understanding of air quality issues. The amount of emissions generated for a particular project would vary depending on its size, the area of disturbance, and the length of the construction schedule.

For example, as described in the GRIP Recirculated Draft EIR (AECOM, 2015), construction emissions for Project CO were modeled based on a worst-case scenario representing an intensive day of construction to conservatively estimate the maximum daily emissions. The GRIP Recirculated Draft EIR concluded that the following criteria pollutant emissions from construction activities would not exceed thresholds of significance: ROG, CO, SOx, and PM_{10} (AECOM, 2015). However, construction-generated NOx emissions and $PM_{2.5}$ would exceed daily thresholds (AECOM, 2015). Mitigation measures were imposed and demonstrated to reduce impacts associated with NOx and $PM_{2.5}$ emissions to less than significant levels.

While the construction-related emissions associated with GRIP could be mitigated to meet SCAQMD's significance thresholds, other GBMP projects may require construction activities or intensities that result in emissions that exceed significance thresholds even with mitigation. Thus, because there are individual GBMP projects that have more components (i.e., new treatment facilities, brine disposal, conveyance, new injection wells, new extraction wells) than GRIP, the construction emissions generated by these GBMP projects could potentially result in greater overall emissions that may not be able to be reduced via mitigation to below SCAQMD's significance thresholds.

Future GBMP projects that could emit pollutants above significance thresholds would be required to implement **Mitigation Measures AQ-1 and AQ-2**. For each project, implementation of Mitigation Measures AQ-1 and AQ-2 may reduce construction-related emissions to below significance thresholds. However, some of the larger projects may not be reduced to below significance thresholds. For these larger projects, impacts associated with construction emissions for the proposed project are considered potentially significant and unavoidable.

However, it should be noted that the identification of a significant program-level impact in this EIR for the proposed GBMP projects does not preclude the finding of future less-than-significant impacts for the individual GBMP development projects occurring in the project area.

Operations

Implementation of the proposed project would increase energy usage, resulting in increased emissions associated with energy production. However, these emissions would be located largely outside the SCAB. None of the projects would result in substantial local emissions of operational criteria air pollutants. The primary source of emissions generated from operation of the proposed facilities would be from vehicle trips for worker inspection and maintenance purposes. In

addition, chemical and material deliveries to the proposed new or upgraded treatment facilities in the project area would also only occur on a periodic basis each month. While operation of these treatment facilities would require dedicated staff that would commute daily to and from the site, the number of staff for each facility would be small and would not result in a substantial amount of vehicle trips. Operational emissions of the proposed projects would be less than significant.

Mitigation Measures

The following mitigation measures are to be implemented as appropriate by all future GBMP projects in the project area that are unable to demonstrate that construction emissions would be below the applicable SCAQMD thresholds without implementation of mitigation.

Measure AQ-1: The following mitigation measures shall be incorporated to minimize emissions of NOx associated with construction activities for the proposed project:

- Construction activities shall require the use of 2010 and newer diesel haul trucks (e.g., material delivery trucks and soil import/export) to the extent feasible. Under conditions where it is determined that 2010 model year or newer diesel trucks are not readily available or obtainable for a project, the implementing agency shall be required to provide this evidence to WRD and shall instead use trucks that meet USEPA 2007 model year NOx emissions requirements.
- Off-road diesel-powered construction equipment greater than 50 horsepower shall meet Tier 3 emissions standards at a minimum and the Tier 4 where available. Under conditions where it is determined that equipment meeting Tier 4 emission standards are not readily available or obtainable for a project, the implementing agency shall be required to provide this evidence to WRD and shall instead use USEPA Tier 3 equipment.

Measure AQ-2: The implementing agency for each individual GBMP project shall require by contract specifications that:

- Construction-related equipment, including heavy-duty equipment, motor vehicles, and portable equipment, shall be turned off when not in use to avoid excessive idling.
- Construction operations shall minimize use of diesel-powered generators and rely on the electricity infrastructure where feasible.
- Construction trucks shall be routed away from congested streets or sensitive receptor areas where feasible.

Significance after Mitigation: Significant and unavoidable.

Impact 4.2-3: The project could 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)

As the Basin is currently in non-attainment for ozone, PM_{10}, and $PM_{2.5}$, cumulative development consisting of the proposed project along with other reasonably foreseeable future projects in the Basin as a whole could violate an air quality standard or contribute to an existing or projected air quality violation. However, based on SCAQMD's cumulative air quality impact methodology, SCAQMD recommends that if an individual project results in air emissions of criteria pollutants (ROG, CO, NOx, SOx, PM_{10}, and $PM_{2.5}$) that exceed the SCAQMD's recommended daily thresholds for project-specific impacts, then it would also result in a cumulatively considerable net increase of these criteria pollutants for which the proposed program region is in non-attainment under an applicable federal or state ambient air quality standard.

Because individual GBMP projects may require intensive construction efforts, the construction emissions generated by these GBMP projects could potentially result in emissions that may not be able to be reduced via mitigation to below SCAQMD's significance thresholds. Cumulative air quality impacts associated with construction-related pollutant emissions from the proposed project would, in conjunction with other past, current, and probable future projects, be cumulatively considerable and cumulative impacts would be significant and unavoidable.

With respect to operational emissions, project implementation would not result in substantial long-term regional emissions of criteria air pollutants and would not exceed the SCAQMD thresholds of significance for criteria pollutants. As such, the proposed project's operational emissions would not be cumulatively considerable, and cumulative air quality impacts would be less than significant.

Mitigation Measures

Implementation of Mitigation Measures AQ-1 and AQ-2.

Significance after Mitigation: Significant and unavoidable for construction; less than significant for operations.

Impact 4.2-4: The project could expose sensitive receptors to substantial pollutant concentrations. (Less than Significant with Mitigation)

Construction of the proposed project could potentially expose sensitive receptors located within the project area boundaries to localized air quality impacts from criteria pollutants and TACs from on-site sources during project construction. During project operation, the primary source of emissions would be generated from minimal worker trips for periodic inspection and maintenance visits of the GBMP facilities along with periodic chemical delivery trips to the new or upgraded treatment facilities, which would not generate substantial levels of pollutant emissions. Separate discussions are provided below analyzing the potential for sensitive receptors to be exposed to these pollutant sources.

Localized Construction Air Quality Impacts – Criteria Air Pollutants

During construction of the proposed GBMP projects within the project area, nearby sensitive receptors located offsite from each of the various GBMP construction sites could be exposed to

significant adverse localized air quality impacts. According to SCAQMD's localized significance threshold (LST) methodology, projects greater than five acres in size should perform air quality dispersion modeling to determine whether construction activities would cause or contribute to adverse localized air quality impacts. Where projects would be less than five acres in size, the SCAQMD provides screening tables that can be used to determine the maximum allowable daily emissions that would satisfy the LSTs without project-specific dispersion modeling. LSTs represent the maximum emissions from a project that will not cause or contribute to an exceedance of the most stringent applicable federal or state ambient air quality standard. According to SCAQMD's LST methodology, LSTs are only applicable to the on-site construction emissions that are generated by a project and do not apply to emissions generated offsite such as mobile emissions on roadways from worker, vendor, and haul truck trips.

SCAQMD has indicated that LSTs are only applicable to projects at the project-specific level, and are not intended for plan-level analysis (SCAQMD, 2003). Given the nature of the proposed project, where the size, location, number, and timing and sequencing of the proposed GBMP projects under both Concept A and Concept B within the project area have not been finalized at this time but is expected to occur intermittently in the future based on the consideration of various factors (e.g., new recycled water regulations, recycled water flow availability, river storm flow availability, etc.), an analysis of construction-related air quality impacts on nearby sensitive receptors on a localized level (as opposed to a regional level) would be rather speculative. Since construction of various individual GBMP projects (consisting of pipelines, pump stations, injection/production wells, and/or treatment facilities) of different sizes would occur at different locations throughout the project area at different time periods, it would not be feasible to estimate what the localized air quality impacts would be at any one sensitive receptor located offsite and in the vicinity of these individual construction sites. The localized air quality impacts associated with the construction of each individual GBMP project on its nearby sensitive receptors would be short-term in nature and limited only to the period of time when construction activity is taking place for that project.

Overall, through the environmental review process, WRD would review the proposed GBMP projects on a case-by-case basis to determine whether a project will result in localized air quality impacts on its nearby sensitive receptors during construction. Depending on the size and scale of a particular GBMP project, and the intensity of the construction effort that would be required, the construction emissions generated by an individual GBMP project could potentially cause or contribute to an exceedance of the most stringent applicable federal or state ambient air quality standards at the existing sensitive uses located in the vicinity of that project. For individual GBMP projects that would fit this scenario, Mitigation Measure AQ-3 would be implemented, which requires a project-level LST analysis to be prepared to demonstrate that the construction emissions of a GBMP project would not exceed SCAQMD's LSTs or result in pollutant emissions that would cause or contribute to an exceedance of the most stringent applicable federal or state ambient air quality standards.[3] With implementation of Mitigation Measures AQ-3, this impact would be reduced to less than significant

[3] As discussed previously, the LSTs for NOx, CO, PM_{10}, and $PM_{2.5}$ provided in SCAQMD's screening tab7les represent the maximum emissions from a project that will not cause or contribute to an exceedance of the most stringent applicable federal or state ambient air quality standard for those respective pollutants. For projects that are

Localized Construction Air Quality Impacts – Toxic Air Contaminants

Intermittent construction activities occurring throughout the project area associated with the proposed project would result in short-term emissions of diesel PM, which is a TAC. During construction of each individual GBMP project within the project area, the exhaust of off-road heavy-duty diesel equipment would emit diesel PM during general construction activities, such as site preparation (e.g., excavation, grading, and clearing); paving; installation of utilities, materials transport and handling; building/structure construction; and other miscellaneous activities. Similar to the localized air quality analysis for construction, the short-term emissions of diesel PM associated with each GBMP project would only affect its own remote group of existing sensitive receptors that are located nearby. SCAQMD has not adopted a methodology for analyzing such impacts and has not recommended that health risk assessments be completed for construction-related emissions of TACs.

The dose to which receptors are exposed is the primary factor used to determine health risk (i.e., the potential exposure to TACs to be compared to applicable standards). Dose is a function of the concentration of a substance or substances in the environment and the duration of exposure to the substance. Dose is positively correlated with time, meaning that a longer exposure period would result in a higher exposure level for the maximally exposed individual. Thus, the risks estimated for a maximally exposed individual are higher if a fixed exposure occurs over a longer period of time. According to the Office of Environmental Health Hazard Assessment (OEHHA), health risk assessments, which determine the exposure of sensitive receptors to TAC emissions, should be based on a 70-year exposure period; however, such assessments should be limited to the period or duration of activities associated with each of the individual GBMP projects occurring under the proposed project.

The construction period for any of the GBMP projects that would occur in the project area would be finite and much less than the 70-year period used for risk determination. Because off-road heavy-duty diesel equipment would be used only temporarily at each construction site, the construction activities associated with the individual GBMP projects would not expose sensitive receptors to substantial emissions of TACs. This impact would be less than significant.

Operational Sources of Toxic Air Contaminants

The proposed project would not introduce any new stationary sources of TACs, such as diesel-fueled pumps or generators. The operation of the pump stations and treatment facilities would be powered by electricity, and thus would not emit any TAC emissions. Therefore, the project would not expose surrounding sensitive receptors to TAC emissions. Impacts would be less than significant.

CO Hotspots

A CO hotspot is an area of localized CO pollution that is caused by severe vehicle congestion on major roadways, typically near intersections. Projects may worsen air quality if they increase the

less than five acres, the SCAQMD's LST screening tables can be used to determine whether construction-related emissions would result in a potential significant air quality impact. For projects that exceed five acres in size, dispersion modeling should be conducted, per SCAQMD's LST methodology, to determine whether the most stringent applicable federal or state ambient air quality standards for pollutants would be exceeded, which would result in a significant air quality impact.

percentage of vehicles in cold start modes by two percent or more; significantly increase traffic volumes (by five percent or more) over existing volumes; or worsen traffic flow, defined for signalized intersections as increasing average delay at intersections operating at Level of Service (LOS) E or F or causing an intersection that would operate at LOS D or better without the project, to operate at LOS E or F.

While construction-related traffic on the local roadways would occur during construction of each GBMP project, the net increase of construction worker vehicle trips to the existing traffic volumes on the local roadways would be relatively small and would not result in CO hotspots. Additionally, the construction-related vehicle trips would only occur in the short-term, and would cease once construction activities for a GMBP project has been completed. During operation of the GBMP projects, only minimal emissions would be generated from vehicle trips by worker staff for periodic inspection and maintenance purposes. In addition, chemical and material deliveries to the proposed new or upgraded treatment facilities in the project area would also only occur on a periodic basis each month.

For the GRIP project alone (Project C0-B), it has been estimated that construction activity would produce up to 73 pounds per day of CO emissions (AECOM, 2015; Table 3.3-6), which is approximately 13 percent of the SCAQMD threshold of 550 pounds per day. Although other GBMP projects may differ, it is expected that local CO concentrations generated by both construction and operation of other GBMP projects similarly would be less than significant, and no mitigation is required.

Mitigation Measure

> **Measure AQ-3:** Prior to approval of an individual GBMP project, a project-specific LST analysis that identifies the resulting construction emissions shall be prepared using either SCAQMD's LST screening tables (for projects that are less than five acres) or dispersion modeling (for projects that exceed five acres in size). Where it is determined that construction emissions would exceed the applicable LSTs or the most stringent applicable federal or state ambient air quality standards, the GBMP project shall reduce its daily construction intensity (e.g., reducing the amount of equipment used daily, reducing the amount of soil graded/excavated daily, etc.) to a level where the GBMP project's construction emissions would no longer exceed SCAQMD's LSTs or result in pollutant emissions that would cause or contribute to an exceedance of the most stringent applicable federal or state ambient air quality standards.

Significance after Mitigation: Less than significant with mitigation.

Impact 4.2-5: The proposed project could create objectionable odors affecting a substantial number of people. (Less than Significant with Mitigation)

According to the SCAQMD *CEQA Air Quality Handbook*, land uses associated with odor complaints typically include agricultural uses, wastewater treatment plants, food processing plants, chemical plants, composting, refineries, landfills, dairies, and fiberglass molding. The

proposed project consists of the development of numerous GBMP projects under Concept A and B, each of which could involve the development of various components such as pipelines, pump stations, injection/production wells, and new or upgraded treatment facilities. As the new or upgraded water treatment facilities would be used to treat recycled water for the purposes of replenishing the groundwater basins, odors may be emitted that could be perceptible at nearby off-site locations. However, similar to existing water treatment facilities that operate within the jurisdiction of WRD, these new or upgraded treatment facilities would be designed with odor control equipment and would implement standard odor control measures to reduce odor impacts on off-site receptors. Nonetheless, to ensure that odors generated from the new and upgraded water treatment facilities associated with the proposed project would be reduced to the maximum extent possible, Mitigation Measure AQ-4 would be implemented, which requires each new or upgraded treatment facility to prepare and implement an Odor Control Maintenance and Monitoring Plan. With implementation of Mitigation Measure AQ-4, the project's odor impacts during operation would be reduced to a less-than-significant level.

During the construction phases for each of the GBMP projects that would occur in the project area, exhaust from equipment may produce discernible odors typical of most construction sites. Such odors would be a temporary source of nuisance to adjacent uses, but because they are temporary and intermittent in nature, would not be considered a significant environmental impact. Therefore, impacts associated with objectionable odors during construction would be less than significant.

Mitigation Measure

> **Measure AQ-4:** All new or upgraded water treatment facilities associated with the proposed project shall prepare and implement an Odor Control Maintenance and Monitoring Plan that would define a schedule for the regular maintenance of the facility's odor control equipment, a schedule for odor monitoring along the treatment facility's property boundary, and establish a protocol for handling and resolving odor complaints.

Significance after Mitigation: Less than significant with mitigation.

TABLE 4.2-6
AIR QUALITY IMPACT SUMMARY

	Concept A		Concept B	
Impact	**Impact Determination**	**Mitigation Summary**	**Impact Determination**	**Mitigation Summary**
Air Quality Plan: The GBMP would not conflict with or obstruct implementation of the applicable air quality plan.	Less than Significant	None required	Less than Significant	None required
Air Quality Violation: The proposed GBMP projects could violate an air quality standard or contribute substantially to an existing or projected air quality violation.	Significant and Unavoidable with Mitigation for Construction; Less than Significant for Operation	AQ-1, AQ-2	Significant and Unavoidable with Mitigation for Construction; Less than Significant for Operation	AQ-1, AQ-2
Cumulative Considerable Net Increase of Criteria Pollutants: The proposed GBMP projects could 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 with Mitigation for Construction; Less than Significant for Operation	AQ-1, AQ-2	Significant and Unavoidable with Mitigation for Construction; Less than Significant for Operation	AQ-1, AQ-2
Exposure of Sensitive Receptors to Pollutant Concentrations: The proposed GBMP projects could expose sensitive receptors to substantial pollutant concentrations.	Less than Significant with Mitigation	AQ-3	Less than Significant with Mitigation	AQ-3
Create Objectionable Odors: The proposed GBMP projects could create objectionable odors affecting a substantial number of people.	Less than Significant with Mitigation	AQ-4	Less than Significant with Mitigation	AQ-4

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4.3 Biological Resources

This section describes the existing biological resources within, and in the vicinity of, the GBMP area and evaluates the need for further assessments based on potential impacts associated with the proposed project.

4.3.1 Environmental Setting

Methods

The GBMP area was evaluated for its potential to support special-status species that are known to occur or are expected to occur in the region. Vegetation types and wildlife habitats were characterized on the basis of accepted classification systems. The following sources were consulted for information on biological resources within the project area:

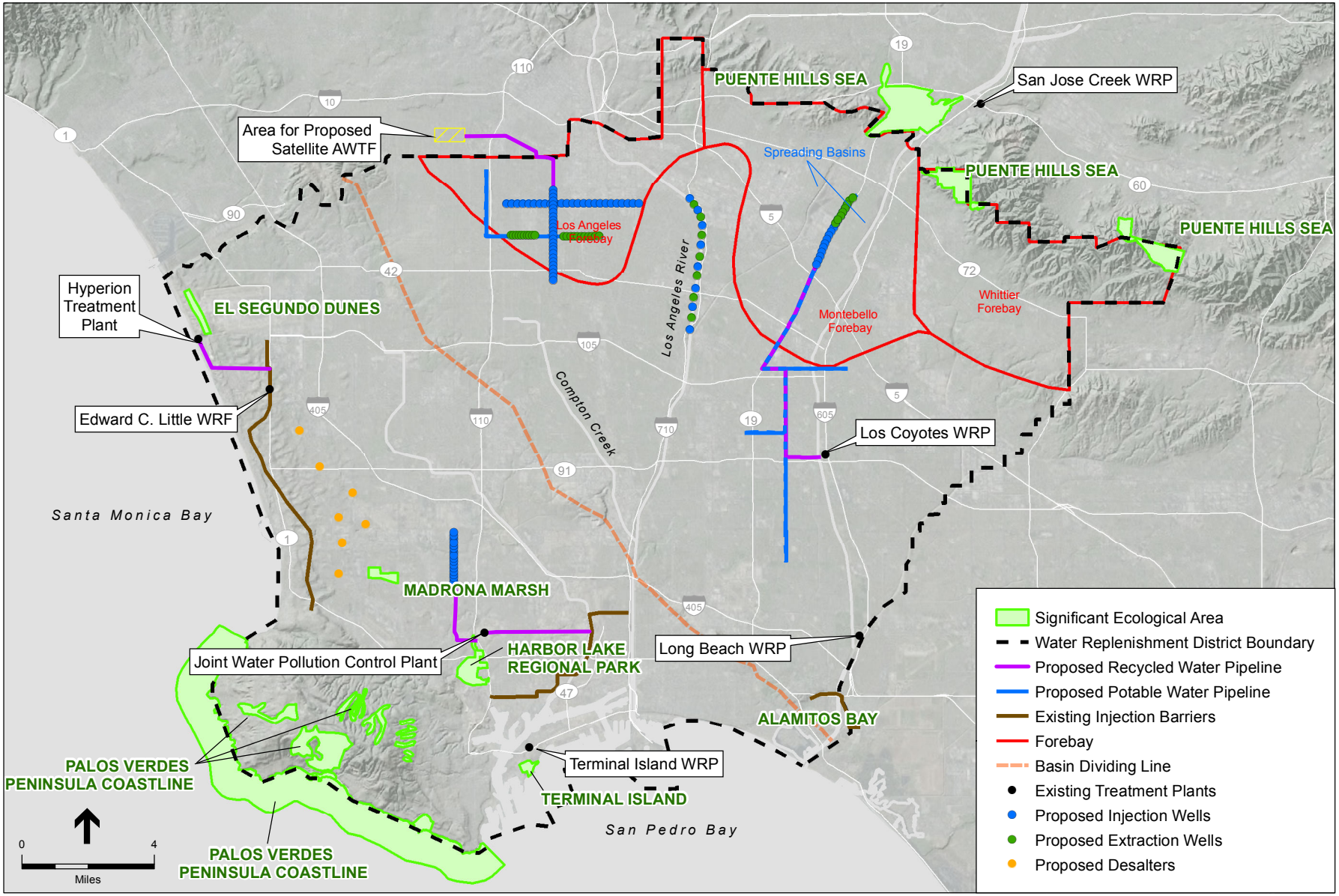
- California Department of Fish and Wildlife's (CDFW) California Natural Diversity Database (CNDDB) and the California Native Plant Society Electronic Inventory (CNPS, 2013) record search for USGS 7.5-minute topographic quadrangle maps: Anaheim, Baldwin Park, El Monte, Hollywood, Inglewood, La Habra, Los Alamitos, Los Angeles, Long Beach, Redondo Beach, San Pedro, South Gate, Torrance, Venice, and Whittier (CDFW, 2013)
- Los Angeles County Significant Ecological Area (SEA) Study prepared by England and Nelson Environmental Consultants (1976) for Los Angeles County Department of Regional Planning and Environmental Systems Research Institute

The CNDDB lists historical and recently recorded occurrences of both special-status plant and wildlife species and the CNPS database lists historical and recent occurrences of special-status plant species. ESA queried these sources for special-status species records in the Anaheim, Baldwin Park, El Monte, Hollywood, Inglewood, La Habra, Los Alamitos, Los Angeles, Long Beach, Redondo Beach, San Pedro, South Gate, Torrance, Venice, and Whittier US Geological Survey (USGS) 7.5-minute quadrangles which encompass the proposed GBMP projects' boundaries. For simplicity, Table 4.3-1 presents only those species with a formal listing status of federally or State Endangered, Threatened or Candidate. The entire list of species can be found in **Appendix D**.

The potential for special-status species to occur within the GBMP area is based on the proximity of the proposed GBMP projects to previously recorded occurrences in the CNDDB/CNPS, onsite vegetation and habitat quality, topography, elevation, soils, surrounding land uses, habitat preferences, and geographic ranges of formally listed plant and wildlife species known to occur in the region.

Regional Setting

The GBMP projects would be implemented within the WRD service area, located in southern Los Angeles County and encompassing 17 cities. The County has established over 60 SEAs, seven of which fall within the WRD service area boundary (**Figure 4.3-1**).



SOURCE: ESA, 2012.

WRD - Groundwater Basins Master Plan . 120192

Figure 4.3-1

Significant Ecological Areas

Open space lands located within the WRD service area include County Lands such as regional parks managed by the Los Angeles County Department of Parks and Recreation (LA County General Plan, Open Space Policy, Figure 6.1).

Local Setting

Habitat Types

The WRD service area is bounded to the south and west by the Pacific Ocean providing an array of coast habitat. Land uses in the project area include developed (e.g., residential, commercial, industrial) and open spaces containing native habitats. High-quality habitats are present where native habitat types are relatively undisturbed and have connectivity to other open space areas. Non-native and disturbed habitats generally provide low-quality wildlife habitat. The majority of the proposed projects occur within developed and disturbed areas that do not offer high-quality native habitat.

The Rio Hondo is a major tributary to the Los Angeles River; most of the Rio Hondo is concrete lined with minimal habitat value. Historically, the Los Angeles and San Gabriel Rivers were wide shallow rivers consisting of a braided series of channels that would periodically intermingle following large storm events. The Rio Hondo once formed the main bed of the San Gabriel River, but today the rivers have been engineered into three channels created to divert water from the San Gabriel to the Rio Hondo.

Due to the construction of recharge basins for groundwater recharge, the Rio Hondo is only expected to reach the Los Angeles River during rain events when the spreading /recharge basins are bypassed or when flows exceed recharge capacities.

Natural Communities of Special Management Concern

The CNDDB tracks the occurrence of what the CDFW terms “Terrestrial Natural Communities” that are “considered rare and worthy of consideration by CNDDB.” The CNDDB query for the entire WRD service area yielded seven natural communities: California Walnut Woodland, Riversidean Alluvial Fan Sage Scrub, Southern Coastal Bluff Scrub, Southern Coastal Salt Marsh, Southern Dune Scrub, Southern Sycamore Alder Riparian Woodland, and Walnut Forest.

Of the seven natural communities, only three occur within the WRD service area. Southern Coastal Bluff Scrub occurs along the coast and within the Palos Verdes Peninsula and Coastline SEA; Southern Coastal Salt Marsh occurs within the Alamitos Bay SEA; and Southern Dune Scrub occurs within the beach near the Hyperion Water Treatment Plant.

Special-Status Species

Definitions of Special-Status Species

Special-status species are those plants and animals that, because of their recognized rarity or vulnerability to various causes of habitat loss or population decline, are recognized by federal, state, or other agencies. Some of these species receive specific protection that is defined by federal or state endangered species legislation. Others have been designated as “sensitive” on the basis of adopted policies and expertise of state resource agencies or organizations with

acknowledged expertise, or policies adopted by local governmental agencies such as counties, cities, and special districts to meet local conservation objectives. These species are referred to collectively as "special-status species" in this report, following a convention that has developed in practice but has no official sanction. Special-status species include:

- Plants or animals listed or proposed for listing as threatened or endangered under the federal Endangered Species Act (FESA) (50 Code of Federal regulations [CFR] 17.12 [listed plants], 17.11 [listed animals] and various notices in the Federal Register [FR] [proposed species]).
- Plants or animals that are candidates for possible future listing as threatened or endangered under FESA (61 FR 40, February 28, 1996);
- Plants or animals listed or proposed for listing by the State of California as threatened or endangered under the California Endangered Species Act (CESA) (14 California Code of Regulations [CCR] 670.5);
- Plants listed as rare or endangered under the California Native Plant Protection Act (California Fish and Game Code, Section 1900 et seq.);
- Plants that meet the definitions of rare and endangered under CEQA (*CEQA Guidelines* Section 15380);
- Plants considered under the CNPS to be “rare, threatened or endangered in California” (Lists 1A, 1B, and 2 in CNPS 2008);
- Plants listed by CNPS as plants about which more information is needed to determine their status and plants of limited distribution (Lists 3 and 4 in CNPS 2008), which may be included as special-status species on the basis of local significance or recent biological information; and
- Animals fully protected in California (California Fish and Game Code, Sections 3511 [birds], 4700 [mammals], and 5050 [reptiles and amphibians]).
- Plants or animals covered by a locally or state adopted species conservation plan, including sensitive plants and animals and narrow endemic plants that have reasonable potential to occur on-site.

Plants and Wildlife

The CNDDB search yielded 47 plant species and 52 wildlife species within the specified quads that cover the WRD service area and all GBMP projects (see Appendix D).

Implementation of the proposed GBMP projects would occur entirely within existing facilities or through established ROWs where no native vegetation is present or very little managed non-native vegetation can be found. It is anticipated that all special-status species would have a low potential to occur within the proposed projects’ locations.

Formally-listed wildlife species (those either deemed threatened or endangered by USFWS or CDFW) designated by a CNDDB search as known to occur where project components would be constructed are listed below:

Projects W1 and W3 – Pacific pocket mouse (*Perognathus longimembris pacificus*), El Segundo blue butterfly (*Euphilotes battoides allyni*), and beach spectaclepod (*Dithyrea maritime*)

Project W4 – Palos Verdes blue butterfly (*Glaucopsyche lygdamus palosverdesensis*)

Project C1, and C3 – least Bell's vireo (*Vireo bellii pusillus*) and Western yellow-billed cuckoo (*Coccyzus americanus occidentalis*)

Projects C3, C4, and C6 – bank swallow (*Riparia riparia*), Brand's star phacelia (*Phacelia stellaris*), and California Orcutt grass (*Orcuttia californica*)

Project C10 – Southwestern willow flycatcher (*Empidonax traillii extimus*)

The proposed project locations do not support suitable habitat for the above-named, formally-listed species and as previously noted, these species would have a low potential to occur within the proposed project areas.

Wildlife Movement

Habitat linkages are contiguous areas of open space that connect two larger habitat areas. Linkages provide for both diffusion and dispersal for a variety of species within the landscape. In addition, linkages can serve as primary habitat for some smaller species. Corridors are linear linkages between two or more habitat patches. Corridors provide for movement and dispersal, but do not necessarily include habitat capable of supporting all life history requirements of a species.

Wildlife movement corridors are critical for the survivorship of ecological systems for several reasons. Corridors can connect water, food, and cover sources, spatially linking these three resources with wildlife in different areas. In addition, wildlife movement between habitat areas provides for the potential of genetic exchange between wildlife species populations, thereby maintaining genetic variability and adaptability to maximize the success of wildlife responses to changing environmental conditions. This is especially critical for small populations subject to loss of variability from genetic drift and effects of inbreeding. The nature of corridor use and wildlife movement patterns varies greatly among species.

The southern portion of the Puente Hills SEA (south of the 605 Freeway) provides regional linkage to the Chino Hills in Orange County to the southeast (Figure 4.3-1). No regional wildlife linkages, as described in the Los Angeles County General Plan, exist within the WRD service area, nor would any linkage be impacted by the proposed projects.

Jurisdictional Resources

Wetlands and permanent and intermittent drainages, creeks, and streams identified as waters of the U.S. are generally subject to the jurisdiction of the U.S. Army Corps of Engineers (USACE) and Regional Water Quality Control Board (RWQCB) under Section 404 and Section 401, respectively, of the Federal Clean Water Act. All of the rivers and flood control drainages that flow to the ocean within the WRD service area are considered jurisdictional.

Streambeds are subject to regulation by the CDFW under Section 1602 of the California Fish and Game Code. A stream is defined under these regulations as a body of water that flows at least periodically or intermittently through a bed or channel having banks and that supports fish or other aquatic life. This definition includes watercourses having a surface or subsurface flow that supports or has supported riparian vegetation. CDFW jurisdiction typically extends to the edge of the riparian vegetation canopy.

4.3.2 Regulatory Framework

Federal

Federal Endangered Species Act

The U.S. Fish and Wildlife Service (USFWS) in the Department of the Interior, has responsibility for administration of the FESA. The FESA provides broad protection for species of fish, wildlife and plants that are listed as threatened or endangered in the U.S. or elsewhere. The FESA has four major components: 1) provisions are made for listing species, 2) requirements for federal agency consultation with USFWS or National Marine Fisheries Service (NMFS), 3) prohibitions against "taking" of listed species, and 4) the provisions for permits that allow incidental "take" of listed species for otherwise lawful activities.

The Migratory Bird Treaty Act of 1918

The Migratory Bird Treaty Act (MBTA) of 1918 (16 U.S.C. 703-711) makes it unlawful to possess, buy, sell, purchase, barter or "take" any migratory bird listed in Title 50 of the Code of Federal Regulations Part 10. "Take" is defined as possession or destruction of migratory birds, their nests or eggs. Disturbances that cause nest abandonment and/or loss of reproductive effort or the loss of habitats upon which these birds depend may be a violation of the MTBA.

Clean Water Act Section 404

Wetlands are generally considered to be areas that are periodically or permanently inundated by surface or ground water, and support vegetation adapted to life in saturated soil. Wetlands are recognized as important features on a regional and national level due to their high inherent value to fish and wildlife, use as storage areas for storm and floodwaters, and water recharge, filtration, and purification functions. Technical standards for delineating wetlands have been developed by the USACE which generally defines wetlands through consideration of three criteria: hydrology, soils, and vegetation. Under Section 404 of the Clean Water Act (CWA), the USACE is responsible for regulating the discharge of dredged or fill material into waters of the United States. The term "waters" includes wetlands and non-wetland bodies of water that meet specific criteria as defined in the CFR.

State

California Endangered Species Act

The CESA is similar to the main provisions of the FESA and is administered by the CDFW. Unlike its federal counterpart, CESA applies the take prohibitions to not only listed threatened and endangered species, but also to state candidate species for listing. Section 86 of the Fish and Game Code defines "take" as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue,

catch, capture, or kill." The CDFW maintains lists for Candidate-Endangered Species and Candidate-Threatened Species, which have the same protection as listed species. Under CESA the term "endangered species" is defined as a species of plant, fish, or wildlife, which is "in serious danger of becoming extinct throughout all, or a significant portion of its range" and is limited to species or subspecies native to California.

Clean Water Act Section 401/Porter-Cologne Act

The State of California regulates water quality related to discharge of dredge or fill material into waters of the State pursuant to Section 401 of the CWA. Section 401 compliance is a federal mandate regulated by the State. The local RWQCBs have jurisdiction over all those areas defined as jurisdictional under Section 404 of the CWA. In addition, the RWQCBs regulate water quality for all waters of the State, which may also include isolated wetlands, as defined by the California Porter-Cologne Water Quality Control Act (Porter Cologne; Ca. Water Code, Div. 7, Section 13000 et seq.). The RWQCB regulates discharges that can affect water quality of both waters of the U.S. and waters of the State. If there is no significant nexus to a traditional navigable water body and thus no USACE jurisdiction over waters of the U.S., then the RWQCB regulates water quality of waters of the State through a Waste Discharge Permit, as required to comply with the Porter-Cologne Water Quality Control Act.

Section 1602 Lake and Streambed Alteration Agreement

Jurisdictional authority of the CDFW over the bed, bank, or channel of a river, stream, or lake is established under Section 1600 et. seq. of the California Fish and Game Code, which pertains to activities that would disrupt the natural flow or alter the channel, bed, or bank of any lake, river, or stream. The California Fish and Game Code stipulates that it is unlawful to substantially divert or obstruct the natural flow or substantially change the bed, channel or bank of any river, stream, or lake resulting in a substantial effect on a fish or wildlife resource without notifying the CDFW and completing the Streambed Alteration Agreement process.

California Department of Fish and Game Codes

All birds, and raptors specifically, and their nests, eggs and parts thereof are protected under Sections 3503.5 of the California Fish and Game Code. Disturbance that causes nest abandonment and/or loss of reproductive effort (e.g., killing or abandonment of eggs or young) is considered a violation of this code. Additionally Section 3513 prohibits the take or possession of any migratory non-game bird listed by the MBTA. The CDFW has jurisdiction over the conservation, protection, and management of wildlife, native plants, and habitat necessary to maintain biologically sustainable populations (California Fish & Game Code Section 1802). The CDFW, as a trustee agency under *CEQA Guidelines* Section 15386, provides expertise in reviewing and commenting on environmental documents and makes and regulates protocols regarding potential negative impacts to biological resources held in California.

Non-Listed Species Management and Conservation Concerns

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. This designation does not provide legal protection, but signifies that these species are recognized as declining by CDFW.

In addition, CNPS has developed an inventory of California's sensitive plant species. This inventory summarizes information on the distribution, rarity, and endangerment of California's vascular plants. The inventory is divided into four lists based on the rarity of the species. CNPS also provides an inventory of plant communities that are considered natural communities of special concern by the state and federal resource agencies, academic institutions, and various conservation groups.

Natural communities of special concern are those that support concentrations of special-status plant or wildlife species, are of relatively limited distribution, or are of particular value to wildlife. The determination of the level of significance of impacts on plant species and natural communities is based on the number and size of remaining occurrences as well as recognized threats. Natural communities of special concern are not afforded legal protection unless they are designated critical habitat for federally listed threatened or endangered species, support formally listed species, or are jurisdictional wetland habitats.

Local

Los Angeles County Significant Ecological Areas (SEAs)

As part of the General Plan Conservation/Open Space and Land Use elements, the County has identified and adopted policies for SEAs. The purpose of establishing an SEA is to maintain biological diversity by establishing natural biological parameters, including species, habitat types, and linkages. The County General Plan includes recommended management practices for each SEA. Seven SEAs fall within the WRD service area or near proposed GBMP projects: Palos Verdes Peninsula and Coastline SEA, Harbor Lake Regional Park SEA, Alamitos Bay SEA, Terminal Island SEA, Madrona Wash SEA, El Segundo Dune SEA, and Puente Hills SEA (Figure 4.3-1). Four of these are located near proposed GBMP projects and are described further below.

El Segundo Dunes SEA

The El Segundo Dunes SEA houses the largest coastal dune habitat remaining in Southern California and the dunes provide habitat for the endangered El Segundo blue butterfly. This SEA is on the Pacific Flyway migration route used by many birds seasonally and though it is a small area with limited resources it tends to attract some birds due to the highly developed nature of its surrounding areas. The El Segundo Dunes SEA is located just north of the Hyperion WTP and proposed Project W1 and W3.

Puente Hills SEA

The northwestern portion of the Puente Hills SEA is part of the Los Angeles Flood Control Basin Important Bird Area (IBA), designated by the California Audubon. Many resident and migrating birds use the wetlands along this area. This IBA also extends beyond the SEA and along the Rio Hondo and upstream along the San Gabriel River. The Puente Hills SEA has walnut woodland habitat. The proposed GBMP projects would occur outside of the boundaries of the SEA, including a new recycled water pipeline that would be constructed as part of Project C8 to connect the San Jose Creek WRP to new injection wells at the MFSG.

Madrona Wash Preserve SEA

This SEA is surrounded by urban development and includes the Madrona Marsh Preserve. The Madrona Wash Preserve SEA supports one of three remaining freshwater wetlands in Los Angeles County. The SEA is highly used by migrant birds in the spring and in the fall due to its isolated high-quality vernal pool resources which provide habitat linkage for migratory waterfowl. The Madrona Wash Preserve SEA is located west of proposed Project W4 and east of proposed Project W2 desalters.

Harbor Lake Regional Park SEA

This SEA is located within the Kennedy Malloy Harbor Regional Park. It supports another of the three remaining wetlands that once covered the southern and western areas of the Los Angeles Basin. It supports significant areas of aquatic and terrestrial plant communities providing habitat to several birds and other wildlife. As with the Madrona Wash Preserve SEA, this one also provides high-quality habitat linkage for migratory waterfowl in the area. Project W4's proposed recycled water pipeline would travel through the northern portion of the Harbor Lake Regional Park SEA within an existing ROW along Lomita Boulevard.

Los Angeles County and City Tree Preservation Ordinances

Title 22, Part 16 of the Los Angeles County Code of Ordinances is the Oak Tree Ordinance. The ordinance was established to recognize oak trees within the County as a historical, aesthetic and ecological resource. The ordinance applies to all unincorporated areas of the County. Several cities within the County may have adopted this or a similar ordinance. The LA County ordinance in particular, prohibits a person to "cut, destroy, remove, relocate, inflict damage, or encroach into the protected zone of any tree of the oak genus" that is eight inches or more in diameter. Other city ordinances, such as the City of Los Angeles, may protect additional tree species in addition to oaks.

4.3.3 Impacts and Mitigation Measures

Significance Criteria

The criteria used to determine the level of significance of impacts to biological resources are based on Appendix G of the *CEQA Guidelines*. The proposed project would have a significant impact on biological resources if it would:

- 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 CDFW or USFWS;
- 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 CDFW or USFWS;
- 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;

- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; or
- Conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan.

Impacts Discussion

Potential impacts may occur to some natural communities within and immediately adjacent to the GBMP project's area. The ultimate locations of individual projects and infrastructure are not known in detail at this time; Figure 3-1 and Figures B1 through B11 show conceptual locations for future facilities.

As proposed, Projects W1 and W3 would occur within an area primarily characterized by open space and public facilities along the Pacific Ocean in a highly urbanized area of El Segundo. The recycled water pipelines would be located mostly within existing transportation and utility rights of way (ROW) connecting the Hyperion WWTP and E.C. Little WRF. The pipeline would travel adjacent to a public beach and adjacent to the El Segundo Golf Course.

Project W4 would include construction of pipelines and installation of injection wells primarily within existing transportation and utilities ROW and construction within the existing footprint of the JWPCP facilities. Pipeline construction would occur just north of the East Basin and would end before the Dominguez Channel.

Projects C1, C2, C3, C4, and C6 would be constructed within highly developed urban areas including residential, commercial and industrial land uses. Proposed facilities would be constructed within exiting treatment plants or utility ROWs.

The majority of the proposed facilities for Projects C5 and C10 are also located in developed, urban area with residential, commercial and industrial land uses. Project C5 would involve construction of injection wells and extraction wells primarily within the Los Angeles River ROW. This portion of the river is entirely concrete lined and void of vegetation. Potential spreading basins associated with Project C5 would also be located within an easement directly adjacent to the river along I-710. This area is a utility corridor with regularly maintained groundcover, if any. The area for the proposed Satellite AWTF is entirely developed with residential and commercial land uses and would not be constructed within any designated open space or vegetated areas.

Operations

Once constructed, all pipelines would be located underground and no operational impacts would occur. All other project construction, with the exception of the proposed satellite AWTF, would occur within existing facilities where operational impacts would be similar to existing conditions. No impacts to biological resources due to operation of the proposed facilities would occur.

Special-Status Wildlife Species

Impact 4.3-1: Activities associated with the construction of the proposed project could result in substantial adverse effects, either directly or through habitat modifications, on wildlife species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS. (Less than Significant with Mitigation)

The CNDDB search indicated the potential for 52 special-status wildlife species to occur in the WRD service area and project area (Table 4.3-1). Construction of the proposed project components would occur primarily within the boundaries of existing facilities or within developed and disturbed areas adjacent to existing treatment plants and existing right-of-ways that do not support native vegetation or undisturbed habitat. However, the ultimate locations of many project components have not been finalized and surveys should be conducted prior to any construction activities to ensure that wildlife species would not be impacted. The future project-level environmental review processes will consider all proposed projects on a case-by-case basis to ascertain whether an individual project would impact animal species and, where it is necessary, will require the implementation of mitigation measures to minimize and reduce potentially significant impacts to animal species. Implementation of **Mitigation Measures BIO-1** through **BIO-5** would avoid potential impacts to special-status species or reduce the impact to a level of less than significant.

Mitigation Measures

BIO-1: Prior to ground disturbing activities in areas that could support sensitive biological resources, a habitat assessment shall be conducted by a qualified biologist to determine the potential for special-status wildlife species to occur within affected areas. If the habitat assessment determines that a special-status species has the potential to be present within a minimum of 500 feet of the construction zone, a focused survey shall be conducted by a qualified biologist prior to project implementation to determine presence or absence of special-status species.

BIO-2: If a special-status wildlife species is determined present or potentially present within the limits of construction activities, a qualified biologist shall conduct pre-construction surveys of proposed work zones and the 500-foot buffer around each area within 14 days prior to ground disturbing activities. Any potential habitat capable of supporting a special-status wildlife species, such as burrows, shall be flagged for avoidance, as necessary; any additional habitat features, if any, shall also be identified and flagged as necessary.

BIO-3: If avoidance of special-status species is not feasible, implementing agencies shall consult with the appropriate regulating agency (USFWS or CDFW) to determine a strategy for compliance with the Endangered Species Act including development of mitigation and/or compensation for the impact.

BIO-4: Every effort shall be made to avoid potential impacts to special-status wildlife species by eliminating construction activities to the greatest extent possible within areas where those species are detected through surveys. Tunneling or jack and bore construction methods under drainages that may support listed special-status wildlife species shall be recommended in areas where those species have the potential to occur or where presence

has been confirmed. Similarly, silt fencing or similar impermeable barriers to exclude small wildlife species from entering the active work areas shall be installed around work areas that occur within or adjacent to undisturbed habitats, or near areas of documented occurrences of special-status wildlife. Such impermeable barriers shall be verified by a qualified biologist prior to initiating construction activities.

BIO-5: All construction areas, staging areas, and right-of-ways shall be staked, flagged, fenced, or otherwise clearly delineated to restrict the limits of construction to the minimum necessary near areas that may support special-status wildlife species as determined by a qualified biologist.

Significance Determination: Less than significant with mitigation

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Special-status Plant Species

Impact 4.3-2: Activities associated with the construction of the proposed project could result in adverse impacts to special-status plant species. (Less than Significant with Mitigation)

The CNDDB and CNPS search yielded 47 plant species. The closest recorded occurrences of special status species to the proposed project components included California orcutt grass (*Orcuttia californica*) (Projects C3, C4 and C6) and Brand's start phacelia (*Phacelia stellaris*), beach spectaclepod (*Dithyrea maritime*) (Projects W1 and W3).

The majority of facilities are expected to occur within the boundaries of existing facilities or within developed and disturbed areas at existing treatment plants and existing ROWs that do not support native vegetation or where very little managed non-native vegetation exist. However, some potential construction may occur in or adjacent to natural communities that may have potential to support special-status plant species. Impacts to special-status plant species would be reduced to less than significant levels with the implementation of **Mitigation Measures BIO-6** through **BIO-9**.

BIO-6: Prior to construction in areas that could support special status plants, a qualified botanist shall conduct a pre-construction floristic inventory and focused rare plant survey of project areas to determine and map the location and extent of special-status plant species populations within disturbance areas. This survey shall occur during the typical blooming periods of special-status plants with the potential to occur. The plant survey shall follow the CDFW Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities (November 24, 2009).

BIO-7: The limits of construction shall be staked, flagged, fenced, or otherwise clearly delineated to avoid and minimize impacts on adjacent habitats that may support special-status plant species.

BIO-8: To the extent feasible, the implementing agencies shall avoid and/or reduce the footprint of construction and staging areas in areas having potential occurrences of special-status plant species.

BIO-9: If temporary construction-related impacts to special-status plant populations are identified within a disturbance area, the implementing agencies shall prepare and implement a special-status species salvage and replanting plan. The salvage and replanting plan shall include measures to salvage, replant, and monitor the disturbance area until native vegetation is re-established under the direction of CDFW and USFWS.

Significance Determination: Less than significant with mitigation

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Sensitive Natural Communities

Impact 4.3-3: Activities associated with the construction of the proposed project could result in adverse impacts to sensitive natural communities. (Less than Significant)

Three natural communities tracked by the CNDDB occur within the WRD service area. Southern Coastal Bluff Scrub occurs along the coast and within the boundaries of the Palos Verde Peninsula and Coastline SEA; Southern Coastal Salt Marsh occurs within the boundaries of the Alamitos Bay SEA; and Southern Dune Scrub occurs within the beach near the Hyperion Water Treatment Plant, which is located at the western coast of the West Coast Basin.

These communities are not expected to occur within the disturbance areas of the proposed GBMP projects. Project W4 would travel through the northern portion of the Harbor Lake Regional Park SEA; however, no impacts to vegetation would occur as the project would be constructed entirely within an existing ROW along Lomita Boulevard. All other proposed construction would occur outside the boundaries of established SEAs and would not occur within any native sensitive natural community. The future project-level environmental review processes would consider all proposed projects on a case-by-case basis to ascertain whether an individual project would impact existing fish and wildlife habitat and where it is necessary, will require the implementation of mitigation measures to minimize and reduce potentially significant impacts to fish and wildlife habitat. Most projects are proposed within the boundaries of existing treatment plants or along existing ROWs. No mitigation is required.

Significance Determination: Less than significant

Riparian and Wetland Habitats

Impact 4.3-4: Activities associated with the construction of the proposed project could result in adverse impacts on riparian or wetland habitats. (Less than Significant with Mitigation)

Construction through areas with wetland features would require approval from one or more of the following: USACE, RWQCB, or CDFW. Features within the GBMP project areas that could support jurisdictional wetlands or drainages include work within the Los Angeles River, San Gabriel River, and Rio Hondo. Once project facility locations and designs are determined, exact locations and acreages of jurisdictional areas located within or adjacent to impact areas shall be determined through a formal jurisdictional delineation.

For projects impacting native vegetation within jurisdictional drainages, WRD or the implementing agency would be required to obtain California Fish and Game Code Section 1602 compliance and Section 404 compliance from the USACE and Section 401 Certification from the RWQCB. In addition, implementation of **Mitigation Measures BIO-10** through **BIO-12** would ensure compliance with state and federal regulations relating to potentially jurisdictional features, including wash habitat vegetation that may fall under CDFW jurisdiction.

> **BIO-10:** Prior to construction, a qualified wetland delineator shall be retained to conduct a formal wetland delineation in areas where potential jurisdictional resources (i.e., wetlands or drainages) may be affected by the project. If jurisdictional resources are identified in the project area and would be directly or indirectly impacted by individual projects, the qualified wetland delineator shall prepare a jurisdictional delineation report outlining mitigation and compensation requirements to be implemented prior to construction.
>
> **BIO-11:** Proposed projects shall avoid impacting previously undisturbed areas where possible. This would include employing tunneling or jack and bore methods under drainages if practicable. The construction zone(s) shall be modified if feasible to minimize disturbance of any wetland or drainage.
>
> **BIO-12:** Where jurisdictional wetlands and other waters cannot be avoided, a restoration plan shall be prepared that provides for replanting and monitoring for a minimum three-year period following construction to ensure riparian and/or wetland habitat is re-established.

Significance Determination: Less than significant with mitigation

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Wildlife Movement

Impact 4.3-5: Activities associated with the construction of the proposed project could interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, such as birds and bats, or impede the use of native wildlife nursery sites. (Less than Significant with Mitigation)

There are no established wildlife movement corridors within the WRD service area as described within the Los Angeles County General Plan. The proposed GBMP projects would be constructed within existing facilities or within existing ROWs. None of the proposed project components would interfere with wildlife movement or any native resident or migratory wildlife species and would not be constructed within a native wildlife nursery site.

However, common and special-status migratory birds are likely to nest or forage in habitats found within or near the proposed project areas. The SEAs within the county and the WRD service area provide ideal pockets of habitat for several migratory and resident bird species. The exact location of proposed projects has not been established. Therefore, focused surveys should be performed by a qualified biologist prior to any construction activities that could result in direct or indirect impacts to breeding or nesting birds. **Mitigation Measures BIO-13** and **BIO-14** would reduce impacts on nesting birds to less than significant levels.

Implementation of the proposed GBMP projects may result in temporary or permanent loss of foraging habitat for migratory birds, including raptor species. Similarly, proposed construction activities could impact roosting bats. Potential bat roost sites in the vicinity of the project areas may include abandoned structures and bridges.

Implementation of **Mitigation Measures BIO-13** through **BIO-15** would reduce potential direct and indirect impacts to migratory birds, raptor species, and bats to a level of less than significant.

Mitigation Measures

BIO-13: If construction and vegetation removal is proposed between February 1 and August 31, then a qualified biologist shall conduct a pre-construction survey for breeding and nesting birds within 500-feet of the construction limits to determine and map the location and extent of breeding birds that could be affected by the project. Active nest sites located during the pre-construction surveys shall be avoided and a non-disturbance buffer zone shall be established sufficient to avoid demonstrable harassment of the nesting birds. Nest sites shall be avoided until the adults and young are no longer reliant on the nest site for survival as determined by a qualified biologist.

BIO-14: All active bird nest buffer areas shall be clearly demarcated with stakes, flag, or fence material. The installation of buffer areas shall be verified by a qualified biologist prior to the initiation of ground disturbance activities.

BIO-15: A qualified biologist shall conduct a survey for bat roost sites prior to the initiation of any construction activities in areas where potential roost sites may occur, such as abandoned structures, bridges, or hollow trees. If a bat roost is identified, a non-disturbance buffer zone shall be established sufficient to avoid demonstrable harassment by a qualified biologist or as otherwise determined in consultation with the CDFW.

Significance Determination: Less than significant with mitigation

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Local Policies or Ordinances

Impact 4.3-6: Activities associated with the construction of the proposed project could conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance. (Less than Significant with Mitigation)

The proposed project would mainly be constructed within the boundaries of existing treatment plants or within existing ROWs. Any impacts to oak trees within Los Angeles County would be required to comply with the Oak Tree Preservation Ordinance (or other tree ordinances established by the local city). A tree permit may be required if impacts to oak trees or other protected trees are determined to be necessary. No impacts to oak trees or other protected tree species is anticipated. However, the exact locations of proposed projects have not been established. Implementation of **Mitigation Measure BIO-16** would reduce any potential impacts to protected tree species to a less than significant level.

BIO-16: If trees could be impacted by project construction, an arborist shall conduct a tree survey. If any Oak trees or other protected trees will be impacted by the proposed project,

the implementing agency shall obtain any required County or City permits as directed by the arborist.

Significance after Mitigation: Less than significant with mitigation

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Adopted Habitat Conservation Plans

Impact 4.3-7: Activities associated with the construction of the proposed project could 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 with Mitigation)

Seven SEAs can be found within the boundary of the WRD service area. The SEAs provide protection to many of the sensitive natural communities and special-status species within the county. As previously discussed under Section 4.3.2, Regulatory Framework, four SEAs are located near the disturbance areas of the proposed GBMP projects. However, though construction could occur near an established SEA, no impacts would occur within the boundaries of the SEA. Construction is proposed mainly within existing facilities or through existing ROWs. The proposed Satellite AWTF would be constructed within a developed area and outside of the boundaries of an existing SEA.

The HTP is located just south of the El Segundo Dunes SEA which is part of Projects W1 and W3. Project W4 would be constructed within an existing ROW along Lomita Boulevard, which crosses through the northernmost portion of the Harbor Lake Regional Park SEA. The SEA and any associated habitat would not be directly impacted by construction of the proposed project.

No impacts to established SEAs are anticipated. However, due to the close proximity to some of the established SEAs, implementation of Mitigation Measures BIO-1 through BIO-9 would ensure that indirect impacts associated with construction adjacent to an SEA, and to wildlife species who utilize the SEA, would be reduced to less than significant.

Mitigation Measures

Implement **Mitigation Measures BIO-1** through **BIO-9.**

Significance Determination: Less than significant with mitigation

TABLE 4.3-1
BIOLOGICAL RESOURCES IMPACT SUMMARY

	Concept A		Concept B	
Impact	**Impact Determination**	**Mitigation Summary**	**Impact Determination**	**Mitigation Summary**
Special-status Wildlife Species: Surveys should be conducted prior to project implementation to ensure that no wildlife species are within the project footprint.	Less than Significant with Mitigation	BIO-1 through BIO-5	Less than Significant with Mitigation	BIO-1 through BIO-5
Special-status Plant Species: Surveys should be conducted prior to project implementation to ensure that no plant species are within the project footprint.	Less than Significant with Mitigation	BIO-6 through BIO-9	Less than Significant with Mitigation	BIO-6 through BIO-9
Sensitive Natural Communities: There are no sensitive natural communities within the project impact areas.	Less than Significant	None required	Less than Significant	None required.
Riparian and Wetland Habitat: The proposed projects could occur within jurisdictional wetlands or drainages.	Less than Significant with Mitigation	BIO-10 through BIO-12	Less than Significant with Mitigation	BIO-10 through BIO-12
Wildlife Movement: There are no officially-designated wildlife movement corridors within proposed project areas; however, loss of foraging habitat for migratory birds and impacts to bats could occur.	Less than Significant with Mitigation	BIO-13 through BIO-15	Less than Significant with Mitigation	BIO-13 through BIO-15
Local Policies or Ordinances: If there are impacts to covered tree species, permits from the county or local cities may be required.	Less than Significant with Mitigation	BIO-16	Less than Significant with Mitigation	BIO-16

	Concept A		Concept B	
Impact	**Impact Determination**	**Mitigation Summary**	**Impact Determination**	**Mitigation Summary**
Adopted Habitat Conservation Plans: Project components directly adjacent to established SEAs could impact habitat and wildlife species within these areas.	Less than Significant with Mitigation	BIO-1 through BIO-9	Less than Significant with Mitigation	BIO-1 through BIO-9

References – Biological Resources

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California Native Plant Society (CNPS). 2010. Electronic Inventory of Rare and Endangered Vascular Plants of California. Records of Occurrence for Anaheim, Baldwin Park, El Monte, Hollywood, Inglewood, La Habra, Los Alamitos, Los Angeles, Long Beach, Redondo Beach, San Pedro, South Gate, Torrance, Venice, and Whittier USGS quadrangle maps. Sacramento, CA: CNPS. http://www.cnps.org/inventory. (http://www.cnps.org/)

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4.4 Cultural Resources

This section describes the environmental setting for cultural and paleontological resources, the applicable regulatory framework, potential impacts of the proposed project, and mitigation measures to reduce those impacts to a level of less than significant.

Cultural resources include prehistoric and historic sites, structures, districts, places, and landscapes, or any other physical evidence associated with human activity considered important to a culture, a subculture, or a community for scientific, traditional, religious or any other reason. Under CEQA, paleontological resources, although not associated with past human activity, are grouped within cultural resources. For the purposes of this analysis, cultural resources may be categorized into the following groups: archaeological resources, historic resources (including architectural/engineering resources), contemporary Native American resources, human remains, and paleontological resources.

Archaeological resources are places where human activity has measurably altered the earth or left deposits of physical remains. Archaeological resources may be either prehistoric-era (before European contact) or historic-era (after European contact). The majority of such places in California are associated with either Native American or Euro-American occupation of the area. The most frequently encountered prehistoric or historic Native American archaeological sites are village settlements with residential areas and sometimes cemeteries; temporary camps where food and raw materials were collected; smaller, briefly occupied sites where tools were manufactured or repaired; and special-use areas like caves, rock shelters, and rock art sites. Historic-era archaeological sites may include foundations or features such as privies, corrals, and trash dumps.

Historic resources include standing structures, infrastructure, and landscapes of historic or aesthetic significance that are generally 50 years of age or older. In California, historic resources considered for protection tend to focus on architectural sites dating from the Spanish Period (1529-1822) through the early years of the Depression (1929-1930), although there has been recent attention paid to World War II (WWII) and Post War era facilities. Earlier historic resources are often associated with archaeological deposits of the same age. Some resources, however, may have achieved significance within the past 50 years if they meet the criteria for exceptional significance.

Contemporary Native American resources, also called ethnographic resources, can include archaeological resources, rock art, and the prominent topographical areas, features, habitats, plants, animals, and minerals that contemporary Native Americans value and consider essential for the preservation of their traditional values. These locations are sometimes hard to define and traditional culture often prohibits Native Americans from sharing these locations with the public.

Paleontology is a branch of geology that studies the life forms of the past, especially prehistoric life forms, through the study of plant and animal fossils. Paleontological resources represent a limited, non-renewable, and impact-sensitive scientific and educational resource. As defined in this section, paleontological resources are the fossilized remains or traces of multi-cellular

invertebrate and vertebrate animals and multi-cellular plants, including their imprints from a previous geologic period. Fossil remains such as bones, teeth, shells, and leaves are found in the geologic deposits (rock formations) where they were originally buried. Paleontological resources include not only the actual fossil remains, but also the collecting localities, and the geologic formations containing those localities.

4.4.1 Environmental Setting

Regional Setting

The WRD service area is located in the Los Angeles Basin, which is formed by the Santa Monica Mountains to the northwest, the San Gabriel Mountains to the north, and the San Bernardino Mountains and San Jacinto Mountains to the east. The basin was formed by alluvial and fluvial deposits derived from these surrounding mountains. Prior to urban development and the channeling of the Los Angeles River, much of the WRD service area was likely covered with marshes, thickets, dense woodland, and grassland. Historically, the Los Angeles River originated from a spring near present-day Encino. The river flowed eastward from Encino through the southern portion of the San Fernando Valley near the foot of the Santa Monica Mountains before turning southeast at present-day Griffith Park (Gumprecht, 2001). From there, it flowed to the Pacific Ocean along a frequently shifting course, sometimes flowing south to empty into San Pedro Bay near Long Beach, sometimes flowing west to the Santa Monica Bay along the course of modern-day Ballona Creek. In its natural state, the river's flow meandered dramatically, narrowed and widened intermittently, and even returned underground completely in certain locations. The floodplain forest of the Los Angeles Basin formed one of the most biologically rich habitats in southern California. Willow, cottonwood and sycamore, and a dense underbrush of alder, hackberry, and shrubs once lined the Los Angeles River, supporting a plethora of wildlife (Gumprecht, 2001).

Prehistoric Setting

The abundant and diverse environmental resources of the coastal Los Angeles basin have attracted human inhabitants from the earliest times. The prehistory of the region has been summarized within four major horizons or cultural periods: Early, Millingstone, Intermediate, and Late Prehistoric (Wallace, 1955).

The Early period covers the interval from the first presence of humans in southern California until post-glacial times. While people are known to have inhabited southern California beginning at least 13,000 years Before Present (B.P.) (Arnold et al., 2004), the first evidence of human occupation of the Los Angeles area dates to at least 9,000 B.P. These occupations are associated with a period known as the Millingstone Cultural Horizon (7,000-4,000 B.P) (Wallace, 1955; Byrd and Raab, 2007). Departing from the subsistence strategies of their nomadic big-game hunting predecessors, Millingstone populations established more permanent settlements. Settlements were located primarily on the coast and in the vicinity of estuaries, lagoons, lakes, streams, and marshes where a variety of resources, including seeds, fish, shellfish, small mammals, and birds, were exploited. Early Millingstone occupations are typically identified by the presence of handstones (manos) and millingstones (metates), while those Millingstone

occupations dating later than 5,000 B.P. contain a mortar and pestle complex as well, signifying an increased dependence on new food sources, such as acorns and starchy tubers. A number of Millingstone period sites have been identified in the coastal Los Angeles basin, including several on the coast, some near Ballona Lagoon, and some south of the Baldwin Hills (Altschul et al., 2003).

Although many aspects of Millingstone culture persisted, by 3,500 B.P., a number of socioeconomic changes occurred (Wallace, 1955; McIntyre, 1990). These changes are associated with the period known as the Intermediate Horizon (3,500-1,500 B.P.) (Wallace, 1955). Increasing population size necessitated the intensified use of existing terrestrial and marine resources (Erlandson, 1994). This was accomplished in part through use of the circular shell fishhook on the coast and more abundant and diverse hunting equipment. The Intermediate Horizon marks a period in which specialization in labor emerged, trading networks became an increasingly important means by which both utilitarian and non-utilitarian materials were acquired, and travel routes were extended. Archaeological evidence suggests that the margins of rivers, marshes, and swamps within the Los Angeles River drainage, with their rich variety of resources, served as locations of prehistoric settlement and travel during this period. Settlement around the Ballona Lagoon increased significantly during this period (Altschul et al., 2003)

The Late Prehistoric Period, spanning from approximately 1,500 B.P. to the Spanish mission era, witnessed an increase in terrestrial and sea mammal hunting, along with continued seed collecting (Wallace, 1955). Small projectile points indicate the use of the bow and arrow. Inter-village and inter-regional trade increased, and there is evidence for the use of shell beads as a form of money in economic exchanges. The large number and variety of archaeological sites dating to this period may indicate population growth along the southern California coast (Altschul et al., 2003).

Ethnographic Setting

Gabrielino-Tongva

The WRD service area is located in a region traditionally occupied by the Takic-speaking Gabrielino-Tongva Indians. The term “Gabrielino” is a general term that refers to those Native Americans who were administered by the Spanish at the Mission San Gabriel Arcángel. Many contemporary Gabrielino identify themselves by the name “Tongva.” Prior to European colonization, the Gabrielino-Tongva occupied a diverse area that included: the watersheds of the Los Angeles, San Gabriel, and Santa Ana rivers; the Los Angeles basin; and the islands of San Clemente, San Nicolas, and Santa Catalina (Kroeber, 1925). Their neighbors included the Chumash to the north, the Juañeno to the south, and the Serrano and Cahuilla to the east. The Gabrielino-Tongva are reported to have been second only to the Chumash in terms of population size and regional influence (Bean and Smith, 1978). The Gabrielino language, like the Tataviam language, was part of the Takic branch of the Uto-Aztecan language family.

The Gabrielino-Tongva Indians were hunter-gatherers and lived in permanent communities located near the presence of a stable water and food supply. Community populations generally ranged from 50 to 100 inhabitants, although larger settlements may have existed. The Gabrielino-Tongva are estimated to have had a population numbering around 5,000 in the pre-contact period

(Kroeber, 1925). Villages are reported to have been the most abundant in the San Fernando Valley, the Glendale Narrows area north of downtown, and around the Los Angeles River drainage (Gumprecht, 2001). Maps produced by early explorers indicate that at least twenty-six Gabrielino villages were within close proximity to known Los Angeles River courses, while an additional eighteen villages were within reasonably close proximity to the river (Gumprecht, 2001). Within the WRD service area, a number of villages existed, including *Chokiishnga, Curunga* and *Huutnga*, near Bell; *Naxaw'nga* and *Sehat*, near Whittier; *Tevaaxa'anga, 'Ahwaanga,* and *Povuu'nga*, near Long Beach; '*Ongoovanga*, near Redondo Beach; and nine villages on the Palos Verdes peninsula (McCawley, 1996).

Subsistence consisted of hunting, fishing, and gathering. Small terrestrial game were hunted with deadfalls, rabbit drives, and by burning undergrowth, while larger game such as deer were hunted using bows and arrows. Fish were taken by hook and line, nets, traps, spears, and poison (Bean and Smith, 1978). The primary plant resources were the acorn, gathered in the fall and processed in mortars and pestles, and various seeds that were harvested in late spring and summer and ground with manos and metates. The seeds included chia and other sages, various grasses, and islay or holly-leafed cherry.

Gabrielino-Tongva society was characterized by patrilineal, non-localized clans, each clan consisting of several lineages. The Gabrielino-Tongva inhabited large circular, domed houses constructed of willow poles thatched with tule (Bean and Smith, 1978). These houses could sometimes hold up to 50 people. Other village structures of varying sizes served as sweathouses, ceremonial enclosures, and granaries.

At the time of Spanish contact, many Gabrielino-Tongva practiced a religion that was centered around the mythological figure *Chinigchinich* (Bean and Smith, 1978). This religion may have been relatively new when the Spanish arrived, and was spreading at that time to other neighboring Takic groups. The Gabrielino-Tongva practiced both cremation and inhumation of their dead. A wide variety of grave offerings, such as stone tools, baskets, shell beads, projectile points, bone and shell ornaments, and otter skins, were interred with the deceased.

Coming ashore on Santa Catalina Island in October of 1542, Juan Rodriguez Cabrillo was the first European to make contact with the Gabrielino-Tongva; the 1769 expedition of Portolá also passed through Gabrielino-Tongva territory (Bean and Smith, 1978). Native Americans suffered severe depopulation and their traditional culture was radically altered after Spanish contact. Nonetheless, Gabrielino-Tongva descendants still reside in the greater Los Angeles and Orange County areas and maintain an active interest in their heritage.

Historic Setting

Regional Overview

Spanish Period (A.D. 1769-1821)

Although Spanish explorers made brief visits to the region in 1542 and 1602, sustained contact with Europeans did not commence until the onset of the Spanish Period. In 1769, Gaspar de

Portolá led an expedition from San Diego, passing through Los Angeles Basin, San Fernando Valley, and Santa Clarita Valley on its way to the San Francisco Bay (McCawley, 1996). This was followed in 1776 by the expedition of Father Francisco Garcés.

In the late 18th century, the Spanish began establishing missions in California and forcibly relocating and converting native peoples. The nearest mission to the WRD service area was Mission San Gabriel Arcángel, founded in 1771. Gabrielino-Tongva Indians were primarily sent to Mission San Gabriel to be baptized, although some were also baptized at Mission San Fernando. Disease and hard labor took a toll on the native population in California; by 1900, the Native Californian population had declined by as much as 90 percent (Cook, 1978). In addition, native economies were disrupted, trade routes were interrupted, and native ways of life were significantly altered.

In an effort to promote Spanish settlement of Alta California, Spain granted several large land concessions from 1784 to 1821. At this time, unless certain requirements were met, Spain retained title to the land (State Lands Commission [SLC], 1982). Spanish and Mexican land grants within the WRD service area include Los Palos Verdes, San Pedro, Sausal Redondo, Aguaje de la Centinela, Tajauta, Los Cerritos, Los Alamitos, Los Coyotes, Santa Gertrudes, San Antonio, Paso de Bartolo, Cienega o Paso de la Tijera, and La Merced (Eddy, 1937).

Mexican Period (A.D. 1821-1848)

Alta California became a state, with its capital at Monterey, when Mexico won its independence from Spain in 1821. In 1833, Mexico began the process of secularizing the missions, reclaiming the majority of mission lands and redistributing them as land grants. According to the terms of the Secularization Law of 1833 and Regulations of 1834, at least a portion of the lands would be returned to the Native populations, but this did not always occur (Milliken et al., 2009: 154-155). Native Americans who had become dependent upon the missions were disenfranchised, and most Gabrielino neophytes either fled to the north or sought work as laborers for nearby private landowners.

In 1846, U.S. naval forces took Monterey and American forces captured Los Angeles shortly thereafter. Los Angeles soon slipped from American control, and was retaken in 1847. Approximately 600 U.S. sailors, marines, Army dragoons, and mountain men converged under the leadership of Colonel Stephen W. Kearney and Commodore Robert F. Stockton in early January of that year to challenge the California resistance, which was led by General José Maria Flores. On January 10, 1847, the town of Los Angeles was recaptured by American forces. Three days later, on January 13, 1847, the Articles of Capitulation (aka Treaty of Cahuenga) were signed by Lt. Col. John Fremont and General Andres Pico (Denger, 2010).

American Period (A.D. 1848-present)

Mexico ceded California to the United States as part of the Treaty of Guadalupe Hildalgo in 1848. California officially became one of the United States in 1850. While the treaty recognized right of Mexican citizens to retain ownership of land granted to them by Spanish or Mexican authorities, the claimant was required to prove their right to the land before a patent was given.

The process was lengthy, and generally resulted in the claimant losing at least a portion of their land to attorney's fees and other costs associated with proving ownership (Starr, 2007).

The well-established cattle industry of the Los Angeles area served to provide meat and hides to the mine workers of northern California. However, a devastating flood in 1861, followed by droughts in 1862 and 1864, led to a rapid decline of the cattle industry; over 70 percent of cattle perished during these droughts (McWilliams, 1946; Dinkelspiel, 2008). This event, coupled with the burden of proving ownership of their lands, caused many Californios to lose their lands during this period (McWilliams, 1946).

The first transcontinental railroad was completed in 1869, connecting San Francisco with the eastern United States. Newcomers poured into northern California. Southern California experienced a trickle-down effect, as many of these newcomers made their way south. The Southern Pacific Railroad extended this line from San Francisco to Los Angeles in 1876. The second transcontinental line, the Santa Fe, was completed in 1886. Settlers flooded into the region and the demand for real estate skyrocketed. As real estate prices soared, land that had been farmed for decades outlived its agricultural value and was sold to become residential communities. The subdivision of the large ranchos took place during this time (Meyer, 1981; McWilliams, 1946). During the first three decades of the 20th century, more than 2 million people moved to Los Angeles County, transforming it from a largely agricultural region into a major metropolitan area.

Los Angeles

On September 4, 1781, El Pueblo de la Reina de los Angeles was established not far from the site where Portola and his men camped during their 1769 excursion. Father Juan Crespi, who accompanied the 1769 expedition, had noted the suitability of the area for supporting a large settlement. He named the river El Rio de Nuestra Senora la Reyna de Los Angeles de Porciuncula (The River of Our Lady the Queen of the Angels of Porciuncula) (Gumprecht, 2001).

The pueblo was first established in response to the increasing agricultural needs of Spanish missions and presidios in Alta California. A land grant of 28 acres was issued to California Governor Felipe de Neve in 1781. A small group of colonists from Mexico then set out to develop a pueblo near the river. The original pueblo consisted of a central square surrounded by twelve houses and a series of agricultural fields. Thirty-six fields occupied 250 acres between the town and the river to the east (Gumprecht, 2001).

An irrigation system that would carry water from the river to the fields and the pueblo was the communities' first priority and was constructed almost immediately. The main irrigation ditch, or Zanja Madre, was completed by the end of October 1781. It was constructed in the area of present-day Elysian Park, and carried water south along Alameda Street to the pueblo and then beyond (Gumprecht, 2001).

By 1786, the flourishing pueblo attained self-sufficiency and funding by the Spanish government ceased (Gumprecht, 2001). Fed by a steady supply of water and an expanding irrigation system,

agriculture and ranching grew, and by the early 1800s the pueblo produced surplus wheat, corn, barley, and beans for export. A large number of livestock, including cattle and sheep, grazed in the surrounding lands. Wine production gained importance and vineyards blanketed the landscape between present-day San Pedro Street and the river. An estimated 100,000 vines were being cultivated at twenty-six Los Angeles vineyards by 1830. By the time California became a state in 1850, Los Angeles County had become the number one producer of wine in the country (Gumprecht, 2001).

The County of Los Angeles was established on February 18, 1850 as one of the 27 original counties, several months before California was admitted to the Union on September 9, 1850. It derived its name from the community of Los Angeles, which was designated the County seat. On April 1, 1850 the people of Los Angeles County asserted their newly won right of self-government and elected a three-man Court of Sessions as their first governing body. Parts of the county's territory were given to San Bernardino County in 1853, to Kern County in 1866 and to Orange County in 1889 (County of Los Angeles, 2013).

In the decade after California was admitted to the Union the population of Los Angeles tripled (Gumprecht, 2001). After the collapse of the cattle industry in the mid-1860s, wine and grain became the city's major industries (McWilliams, 1949). In 1870, the population of Los Angeles was 5,728, while San Francisco had a population of nearly 150,000 at that time (U.S. Census Bureau, 2012). Despite the boom of the 1850s, Los Angeles remained a small town in comparison. However, the 1870s saw the expansion of additional industries, including the first woolen mill and several banks. The first horse-drawn streetcar system was established in 1874 (Winther, 1947). After the conclusion of the Civil War, many veterans and their families chose to make the long journey to California, in search of warmer climates and fertile, cheap land (Dinkelspiel, 2008).

When Los Angeles was connected to the transcontinental railroad via San Francisco on September 5, 1876, it experienced another boost in population. The city would experience its greatest growth in the 1880s when two more direct rail connections to the East Coast were constructed. The Southern Pacific completed its second transcontinental railway, the Sunset Route from Los Angeles to New Orleans, in 1883 (Orsi, 2005). In 1885, the Santa Fe Railroad completed a competing transcontinental railway to San Diego, with connecting service to Los Angeles (Mullaly and Petty, 2002). The resulting fare wars led to an unprecedented real estate boom. Despite a subsequent collapse of the real estate market, the population of Los Angeles increased 350 percent from 1880 to 1890 (Dinkelspiel, 2008).

From 1890 to 1900, the city continued to grow, and many infrastructure projects were completed during this decade (McWilliams, 1949). E.L. Doheny discovered oil in 1892, adding fuel to the flame, and the population doubled by 1900. From 1900 to 1920, Los Angeles became a tourist mecca (McWilliams, 1949). The Los Angeles Aqueduct was constructed and a large portion of the San Fernando Valley annexed to the city during the first decade of the 20th century. From 1920 to 1930, Los Angeles experienced another population explosion, due in part to the automobile and the development of the movie industry.

Southern Los Angeles County and San Pedro Bay

Cattle ranching dominated the economy of what is now southern Los Angeles County during the Spanish and Mexican periods. The region was underused as a port during this period. By 1830, San Pedro was the leading west coast center of cattle export and hide production. Cattle and sheep ranching continued to dominate the economy, with one of the largest sheep operations in California, Flint, Bixby & Company, establishing the largest portion of its operation in San Pedro (Queenan 1986; Beck and Hasse 1974).

Arriving from Delaware in 1851, Phineas Banning realized the potential of the San Pedro Bay as a commercial shipping port, and in 1857 constructed docks in what would become Wilmington to take advantage of the increasing trade coming in and out of Los Angeles. Wilmington became the first settlement in the area. Two primary routes to the southwest gold fields, the Gila River Trail and the Old Spanish Trail, ended in Los Angeles. Banning shuttled materials on smaller boats from his base in Wilmington to and from a second location on the Rancho San Pedro waterfront.

Banning also realized the importance of rail transportation between his operation on the bay and the growing city of Los Angeles. In 1869, Banning and his investors organized the Los Angeles & San Pedro Railroad (LA&SP), marking the beginning of a period of fierce rail competition in the San Pedro and Los Angeles area. Banning's LA&SP was the first route to establish a reliable means of moving cargo from the ships coming into San Pedro Harbor to the City of Los Angeles (County of Los Angeles, 2013).

Growing commerce in Los Angeles eventually required the formal establishment of a shipping port. In 1906, in preparation for the opening of the Panama Canal, the City of Los Angeles extended its boundaries to coastal tidewaters when it annexed San Pedro and a narrow strip of land connecting the two cities (GPA, 2012).

Like the rest of Los Angeles County, the area experienced significant population growth in the 1880s and 1890s. The cities of Redondo Beach, Gardena, Hawthorne, and Inglewood were founded during this time. In the 20th century, the region experienced an oil boom. Major discoveries were made in the 1920s in Whittier, Montebello, Compton, Torrance, Inglewood, Signal Hill, and Santa Fe Springs (County of Los Angeles, 2013).

While growth in the region continued steadily throughout the late 19th and 20th centuries, the areas of Gardena, Hawthorne, Inglewood, and Torrance experienced an additional boom after World War II with the coming of the aerospace industry and other manufacturing enterprises (GPA, 2012).

4.4.2 Regulatory Framework

Numerous laws and regulations require federal, state, and local agencies to consider the effects a project may have on cultural resources. These laws and regulations stipulate a process for compliance, define the responsibilities of the various agencies proposing the action, and prescribe the relationship among other involved agencies (e.g., State Office of Historic Preservation [OHP] and the Advisory Council on Historic Preservation). The National Historic Preservation Act

(NHPA); CEQA; and the California Register of Historical Resources (California Register), Public Resources Code (PRC) 5024, are the primary federal and state laws governing and affecting preservation of cultural resources of national, state, regional, and local significance. Individual projects implemented under the WRD Central and West Coast Groundwater Basins Master Plan may be required to comply with some or all of these laws.

Federal

Cultural Resources

Section 106 of the NHPA

Archaeological resources are protected through the NHPA of 1966, as amended (16 USC 470f), and its implementing regulation, Protection of Historic Properties (36 CFR Part 800), the Archaeological and Historic Preservation Act of 1974, and the Archaeological Resources Protection Act of 1979. Prior to implementing an "undertaking" (e.g., issuing a federal permit), Section 106 of the NHPA requires federal agencies to consider the effects of the undertaking on historic properties and to afford the Advisory Council on Historic Preservation and the State Historic Preservation Officer a reasonable opportunity to comment on any undertaking that would adversely affect properties eligible for listing in the National Register of Historic Places (National Register). As indicated in Section 101(d)(6)(A) of the NHPA, properties of traditional religious and cultural importance to a tribe are eligible for inclusion in the National Register. Under the NHPA, a resource is considered significant if it meets the National Register listing criteria at 36 CFR 60.4.

National Register of Historic Places

The National Register was established by the NHPA as "an authoritative guide to be used by federal, State, and local governments, private groups and citizens to identify the Nation's historic resources and to indicate what properties should be considered for protection from destruction or impairment" (Code of Federal Regulations [CFR] 36 Section 60.2). The National Register recognizes both historical-period and prehistoric archaeological properties that are significant at the national, state, and local levels.

To be eligible for listing in the National Register, a resource must be significant in American history, architecture, archaeology, engineering, or culture. Districts, sites, buildings, structures, and objects of potential significance must meet one or more of the following four established criteria (U.S. Department of the Interior, 1995):

A. Are associated with events that have made a significant contribution to the broad patterns of our history;

B. Are associated with the lives of persons significant in our past;

C. Embody the 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. Have yielded, or may be likely to yield, information important in prehistory or history.

Unless the property possesses exceptional significance, it must be at least 50 years old to be eligible for National Register listing (U.S. Department of the Interior, 1995).

In addition to meeting the criteria of significance, a property must have integrity. Integrity is defined as "the ability of a property to convey its significance" (U.S. Department of the Interior, 1995). The National Register recognizes seven qualities that, in various combinations, define integrity: location, design, setting, materials, workmanship, feeling, and association. To retain historic integrity a property must possess several, and usually most, of these seven aspects. Thus, the retention of the specific aspects of integrity is paramount for a property to convey its significance.

Paleontological Resources

A variety of federal statutes specifically address paleontological resources. They are generally applicable to a project if that project includes federally owned or federally managed lands or involves a federal agency license, permit, approval, or funding. Federal legislative protection for paleontological resources stems from the Antiquities Act of 1906 (PL 59-209; 16 United States Code 431 et. seq.; 34 Stat. 225), which calls for protection of historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest on federal lands.

State

Cultural Resources

The State implements the NHPA through its statewide comprehensive cultural resources surveys and preservation programs. The California Office of Historic Preservation (OHP), as an office of the California Department of Parks and Recreation, implements the policies of the NHPA on a statewide level. The OHP also maintains the California Historic Resources Inventory. The State Historic Preservation Officer (SHPO) is an appointed official who implements historic preservation programs within the State's jurisdictions.

California Register of Historical Resources

The California Register is "an authoritative listing and guide to be used by State and local agencies, private groups, and citizens in identifying the existing historical resources of the State and to indicate which resources deserve to be protected, to the extent prudent and feasible, from substantial adverse change" (PRC Section 5024.1[a]). The criteria for eligibility for the California Register are based upon National Register criteria (PRC Section 5024.1[b]). Certain resources are determined by the statute to be automatically included in the California Register, including California properties formally determined eligible for, or listed in, the National Register.

To be eligible for the California Register, a prehistoric or historic-period property must be significant at the local, state, and/or federal level under one or more of the following four criteria:

1. Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
2. Is associated with the lives of persons important in our past;

3. Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or
4. Has yielded, or may be likely to yield, information important in prehistory or history.

A resource eligible for the California Register must meet one of the criteria of significance described above, and retain enough of its historic character or appearance (integrity) to be recognizable as a historical resource and to convey the reason for its significance. It is possible that a historic resource may not retain sufficient integrity to meet the criteria for listing in the National Register, but it may still be eligible for listing in the California Register.

Additionally, the California Register consists of resources that are listed automatically and those that must be nominated through an application and public hearing process. The California Register automatically includes the following:

- California properties listed on the National Register and those formally determined eligible for the National Register;
- California Registered Historical Landmarks from No. 770 onward; and,
- Those California Points of Historical Interest that have been evaluated by the OHP and have been recommended to the State Historical Commission for inclusion on the California Register.

Other resources that may be nominated to the California Register include:

- Historical resources with a significance rating of Category 3 through 5 (those properties identified as eligible for listing in the National Register, the California Register, and/or a local jurisdiction register);
- Individual historical resources;
- Historical resources contributing to historic districts; and,
- Historical resources designated or listed as local landmarks, or designated under any local ordinance, such as an historic preservation overlay zone.

California Environmental Quality Act

CEQA is the principal statute governing environmental review of projects occurring in the state and is *codified at PRC Section 21000 et seq.* CEQA requires lead agencies to determine if a proposed project would have a significant effect on the environment, including significant effects on historical or unique archaeological resources.

Under CEQA (Section 21084.1), a project that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment. An archaeological resource may qualify as an “historical resource” under CEQA. The CEQA Guidelines (Title 14 California Code of Regulations [CCR] Section 15064.5) recognize that an historical resource includes: (1) a resource listed in, or determined to be eligible by the State Historical Resources Commission, for listing in the California Register; (2) a

resource included in a local register of historical resources, as defined in PRC Section 5020.1(k) or identified as significant in a historical resource survey meeting the requirements of PRC Section 5024.1(g); and (3) any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California by the lead agency, provided the lead agency's determination is supported by substantial evidence in light of the whole record. The fact that a resource does not meet the three criteria outlined above does not preclude the lead agency from determining that the resource may be an historical resource as defined in PRC Sections 5020.1(j) or 5024.1.

If a lead agency determines that an archaeological site is a historical resource, the provisions of Section 21084.1 of CEQA and Section 15064.5 of the CEQA Guidelines apply. If a project may cause a substantial adverse change (defined as physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired) in the significance of an historical resource, the lead agency must identify potentially feasible measures to mitigate these effects (CEQA Guidelines Sections 15064.5(b)(1), 15064.5(b)(4)).

If an archaeological site does not meet the criteria for a historical resource contained in the CEQA Guidelines, then the site may be treated in accordance with the provisions of Section 21083, which is a unique archaeological resource. As defined in Section 21083.2 of CEQA a "unique" archaeological resource is an archaeological artifact, object, or site, about which it can be clearly demonstrated that without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

- Contains information needed to answer important scientific research questions and there is a demonstrable public interest in that information;
- Has a special and particular quality such as being the oldest of its type or the best available example of its type; or,
- Is directly associated with a scientifically recognized important prehistoric or historic event or person.

If an archaeological site meets the criteria for a unique archaeological resource as defined in Section 21083.2, then the site is to be treated in accordance with the provisions of Section 21083.2, which state that if the lead agency determines that a project would have a significant effect on unique archaeological resources, the lead agency may require reasonable efforts be made to permit any or all of these resources to be preserved in place (Section 21083.1(a)). If preservation in place is not feasible, mitigation measures shall be required.

The CEQA Guidelines note that if an archaeological resource is neither a unique archaeological nor a historical resource, the effects of the project on those resources shall not be considered a significant effect on the environment (CEQA Guidelines Section 15064.5(c)(4)).

Senate Bill 18

SB 18 (Statutes of 2004, Chapter 905), which went into effect January 1, 2005, requires local governments (city and county) to consult with Native American tribes before making certain planning decisions and to provide notice to tribes at certain key points in the planning process. The intent is to "provide California Native American tribes an opportunity to participate in local land use decisions at an early planning stage, for the purpose of protecting, or mitigating impacts to, cultural places" (Governor's Office of Planning and Research, 2005).

The purpose of involving tribes at these early planning stages is to allow consideration of cultural places in the context of broad local land use policy, before individual site-specific, project-level, land use designations are made by a local government. The consultation requirements of SB 18 apply to general plan or specific plan processes proposed on or after March 1, 2005.

According to the *Tribal Consultation Guidelines: Supplement to General Plan Guidelines* (Governor's Office of Planning and Research, 2005), the following are the contact and notification responsibilities of local governments:

- Prior to the adoption or any amendment of a general plan or specific plan, a local government must notify the appropriate tribes (on the contact list maintained by the NAHC) of the opportunity to conduct consultations for the purpose of preserving, or mitigating impacts to, cultural places located on land within the local government's jurisdiction that is affected by the proposed plan adoption or amendment. Tribes have 90 days from the date on which they receive notification to request consultation, unless a shorter timeframe has been agreed to by the tribe (Government Code §65352.3).
- Prior to the adoption or substantial amendment of a general plan or specific plan, a local government must refer the proposed action to those tribes that are on the NAHC contact list and have traditional lands located within the city or county's jurisdiction. The referral must allow a 45-day comment period (Government Code §65352). Notice must be sent regardless of whether prior consultation has taken place. Such notice does not initiate a new consultation process.
- Local government must send a notice of a public hearing, at least 10 days prior to the hearing, to tribes who have filed a written request for such notice (Government Code §65092).

Paleontological Resources

Paleontological resources are also afforded protection by CEQA. Appendix G (Part V) of the CEQA Guidelines provides guidance relative to significant impacts on paleontological resources, stating that a project will normally result in a significant impact on the environment if it will "…disrupt or adversely affect a paleontologic resource or site or unique geologic feature, except as part of a scientific study." PRC Section 5097.5 specifies that any unauthorized removal of paleontological remains is a misdemeanor. Further, the California Penal Code Section 622.5 sets the penalties for the damage or removal of paleontological resources.

Professional Standards

The Society for Vertebrate Paleontology (SVP) has established standard guidelines for acceptable professional practices in the conduct of paleontological resource assessments and surveys, monitoring and mitigation, data and fossil recovery, sampling procedures, and specimen preparation, identification, analysis, and curation. Most practicing professional paleontologists in the nation adhere closely to the SVP's assessment, mitigation, and monitoring requirements as specifically provided in its standard guidelines. Most California State regulatory agencies accept the SVP standard guidelines as a measure of professional practice.

Local

The following section summarizes relevant local regulations and general plan goals and policies. The following incorporated communities either do not have cultural resources regulations, or no information was available regarding such regulations: Bell, Bell Gardens, La Habra Heights, Maywood, Pico Rivera, Santa Fe Springs, El Segundo, Lynwood, La Mirada, Rolling Hills, Inglewood, Palos Verdes Estates, Lakewood, Artesia, Norwalk, Hawaiian Gardens, and Hawthorne.

Los Angeles County General Plan

The Conservation and Open Space Element of the Los Angeles County General Plan (2008) governs the natural and cultural resources of the county. The Los Angeles County General Plan has the following relevant goals and policies related to the protection of cultural resources.

Goal C/OS-12: Protect cultural heritage resources.

> **Policy C/OS 12.1:** Support an inter-jurisdictional collaborative system that protects and enhances the County's cultural heritage resources.
>
> **Policy C/OS 12.2:** Support the preservation and rehabilitation of historic buildings.
>
> **Policy C/OS 12.3:** Ensure proper notification procedures to Native American tribes in accordance with Senate Bill 18 (2004).
>
> **Policy C/OS 12.4:** Promote public awareness of the County's cultural heritage resources.

In addition, the General Plan makes the following recommendation:

> If a CEQA analysis determines that a project will impact a cultural resource area (historic, cultural, or paleontological), the following guidelines will apply:
>
> 1. A literature search for valid archaeological or paleontological surveys shall be conducted (for each initial study of a public or private project).
> 2. If an impact or potential impact to a cultural resource is anticipated, a study of the project site shall be made by a qualified archaeologist or paleontologist who shall determine the scientific value of finds, if any, and a recommendation as to their preservation or disposition.

3. The County Historical Landmarks Commission must be notified of all cultural, historical, or paleontological findings.
4. All significant impacts to cultural resource sites must be mitigated to the greatest extent feasible, and a reasonable period of time must be allowed to salvage the site.
5. The integrity of significant historical features of the structure and/or site should be maintained to the largest extent possible.
6. The integrity of sightlines to the structure or site should be maintained.
7. Development adjacent to a cultural resource site should consider design guidelines and appropriate building design, setbacks, landscaping, and other factors that will protect the integrity of the cultural resource area.
8. Materials collected during surface surveys or salvage operations should be donated to an appropriate nonprofit institution. In the event the property owner wishes to retain possession of the artifacts found, it is desirable that archaeologists or paleontologist be allowed to study and photograph the artifacts.

City of Bellflower

The following resource management policies come from the Conservation Element of the City of Bellflower General Plan (1994):

Goal 6: Identify and encourage preservation of significant architectural, historical, and cultural resources policies.

Policy 6.1: In the downtown area, encourage the adaptive reuse of buildings and structures of significant historical or cultural value

Policy 6.2: Encourage and provide incentives for the preservation of significant architectural, historical, and cultural buildings.

City of Carson

The following resource management policies come from the Parks, Recreation, and Human Services Element of the City of Carson General Plan (2004):

Goal: P-9: Protection of historic resources within the City.

Policy P-9.1 Promote the preservation of historic resources in the City through the Fine Arts and Historical Commission.

Policy P-9.2 Coordinate with the Departments of History and Anthropology at Cal State University Dominguez Hills in order to mutually enrich both the educational and general communities.

City of Cerritos

The following resource management policies come from the Conservation Element of the City of Cerritos General Plan (2004):

Goal CON-8 Enhance, preserve and protect the City of Cerritos' historic and cultural resources.

Policy CON-8.1 Ensure that all items of historic and cultural significance, including houses, are preserved for the enjoyment by all Cerritos residents.

Policy CON-8.2 Identify, record, map and evaluate all potential historic and cultural resources within the City.

City of Commerce

The following resource management policies come from the Resource Management Element of the City of Commerce 2020 General Plan (2008):

Resource Management Policy 2.1. The city of Commerce will strive to preserve the history of the city and any historical places in the city, such as the railroad station and the rubber trees in the vicinity of Olympic and Goodrich Boulevards.

Resource Management Policy 2.2. The city of Commerce will evaluate other potential significant sites in the community, and will continue to recognize the city's cultural and historical resources.

Resource Management Policy 2.3. The city of Commerce will document local historic sites and promote the public's awareness of these resources.

City of Compton

The City of Compton's 2030 General Plan, Conservation Element (2011), contains the following policy and programs related to cultural resources:

Policy 4.3. The City of Compton will identify and preserve those sites/buildings that are important to the community for the benefit of the future generations that will reside or work in the City.

Program: *Cultural Resources Management.* Should archaeological or paleontological resources be encountered during excavation and grading activities, all work would cease until appropriate salvage measures are established. Appendix K of the CEQA Guidelines shall be followed for excavation monitoring and salvage work that may be necessary. Preservation efforts will be undertaken pursuant to Appendix K requirements outlined in CEQA.

City of Cudahy

The City of Cudahy's 2010 General Plan, Conservation Element (2010), contains the following goals:

Conservation Element Goal 2. The City of Cudahy will promote the preservation of cultural, historical and natural resources within the City.

Conservation Element Policy 2.1. The City of Cudahy will increase public awareness of the City's history and cultural resources in the area.

Conservation Element Policy 2.2. The City of Cudahy will establish guidelines for the protection of sites of historical or cultural significance.

City of Downey

The Design Element of the 2025 Downey General Plan contains goals, policies, and programs relating to the preservation and protection of cultural resources within the City. These goals, policies and programs are described below.

Goal 8.4 Enhance Downey's Cultural Resources

Policy 8.4.2 Preserve the City's Cultural Resources

Program 8.4.2.3	Promote the preservation and restoration of older structures.
Program 8.4.2.4	Encourage adaptive re-use of older structures.
Program 8.4.2.5	Reuse existing historic architectural elements in new construction when preservation of historic resources is not feasible.
Program 8.4.2.6	Discourage the relocation of historic resources, or if necessary, relocate the historic resource within Downey.
Program 8.4.2.7	Preserve and/or relocate archaeological resources.

The City of Downey municipal code identifies no local register of historic resources, designated local landmarks, or landmarks preservation board. The code does, however, code define "historic structures" as those that are potentially eligible or listed on the National Register or the State Register. The Code also states that local landmarks "must be individually listed on a local inventory in a community with a state certified program." As described above, the City of Downey has no such local inventory or state certified local preservation program.

City of Gardena

The City of Gardena's General Plan, Community Resources Element (2006), contains the following relevant goals and policies:

CN Goal 5. Protect the City's cultural resources.

Policy CN 5.1: Maintain an inventory of the City's historical resources, including a survey of buildings of architectural, cultural or historical significance.

Policy CN 5.2: Provide provisions in the Municipal Code to protect historical and cultural resources.

Policy CN 5.3: Protect and preserve cultural resources of the Gabrielino Native American Tribe found or uncovered during construction.

City of Hermosa Beach

The City of Hermosa Beach Preservation Ordinance (Municipal Code Chapter 17.53) sets forth criteria for City historic landmark designation as follows:

A. It exemplifies or reflects special elements of the City's cultural, social, economic, political, aesthetic, engineering, or architectural history; or
B. It is identified with persons or events significant in local, state, or national history; or
C. It embodies distinctive characteristics of a style, type, period, or method of construction, or is a valuable example of the use of indigenous materials or craftsmanship; or
D. It is representative of the notable work of a builder, designer, or architect; or
E. Its unique location or singular physical characteristic(s) represents an established and familiar visual feature or landmark of a neighborhood, community, or the City.

City of Huntington Park

The City of Huntington Park Historic Preservation Ordinance (Title 9, Chapter 3, Article 18) establishes criteria for listing in the City's Historic Register for Resources, Interiors, Historic Signs, and Historic District. The criteria are largely based on National Register Criteria. The ordinance also establishes procedures for the City's Historic Commission to evaluate applications for historic designation.

City of Lawndale

The Conservation Element of the City of Lawndale's General Plan (1991) contains the following relevant goals and policies related to historic preservation and cultural resources.

Goal 4. Promote the preservation and rehabilitation of cultural resources that are significant to the Lawndale community because of their age, architecture, history, or symbolism.

Policy 4a. Promote the preservation and/or conservation of historic structures, places, and/or architectural features.

Policy 4d. Encourage the preservation of historic structures on their existing sites or relocation if necessary and feasible.

Policy 4e. Discourage the demolition or movement of historic structures without an evaluation of the condition of the structure, the costs of rehabilitation, and the feasibility of preservation or conservation alternatives.

Policy 4f. Encourage the adaptive re-use of historic structures.

City of Lomita

The Resource Management Element of the City of Lomita's General Plan (1998) contains the following relevant resource management program related to cultural resources.

> **Cultural Resources Management.** This regulation requires that, should archaeological or paleontological resources be uncovered during excavation and grading activities, all work would cease until appropriate salvage measures are established. Appendix K of the CEQA Guidelines shall be followed for excavation monitoring and salvage work that may be necessary.

City of Long Beach

The Historic Preservation Element of the City of Long Beach's 2030 General Plan (2010) contains a number of goals and policies related to historic preservation and cultural resources. The Element encourages the maintenance of a citywide historic preservation program and historic resources inventory; the protection of historic resources from demolition or inappropriate alteration; and efforts to increase public awareness of City history.

In addition, the City's Cultural Heritage Ordinance (Chapter 2.63 of the City of Long Beach Municipal Code), adopted in 1992 and updated in 2009, codifies procedures for designating historic landmarks or districts, and for demolishing or altering historic structures.

City of Los Angeles General Plan

The City of Los Angeles General Plan (adopted 2001) states as its objective, to "protect the city's archaeological and paleontological resources for historical, cultural, research, and/or educational purposes" by continuing "to identify and protect significant archaeological and paleontological resources known to exist or that are identified during land development, demolition, or property modification activities."

In addition, the City will:

> continue to protect historic and cultural sites and/or resources potentially affected by proposed land development, demolition, or property modification activities…The city's environmental guidelines require the applicant to secure services of a bona fide archaeologist to monitor excavations or other subsurface activities associated with a development project in which all or a portion is deemed to be of archaeological significance. Discovery of archaeological materials may temporarily halt the project until the site has been assessed, potential impacts evaluated and, if deemed appropriate, the resources protected, documented and/or removed (City of Los Angeles, 2001).

In addition to the National Register and the California Register, three additional types of historic designations may apply at a local level:

1) Historic-Cultural Monument

2) Designation by the Community Redevelopment Agency as being of cultural or historical significance within a designated redevelopment area

3) Classification by the City Council as an Historic Preservation Overlay Zone

The City of Los Angeles Cultural Heritage Ordinance states that a Historic-Cultural Monument designation is reserved for those resources that have a special aesthetic, architectural, or engineering interest or value of a historic nature and meet one of the following criteria (Department of City Planning, 2009). A historical or cultural monument is any site, building, or structure of particular historical or cultural significance to the City of Los Angeles, such as historic structures or sites:

- in which the broad cultural, political, economic, or social history of the nation, state, or community is reflected or exemplified; or
- which are identified with historic personages or with important events in the main currents of national, state, or local history; or
- which embody the distinguishing characteristics of an architectural-type specimen, inherently valuable for a study of a period, style, or method of construction; or
- which are a notable work of a master builder, designer, or architect whose individual genius influenced his or her age.

In addition, the Los Angeles Municipal Code (LAMC) Section 91.106.4.5 states that the Building Department "shall not issue a permit to demolish, alter or remove a building or structure of historical, archaeological or architectural consequence if such building or structure has been officially designated" by a federal, state, or local authority.

City of Manhattan Beach

City of Manhattan Beach Ordinance No. 2089, Designation of Culturally Significant Landmarks (Chapter 10.86 MBMC) sets forth the process for acknowledging and preserving notable historic sites, structures, and significant horticultural developments considered meaningful to the character, background, and evolution of the City of Manhattan Beach.

City of Montebello

The City of Montebello Conservation Element (1975) contains the following policy:

> **Policy 8.** The Juan Matias Sanchez Adobe, the Rio Hondo monument, the Viejo Mission, Taylor Ranch, and E1 Camino Real should be preserved and restored as necessary.

City of Monterey Park

The following goal and policies in Monterey Park's General Plan, Resources Element (n.d.), support the preservation of cultural resources for future generations.

> **Goal 3.0**
> Preserve the historical resources of Monterey Park.

Policy 3.1
Continue to support the efforts of the Historical Society, Historical Heritage Commission, and the Arts and Cultural Commission.

Policy 3.2
Raise public awareness about Monterey Park's history and cultural resources.

City of Paramount

The following policy in the City of Paramount's General Plan, Resources Management Element (2007), relates to cultural resources.

Policy 19. The City of Paramount will identify and preserve those sites/buildings that are important to the community for the benefit of the future generations that will reside or work in the City.

City of Rancho Palos Verdes

The following relevant policies in the City of Rancho Palos Verdes' General Plan, Socio-Cultural Resources Element (1975), relate to cultural resources.

Policy 2. Encourage the identification of archaeologically sensitive areas and sites.

Policy 3. Require all projects for new construction, subdivisions, conditional use permits, and variances, that occur in archaeologically sensitive are as to have a special archaeological component in their Environmental Impact Reports.

Policy 5. Allow salvage excavation of the site, where some technique of preservation cannot be implemented.

City of Redondo Beach

The City of Redondo Beach Historic Preservation Ordinance (Municipal Code Chapter 10.4) states as its purpose "to promote the public health, safety, and general welfare by providing for the identification, protection, enhancement, perpetuation, and use of historic resources such as building, structures, sites, places and districts within the City that reflect special elements of the City's architectural, artistic, cultural, historical, political, and social heritage". The ordinance sets forth criteria for City historic landmark or district designation as follows:

a) It exemplifies or reflects special elements of the City's cultural, social, economic, political, aesthetic, engineering, or architectural history; or
b) It is identified with persons or events significant in local, state or national history; or
c) It embodies distinctive characteristics of a style, type, period, or method of construction, or is a valuable example of the use of indigenous materials or craftsmanship; or
d) It is representative of the notable work of a builder, designer, or architect; or
e) Its unique location or singular physical characteristic(s) represents an established and familiar visual feature or landmark of a neighborhood, community, or the City.

City of Rolling Hills Estates

The following goal and policy in the City of Rolling Hills Estates' General Plan, Conservation Element (1992), relate to cultural resources.

Goal 3: Promote the preservation of cultural, historical and natural resources within the City.

Policy 3.1 Implement General Plan guidelines for the protection of sites of paleontological, archaeological, historical or culturally valuable significance.

3.1.1 Implementation Measure: New development in areas designated as having a high cultural sensitivity will be required to have archaeological surveys and on-site monitoring when deemed necessary. All development shall be subject to the provisions of Appendix K in the CEQA Law and Guidelines.

City of Signal Hill

The following goal and policies in the City of Signal Hill's General Plan, Environmental Resources Element (1986), relate to cultural resources.

Goal 2. Maintain and Enhance the City's unique cultural, aesthetic and historic areas.

Policy 2.1. Protect and enhance the State Historical Landmark at the Alamitos Well Site #1.

Policy 2.2. Protect and enhance architectural resources in the City consistent with their significance and importance. Develop ways of encouraging these resources to remain intact as the City grows and develops.

City of South Gate

The following goal and policy in the City of South Gate's 2035 General Plan, Green City Element (2009), relate to cultural resources.

Objective CD 9.1: Identify and preserve cultural and historic resources.

Policy P.1 encourages preservation of historically and culturally significant buildings.

City of Torrance

The following goal and policy in the City of Torrance's General Plan, Community Resources Element (2010), relate to cultural resources.

Objective CR.12: Preservation of sites of local historical or cultural importance

Policy CR.12.1: Encourage the preservation of public and private buildings which are of local, historical, or cultural importance.

Policy CR.12.3: Balance historic preservation goals with the interests of private property owners.

Policy CR.12.4: Work toward the establishment of a citywide historic policy and programs for recognition of historical assets within the City.

City of Vernon

The City of Vernon's General Plan, Resources Element (2007), contains the following policies:

GOAL R-4: Recognize and preserve Vernon's contributions to the industrial and architectural history of Los Angeles.

POLICY R-4.1: Expand available cultural resource information by establishing a City-maintained database of historic sites and facilities.

POLICY R-4.2: Support the efforts of interested agencies or private organizations to undertake surveys or other research efforts to document buildings and places in Vernon of historic and/or architectural significance.

POLICY R-4.3: Ensure compliance with CEQA provisions regarding cultural resources at the time buildings or places of identified or potential historic or architectural merit are proposed for demolition.

POLICY R-4.4: Establish local programs and practices that recognize places of local or other historic significance.

City of Whittier

The City of Whittier's Historic Preservation Ordinance (Title 18, Chapter 18.84) provides a process by which potential historic resources can be officially recognized and listed on the City's Local Official Register of Historic Resources provided it meets the following criteria:

A historic resource shall be designated a historic landmark if the council finds that it meets the criteria for listing on the National Register of Historic Places or the California Register of Historical Resources; or meets one or more of the following criteria:

a. It is particularly representative of a distinct historical period, type, style, region or way of life;

b. It is connected with someone renowned, important, or a local personality;

c. It is connected with a use that was once common, but is now rare;

d. It represents the work of a master builder, engineer, designer, artist or architect whose individual genius influenced his age;

e. It is the site of an important historic event or is associated with events that have made a meaningful contribution to the nation, state or city;

f. It exemplifies a particular architectural style;

g. It exemplifies the best remaining architectural type of a neighborhood;

h. It embodies elements of outstanding attention to architectural or engineering design, detail, material or craftsmanship; or

i. It has a unique location, singular characteristic or is an established and familiar visual feature of a neighborhood, community or the city.

The Historic Resources Element of the City of Whittier's General Plan (n.d.) also provides numerous goals and policies related to historic resources.

4.4.3 Impacts and Mitigation Measures

Method of Analysis

This impact analysis is a preliminary, program-level assessment of potential impacts on important cultural resources that could occur as a result of implementation of the proposed project. Because this a program-level analysis, impacts on specific cultural resources that could result from individual projects or management strategies implemented under the Draft GBMP are not addressed in this document, but may need to be assessed through additional analysis as project implementation actions are developed and further defined.

The impacts and mitigation measures identified in this section address types of activities that could significantly impact cultural resources including archaeological sites, historic buildings and structures, and locations of importance to Native Americans. Proposed facilities for each management strategy include aboveground structures such as treatment plant expansions, pump stations, injection wells and extraction wells. Other facilities would be located belowground, specifically conveyance facilities. Construction of such facilities could result in impacts to cultural and paleontological resources. Project implementation actions that include these types of activities would be required to implement the identified mitigation measures in an effort to reduce any impacts to a less-than-significant level.

The identification of specific impacts and mitigation measures that are appropriate for a specific project implementation action will depend on both the nature of the cultural resources that are present and on the nature of the action. In some instances, mitigation measures must be developed in consultation with multiple agencies and other interested parties.

Significance Criteria

According to *CEQA Guidelines* (CCR Title 14, 15064.4), a project with an effect 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 (CCR Title 14, 15064.4(b)). The guidelines further state that a substantial adverse change in the significance of a resource means the physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of a historic resource would be materially impaired. Actions that would materially impair the significance of a historical resource are any actions that would demolish or adversely alter those physical characteristics of a historical resource that convey its historical significance and qualify it for inclusion in the California Register or in a local register or survey that meet the requirements of PRC Sections 5020.1(k) and 5024.1(g).

Identified cultural resources that may be impacted by a proposed project implementation action would be evaluated for eligibility for listing on the California Register or local historic register. Cultural resources that are eligible for the California Register or local historic register are considered to be significant historic resources. Cultural resources would also be evaluated for their qualification as a unique archaeological resource under CEQA. Cultural resources that are identified within project areas subject to federal approval, permits, or funding would also be evaluated for eligibility for listing on the National Register. Cultural resources determined to be eligible for listing on the National Register are automatically eligible for listing on the California Register and are considered to be significant cultural resources.

Paleontological resources are also afforded protection by CEQA. Appendix G (Part V) of the *CEQA Guidelines* provides guidance relative to significant impacts on paleontological resources. A project will have a significant impact on the environment if it adversely affects a paleontological resource or site, or a unique geological feature.

Impact 4.4-1: The proposed project could impact known and/or unknown cultural resources, including prehistoric and historic archaeological sites, historic architectural resources, and Native American sacred sites. (Less than Significant with Mitigation)

The WRD service area has a long history of human occupation, dating to at least 9,000 years before the present. The abundant natural resources within the WRD service area, including rivers, creeks, the Pacific Ocean, and the flora and fauna associated with these water features, would have attracted and sustained human settlement. Significant archaeological resources have been recorded throughout the WRD service area, and at least 18 Gabrielino village sites are known to have existed within the WRD service area (Altschul et al., 2003; Gumprecht, 2001; McCawley, 1996). Despite heavy urbanization, the WRD service area should nonetheless be considered to have a high archaeological sensitivity. Because of this, previously unknown and unrecorded archaeological resources may be unearthed during excavation and grading activities for individual projects implemented under the GBMP. This can occur even in already developed areas, as older buildings are known to have often been built on top of or within archaeological deposits. If previously undiscovered artifacts or buried archaeological resources are uncovered during excavation or construction, significant impacts could occur. Resources of importance to Native Americans may also be present within individual project areas. These resources may be identified through cultural resources studies and through consultation and coordination with local Native American groups.

In addition, numerous historic structures exist within the WRD service area. Were a project to cause an alteration or demolition of a significant historic structure, this could result in a significant archaeological impact.

Since the proposed project is at the programmatic level, specific project locations and design elements have yet to be finalized. As such, impacts to specific cultural resources are not addressed here. However, as project implementation actions move forward, individual projects would undergo additional CEQA review prior to construction. The WRD service area should be considered sensitive for cultural resources, which should be taken into consideration during

subsequent CEQA review. **Mitigation Measures CUL-1a, CUL-1b,** and **CUL-1c** would minimize impacts to cultural resources and shall be executed prior to project implementation actions.

Mitigation Measures

CUL-1a: For project components that require ground disturbance, the implementing agency shall conduct a cultural resources records search at the appropriate information center. A field survey will be conducted where deemed appropriate by a qualified archaeologist. The qualified archaeologist shall document the cultural records assessment and recommend whether additional investigation or monitoring is warranted.

CUL-1b: For project components that affect existing structures that are 50 years old or greater, the implementing agency shall determine the need for a project-specific historic architectural study. If warranted, an architectural historian shall identify and evaluate potentially affected historic resources (eligible for the National Register, California Register, or local designation) prior to project implementation.

CUL-1c: The implementing agency shall avoid impacts, if feasible, on identified cultural resources that are eligible for listing in the National Register, California Register, or local designation, or that qualify as a unique archaeological resource under CEQA, including prehistoric and historic archaeological sites, locations of importance to Native Americans, human remains, and historical buildings, structures and landscapes. Methods of avoidance may include, but should not be limited to project re-route, re-design, or identification of protection measures such as capping or fencing. If avoidance is determined not to be feasible, then a qualified archaeologist shall develop and implement a cultural resources treatment plan. The treatment plan shall include provisions for analysis of data in a regional context, curation of artifacts and data at an approved facility, and dissemination of prepared reports.

Significance Determination: Less than significant with mitigation

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Human Remains

Impact 4.4-2: The proposed project could impact human remains. (Less than Significant with Mitigation)

In the event that human remains are discovered, including those interred outside of formal cemeteries, the human remains could be inadvertently damaged, which could be a significant impact. **Mitigation Measure CUL-2** would reduce impacts to human remains to less than significant levels.

CUL-2: If human remains are encountered unexpectedly during construction excavation and grading activities, State Health and Safety Code Section 7050.5 requires that no further disturbance shall occur until the County Coroner has made the necessary findings as to origin and disposition pursuant to PRC Section 5097.98. If the remains are determined to be of Native American descent, the coroner has 48 hours to notify the Native American Heritage Commission (NAHC). The NAHC will then identify the designated Most Likely Descendent of the deceased Native American, who will engage in consultation to determine the disposition of the remains.

Significance Determination: Less than significant with mitigation

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Paleontological Resources

Impact 4.4-3: The proposed project could impact known and/or unknown paleontological resources. (Less than Significant with Mitigation)

According to the Los Angeles County General Plan 2035 (2012), significant fossils have been found in the Palos Verdes Peninsula (in the Palos Verdes Sand and San Pedro formations), as well as in the Puente Hills (Puente Formation). The City of Los Angeles CEQA Thresholds (Appendix D, Cultural Resources), identifies the following geologic formations located within the WRD service area as having a high paleontological sensitivity: Palos Verdes Sand, San Pedro Sand, Lomita Marl, Timms Point Silt, Fernando Formation, Monterey Formation, Altamira Shale, and Quaternary Alluvium (in which paleontological sensitivity increases with depth) (City of Los Angeles, 2006). Other paleontologically sensitive formations and specific fossil localities may be identified during the course of paleontological studies associated with future development. Ground-disturbing construction activities associated with implementation of future projects could result in the inadvertent discovery of paleontological resources, which could be a significant impact.

Since the proposed project is at the programmatic level, specific project locations and design elements have yet to be finalized. As such, impacts to specific paleontological resources are not addressed here. Some portions of the WRD service area are highly sensitive for paleontological resources, which should be taken into consideration during subsequent CEQA review. **Mitigation Measure CUL-3** would minimize impacts to paleontological resources and shall be executed prior to project implementation actions.

Mitigation Measures

> **CUL-3:** For projects implemented under the GBMP that involve ground disturbance, the implementing agency shall determine the necessity of conducting a study of the project area(s) based on the potential sensitivity of the project site for paleontological resources. If deemed necessary, the paleontologist shall conduct a paleontological resources inventory designed to identify potentially significant resources. The paleontologist shall provide recommendations regarding additional investigation or monitoring activities.

Significance Determination: Less than significant with mitigation

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TABLE 4.4-1
CULTURAL RESOURCES IMPACT SUMMARY

Impact	Concept A		Concept B	
	Impact Determination	**Mitigation Summary**	**Impact Determination**	**Mitigation Summary**
Known or Unknown Cultural Resources: Implementation of the proposed project could impact known and/or unknown cultural resources, including prehistoric and historic archaeological sites, historic architectural resources, and Native American sacred sites.	Less than Significant with Mitigation.	CUL-1a, CUL-1b, and CUL-1c.	Less than Significant with Mitigation.	CUL-1a, CUL-1b, and CUL-1c.
Human Remains: The proposed project could impact human remains.	Less than Significant with Mitigation.	CUL-2.	Less than Significant with Mitigation.	CUL-2.
Paleontological Resources: The proposed project could impact known and/or unknown paleontological resources.	Less than Significant with Mitigation.	CUL-3.	Less than Significant with Mitigation.	CUL-3.

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4.5. Geology, Soils and Seismicity

This section describes the regional and local geologic resources, soils and seismicity within the GBMP area and evaluates potential adverse impacts related to those resources.

4.5.1 Environmental Setting

Regional Setting

The GBMP area is located at the northern end of the Peninsular Ranges geomorphic province (Reichard et al, 2003). The Peninsular Ranges are a series of northwest trending mountain ranges and valleys, typical to coastal California, (CGS, 2002) that run sub parallel (almost parallel, but diverging or converging slightly) to faults branching from the San Andreas Fault. The Peninsular Ranges extend into lower California and are bounded on the east by the Colorado Desert province. The Peninsular Ranges have geology comparable to the Sierra Nevada province, comprised of granitic rock intruding into older metamorphic rock, and are known for their high oil production and active seismicity. The areas included in this province are the Los Angeles Basin, the island group (Santa Catalina, Santa Barbara, San Clemente and San Nicolas), and the surrounding continental shelf (CGS, 2002).

Local Setting

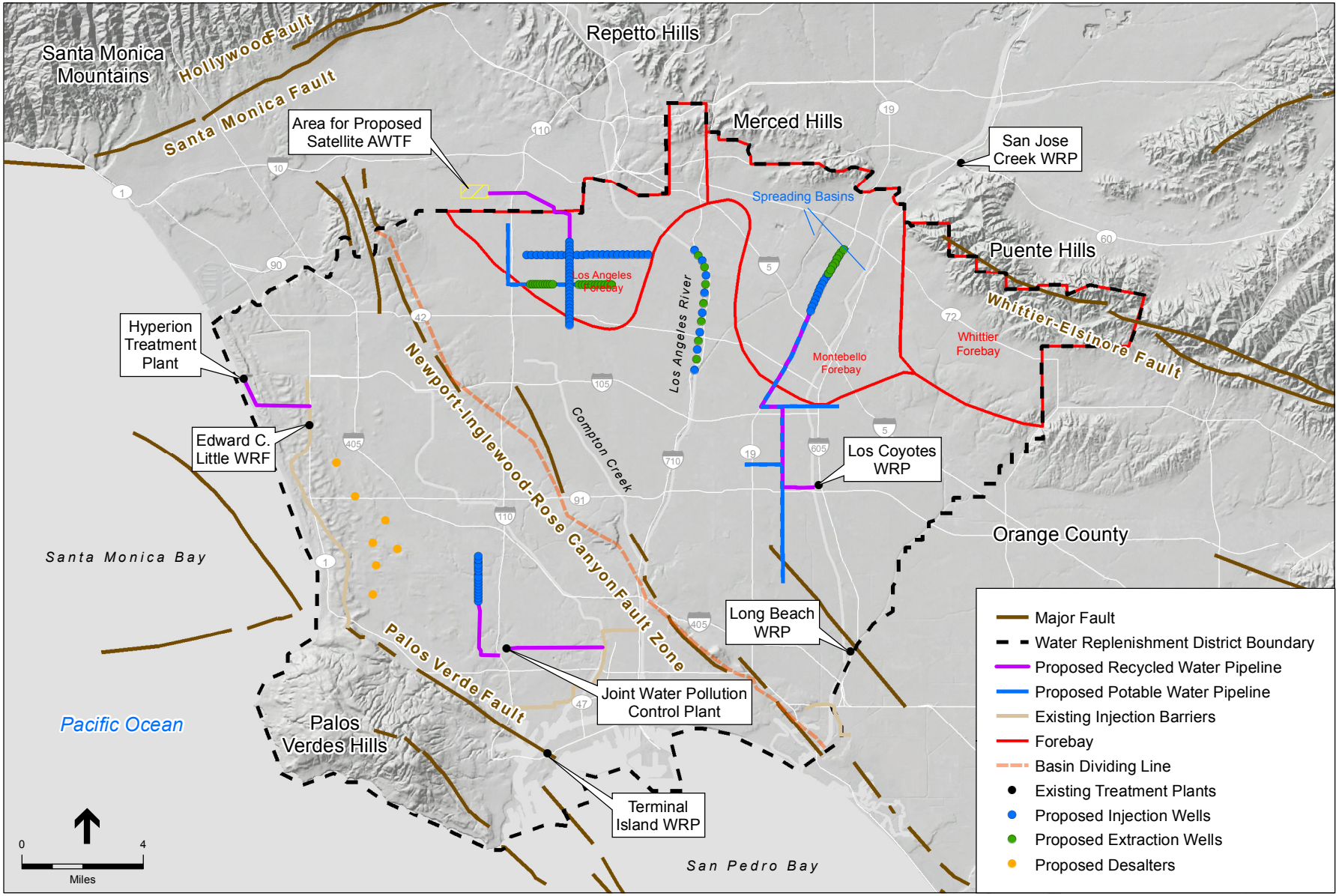
Topography

The GBMP area consists of several project sites throughout the Los Angeles Basin. The Los Angeles Basin is bounded on the north by the Santa Monica Mountains; on the northeast by the Elysian, Repetto, Merced, and Puente Hills; on the southeast by Orange County and on the west and southwest by the Pacific Ocean (Santa Monica Bay and San Pedro Bay) and the Palos Verdes Hills (Reichard et al, 2003) (**Figure 4.5-1**).

The Los Angeles Basin is considered a coastal plain, a landform common to the South Coast region of California. Bordered to the north and east by highly urbanized foothill and valley areas, this highly residential and industrial coastal plain terminates at the western boundary at highly utilized recreational beaches and harbors. Topography varies regionally within the project area in the Los Angeles Basin, as discussed below.

West Coast Basin

Bordered on the west by Santa Monica Bay, the topography of the northern West Coast Basin consists of flat portions of sandy beach that rise up quickly into hilly dunes moving eastward. Elevations within the area range from about 0 feet above mean sea level (amsl) at the shoreline to about 200 amsl. General surface drainage flows west towards the ocean. Concept A Project W1 and Concept B Project W3 are located in this area in the City of El Segundo. The saline plume (Project W2) also is located in this area.



SOURCE: ESA, 2012.

WRD - Groundwater Basins Master Plan . 120192

Figure 4.5-1

General Fault Map

The southern portion of the West Coast Basin is of low relief, bordered by the San Pedro Bay. Elevation gradually increases moving northward towards the hilly Newport-Inglewood Uplift (NIU). Elevations range from 0 feet amsl at the shoreline to approximately 350 amsl at the area's highest point, Signal Hill. However, a large majority of the region is relatively flat, typically not reaching elevations above 125 amsl. The area includes multiple water bodies along the southern extent. The Los Angeles Harbor serves as the discharge point for the Dominguez Channel into the San Pedro Bay. Queensway Bay is the meeting point between the Los Angeles River and the San Pedro Bay. Concept B Project W4 is located in this area.

Central Basin

The western portion of the Central Basin is relatively flat, with elevations within the area ranging from about 100 to 200 amsl. Emerging from the Glendale Narrows, the Los Angeles River flows south through this region and into the West Coast Basin. The confluence of the Los Angeles River and its eastern tributary, Rio Hondo, is located in the City of South Gate, which is the geographic center of the Los Angeles Basin (LA Almanac, 1998). Concept B Projects C5 and C10 are located in this area.

In the eastern portion of the Central Basin, elevations range from approximately 80 to 180 amsl. Elevations are highest in the northern part of the region in the Puente and Merced Hills. Rio Hondo flows southwest through the region on its way to the Los Angeles River. The San Gabriel River, located only a few miles east of Rio Hondo, also runs southwest, flowing into the Alamitos Bay and eventually discharging into the San Pedro Bay. Concept A Projects C0, C1, C2, C3, C4, C6, C7, C8, and C9 are located in this area.

Soils

West Coast Basin

The dominant soil types in the northern West Coast Bain are Chino silt loam, Oakley fine sand and Ramona loam (LA County, 2011). Formed from granite alluvium, Chino soils are poorly drained with low permeability. These soils are moderately extensive and found in basins and floodplains within the coastal and intermountain valleys of southern California (USDA, 1997). The Oakley sand series is wind-laid in origin, commonly found in the rolling topography of the San Pedro Hills and Playa del Rey. This series is both absorptive and well-drained (Dunn et al, 1921). The Ramona soil series are derived from derived mostly from granitic and related rock sources and found extensively on terraces and alluvial fans in central and western southern California. These soils are well-drained and have a moderately slow permeability (USDA, 2003).

The dominant soil types in the southern West Coast Basin are Ramona loam as described above and Hanford fine sandy loam (LA County, 2011). Hanford soils are deep, well-drained, and formed in moderately course-textured granite alluvium. These soils are found extensively throughout the valleys of central and southern California (USDA, 1999a).

Central Basin

The dominant soil types in the Central Basin are Tujunga fine sandy loam, Chino silt loam, Hanford fine sandy loam, and a slightly more gravelly version of the Hanford series described above (LA County, 2011). Tujunga soils are deep and excessively drained, and like the Hanford series, formed from granite alluvium. They are of moderate extent in central and southern California (USDA, 1999b).

Corrosive Soils

Corrosion potential is an important soil characteristic to consider during the development of new facilities. Steel and concrete, as common building materials, have the potential to be damaged by corrosive soils. Corrosion of building materials threatens the longevity of facilities and generates high repair costs. **Table 4.5-1** lists the corrosion potential for the soil types within the project area. The Chino series shows a high steel corrosion potential, and the Oakley series shows a high corrosion potential for both steel and concrete. All other soil series show low corrosion potential for steel and concrete.

TABLE 4.5-1
CORROSION POTENTIAL OF SOIL TYPES WITHIN THE PROJECT AREA

Soil Type	Steel Corrosion Potential	Concrete Corrosion Potential
Ramona	Low	Low
Hanford	Low	Low
Oakley	High	High
Tujunga	Low	Low
Chino	High	Low

SOURCE: NRCS, 2012 and USDA 1999, 2002

Seismicity

The project area is located in Southern California in an area subject to frequent earthquakes. Seismic hazards are consequences of ground shaking caused by events on nearby or distant, active or potentially-active faults. Faults in the vicinity of the project areas are shown in Figure 4.5-1.

The San Andreas transform fault system, which forms the boundary between the North American and Pacific tectonic plates, is responsible for the highly seismic nature of Southern California. The fault bends in an east-west direction from the Southern end of the San Joaquin Valley to the eastern end of the San Bernardino Mountains. This portion of the San Andreas Fault system is referred to as the “Big Bend” and generates major compression forces which in turn create many smaller fault branches (LARWQCB, 1994 & SCEC, 2012).

Historically active faults are those which have shown movement in the past 150 years. The Newport-Inglewood-Rose Canyon fault, also referred to as the Newport-Inglewood Uplift (NIU)

is historically active. The NIU runs southeast through the project area and serves as the dividing line between the West Coast Basin and Central Basin (Johnson, 2004), passing just two miles northeast of the proposed JWPCP recycled water pipeline (Figure 4.5-1). Other historically active faults in the project vicinity include the Whittier-Elsinore Fault, which runs along the Chino Hills roughly one mile east of the project area (Figure 4.5-1), and the San Fernando section of the Sierra Madre Fault, located 22 miles north of project area (USGS, 2012c).

Active faults are those which have moved in the past 11,000 years (USGS, 2012a). The Palos Verdes Fault runs less than a mile west of the proposed TIWRP recycled water pipeline and is also located about 10 miles northwest and offshore from the existing HTP. The Raymond, Hollywood, and Santa Monica faults are located about six miles north of the proposed Project C10 satellite treatment plant.

Two other fault characteristics—the maximum moment magnitude and slip rate—are also important in determining the potential damage a fault may cause. The maximum moment magnitude of a fault refers to the largest possible earthquake it can experience given its existing geology (Wheeler, 2009). A fault's slip rate is defined as how fast the two sides of a fault are slipping relative to one another (USGS, 2012). The fastest moving faults have more and larger earthquakes than faults that do not slip as fast (CGS, 2007).

Table 4.5-2 identifies both historically active and active faults in the vicinity of the project area and their corresponding characteristics that are capable of generating significant ground shaking at the proposed GBMP facilities.

TABLE 4.5-2
PRINCIPALHISTORICALLY ACTIVE AND ACTIVE FAULTS IN THE PROJECT VICINITY

Fault	Approximate Distance From GBMP Project (miles)	Maximum Moment Magnitude (Mmax)	Historical Seismicity (Last 150 Years) (M)	Slip Rate (mm/yr)	Fault Classification
Newport-Inglewood	2	7.1	M 6.4 (1933)	1.0	Historically Active
Palos Verdes	2	7.3	None	3.0	Active
Whittier-Elsinore	1	6.8	M 5.9 (1987)	2.5	Historically Active
Raymond	6	6.5	-	1.5	Active
Hollywood	6	6.4	-	1.0	Active
Santa Monica	6	6.6	-	1.0	Active
Sierra Madre (San Fernando section)	22	6.7	M 6.4 (1971)	2.0	Historically Active
San Andreas	32	7.4	M 7.0 (1899)	29.0	Historically Active

SOURCE: USGS 2012b and City of Bellflower General Plan, 1994. Gold Line Foothill Extension EIR, 2007

Seismic Hazards

Surface Fault Rupture

Surface rupture occurs when movement on a fault deep within the earth breaks through to the surface (CGS, 2007). The magnitude and nature of ground rupture can vary for different faults, or even along different strands of the same fault. As stated above, seismic activity is considered more likely along historically active faults. Therefore, seismically-induced ground rupture is more likely along historically active faults. Alquist-Priolo Zones are buffers around historically active faults which have been determined to be especially prone to surface fault rupture. However, surface fault rupture is not necessarily restricted within an Alquist-Priolo Fault Zone.

The set of figures provided in **Appendix G** shows the proximity of proposed GBMP projects to Alquist Priolo fault zones. None of the proposed project facilities themselves would be located in an Alquist-Priolo Earthquake fault zone as designated by the Alquist-Priolo Earthquake Fault Zoning Act (Hart, 1997) (See **Figures G-1** to **G-7** in **Appendix G**).

Ground Shaking

The project area is subject to seismic ground shaking. Ground shaking intensity varies depending on the overall earthquake magnitude, distance to the fault, focus of earthquake energy, and type of geologic materials underlying an area. The Modified Mercalli Intensity (MMI) scale is commonly used to express earthquake effects due to ground shaking because it expresses ground shaking relative to actual physical effects observed by people during a seismic event. MMI values range from I (earthquake not felt) through a scale of increasing intensities to XII (nearly total damage). Earthquakes on the various active and potentially active fault systems near or within the project area can produce a wide range of ground shaking intensities. Geologists and engineers attempt to predict earthquake ground acceleration at sites to improve the structural design of buildings so that the building can withstand the earthquake motion and not collapse. A probabilistic seismic hazard assessment describes seismic hazard from earthquakes that geologists and seismologists agree could occur. The analysis takes into consideration the uncertainties in the size and location of earthquakes and the resulting ground motions that can affect a particular site. The California Geological Survey (CGS) Probabilistic Seismic Hazard Assessment for California determined that a ground acceleration (g) 0.376 has a 10 percent probability of being exceeded in the center of the Los Angeles Basin (at the confluence of the Rio Hondo and Los Angeles River) within 50 years (1 in 475 chance annually) (CGS, 2012). Ground acceleration is measured in "g" where 1 g corresponds to the vertical acceleration force due to gravity. As shown in **Table 4.5-3**, a ground acceleration of 0.389 g corresponds to a MMI value of VIII, where damage would be slight in specially designed structures.

TABLE 4.5-3
MODIFIED MERCALLI INTENSITY SCALE (ABRIDGED)

Intensity Value	Intensity Description	Average Peak Acceleration(g)[a]
I	Not felt except by very few persons under especially favorable circumstances.	< 0.0017 g
II	Felt only by a few persons at rest, especially on upper floors on buildings. Delicately suspended objects may swing.	< 0.014 g
III	Felt quite noticeably indoors; especially on upper floors of buildings, but many people do not recognize it as an earthquake.	< 0.014 g
IV	During the day felt indoors by many, outdoors by few. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sound.	0.014–0.039 g
V	Felt by nearly everyone, many awakened. Some dishes, windows, etc., broken; a few instances of cracked plaster; unstable objects overturned.	0.039–0.092 g
VI	Felt by all, many frightened and run outdoors. Some heavy furniture moved; minor fallen plaster or damaged chimneys. Damage slight.	0.092–0.18 g
VII	Everybody runs outdoors. Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable in poorly built or badly designed structures; some chimneys broken.	0.18–0.34 g
VIII	Damage slight in specially designed structures; considerable in ordinary substantial buildings, with partial collapse; great in poorly built structures. Panel walls thrown out of frame structures. Fall of chimneys, factory stacks, columns, monuments, and walls.	0.34–0.65 g
IX	Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb; great in substantial buildings, with partial collapse.	0.65–1.24 g
X	Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations; ground badly cracked. Rails bent. Landslides considerable from riverbanks and steep slopes. Shifted sand and mud. Water splashed (slopped) over banks.	> 1.24 g
XI	Few, if any, (masonry) structures remain standing. Bridges destroyed. Broad fissures in ground. Underground pipelines completely out of service. Earth slumps and land slips in soft ground. Rails bent greatly.	> 1.24 g
XII	Damage total. Practically all works of construction are damaged greatly or destroyed. Waves seen on ground surface. Lines of sight and level are distorted. Objects are thrown upward into the air.	> 1.24 g

[a] g is gravity = 980 centimeters per second squared. Acceleration is scaled against acceleration due to gravity or the acceleration with which a ball falls if released at rest in a vacuum (1.0 g). Acceleration of 1.0 g is equivalent to a car traveling 100 meters (328 feet) from rest in 4.5 seconds.

SOURCE: Bolt, 1988

Liquefaction

Liquefaction is defined as the transformation of a granular material from a solid to liquid state as a result of increased water pressure between soil pores. This increase in pressure can be caused by earthquake vibrations. Liquefaction can lead to permanent ground movement or ground failure, such as landslides, and result in severe damage to structures (Youd, 1973).

According to the Department of Conservation, all of the proposed project facilities, excluding the proposed Concept A Project W2 and Concept B Project W5, would be located either partially or entirely within a liquefaction zone (DOC, 2006) (See **Figures G-1** to **G-7** in **Appendix G**).

Seismically-Induced Landslides

Landslides are defined as the movement of rock, debris, or earth masses down a slope. Landslides are a form of "mass wasting" which refers to any down slope movement of soil and rock under the direct influence of gravity. Landslide events include rock falls, topples, slides, spreads, and debris flows. Causes of landslides include rainfall, earthquakes, volcanic activity, groundwater changes, and alteration of a slope by man-made construction activities (USGS, 2012d).

According to the Department of Conservation Seismic maps, none of the proposed project facilities would be located in a landslide zone (DOC, 2006) (See **Figures G-1** to **G-7** in **Appendix G**).

Geologic Hazards

Landslides and Slope Failure

Ground failure is dependent on the slope and geology as well as the amount of rainfall, excavation, or seismic activities. A slope failure is a mass of rock, soil, and debris displaced down a slope by sliding, flowing, or falling. Steep slopes and downslope creep of surface materials characterize landslide-susceptible areas. Small segments of Projects W1 and W3 pipelines would be adjacent to a designated landslide zone. However, these landslide zones are very small. Furthermore, surface elevations throughout the project area have comparatively low relief. For these reasons, the chance of landslide or slope failure within the project area is very low.

Expansive Soils

Expansive soils are clay-rich and subsequently subject to changes in volume with changes in moisture (NRCS 2012c). This results in the shrinking and swelling of expansive soils from changes in water content (Ventura, 2011). Expansive soils can exert pressure on building foundations, “heaving” or lifting buildings during periods of high moisture and resulting in the settlement of buildings during low moisture periods. They can also exhibit high amounts of pressure on building foundations, resulting in lateral movement. Techniques exist to reduce effects of expansive soils. Such techniques include pre-wetting of the soil, which allows for pre-expansion of the soil with the idea that further pressure would be minimized and structural slabs, which provide extra reinforcing to resist movement and distress caused by pressure of underlying expansive soil. Soils within the project area are mainly sandy loams (LA County, 2011), which due to their lack of high clay content would not likely exhibit expansive soil properties.

Erosion

Soil erosion involves the breakdown, detachment, transport, and redistribution of soil particles by forces of water, wind, or gravity (NRCS, 2012b). Soils susceptible to accelerated erosion (beyond natural rates) are those with depleted plant cover and degraded soil structure resulting from excessive disturbance or reduced organic matter input (NRCS, 2001). During construction, exposed soils within the project area would be susceptible to erosion due to storm water runoff during the rainy season. Wind would also be a potential source of erosion to exposed soils.

Settlement and Subsidence

Settlement of the ground surface can occur under static forces (e.g., due to gravity or groundwater removal) but can also be accelerated and accentuated by earthquakes. During an earthquake, settlement can occur from rapid rearrangement, compaction, and settling of subsurface materials (particularly loose, non-compacted, and variable sandy sediments). Settlement can occur both uniformly and differentially (i.e., where adjoining areas settle at different rates). In addition, areas are susceptible to differential settlement if underlain by compressible sediments, such as poorly engineered artificial fill or poorly graded gravels. The sediment within the Los Angeles Basin is alluvium from the Quaternary period, which ranges from about 2.6 million years ago to present day. The majority of the sediment in the West Coast Basin is considered older alluvium, and the Central Basin is made up of mostly younger alluvium within this period. The soil within the Basins are considered mostly consolidated (LA Almanac, 1998); therefore, it is not likely that sites within the project area would exhibit settlement at varying depths under static conditions when loads are applied, or under seismic loading during an earthquake.

Subsidence is a form of settlement, defined as the gradual settling or sudden sinking of the Earth's surface due to subsurface movement of earth materials. Principle causes include either natural (tectonic movement) or human extraction activities such as the removal of groundwater, oil, or gas. The extraction activities reduce the pore pressure, increase void spaces, and allow the underlying soils to compact. As of 2001, the southern part of the Los Angeles Basin, including areas of Carson and Long Beach, were experiencing human-caused subsidence (USGS, 2013a). The Dominguez Gap Barrier Project and Projects W0 and W4 would be located within this area of subsidence, and therefore may experience effects related to subsidence.

Sinkholes

A sinkhole is an area of ground which has no natural external surface drainage; all water stays inside the sinkhole and rains into the subsurface. Some sinkholes can form so slowly they are not noticed, but others can form suddenly when a collapse occurs. Sinkholes can have a dramatic effect if they occur in an urban setting. The proposed project facilities would not be located in any known areas prone to sinkholes. However, sinkhole occurrence within Los Angeles County is generally limited but depends on several characteristics, including frequency of drought, type and structure of parent material, changes in groundwater dispersal, and localized topographic conditions, which can directly cause or exacerbate sinkholes (USGS, 2013b).

4.5.2 Regulatory Framework

State

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act (formerly the Alquist-Priolo Special Studies Zone Act) was signed into law in December of 1972 and requires the delineation of fault zones along active faults in California. The purpose of the Alquist-Priolo Act is to regulate development on or near active fault traces to avoid potential damage to structures from surface fault rupture.

Cities and counties must regulate certain development projects within the zones, which includes withholding permits until geologic investigations demonstrate that development sites are not threatened by future surface displacement (Hart, 1997). Surface fault rupture is not necessarily restricted within an Alquist-Priolo Earthquake Fault Zone.

Seismic Hazards Mapping Act

The Seismic Hazards Mapping Act of 1990 was developed to protect the public from the effects of strong ground shaking, liquefaction, landslides, or other ground failure, and from other hazards caused by earthquakes. This act requires a state geologist to delineate various seismic hazard zones and also requires cities, counties, and other local permitting agencies to regulate certain development projects within these zones. Before a development permit is granted for a site within a seismic hazard zone, a geotechnical investigation of the site must be conducted and appropriate mitigation measures incorporated into the project design. The majority of the project area is identified to be within a designated liquefaction zone. None of the proposed project facilities would be located in a landslide zone.

California Building Code

The California Building Code (CBC) has been codified in the California Code of Regulations (CCR) as Title 24, Part 2. Title 24 is administered by the California Building Standards Commission, which, by law, is responsible for coordinating all building standards. Under state law, all building standards must be centralized in Title 24 or they are not enforceable. The purpose of the CBC is to establish minimum standards to safeguard the public health, safety and general welfare through structural strength, means of egress facilities, and general stability by regulating and controlling the design, construction, quality of materials, use and occupancy, location, and maintenance of all building and structures within its jurisdiction. The 2010 CBC is based on the 2009 International Building Code (IBC) published by the International Code Conference. In addition, the CBC contains necessary California amendments which are based on reference standards obtained from various technical committees and organizations such as the American Society of Civil Engineers (ASCE), the American Institute of Steel Construction (AISC), and the American Concrete Institute (ACI). ASCE Minimum Design Standards 7-05 provides requirements for general structural design and includes means for determining earthquake loads as well as other loads (flood, snow, wind, etc.) for inclusion into building codes. The provisions of the CBC apply to the construction, alteration, movement, replacement, and demolition of every building or structure or any appurtenances connected or attached to such buildings or structures throughout California.

The earthquake design requirements take into account the occupancy category of the structure, site class, soil classifications, and various seismic coefficients which are used to determine a Seismic Design Category (SDC) for a project. The SDC is a classification system that combines the occupancy categories with the level of expected ground motions at the site and ranges from SDC A (very small seismic vulnerability) to SDC E (very high seismic vulnerability and near a major fault). Design specifications are then determined according to the SDC.

CCR Title 24 also includes the California Residential Code (based on the 2009 International Residential Code) and the California Green Building Code, which have been adopted as separate

documents (CCR Title 24, Part 2.5 and 11, respectively). The California Residential Code includes structural design standards for residential one and two family dwellings and covers all structural requirements for conventional construction. All other structures including multi-family residential projects are found in the CBC.

Local

General Plans

Although local building and zoning ordinances generally are not applicable to most water and wastewater infrastructure projects (per Government Code Section 53091(d) and 53091(e)), all available General Plans for jurisdictions in the project areas have been reviewed for policies relevant to the proposed project. Select policies are highlighted below.

Carson (2004)

Policy SAF-1.1: Continue to require all new development to comply with the most recent City Building Code Seismic design standards.

Cerritos (2004)

Policy SAF-2.2: Ensure building code standards are enforced and maintained so that that new development shall be located, designed and operated to reduce the effects of a seismic event.

Cudahy (1992)

Goal 1: Work to provide an environment that is reasonably safe from hazards.

Policy 1.1: Require geologic studies prior to the construction of critical facilities (hospitals, schools, fire stations, etc.).

Downey (2005)

Goal 5.5: Address the potential hazards associated with seismic activity.

Program 5.5.1.2. Monitor seismic activity to identify new potential for fault rupture, liquefaction, and other seismic-related hazards.

Program 5.5.1.4. Ensure the preparation of geotechnical reports for the developments to address soil liquefaction hazards.

El Segundo(1992)

Goal PS1: Protect the public health and safety and minimize the social and economic impacts associated with geologic hazards:

Policy PS1-1.1: Continue to review proposals for new development and for the expansion of existing development in areas of potential geological hazards.

Program PS1-1.2A: The City shall review projects to ensure that adequate geotechnical investigation has been completed in areas susceptible to landsliding and debris flows and in areas where collapsible or expansive soils occur and to approve only those which mitigate these hazards to the satisfaction of the City Engineer.

Goal PS2: Minimize injury and loss of life, property damage, and social, cultural and economic impacts caused by earthquake hazards.

Policy PS2-1.2: The City shall assist in the prevention of structural damage in areas with a high potential for liquefaction, landslides and mudslides by requiring geotechnical studies for new development to mitigate potential impacts.

Program PS2-1.2A: The City shall require geotechnical evaluation of the potential for seismically induced landslide, mudslide, and liquefaction in areas where such hazards have been identified.

Program PS2-1.2B: The City shall require all critical, emergency, and high-occupancy buildings, facilities, and structures containing hazardous materials proposed for development or expansion to be subject so special structural review to insure that hazardous conditions are adequately mitigated based on the most current seismic design standards for these types of facilities.

Huntington Park (1991)

Goal 1.0: Protect the community from seismic hazards.

Policy 1.1: Adopt and maintain high standards for seismic performance of new buildings.

Policy 1.4: In areas with liquefaction potential, require review of soils and geologic conditions, and if necessary on-site borings to determine liquefaction susceptibility of the proposed site.

Industry (2014)

Goal S1: Minimal loss of life and damage to property resulting from an earthquake or geologic hazards.

Los Angeles, City of (1992)

Goal 1: A city where potential injury, loss of life, property damage and disruption of the social and economic life of the City due to fire, water related hazard, seismic event, geologic conditions or release of hazardous materials disasters is minimized.

Objective 1.1: Implement comprehensive hazard mitigation plans and programs that are integrated with each other and with the City's comprehensive emergency response and recovery plans and programs.
Policy 1.1.6: State and federal regulations. Assure compliance with applicable state and federal planning and development regulations, e.g., Alquist-Priolo Earthquake Fault Zoning Act, State Mapping Act and Cobey-Alquist Flood Plain Management Act.

Los Angeles, County of (1980)

Goal: Minimize injury and loss of life, property damage, and the social cultural and economic impacts caused by earthquake hazards.

Policy 2: Review projects proposing expansion of existing development and construction of new development especially critical facilities, and encourage them to avoid localities exposed to high earthquake hazards through such techniques as cluster development and transfer of development rights.

Policy 3: Continue enforcement of stringent site investigations (such as seismic, geologic, hydrologic and soils investigations and implementation of adequate hazard mitigation measures for development projects in areas of high earthquake hazard, especially those involving critical facilities. Do not approve proposals and projects which cannot mitigate safety hazards to the satisfaction of responsible agencies.

Goal: Protect public safety and minimize the social and economic impacts from geologic hazards.

Policy 8: Review proposals and projects proposing new development and expansion of existing development in areas susceptible to landsliding, debris flow, and rockfalls, and in areas where collapsible or expansive soils are a significant problem; and disapprove projects which cannot mitigate these hazards to the satisfaction of responsible agencies.

Pico Rivera (1993)

Goal B: To create a secure public environment which minimizes potential loss of life and property damage, as well as social, economic, and environmental disruptions resulting from natural and man-made disasters.

Objective B.1: Minimize the potential for loss of life and minimize physical injury and property damage from seismic ground shaking and other geologic events.

Policy B.1.1: Manage potential seismic hazards resulting from fault rupture and strong ground motion by identifying and recognizing potentially hazardous condition.

Policy B.1.2: Minimize the potential for damage to critical facilities from geologic hazard by ensuring that such facilities remain operational in the event of a major earthquake.

Vernon (2007)

Goal 5-1: Minimize the risk to public health, safety, and welfare associated with the presence of natural and human-caused hazards.

Policy S-1.1: Periodically update and maintain the Multi-hazard Functional Plan in an effort to identify potential contingencies and emergency conditions and define the necessary response by public safety and other personnel.

4.5.3 Impacts and Mitigation Measures

Significance Criteria

The criteria used to determine the significance of impacts related to geology, soils, and seismicity is based on Appendix G of the *CEQA Guidelines*. The proposed project would result in a significant impact to geology, soils and minerals if it would:

- Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:
  - 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
  - Landslides
- Result in substantial soil erosion or the loss of topsoil;
- Be located on a geologic unit or soil that is unstable or that would become unstable as a result of the project, and potentially result in on-site or offsite landslide, lateral spreading, subsidence (i.e., settlement), liquefaction, or collapse;
- Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property; or
- Have soils incapable of adequately supporting the use of septic tanks or alternative reclaimed water disposal systems where sewers are not available for the disposal of reclaimed water.

Impacts Discussion

Landslides

The project area consists of mainly flat terrain interspersed with some hills of relatively low relief. None of the project facilities are located within zones indicating potential susceptibility to landslides as designated by the California Geological Survey Seismic Hazard Zone maps (DOC, 2006). (See Figures G-1 to G-7 in Appendix G.) Therefore, no impacts related to landslides are expected to occur.

Soil Suitability for Septic System

Implementation of the proposed project would not include facilities that require the use of septic systems. The proposed facilities would be wells, pipelines, pump stations, and wastewater treatment facilities that do not require septic systems. There is no planned use of on-site septic systems for the proposed project facilities. Therefore, no impact would occur related to soil suitability for septic systems.

Fault Rupture

The nearest fault to proposed project components delineated on the Alquist-Priolo Earthquake Fault Zoning Map is the Whittier-Elsinore Fault, located approximately one to two miles east of the recycled water pipeline connecting the San Jose Creek WRP to the MFSG and injection wells for Projects C2 and C8 (Figure 4.5-1). The fault is classified as a historically active fault, which is most likely to demonstrate seismic activity. However, none of the proposed project facilities would be within the boundaries of a designated Alquist-Priolo Earthquake Fault Zone, so no fault rupture is expected, and no impact would occur.

Exposure to Seismic-Related Hazards

Impact 4.5-1: The proposed project could locate new facilities in areas prone to strong seismic ground shaking or liquefaction, which could expose people or structures to potential risk of loss, injury or death. (Less than Significant with Mitigation).

Seismic Ground Shaking

The GBMP area lies in a region that is seismically active. In the event of an earthquake in Southern California, some seismic ground shaking will be experienced in the project area. As mentioned above, the historically active Newport Inglewood-Rose Canyon Fault runs through the WRD service area, separating the West Coast Basin and Central Basin, increasing the potential for proposed facilities to be exposed to seismic ground shaking. Ground shaking could result in structural damage to facilities, which in turn could affect operation of related systems, including wastewater treatment, recycled water conveyance, groundwater replenishment/extraction, and potable water conveyance.

All of the proposed facilities are non-habitable; however, the Concept B Project C10 proposed satellite treatment facility would require full time employees on-site. Therefore, structural and mechanical failure of facilities onset by seismic ground shaking could potentially threaten the safety of on-site workers, which is considered a potentially significant impact. However, all Concept A and Concept B facilities would be designed in accordance with the recommendations of a site-specific geotechnical investigation as required by **Mitigation Measure GEO-**1 and in compliance with the California Building Code (CBC) seismic building code requirements that have criteria to prevent any such seismic damage. These building codes provide requirements for construction, grading, excavation, use of fill, and foundation work, including type of materials, design, procedures, etc., which are intended to limit the probability of occurrence and the severity of consequences from geologic hazards. Impacts for both Concept A and Concept B facilities would be considered less than significant.

Liquefaction

Liquefaction occurs in saturated soils and the susceptibility decreases with groundwater depth. According to the Department of Conservation, parts of the WRD service area are susceptible to liquefaction (see Appendix G) due to proximity to a number of faults, including the Newport-Inglewood-Rose Canyon Fault. Based on the preliminary locations of GBMP facilities, all proposed injection and extraction wells and conveyance pipelines, with the exception of Projects

W1 and W3, would be either partially or entirely within liquefaction zones. Furthermore, the proposed satellite treatment facility would be located entirely within a liquefaction zone. Similar to ground shaking, liquefaction can lead to structural damage. Also, on-site workers at the proposed treatment facility may face threats of injury or death resulting from liquefaction-caused structural damage. Therefore, impacts related to liquefaction could be potentially significant. However, implementation of **Mitigation Measure GEO-1** would ensure that geotechnical investigations are conducted for proposed water facilities (i.e., conveyance pipelines, wells, treatment plants) within these seismic hazard zones to identify liquefaction zones and incorporate site-specific project designs that mitigate such hazards. With implementation of Mitigation Measure GEO-1, impacts for both Concept A and Concept B facilities would be reduced to a less than significant level.

Increased recharge and injection of water under Concept A and B could result in elevated water levels and mounding that could increase localized liquefaction hazards. This potential impact would be limited to the Central Basin since water level increases in the West Coast Basin would occur within the lower confined aquifers. Increased water levels at lower, confined depths would not increase liquefaction hazards to surface structures. However, within the Central Basin, the increase of saturated soils at depths of 50 feet below ground surface could increase liquefaction potential. **Mitigation Measure GEO-2** would require WRD to manage shallow water levels to avoid creating saturated conditions below habitable structures in areas with liquefiable soils.

Mitigation Measures

GEO-1: Prior to construction of each GBMP Project, a design-level geotechnical investigation, including collection of site specific subsurface data if appropriate, shall be completed. The geotechnical evaluation shall identify all potential seismic hazards including fault rupture, and characterize the soil profiles, including liquefaction potential and expansive soil potential. The geotechnical investigation shall recommend site-specific design criteria to mitigate for seismic hazards, such as special foundations and structural setbacks, and these recommendations shall be incorporated into the design of individual proposed projects.

GEO-2: WRD shall continue groundwater level monitoring throughout the West Coast Basin and Central Basin to identify areas of elevated groundwater levels. WRD and the Watermaster Storage Panel shall ensure that, where necessary, future groundwater recharge projects in the Central Basin are designed with groundwater monitoring capabilities sufficient to evaluate and minimize impact of shallow groundwater to habitable structures in areas with liquefiable soils.

Significance Determination: Less than significant with mitigation.

Soil Erosion or Topsoil Loss

Impact 4.5-2: The proposed project could result in substantial soil erosion or the loss of topsoils. (Less than Significant)

Construction activities for proposed GBMP project facilities such as excavation and grading could result in soil erosion during rain or high wind events, resulting in potentially significant impacts. Such construction activities would need to comply with South Coast Air Quality Management District (SCAQMD) Rule 403 for dust control that would ensure the prevention and/or management of wind erosion and subsequent topsoil loss. (See Chapter 4.2, Air Quality for information about SCAQMD Rule 403.) Compliance with SCAQMD Rule 403 would ensure that construction activities generating wind-induced soil erosion are below SCAQMD significance thresholds as stated and discussed in more detail in Chapter 4.2, Air Quality. For a discussion of potential impacts associated with waterborne erosion, please see Chapter 4.8, Surface Water Hydrology and Quality.

To prevent erosion associated with runoff from construction sites for each GBMP project, the implementing agencies would be required to prepare and implement a Storm Water Pollution Prevention Plan (SWPPP) in accordance with the requirements of the statewide Construction General Permit (CGP) (SWRCB Water Quality Order 2009-0009-DWQ). (See Chapter 4.8 Surface Hydrology and Water Quality for a detailed explanation of the CGP.) The SWPPP would identify best management practices (BMPs) to control erosion, sedimentation, and hazardous materials potentially released from construction sites into surface waters. Compliance with the CGP, required SWPPP, and identified BMPs would ensure soil erosion and loss of topsoil would be reduced to less than significant levels.

Should the individual GBMP project result in disturbance of less than one acre during construction activities, then the CGP would not apply to the particular project. Instead, compliance with minimum BMPs, as specified by the Los Angeles County MS4 Permit (LARWQCB, 2012) or an equivalent permit would be required, including erosion and sediment control for the construction site. (See Chapter 4.8 Surface Hydrology and Water Quality for a more detailed explanation of the MS4 Permit.) Adherence to these conditions would ensure that potential soil erosion and loss of topsoils would be minimized to less than significant levels.

Compliance with the above-mentioned permits during implementation of all Concept A and Concept B facilities would minimize potential soil erosion during high wind or rain events and minimize loss of topsoil. Impacts would be considered less than significant. No mitigation is required.

Mitigation Measures

None required.

Significance Determination: Less than significant.

Soil Stability

Impact 4.5-3: The proposed project could be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in onsite or offsite soil creep, landslides, lateral spreading, settlement, subsidence or soil corrosion. (Less than Significant)

Unstable geologic units or soils can result in several geologic manifestations. The proposed facilities would be located in areas of relatively low relief, therefore reducing the potential for soil creep, landslides, or lateral spreading. Area soils are not generally prone to settlement. Sinkholes are generally dependent on localized geological conditions, and can occur rapidly. The Dominguez Gap Barrier Project and Projects W0 and W4 would be located in an area of the Los Angeles Basin currently experiencing human-caused subsidence. Finally, two of the five dominant soil series throughout the project area (Oakley and Chino) show the potential to corrode steel materials, and one of the five (Oakley) has a high concrete corrosion potential. Proposed facilities constructed with these materials exposed to highly corrosive soils could experience an eventual degradation in structural stability.

Sinkholes, subsidence, corrosive soils, and other geologic phenomena could damage the structure of and inhibit operation of new facilities and infrastructure, as well as affect the safety of any potential on-site workers. Therefore, impacts related to unstable earth conditions could be significant. However, implementation of **Mitigation Measure GEO-3** would ensure that site-specific geologic studies would be performed that would detect the potential of these geologic events. With implementation of GEO-3, potential impacts to Concept A and Concept B facilities would be reduced to a less than significant level.

Increased pumping in certain areas could result in lowering groundwater levels. In certain soil conditions, lowering the groundwater below historic levels could result in surface subsidence. Since the groundwater production zones in the West Coast Basin are confined below aquitards, subsidence would not be likely in the West Coast Basin. However, in areas of the Central Basin with unconsolidated soils, lowering of groundwater levels could result in collapsing pore space in soils that would be expressed in lower surface elevations. Implementation of **Mitigation Measure GEO-4** would ensure that groundwater levels do not lower below historic low elevations in areas susceptible to subsidence.

Mitigation Measures

GEO-3: In conjunction with Mitigation Measures GEO-1, prior to construction and where appropriate, the design-level geotechnical investigation shall identify potential geologic hazards, including sinkholes, subsidence, and soil corrosivity, and characterize the soil profiles for their potential to lead to the aforementioned hazards. The geotechnical investigation shall recommend site-specific design criteria to mitigate for geologic hazards, such as avoidance of problem areas and special foundations and structural setbacks. These recommendations shall be incorporated into the design of individual proposed projects.

GEO-4: WRD shall continue to monitor groundwater levels throughout the Central Basin to identify where groundwater levels in the Central Basin reach historically low levels. If monitoring data show that groundwater levels have reached historically low levels in areas susceptible to subsidence, WRD and the Watermaster Storage Panel shall work with implementing agencies to reduce pumping in these areas to prevent subsidence from occurring.

Significance Determination: Less than significant with mitigation.

Expansive Soils

Impact 4.5-4: The proposed project could be located on expansive soil that creates substantial risks to life or property. (Less than Significant with Mitigation)

As stated above, soils throughout the project area mainly consist of sandy loams that show little change with moisture variation, and thus do not typically exhibit expansive soil characteristics. Therefore, the project facilities would be located in areas of low soil expansion potential. However, the specific soil properties of a site can vary on a small scale, and may include undetermined areas that exhibit expansive properties. The presence of expansive soils at proposed project sites could decrease the structural stability of the proposed project facilities, which could result in structural or operational failure of these facilities and or threaten the health and safety of on-site workers. Such impacts are considered potentially significant unless mitigated.

The locations for proposed GBMP projects are preliminary and subject to change. As the GBMP projects are implemented and specific sites selected, subsequent CEQA analyses will identify the corresponding site-specific soil characteristics. In addition, with implementation of Mitigation Measure GEO-1, soils prone to expansiveness at the project sites would be identified per a geotechnical report and properly addressed or mitigated prior to the construction of proposed facilities, if necessary. Potential mitigation could include avoidance of the site and/or modified design and site preparation, including installation of structural slabs and pre-wetting of soil. Therefore, impacts related to risks associated with expansive soils for Concept A and Concept B facilities would be reduced to a less than significant level.

Mitigation Measures

Implement **Mitigation Measure GEO-1.**

Significance Determination: Less than significant with mitigation.

TABLE 4.5-4
GEOLOGY, SOILS AND SEISMICITY IMPACT SUMMARY

	Concept A		Concept B	
Impact	**Impact Determination**	**Mitigation Summary**	**Impact Determination**	**Mitigation Summary**
Seismic-Related Hazards: The proposed project could locate new facilities in areas prone to strong seismic ground shaking or liquefaction, which could expose people or structures to potential risk of loss, injury or death.	Less than Significant with Mitigation	Implement Mitigation Measure GEO-1 and GEO-2.	Less than Significant with Mitigation	Implement Mitigation Measure GEO-1 and GEO-2.
Soil Erosion and Topsoil Loss: The proposed project could result in substantial soil erosion or the loss of topsoils.	Less than Significant	None required.	Less than Significant	None required.
Soil Stability: The proposed project could be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in onsite or offsite soil creep, landslides, lateral spreading, settlement, subsidence or soil corrosion.	Less than Significant with Mitigation	Implement Mitigation Measure GEO-3 and GEO-4.	Less than Significant with Mitigation	Implement Mitigation Measure GEO-3 and GEO-4.
Expansive Soils: The proposed project could be located on expansive soil that creates substantial risks to life or property.	Less than Significant with Mitigation	Implement Mitigation Measure GEO-1.	Less than Significant with Mitigation	Implement Mitigation Measure GEO-1.

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4.6 Greenhouse Gas Emissions

This section provides a discussion of global climate change, existing regulations pertaining to global climate change, and potential greenhouse gas (GHG) emissions resulting from development of the proposed project. Impacts related to GHGs and climate change are analyzed and mitigation measures are provided for any potentially significant impacts. The methods of analyzing emissions described in this section are consistent with the recommendations of the SCAQMD.

4.6.1 Environmental Setting

This section presents a discussion of existing climate conditions, the current state of climate change science, and GHG emissions sources in California.

Affected Environment

Climate

Climate is the accumulation of daily and seasonal weather events over a long period of time, whereas weather is defined as the condition of the atmosphere at any particular time and place (Ahrens, 2003). The proposed project is located in the Basin, which has a distinctive climate determined by its terrain and geographic location. The general region lies in the semi-permanent high-pressure zone of the eastern Pacific, resulting in a mild climate tempered by cool sea breezes with light average wind speeds. The usually mild climate is interrupted occasionally by periods of extremely hot weather, winter storms, or Santa Ana winds. The project area is in a climatic zone characterized as dry summer subtropical or Mediterranean.

Climate Change Overview

Various gases in the earth's atmosphere, classified as GHGs, play a critical role in determining its surface temperature. Solar radiation enters earth's atmosphere from space, and a portion of the radiation is absorbed by the earth's surface. Earth re-radiates this energy back toward space, but the properties of the radiation change from high-frequency solar radiation to lower-frequency infrared radiation. GHGs, which are transparent to solar radiation, are effective in absorbing infrared radiation. As a result, this radiation (that otherwise would have escaped back into space) is now retained in the atmosphere, and results in a warming of the atmosphere. This phenomenon, known as the greenhouse effect, is responsible for maintaining a habitable climate on earth. Without the greenhouse effect, the earth would not be able to support life as we know it.

Prominent GHGs contributing to the greenhouse effect are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), chlorofluorocarbons (CFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6). Much of the scientific literature suggests that human-caused emissions of these GHGs in excess of natural ambient concentrations are responsible for intensifying the greenhouse effect and have led to a trend of unnatural warming of earth's climate, known as global climate change or global warming. While there is some debate regarding this issue, it is unlikely that global climate change of the past 50 years can be explained without contribution from human activities (IPCC, 2007).

Climate change is a global problem. GHGs are global pollutants, unlike criteria air pollutants and toxic air contaminants, which are pollutants of regional and local concern. Whereas pollutants with localized air quality effects have relatively short atmospheric lifetimes (about 1 day), GHGs have long atmospheric lifetimes (1 year to several thousand years). GHGs persist in the atmosphere for long enough time periods to be dispersed around the globe. Although the exact lifetime of any particular GHG molecule is dependent on multiple variables and cannot be pinpointed, it is understood that more CO_2 is emitted into the atmosphere than is sequestered by ocean uptake, vegetation, and other forms of sequestration. Of the total annual human-caused CO_2 emissions, approximately 54 percent is sequestered through ocean uptake, uptake by northern hemisphere forest regrowth, and other terrestrial sinks within 1 year, whereas the remaining 46 percent of human-caused CO_2 emissions remains stored in the atmosphere (Seinfeld and Pandis, 1998).

Similarly, impacts of GHGs are borne globally, as opposed to localized air quality effects of criteria air pollutants and toxic air contaminants. The quantity of GHGs that it takes to ultimately result in climate change is not precisely known; however, it is clear that the quantity is enormous, and no single project would measurably contribute to a noticeable incremental change in the global average temperature, or to global, local, or micro climates. From the standpoint of CEQA, GHG impacts to global climate change are inherently cumulative.

Greenhouse Gas Emission Sources

According to much of the scientific literature on this topic, emissions of GHGs contributing to global climate change are attributable in large part to human activities associated with the transportation, industrial/manufacturing, utility, residential, commercial, and agricultural sectors. In California, the transportation sector is the largest emitter of GHGs, followed by electricity generation (CARB, 2014a). Emissions of CO_2 are byproducts of fossil fuel combustion. CH_4, a highly potent GHG, results from off-gassing (the release of chemicals from nonmetallic substances under ambient or greater pressure conditions) and is largely associated with agricultural practices and landfills. N_2O is also largely attributable to agricultural practices and soil management. CO_2 sinks, or reservoirs, include vegetation and the ocean, which absorb CO_2 through sequestration and dissolution, respectively, and are two of the most common processes of CO_2 sequestration.

California is the 12th to 16th largest emitter of CO_2 in the world (CEC, 2006a). California produced approximately 459 million gross metric tons of CO_2 equivalent (CO_2e) in 2012 (CARB, 2014a). CO_2e is a measurement used to account for the fact that different GHGs have different potential to retain infrared radiation in the atmosphere and contribute to the greenhouse effect. Expressing emissions in CO_2e takes the contributions to the greenhouse effect of all GHG emissions and converts them to the equivalent effect that would occur if only CO_2 were being emitted. This measurement, known as the global warming potential (GWP) of a GHG, is dependent on the lifetime, or persistence, of the gas molecule in the atmosphere. For example, as described in Appendix C, Calculation References, of the General Reporting Protocol of the California Climate Action Registry (CCAR, 2009), 1 ton of CH_4 has the same contribution to the greenhouse effect as approximately 21 tons of CO_2. Therefore, CH_4 is a much more potent GHG than CO_2.

Combustion of fossil fuel in the transportation sector was the single largest source of California's GHG emissions in 2012, accounting for 37 percent of total GHG emissions in the state (CARB, 2014a). This sector was followed by the electric power sector (including both in-state and out-of-state sources) (21 percent) and the industrial sector (19 percent) (CARB, 2014a).

4.6.2 Regulatory Framework

Federal

The federal CAA requires USEPA to define national ambient air quality standards to protect public health and welfare in the U.S. The CAA does not specifically regulate GHG emissions; however, on April 2, 2007 the U.S. Supreme Court in *Massachusetts v. U.S. Environmental Protection Agency*, determined that GHGs are pollutants that can be regulated under the CAA. Currently, there are no federal regulations that establish ambient air quality standards for GHGs.

On December 7, 2009, USEPA adopted its Proposed Endangerment and Cause or Contribute Findings for Greenhouse Gases under the CAA (Endangerment Finding). The Endangerment Finding is based on Section 202(a) of the CAA, which states that the USEPA Administrator should regulate and develop standards for "emission[s] of air pollution from any class or classes of new motor vehicles or new motor vehicle engines, which in [its] judgment cause, or contribute to, air pollution which may reasonably be anticipated to endanger public health or welfare." The rule addresses Section 202(a) in two distinct findings. The first addresses whether the concentrations of the six key GHGs (CO_2, CH_4, N_2O, HFCs, PFCs, and SF_6) in the atmosphere threaten the public health and welfare of current and future generations. The second addresses whether the combined emissions of GHGs from new motor vehicles and motor vehicle engines contribute to atmospheric concentrations of GHGs and, therefore, contribute to the threat of climate change.

The USEPA Administrator found that atmospheric concentrations of GHGs endanger the public health and welfare within the meaning of Section 202(a) of the CAA. The evidence supporting this finding consists of human activity resulting in "high atmospheric levels" of GHG emissions, which are likely responsible for increases in average temperatures and other climatic changes. Furthermore, the observed and projected results of climate change (e.g., higher likelihood of heat waves, wild fires, droughts, sea level rise, and higher intensity storms) are a threat to the public health and welfare. Therefore, GHGs were found to endanger the public health and welfare of current and future generations.

Specific GHG regulations that USEPA has adopted to-date are as follows:

40 CFR Part 98. Mandatory Reporting of Greenhouse Gases Rule. This rule requires mandatory reporting of GHG emissions for facilities that emit more than 25,000 metric tons of CO_2e emissions per year (USEPA, 2011). Additionally, reporting of emissions is required for owners of SF6- and PFC-insulated equipment when the total nameplate capacity of these insulating gases is above 17,280 pounds.

40 CFR Part 52. Proposed Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule. USEPA recently mandated to apply Prevention of

Significant Deterioration (PSD) requirements to facilities whose stationary source CO_2e emissions exceed 75,000 tons per year (USEPA, 2010).

The USEPA also recently released a proposed rule which would regulate GHG emissions from existing power plants across the nation. The proposed rule establishes state-by-state 2030 GHG goals.

State

The California Air Resources Board (CARB) is the agency responsible for coordination and oversight of state and local air pollution control programs in California. Various statewide and local initiatives to reduce the state's contribution to GHG emissions have raised awareness that, even though the various contributors to and consequences of global climate change are not yet fully understood, global climate change is under way, and there is a real potential for severe adverse environmental, social, and economic effects in the long term. Because every nation emits GHGs and therefore makes an incremental cumulative contribution to global climate change, cooperation on a global scale will be required to reduce the rate of GHG emissions to a level that can help to slow or stop the human-caused increase in average global temperatures and associated changes in climatic conditions.

There are currently no state regulations in California that establish ambient air quality standards for GHGs. However, California has passed laws directing CARB to develop actions to reduce GHG emissions, and several state legislative actions related to climate change and GHG emissions have come into play in the past decade.

Assembly Bill (AB) 1493 (Pavley)

In 2002, then-Governor Gray Davis signed AB 1493. AB 1493 requires that CARB develop and adopt, by January 1, 2005, regulations that achieve "the maximum feasible reduction of greenhouse gases 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, in 2004 CARB approved amendments to the California Code of Regulations (CCR) adding GHG emissions standards to California's existing standards for motor vehicle emissions. Amendments to CCR Title 13, Sections 1900 and 1961 (13 CCR 1900, 1961), and adoption of Section 1961.1 (13 CCR 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 passenger vehicle weight classes (i.e., any medium-duty vehicle with a gross vehicle weight rating less than 10,000 pounds that is designed primarily for the transportation of persons), beginning with the 2009 model year. For passenger cars and light-duty trucks with a loaded vehicle weight (LVW) of 3,750 pounds or less, the GHG emission limits for the 2016 model year are approximately 37 percent lower than the limits for the first year of the regulations, the 2009 model year. For light-duty trucks with LVW of 3,751 pounds to gross vehicle weight (GVW) of 8,500 pounds, as well as medium-duty passenger vehicles, GHG emissions would be reduced approximately 24 percent between 2009 and 2016.

Executive Order S-03-05

Executive Order S-03-05, which was signed by Governor Schwarzenegger in 2005, proclaims that California is vulnerable to the impacts of climate change. It declares that increased temperatures could reduce the Sierra's snowpack, further exacerbate California's air quality problems, and potentially cause a rise in sea levels. To combat those concerns, the Executive Order established total GHG emission targets. Specifically, emissions are to be reduced to the 2000 level by 2010, the 1990 level by 2020, and to 80 percent below the 1990 level by 2050.

The Executive Order directed the Secretary of the California Environmental Protection Agency (CalEPA) 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 state legislature describing progress made toward reaching the emission targets, impacts of global warming on California's resources, and mitigation and adaptation plans to combat these impacts. To comply with the Executive Order, the Secretary of CalEPA created the California Climate Action Team (CCAT) made up of members from various state agencies and commissions. CCAT released its first report in March 2006. The report proposed to achieve the targets by building on voluntary actions of California businesses, local government, and community actions, as well as through state incentive and regulatory programs.

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

In September 2006, Governor Arnold Schwarzenegger signed the California Global Warming Solutions Act (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. This reduction will be accomplished by enforcing a statewide cap on GHG emissions, to be implemented in phases starting in 2012. To effectively implement the cap, AB 32 directs CARB to develop and implement regulations to reduce statewide GHG emissions from stationary sources.

Senate Bill 1368

SB 1368 is the companion bill of AB 32 and was signed by Governor Schwarzenegger in September 2006. SB 1368 required the California Public Utilities Commission (CPUC) to establish a GHG emission performance standard for baseload generation from investor-owned utilities. CPUC adopted a GHG Emissions Performance Standard in January 2007. The California Energy Commission (CEC) adopted consistent regulations for implementing and enforcing SB 1368 for the state's publicly-owned utilities in August 2007. These standards cannot exceed the GHG emission rate from a baseload combined-cycle natural gas-fired plant. The legislation further requires that all electricity provided to California, including imported electricity, must be generated from plants that meet the standards set by the CPUC and CEC.

Executive Order S-1-07

Executive Order S-1-07, which was signed by Governor Schwarzenegger in 2007, 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.

On April 23, 2009 CARB approved the proposed regulation to implement the LCFS. The LCFS will reduce GHG emissions from the transportation sector in California by about 16 million metric tons (MMT) in 2020.

Senate Bill 97

SB 97, signed 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. The bill directs the California Office of Planning and Research (OPR) to prepare, develop, and transmit to the California Natural Resources Agency, guidelines for the feasible mitigation of GHG emissions or the effects of GHG emissions, as required by CEQA, by July 1, 2009. The Natural Resources Agency was required to certify or adopt those guidelines by January 1, 2010. On April 13, 2009, OPR submitted to the Secretary for Natural Resources its proposed amendments to the State *CEQA Guidelines* for GHG emissions, as required by SB 97. On February 16, 2010, the Office of Administrative Law (OAL) approved the amendments, and filed them with the Secretary of State for inclusion in the California Code of Regulations. The amendments became effective on March 18, 2010.

Senate Bill 1078 and 107 and Executive Order S-14-08

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. In November 2008, Governor Schwarzenegger signed Executive Order S-14-08, which expands the state's Renewables Energy Standard to 33 percent renewable power by 2020. In April 2011, Governor Jerry Brown signed SB 2X, which created a legislative mandate codifying the 33 percent Renewables Portfolio Standard into law.

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 (RTP). CARB, in consultation with MPOs, has provided 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. ARB 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.

This law also extends the minimum time period for the regional housing needs allocation cycle from five years to eight years for local governments located within an MPO that meet certain requirements. City or county land use policies (including general plans) are not required to be

consistent with the regional transportation plan (and associated SCS or APS). However, new provisions of CEQA would incentivize (through streamlining and other provisions) qualified projects that are consistent with an approved SCS or APS, categorized as "transit priority projects."

On April 4, 2012, the Regional Council of the Southern California Association of Governments (SCAG), which is the MPO in Southern California, adopted the *2012-2035 Regional RTP/SCS: Towards a Sustainable Future*. The RTP/SCS is the culmination of a multi-year effort involving stakeholders from across the SCAG region, which contains six counties (Imperial, Los Angeles, Orange, Riverside, San Bernardino, and Ventura) and 191 cities in Southern California.

CARB Climate Change Scoping Plan

On December 11, 2008, CARB adopted its Scoping Plan, which functions as a roadmap of CARB's plans to achieve GHG reductions in California required by AB 32 through subsequently enacted regulations (CARB, 2008). CARB's Scoping Plan contains the main strategies California will implement to reduce CO_2e emissions by 169 MMT, or approximately 28.4 percent, from the state's projected 2020 emissions level of 596 MMT of CO_2e under a BAU scenario. In August 2011, the Scoping Plan was re-approved by the Board and includes the Final Supplement to the Scoping Plan Functional Equivalent Document. This document includes expanded analysis of project alternatives as well as updates the 2020 emission projections in light of the current economic forecasts. Considering the updated 2020 BAU estimate of 507 $MMTCO_2e$, a 16 percent reduction below the estimated BAU levels would be necessary to return to 1990 levels by 2020. The document also excludes one measure identified in the 2008 Scoping Plan that has been adopted and one measure that is no longer under consideration by CARB (CARB, 2011).

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, i.e. transportation, electrical power, commercial and residential, industrial etc. CARB used three-year average emissions, by sector, for 2002-2004 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.

CARB's Scoping Plan also breaks down the amount of GHG emissions reductions CARB recommends for each emissions sector of the state's GHG inventory. CARB's Scoping Plan calls for the largest reductions in GHG emissions to be achieved by implementing the following measures and standards:

- Improved emissions standards for light-duty vehicles (estimated reductions of 31.7 MMT CO_2e);
- The LCFS (15.0 MMT CO_2e);
- Energy efficiency measures in buildings and appliances, and the widespread development of combined heat and power systems (26.3 MMT CO_2e); and
- A renewable portfolio standard for electricity production (21.3 MMT CO_2e).

CARB has identified a GHG reduction target of 5 MMT (of the 174 MMT total) for local land use changes (Table 2 of ARB's Plan), by implementation of Reduction Strategy T-3 regarding Regional Transportation-Related GHG Targets. Additional land use reductions may be achieved as SB 375 is implemented. CARB's Scoping Plan states that successful implementation of the plan relies on local governments' land use, planning, and urban growth decisions because local governments have primary authority to plan, zone, approve, and permit land development to accommodate population growth and the changing needs of their jurisdictions. CARB further acknowledges that decisions on how land is used will have large effects on the GHG emissions that will result from the transportation, housing, industry, forestry, water, agriculture, electricity, and natural gas emission sectors. CARB's Scoping Plan does not include any direct discussion about GHG emissions generated by construction activity.

Table 4.6-1 shows the Recommended Actions contained in Appendices C and E of CARB's Scoping Plan.

TABLE 4.6-1
RECOMMENDED ACTIONS FROM CARB CLIMATE CHANGE SCOPING PLAN

ID #	Sector	Strategy Name
T-1	Transportation	Pavley I and II – Light-Duty Vehicle GHG Standards
T-2	Transportation	LCFS (Discrete Early Action)
T-3	Transportation	Regional Transportation-Related GHG Targets
T-4	Transportation	Vehicle Efficiency Measures
T-5	Transportation	Ship Electrification at Ports (Discrete Early Action)
T-6	Transportation	Goods-movement Efficiency Measures
T-7	Transportation	Heavy Duty Vehicle GHG Emission Reduction Measure – Aerodynamic Efficiency (Discrete Early Action)
T-8	Transportation	Medium and Heavy-Duty Vehicle Hybridization
T-9	Transportation	High Speed Rail
E-1	Electricity and Natural Gas	Increased Utility Energy efficiency programs More stringent Building and Appliance Standards
E-2	Electricity and Natural Gas	Increase Combined Heat and Power Use by 30,000GWh
E-3	Electricity and Natural Gas	Renewables Portfolio Standard
E-4	Electricity and Natural Gas	Million Solar Roofs
CR-1	Electricity and Natural Gas	Energy Efficiency
CR-2	Electricity and Natural Gas	Solar Water Heating
GB-1	Green Buildings	Green Buildings
W-1	Water	Water Use Efficiency
W-2	Water	Water Recycling
W-3	Water	Water System Energy Efficiency
W-4	Water	Reuse Urban Runoff
W-5	Water	Increase Renewable Energy Production
W-6	Water	Public Goods Charge (Water)
I-1	Industry	Energy Efficiency and Co-benefits Audits for Large Industrial Sources
I-2	Industry	Oil and Gas Extraction GHG Emission Reduction
I-3	Industry	GHG Leak Reduction from Oil and Gas Transmission
I-4	Industry	Refinery Flare Recovery Process Improvements
I-5	Industry	Removal of CH_4 Exemption from Existing Refinery Regulations
RW-1	Recycling and Waste Management	Landfill CH_4 Control (Discrete Early Action)

ID #	Sector	Strategy Name
RW-2	Recycling and Waste Management	Additional Reductions in Landfill CH_4 – Capture Improvements
RW-3	Recycling and Waste Management	High Recycling/Zero Waste
F-1	Forestry	Sustainable Forest Target
H-1	High GWP Gases	Motor Vehicle Air Conditioning Systems (Discrete Early Action)
H-2	High GWP Gases	SF_6 Limits in Non-Utility and Non-Semiconductor Applications (Discrete Early Action)
H-3	High GWP Gases	Reduction in Perfluorocarbons in Semiconductor Manufacturing (Discrete Early Action)
H-4	High GWP Gases	Limit High GWP Use in Consumer Products (Discrete Early Action, Adopted June 2008)
H-5	High GWP Gases	High GWP Reductions from Mobile Sources
H-6	High GWP Gases	High GWP Reductions from Stationary Sources
H-7[a]	High GWP Gases	Mitigation Fee on High GWP Gases
A-1	Agriculture	CH_4 Capture at Large Dairies

[a] This original measure in the 2008 Scoping Plan was subsequently excluded by CARB in the Final Supplement to the Scoping Plan Functional Equivalent Document in 2011, as CARB staff concluded that implementation of this measure would not be feasible.

SOURCE: CARB, 2008.

Furthermore, as required by AB 32, the Scoping Plan must be updated at least every five years to evaluate the mix of AB 32 policies to ensure that California is on track to meet the targets set out in the legislation. Consequently, the draft Update to the initial Scoping Plan developed by CARB in collaboration with the CCAT was presented to CARB's Board for discussion at its February 20, 2014 meeting. The draft Update builds upon the initial Scoping Plan with new strategies and expanded measures, and identifies opportunities to leverage existing and new funds to drive GHG emission reductions through strategic planning and targeted program investments. The first update to the AB 32 Scoping Plan was approved on May 22, 2014 by CARB.

As part of the first update to the Scoping Plan, the emissions reductions required to meet the 2020 statewide GHG emissions limit were further adjusted. The primary reason for adjusting the 2020 statewide emissions limit was based on the fact that the original Scoping Plan relied on the IPCC's 1996 Second Assessment Report (SAR) to assign the GWPs of greenhouse gases. Recently, in accordance with the United Nations Framework Convention on Climate Change (UNFCCC), international climate agencies have agreed to begin using the scientifically updated GWP values in the IPCC's Fourth Assessment Report (AR4) that was released in 2007. Because CARB has begun to transition to the use of the AR4 100-year GWPs in its climate change programs, CARB recalculated the Scoping Plan's 1990 GHG emissions level with the AR4 GWPs. As the recalculation resulted in 431 $MMTCO_2e$, the 2020 GHG emissions limit established in response to AB 32 is now slightly higher than the 427 $MMTCO_2e$ in the initial Scoping Plan. Considering that the update also adjusted the 2020 BAU forecast of GHG emissions to 509 $MMTCO_2e$, a 15 percent reduction below the estimated BAU levels was determined to be necessary to return to 1990 levels by 2020 (CARB, 2014b).

CEQA Guidelines Revisions

In 2007, the State Legislature passed SB 97, which required amendment of the State *CEQA Guidelines* to incorporate analysis of, and mitigation for, GHG emissions from projects subject to CEQA. The California Natural Resources Agency adopted these amendments on December 30, 2009, and they took effect on March 18, 2010, after review by the Office of Administrative Law and filing with the Secretary of State for inclusion in the California Code of Regulations.

The Guidelines revisions include a new section (Sec. 15064.4) that specifically addresses the potential significance of GHG emissions. Section 15064.4 calls for a "good-faith effort" to "describe, calculate or estimate" GHG emissions; Section 15064.4 further states that the analysis of the significance of any GHG impacts should include consideration of the extent to which the project would increase or reduce GHG emissions; exceed a locally applicable threshold of significance; and comply with "regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of greenhouse gas emissions." The new Guidelines also state that a project may be found to have a less-than-significant impact on GHG emissions if it complies with an adopted plan that includes specific measures to sufficiently reduce GHG emissions (Sec. 15064(h)(3)). Importantly, however, the Guidelines do not require or recommend a specific analytical methodology or provide quantitative criteria for determining the significance of GHG emissions.

Local

SCAQMD

As an interim method for determining significance under CEQA until statewide significance thresholds are established, SCAQMD developed a draft tiered flowchart in 2008 for determining significance thresholds for GHGs for projects where SCAQMD is acting as the lead agency. The SCAQMD flowchart uses a tiered approach in which a proposed project is deemed to have a less than significant impact related to GHG emissions when any of the following conditions are met:

- GHG emissions are within GHG budgets in an approved regional plan;
- Incremental increases in GHG emissions due to the project are below the defined Significance Screening Levels, or Mitigated to Less than the Significance Screening Level;
- Performance standards are met by incorporating project design features and/or implementing emission; and
- Carbon offsets are made to achieve target significance screening level.

County of Los Angeles General Plan

The 1980 County of Los Angeles General Plan does not address GHG emissions and climate change. However, the Conservation and Open Space Element contains policies that would contribute to the reduction of GHG emissions (County of Los Angeles, 1980). These are as follows:

Policy 1: Actively support strict air quality regulations for mobile and stationary sources, and continued research to improve air quality. Promote vanpooling, carpooling and improved public transportation.

Policy 2: Support the conservation of energy and encourage the development and utilization of new energy sources including geothermal, thermal waste, solar, wind and ocean-related sources.

Policy 3: Promote the use of solar energy to the maximum extent possible.

The Air Quality Element of the Draft 2014 County of Los Angeles General Plan summarizes air quality issues and outlines goals and policies that will improve air quality and reduce GHG emissions (County of Los Angeles, 2014a). The policies that are most relevant to GHG emissions include:

Policy AQ 1.2: Encourage the use of low or no volatile organic compound (VOC) emitting materials.

Policy AQ 3.1: Facilitate the implementation and maintenance of the Community Climate Action Plan to ensure that the County reaches its climate change and greenhouse gas emission reduction goals.

Policy AQ 3.2: Reduce energy consumption in County operations by 20 percent by 2015.

Policy AQ 3.3: Reduce water consumption in County operations.

Policy AQ 3.4: Participate in local, regional and state programs to reduce greenhouse gas emissions.

Policy AQ 3.5: Encourage maximum amounts of energy conservation in new development and municipal operations.

Policy AQ 3.6: Support and expand urban forest programs within the unincorporated areas.

County of Los Angeles Community Climate Action Plan

The County of Los Angeles released its Final Draft Community Climate Action Plan (CCAP) in July 2014, which serves to mitigate and avoid GHG emissions associated with community activities in unincorporated Los Angeles County. The CCAP addresses emissions from building energy, land use and transportation, water consumption, and waste generation. The measures and actions outlined in the CCAP ties together the County's existing climate change initiatives and provides a blueprint for a more sustainable future. Ultimately, the CCAP and associated GHG reduction measures will be incorporated into the Air Quality Element of the Los Angeles County General Plan 2035.

Specifically, the CCAP will serve to identify emissions related to community activities, establish a GHG reduction target consistent with AB 32 and provide a roadmap for successfully

implementing GHG reduction measures selected by the County. Based on the CCAP's estimated amount of GHG emissions generated by community activities in the County's unincorporated areas in 2010, it was determined that building energy use is the largest source of emissions (49 percent), followed by transportation emissions from on- and off-road vehicles (42 percent) and community waste generation (7 percent). The remaining GHG emissions sources are water conveyance and wastewater generation (2 percent), agriculture (0.4 percent), and stationary sources (0.02 percent). The CCAP comprises a variety of state and local actions to reduce GHG emissions within the unincorporated areas. The state actions considered in the CCAP include: the Renewables Portfolio Standard, Title 24 Standards for Commercial and Residential Buildings (Energy Efficiency and CALGreen), Pavley/Advanced Clean Cars (Vehicle Efficiency), the LCFS, and the California cap-and-trade program. These state actions generally do not require action from the County, but will result in local GHG reductions in the unincorporated areas. To supplement these statewide initiatives, the CCAP has identified 26 local actions to reduce GHG emissions in the unincorporated areas of the County. Specifically, these 26 local actions are grouped into five strategy areas: green building and energy; land use and transportation; water conservation and wastewater; waste reduction, reuse, and recycling; and land conservation and tree planting. With respect to water conservation and wastewater strategies, one of the local actions that is applicable to the proposed project is Action WAW-2 (Recycled Water Use, Water Supply Improvement Programs, and Storm Water Runoff), which has the goal of promoting the use of wastewater and gray water to be used for agricultural, industrial, and irrigation purposes as well as managing stormwater, reducing potential treatment, and protecting local groundwater supplies. Many of the local actions will be implemented through General Plan policies or other County ordinances. These actions undertaken as part of the CCAP will result in important community co-benefits including improved air quality, energy savings, and increased mobility, as well as enhancing the resiliency of the community in the face of changing climatic conditions. Overall, the goal of the CCAP, which will be a component of the Los Angeles County General Plan, will be to reduce GHG emissions from community activities in the unincorporated areas of Los Angeles County in a manner that is consistent with statewide goals outlined under AB 32 (County of Los Angeles, 2014b). The Final Draft CCAP is anticipated to be adopted with the County's General Plan update.

City General Plans

The numerous cities encompassed by the project area all have their own respective city general plans, some of which may contain policies that address GHG emissions and climate change. As implementation of the project proceeds, specific policies and objectives pertaining to GHG emissions and/or climate change from applicable city general plans will be identified and evaluated on a project-by-project basis during subsequent CEQA environmental processes.

4.6.3 Impacts and Mitigation Measures

Significance Criteria

According to Appendix G of the *CEQA Guidelines*, a project would have a significant effect on GHG emissions if it would:

- Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment; or
- Conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of GHGs.

As noted above, the increased concentration of GHGs in the atmosphere has been linked to global warming, which can lead to climate change. Construction and operation of the proposed project would incrementally contribute to GHG emissions along with past, present and future activities. As such, impacts of GHG emissions are analyzed here on a cumulative basis.

Currently, while SCAQMD has issued proposed standards and guidelines, there is no adopted state or local standard for determining the cumulative significance of the proposed project's GHG emissions on global climate change. In December 2008, SCAQMD adopted a 10,000 $MTCO_2e$/year for industrial facilities, but only with respect to projects where SCAQMD is the lead agency. Although SCAQMD has not formally adopted a significance threshold for GHG emissions generated by a proposed project for which SCAQMD is not the lead agency, or a uniform methodology for analyzing impacts related to GHG emissions on global climate change, in the absence of any industry-wide accepted standards the SCAQMD's significance threshold of 10,000 MT/year CO_2e for projects is the most relevant air district-adopted GHG significance threshold and is used as a benchmark for the project. It should be noted that the SCAQMD's significance threshold of 10,000 MT/year CO_2e for industrial projects is intended for long-term operational GHG emissions. The SCAQMD has developed guidance for the determination of the significance of GHG construction emissions that recommends that total emissions from construction be amortized over 30 years and added to operational emissions and then compared to the threshold (SCAQMD 2008).

Project Impacts

Impact 4.6-1: The project could generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment. (Less than Significant)

The proposed project would generate GHG emissions from a variety of sources. First, GHG emissions would be generated during construction of the proposed GBMP projects in the project area. Once fully operational, the GBMP projects' operations would generate direct GHG emissions from mobile sources (i.e., worker commute trips, periodic facility inspection and maintenance visits, and routine chemical deliveries). Indirect source emissions associated with the proposed GBMP projects would be generated from electrical consumption to power the proposed pump stations, pipelines, injection/production wells, and water treatment facilities.

The size, location, and timing and sequencing of the proposed GBMP projects, as well as the number of these projects that would be constructed under both Concept A and Concept B, have not been finalized at this time. In addition, the current designated locations for the various individual GBMP projects are also tentative, and may also change in the future. Furthermore, while the development of the GBMP projects proposed under Concept A are expected to occur prior to those proposed under Concept B, there remains a possibility that not all of the GBMP projects designated under Concept A and B would be developed. As described in detail in

Chapter 3, *Project Description*, of this EIR, the extent of the development of the proposed GBMP projects in the project area would depend on various factors and considerations, including new recycled water regulations, recycled water flow availability, river storm flow availability, MFSG capacity, SNMP development, West Coast Basin Flow and Transport Model revisions, public and stakeholder participation process, annually-conducted replenishment assessments, and Judgment Amendments for the West Coast and Central Basins. Thus, it is expected that development of the proposed GBMP projects in the project area would occur intermittently in the future based on consideration of the aforementioned factors over time to determine the feasibility of implementing each GBMP project.

Although determining the annual GHG emissions associated with the construction and operation of each future individual GBMP project would require WRD to speculate at this juncture, especially the construction-related GHG emissions, a review of the GHG emissions associated with the Groundwater Reliability Improvement Program (GRIP) Recycled Water Project, which is included as part of GBMP Project C0 under Concept A, provides a point of reference to gauge the magnitude of the GHG emissions that may be generated by each GBMP project. The GRIP Project involves the construction of a new treatment facility, brine disposal, and conveyance (pipeline, pump stations) components. WRD issued the DEIR for GRIP in April 2015, which included a quantitative analysis of GHG emissions that would be generated annually by the project (AECOM, 2015). Table 4.6-2 presents the summary of the estimated operational and amortized construction GHG emissions for the GRIP Project.

TABLE 4.6-2
ESTIMATED OPERATIONAL AND AMORTIZED CONSTRUCTION GHG EMISSIONS FOR GRIP PROJECT

Emission Source	CO_2e Emissions (MT/yr.)
Construction	
Total Construction Emissions	1,928
Amortized Construction Emissions (30 years)	64
Operations	
Area	<1
Mobile	22
Energy	3,307
Waste	31
Water	0
Subtotal	3,360
TOTAL GHG EMISSIONS	**3,424**
Significance Threshold	10,000
Exceed Significance Threshold?	No

CO_2e= carbon dioxide equivalent; MT/yr = metric tons per year.

SOURCE: AECOM, 2015.

As shown in Table 4.6-2, out of the total 3,424 MT/year of CO_2e emissions generated by the GRIP Project, approximately 97 percent of the GHG emissions were attributed to energy use (i.e., electricity consumption) for treating, conveying, and discharging water for the project. The

remaining two percent of the annual GHG emissions were attributed to the combined mobile, area, and waste sources associated with the project. Thus, as the other proposed GBMP projects would also consist of similar components that serve similar functions as the GRIP Project in the WRD service area, it is anticipated that energy use would be the primary source of GHG emissions for those projects as well.

As discussed under Impact 4.13-5 in Section 4.13, Utilities and Energy, of this PEIR, the proposed project serves to replace the use of existing and future imported water for groundwater replenishment with recycled water. In general, because the production and use of recycled water is more energy-efficient than imported water, both Concepts A and B under the proposed project would result in reduced energy requirements otherwise associated with utilizing imported water for replenishment. It is estimated, based on data provided by the CEC, that the energy intensity for water supply conveyance in Southern California is 3,020 kWh/AF (9,272 kWh/MG). This value accounts for the travel distance and requirements for pumping and lifting water over natural features such as the Tehachapi Mountains as water is conveyed from north to south. On the other hand, it is estimated that, based on data provided by the WateReuse Research Foundation, the total energy intensity for producing advanced treated recycled water and its distribution is 2,176 kWh/AF. Thus, the offset of imported water with recycled water under implementation of the proposed project would produce a decrease in the energy demand per AF of water, related to the acquisition of the replenishment source for the proposed GBMP projects utilizing recycled water. Since the energy associated with the management strategies of Concepts A and B would be less than importing the same amount of water via the SWP or the Colorado River, the proposed project would constitute an energy offset. Consequently, a corresponding offset in GHG emissions associated with energy use over baseline conditions would occur as a result of the proposed project.

Overall, because a net decrease in energy consumption would occur under the project when compared to existing baseline conditions with respect to water treatment, conveyance, collection, discharge, and distribution in the WRD service area, a reduction in GHG emissions associated with energy use would also occur due to the project. Given that the primary source of GHG emissions attributed to the proposed GBMP projects would be energy use when compared to other GHG emissions sources (i.e., area, mobile, waste, etc.), it is not anticipated that the annual GHG emissions for an individual GBMP project would exceed 10,000 MT/year of CO_2e. Additionally, with implementation of Mitigation Measure UTIL-3, which would require both energy efficient equipment and off-peak operation of proposed facilities, the project's overall energy generation requirements would be further reduced. As such, the GBMP projects would not generate, either directly or indirectly, substantial GHG emissions and impacts would be less than significant.

Mitigation Measures

Project impacts without mitigation would be less than significant. However, implementation of Mitigation Measure UTIL-3 would further reduce the project's GHG emissions associated with energy use.

Significance Determination: Less than significant.

Impact 4.6-2: The project could conflict with an applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of GHGs. (Less than Significant)

As discussed in the impact analysis above, the GHG emissions generated by each GBMP project associated with the proposed program would not exceed the SCAQMD's threshold of 10,000 MT/year CO_2e. The primary source of GHG emissions that would be generated by the GBMP projects would be from energy use. However, because the energy associated with the management strategies of Concepts A and B would be less than importing the same amount of water via the SWP or the Colorado River, the proposed project would constitute an energy offset. Additionally, similar to the GRIP Project, it is anticipated that GHG emissions from other emissions sources (i.e., mobile, area, and waste) would be relatively negligible when compared to the energy source emissions and would not generate substantial emissions. Consequently, the implementation of the GBMP projects in the WRD service area would not generate substantial amounts of GHG emissions that would hinder the State's ability to achieve AB 32's goal of achieving 1990 levels of GHG emissions by 2020.

Consistency with CARB Scoping Plan

As discussed in CARB's Scoping Plan, water use requires significant amounts of energy, where approximately one-fifth of the electricity and one-third of the non-power plant natural gas consumed in the state are associated with water delivery, treatment, and use (CARB, 2008). The Scoping Plan acknowledges that GHG emissions can be reduced if the state can move, treat, and use water more efficiently. As such, the Scoping Plan established GHG emissions reduction strategies measures that are directed at the water sector to increase the efficient treatment, use, and transport of water supplies.

The primary objectives of the proposed project are to: 1) provide adequate replenishment water supplies to meet the future needs of groundwater pumpers in the Central and West Coast Basins; 2) improve the reliability of the replenishment supplies by reducing and eventually eliminating the current use of imported water for basin replenishment; 3) improve groundwater quality; and 4) enhance the ability of the Central and West Coast Basins to sustainably store and deliver water supplies. Thus, the project would not conflict with the CARB Scoping Plan recommended actions listed in Table 4.6-1; in particular, water associated measures W-1 through W-4.

W-1: Water Use Efficiency

By providing adequate replenishment water supplies to the Central and West Coast Basins, the GBMP aims to reduce and eventually eliminate the current use of imported water for basin replenishment. The GBMP would not create a new or substantial increase in water demand and increased use of recycled water would actually lower demand for potable water. The GBMP would not conflict with measure W-1.

W-2: Water Recycling

The GBMP aims to use recycled water from existing water reclamation and treatment plants in the project area to augment natural recharge of the Central and West Coast Basins and meet overlying groundwater demands. In doing so, the GBMP projects would provide water replenishment for the groundwater basins with locally developed supplies rather than imported

water. Additional recycled water for the Central Basin would be developed from the LACSD, SJCWRP, and LCWRP facilities. In particular, full utilization of recycled water flows from SJCWRP and LCWRP could provide up to an additional 66,800 AFY of recycled water for replenishment in the Central Basin through surface spreading and injection in the Montebello Forebay. In the West Coast Basin area, opportunities exist to use available recycled water supplies from the City of Los Angeles' HTP and TIWRP, as well as LACSD's JWPCP, for replenishment purposes, which can provide up to an additional 54,000 AFY of recycled water. Thus, the GBMP would promote reuse of treated wastewater, lowering demand for potable water, and would not conflict with measure W-2.

W-3: Water System Energy Efficiency

As discussed in Section 4.14, *Utilities and Energy*, of this EIR, Concept A of the GBMP would replenish enough water up to the adjudicated limit required to meet the full water rights of pumpers, while Concept B would increase recharge and pumping mechanisms to augment replenishment in the groundwater basins above the adjudicated limit using additional energy on top of Concept A. Both concepts would decrease reliance on imported water and subsequently reduce energy intense water cycles involved with imported water. In addition, although operation of the proposed pipelines, injection and extraction wells, and the new and expanded treatment plants would require energy provided by SCE, this power would otherwise be used to import water for replenishment in the West Coast and Central groundwater basins. Overall, the energy associated with the management strategies of Concepts A and B would be less than importing the same amount of water via the SWP or the Colorado River. As such, the proposed project would constitute an energy offset. Furthermore, management strategies would be implemented by the GBMP to lessen the impact on local power supply providers while also supporting policies of the California Energy Action Plan II to reduce the state's overall energy users. Implementation of Mitigation Measure UTIL-3 would require both energy efficient equipment and off-peak operation of proposed facilities. Such energy efficiency measures would reduce the overall energy requirements associated with the proposed GBMP projects. Thus, the GBMP's operational activities would comply with applicable energy efficiency policies and standards. The project would not conflict with measure W-3.

W-4: Reuse Urban Runoff

Aside from recycled water, storm water runoff would constitute the other water source for replenishment of the Central and West Coast Basins under the project. The project's source of storm water would be captured from the San Gabriel River and the Los Angeles River. Thus, the project would not conflict with measure W-4.

Consistency with County of Los Angeles Community Climate Action Plan

As discussed previously, the County released its Final Draft CCAP in July 2014 that serves to mitigate and avoid GHG emissions associated with community activities in unincorporated Los Angeles County. The CCAP establishes a GHG reduction target that is consistent with AB 32. As part of the CCAP, 26 local actions have been identified to reduce GHG emissions in the unincorporated areas of the County. In particular, Measure WAW-2 (Recycled Water Use, Water Supply Improvement Programs, and Stormwater Runoff) from the CCAP specifically aims to promote recycled water use and policies to better manage stormwater to protect local

groundwater supplies. A part of the goal for this measure is to manage stormwater and protect local groundwater supplies. A specific implementation step associated with this measure identified in the CCAP is for the County to participate in and support regional programs and projects that target the improvement and conservation of the region's groundwater and surface water supplies. Thus, the GBMP projects that would be implemented as part of the proposed project would be consistent with this GHG reduction measure of the CCAP. Therefore, the proposed project would not conflict with the County's CCAP, and this impact would be less than significant.

Mitigation Measures

None required.

Significance Determination: Less than significant.

TABLE 4.6-3
GHG EMISSIONS IMPACT SUMMARY

	Concept A		Concept B	
Impact	**Impact Determination**	**Mitigation Summary**	**Impact Determination**	**Mitigation Summary**
GHG Emissions Generation: The project would generate GHG emissions, but would not have a significant impact on the environment, either directly or indirectly.	Less than Significant	None required; Implementation of Mitigation Measure UTIL-3 would further reduce less-than-significant impact.	Less than Significant	None required; Implementation of Mitigation Measure UTIL-3 would further reduce less-than-significant impact.
Applicable Plans: The project would not conflict with an applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of GHGs.	Less than Significant	None required.	Less than Significant	None required.

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4.7 Hazards and Hazardous Materials

Potential hazards addressed in this section include uses of hazardous materials during operation, hazardous materials in soil and groundwater, releases of hazardous materials during construction, and hazards related to aviation, emergency preparedness, and wildfires. Mitigation measures to reduce impacts to a less-than-significant level are identified.

4.7.1 Environmental Setting

Regional Setting

The following sections describe the environmental setting for hazards and hazardous materials within the project area. Specifically the GBMP projects would be located within the WRD's service area which is spread across the urbanized southern portion of Los Angeles County and focused in 17 municipalities and unincorporated areas of Los Angeles County. The cities include Bell, Bellflower, Carson, Cerritos, Cudahy, Downey, El Segundo, Huntington Park, Industry, Lakewood, Long Beach, Los Angeles, Maywood, Norwalk, Pico Rivera, South Gate, and Vernon.

Hazardous materials are currently stored and used within the WRD service area for a variety of reasons. Facilities within these boundaries that use or store hazardous materials may have experienced unauthorized releases into soil or groundwater, and these releases may or may not have been reported to the appropriate agency or agencies.

Local Setting

West Coast Basin

In the northern West Coast Basin, Projects W1 and W3 would be located in the City of El Segundo and the City of Los Angeles. El Segundo is a coastal city which retains primarily industrial and suburban residential land uses. According to the State Water Resources Control Board's (SWRCB) Geotracker Database, there are five open or active sites in the vicinity of Projects W1 and W3.

In the southern portion of the West Coast basin, Projects W4 would be located in the cities of Los Angeles, Carson, and unincorporated Los Angeles County. This area is highly urbanized and includes industrial, commercial, and residential uses.

The areas of Los Angeles and Carson where the GBMP projects would be located are generally flat with little topographic relief. According to the SWRCB's Geotracker Database, there are approximately 23 open or active hazardous waste release sites within one mile of the intersection of E. Anaheim Street and S. Alameda Street. There are approximately 15 open or active sites within a radius of one mile of Project W4, from the intersection of Normandie Avenue and W 228th Street.Central Basin

The proposed Projects C1 through C4, and C6 through C9 would be located in the eastern Central Basin in the Montebello Forebay area, east of I-710, south of SR-60 and west of I-605. The proposed project areas would include the cities of Bellflower, Downey, Pico Rivera, Industry,

Cerritos, Norwalk, Lakewood, Long Beach, and unincorporated Los Angeles County. A large part of the eastern Central basin is developed with residential, commercial, and industrial land uses. The SWRCB's Geotracker Database lists approximately eight open or active hazardous waste release sites within 2,000 feet of either side of I-605, and approximately 166 open and active sites in the vicinity of Projects C3, C4 and C6.

The proposed Projects C5 and C10 would be located in the western Central Basin in the Los Angeles Forebay/River area, primarily east of I-110, west of I-710 and south of I-10. Some proposed pipelines and the proposed new Satellite AWTF are located just west of I-110. The proposed projects would be located in the cities of Los Angeles, Huntington Park, Vernon, Maywood, Bell, Cudahy, and South Gate. These areas are zoned as mixed residential, commercial, and industrial. The SWRCB's Geotracker Database lists 13 open or active hazardous waste release sites within about 2,000 feet of either side of the Los Angeles River where Project C5 is located, and over 150 open or active sites within a 20,000 foot radius of Compton Avenue and E. Slauson Avenue, near Project C10.

Airports

There are five airports located within WRD's service. A brief description of each airport is described below and depicted on **Figure 4.10-1** in Chapter 4.10

Compton/Woodley Airport

Compton/Woodley Airport is located in the City of Compton and is owned by the County of Los Angeles. It is the oldest continuously operating airport in the Los Angeles Basin. The surrounding land uses are residential, commercial, and industrial. No proposed facilities are located within the airport's Airport Influence Area (AIA) (County of Los Angeles, 1991).

Hawthorne Municipal Airport/Jack Northrop Field

Hawthorne Municipal Airport/Jack Northrop Field is a public use airport owned by the City of Hawthorne, with surrounding residential, commercial, and industrial land uses. No proposed facilities are located within the airport's AIA (County of Los Angeles, 1991).

Torrance Airport/Zamperini Field

Torrance Airport/Zamperini Field is a general aviation airport owned and operated by the City of Torrance. Surrounding land uses are commercial, industrial, recreational, and residential (County of Los Angeles, 1991).

Long Beach Municipal Airport

Long Beach Municipal Airport is a scheduled air carrier airport owned and operated by the City of Long Beach. Surrounding land uses are recreational, commercial, residential, and industrial. No proposed facilities are located within the airport's AIA (County of Los Angeles, 1991).

Los Angeles International Airport

Los Angeles International Airport (LAX) is owned by the City of Los Angeles and is operated by Los Angeles World Airports, a proprietary department of the City of Los Angeles. It is the sixth busiest airport in the world. Surrounding land uses are industrial, commercial, and residential

(County of Los Angeles, 1991). Projects W1 and W3 would be located within LAX's AIA (See Figure 4.10-1).

Hazardous Materials

According to 22 California Code of Regulations (CCR) Section 66261.20, the term hazardous substance refers to both hazardous materials and hazardous wastes and both are classified according to four properties: toxicity, ignitability, corrosiveness, and reactivity. A hazardous material is defined by 22 CCR Section 66261.10 as a substance or combination of substances that may cause or significantly contribute to an increase in serious, irreversible, or incapacitating illness or may pose a substantial presence or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed.

Public health is potentially at risk whenever hazardous materials are or will be used. It is necessary to differentiate between the hazard of these materials and the acceptability of the risk they pose to human health and the environment. A hazard is any situation that has the potential to cause damage to human health and the environment. The risk to health and public safety is determined by the probability of exposure, and to the inherent toxicity of a material (DTSC 2010).

Factors that can influence health effects when human beings are exposed to hazardous materials include the dose the person is exposed to, the frequency of exposure, the duration of exposure, the exposure pathway (route by which a chemical enters a person's body), and the individual's unique biological susceptibility.

Hazardous wastes are hazardous substances that no longer have practical use, such as materials that have been discarded, discharged, spilled, or contaminated or are being stored until they can be disposed of properly (22 CCR Section 66261.10). Soil that is excavated from a site containing hazardous materials is a hazardous waste if it exceeds specific 22 CCR criteria. While hazardous substances are regulated by multiple agencies, as described in the Regulatory Framework subsection below, cleanup requirements of hazardous wastes are determined on a case-by-case basis according to the agency with lead jurisdiction over the project.

Given the predominantly urbanized nature of the proposed project area, hazardous materials and hazardous wastes may be found in commercial and industrial facilities that produce and/or use the materials, as well as in residential areas where consumer quantities of materials are stored or transported via roadways. In addition, soil, soil vapor, and groundwater throughout the proposed project area may have current and/or residual impacts from authorized or unauthorized releases of hazardous materials or waste.

Sensitive Receptors

Preschools, schools, daycare centers, nursing homes, and hospitals are considered sensitive receptors for hazardous material issues because children and the elderly are more susceptible than adults to the effects of many hazardous materials. There are numerous sensitive receptors in the

WRD service area. Due to the uncertainty of some project component locations, there is the potential for a number of sensitive receptors to be within 0.25 miles of project facilities.

Hazardous Materials in Soil and Groundwater

The potential for hazardous materials in soil and groundwater within the project area is based on an environmental database review conducted to identify environmental cases,[1] permitted hazardous materials uses,[2] and spill sites[3] within the boundaries of the cities listed above.

Environmental Database Review

Analysis for this project included a regulatory agency records search for the project area, but did not include a Phase I Environmental Site Assessment. The records search included the following database searches:

- State Water Resources Control Board (SWRCB) Geotracker Database (which identifies sites that impact groundwater or require groundwater cleanup), and
- California Department of Toxic Substances Control (DTSC) Envirostor database (which identifies sites with known hazardous material contamination or warrant further investigation as well as facilities that treat, store, transfer, or dispose of hazardous waste).

These databases have compiled information from various sources listing potential and confirmed hazardous waste and hazardous substances sites in California. The SWRCB Geotracker and DTSC Envirostor outputs for the project area are included in **Appendix J**. The records search revealed a total of 1,731 listed active or open sites within the aforementioned cities.

Active Sites

The SWRCB GeoTracker database notes that there are 1,255 open or active groundwater contamination sites in the cities of Bell, Bellflower, Carson, Cerritos, Cudahy, Downey, El Segundo, Huntington Park, Industry, Lakewood, Long Beach, Los Angeles, Maywood, Norwalk Pico Rivera, South Gate, and Vernon. The DTSC Envirostor database lists 476 open or active hazardous material sites in the same cities.

Household Hazardous Materials

Household hazardous waste is a hazardous waste generated incidental to owning or maintaining a place of residence, as defined in Section 25218.1 (e) of the California Health and Safety Code. Examples of common household hazardous wastes include antifreeze, household batteries, compressed gas cylinders, television/computer monitors, consumer electronic devices, home-generated sharps, oil-based paints, latex paints, motor oil, used oil filters, rodent poison, asbestos, gasoline, fluorescent lamps, partially used aerosol containers, and weed killers (CIWMB 2002). A household hazardous waste collection facility is operated by a public agency or its contractor for

1 Environmental cases are those sites that are suspected of releasing hazardous substances or have had cause for hazardous substances investigations and are identified on regulatory agency lists.
2 Permitted hazardous materials uses are facilities that use hazardous materials or handle hazardous wastes that operate under appropriate permits and comply with current hazardous materials and hazardous waste regulations.
3 Spill sites are locations where a spill has been reported to the State or federal regulatory agencies. Such spills do not always involve a release of hazardous materials.

the purposes of collecting, handling, treating, storing, recycling, or disposing of household hazardous wastes (Health and Safety Code Section 2518.1 (f)). A household hazardous waste collection facility may also accept wastes from small businesses that are conditionally exempt generators, defined as a small business that generates no more than 100 kilograms of hazardous waste per month.

Within WRD's service area, there are three permanent household hazardous waste collection centers. In the West Coast Basin, the Gaffey Street SAFE (Solvents/Automotive/Flammables/ Electronics) Center is in San Pedro, located at 1400 N. Gaffey Street, and the Hyperion Treatment Plant in Playa del Rey has a SAFE Center at 7660 West Imperial Highway at Gate B. In the Central Basin, there is a SAFE Center located at 2649 E. Washington Blvd in Los Angeles. These facilities accept items such as lawn and garden care products, paint and paint-related products, automotive fluids and batteries, beauty products and medicines, household cleaners, electronic waste, and other common household hazardous wastes. Each SAFE Center will also accept business waste from Conditionally Exempt Small Quantity Generators by appointment only (City of Los Angeles Sanitation Department).

Wildfires

Both the State of California and the County of Los Angeles Fire Department maps the Fire Hazard Severity Zones (FHSZ) within Los Angeles County. The FHSZ are based on an evaluation of fuels, topography, dwelling density, weather, infrastructure, building materials, brush clearance, and fire history (California Department of Forestry and Fire Protection, 2000). Though none of the project sites lie within Cal Fire-designated FHSZs or the Los Angeles Fire Department's Brush Clearance Zones, small portions of the WRD service area contain or are adjacent to Moderate, High, and Very High FHSZs along the hills to the north and east of Whittier, the Palos Verdes Hills in San Pedro, and just north of Inglewood.

4.7.2 Regulatory Framework

Hazards and hazardous materials are subject to numerous federal, State, and local laws and regulations intended to protect health, safety, and the environment. The U.S. Environmental Protection Agency (USEPA), DTSC, RWQCB, and County of Los Angeles are the primary agencies enforcing these regulations. Local regulatory agencies enforce many federal and State regulations through the Certified Unified Program Agency (CUPA) program. In 1997, the Los Angeles County Fire Department Health Hazardous Materials Division became the CUPA for the Hazardous Waste Generator Program, the Hazardous Materials Release Response Plans and Inventory Program, the California Accidental Release Prevention Program (Cal-ARP), the Aboveground Storage Tank Program and the Underground Storage Tank Program in Los Angeles County (LACFD, 2011).

Federal

Resource Conservation and Recovery Act (RCRA)

RCRA (42 U.S.C §6901-6987), which was enacted in 1976, is the principal law governing the disposal of hazardous materials. The purpose of RCRA is to protect human health and the

environment from the hazards posed by waste disposal; conserve energy and natural resources through waste recycling and recovery; reduce or eliminate the amount of waste generated, including hazardous waste; and ensure that wastes are managed in a manner that is protective to human health and the environment. In 1984 the scope of RCRA was substantially expanded with enactment of the Hazardous and Solid Waste Amendments (HSWA). HSWA expanded RCRA by adding compliance and enforcement program development along with further restrictions on leaking underground storage tanks. RCRA is considered a "cradle to grave" statute for hazardous wastes in that it addresses all aspects of hazardous materials from creation to disposal.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)

CERCLA, which is commonly referred to as Superfund, is a federal program that was established to address abandoned hazardous waste sites. CERCLA provides the USEPA with the authority to clean up contaminated sites, as well as require responsible parties to perform or reimburse the government for cleanup activities. The USEPA created the National Priorities List, a list established from the Hazard Ranking System, primarily for informational purposes. This list assists the USEPA in identifying sites or other releases of hazardous materials that may warrant remedial actions.

Emergency Planning and Community Right-To-Know Act (EPCRA)

EPCRA was created by the Superfund Amendments and Reauthorization Act (SARA) of 1986, which was intended to improve community access to information regarding chemical hazards and to facilitate the development of chemical emergency response plans by state, tribal, and/or local governments. Implementation of EPCRA required each state to appoint a State Emergency Response Commission or Tribal Emergency Response Commission that is responsible for dividing their state or tribal lands into Emergency Planning Districts and to appoint a Local Emergency Planning Committee for each district. EPCRA also established reporting obligations for facilities that store or manage specified chemicals.

Federal Hazardous Materials Transportation Law and Hazardous Materials Regulations

The federal Hazardous Materials Transportation Law (federal Hazmat Law), 49 U.S.C. Section 5101 et seq., 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 (HMR), which implement the federal Hazmat Law, govern the transportation of hazardous materials by highway, rail, vessel, and air. The HMR address hazardous materials classification, packaging, hazard communication, emergency response information, and training. The Pipeline and Hazardous Material Safety Administration (PHMSA) also issues procedural regulations, including provisions on registration and public sector training

and planning grants (49 CFR Parts 105, 106, 107, and 110). The Pipeline and Hazardous Material Safety Administration issues the HMR (PHMSA 2009).

The Federal Motor Carrier Safety Administration

The Federal Motor Carrier Safety Administration issues regulations concerning highway routing of hazardous materials, the hazardous materials endorsement for a commercial driver's license, highway hazardous material safety permits, and financial responsibility requirements for motor carriers of hazardous materials (PHMSA, 2009).

Process Safety Management

Facilities that handle more than 10,000 pounds of a flammable liquid, or specific chemicals above threshold quantities, are subject to the federal Process Safety Management regulations specified in Title 29 of the Federal Code of Regulations, Section 1910.119. In accordance with these regulations, the facility operator must conduct a hazard analysis for each process, develop written operating procedures, provide employee training, establish and implement an emergency action plan, and conduct periodic audits of the process. The operator must also inform contractor employees of all hazards related to work involving the regulated process, require implementation of safe work practices by the contractor in accordance with written operating procedures, and explain the emergency action plan. For maintenance, the operator must also provide written procedures to maintain the ongoing integrity of equipment required for the regulated process.

Regional Screening Levels

The USEPA has published Regional Screening Levels (RSL), previously referred to as Preliminary Remediation Goals, for the evaluation of chemicals commonly found in soil or groundwater where a release of hazardous materials has occurred (USEPA, 2010). For an industrial worker, these screening levels are conservative estimates of safe levels of a chemical that a worker could be exposed to in soil and groundwater. If the concentration of a chemical in the soil or groundwater is below the RSL, then it can be assumed that the chemical would not pose a health risk to the worker. However, these screening levels are based on conservative exposure assumptions, and it is possible to conduct a more detailed risk assessment using project-specific exposure assumptions to develop a higher concentration that would be considered safe.

In addition, screening levels would generally be lower for industrial workers than construction workers because the industrial worker would be exposed to the soil and groundwater over a lifetime while the construction worker would only be exposed for the duration of construction. Therefore, safe levels of chemicals in soil and groundwater would generally be higher for construction workers than industrial workers.

Hazardous Materials Worker Safety Requirements

The federal Occupational Safety and Health Administration (OSHA) is the federal agency responsible for ensuring worker safety. The federal regulations for worker safety are contained in Title 29 of the Code of Federal Regulations, as authorized in the Occupational Safety and Health

Act of 1970. These regulations provide standards for safe workplaces and work practices, including those relating to hazardous materials handling.

State

Hazardous Waste Regulations

Hazardous waste programs in California are primarily administered by DTSC and the California Environmental Protection Agency (Cal EPA). Title 22, Division 4.5, Environmental Health Standards for the Management of Hazardous Wastes provides the basis for California hazardous waste regulations, and Chapter 6.5 of the California Health and Safety allows for implementation of a "cradle to grave" waste management system analogous to RCRA.

Cal EPA oversees the Unified Program, which is a consolidation of six environmental and emergency response programs. The Enforcement and Emergency Response Program of DTSC oversees the hazardous waste generator and onsite waste treatment surveillance and enforcement program that is carried out by local Certified Unified Program Agencies (CUPAs). The local CUPAs are tasked with establishing a unified hazardous waste and hazardous materials management program for hazardous waste generators, treatment of hazardous waste, facilities with underground and aboveground storage tanks, risk management and prevention plans, and hazardous materials management plans and inventory statements required by the Uniform Fire Code.

The Los Angeles County Fire Department is the CUPA for the majority of the County of Los Angeles, including WRD's service area.

Hazardous Material Release Response Plans and Inventory Law

The California Hazardous Materials Release Response Plan and Inventory Law of 1985 (Business Plan Act) requires that businesses that store hazardous materials on site prepare a Hazardous Materials Business Plan (HMBP) and submit it to local health and fire departments. The business plan must include details of the facility and business conducted at the site, an inventory of hazardous materials that are handled and stored onsite, an Emergency Response Plan, and a Site Safety Plan that includes an emergency response training program for new employees with an annual refresher course. HMBPs must be submitted to the local CUPA and also must follow federal EPCRA reporting requirements.

California Accidental Release Prevention Program

The California Accidental Release Prevention (CalARP) Program regulates facilities that use or store regulated substances, such as toxic or flammable chemicals, in quantities that exceed established thresholds (California Code of Regulations (CCR) Title 19, Division 2, Chapter 4.5). The purpose of the CalARP program is to prevent accidental releases of regulated substances and reduce the severity of releases that do occur. The CalARP Program meets all requirements of the USEPA's Risk Management Program, established pursuant to the Clean Air Act Amendments (42 USCA Section 7412(4)). The CalARP Program requires facilities that use regulated substances to develop a Risk Management Plan (RMP).

California Fire Code

The California Fire Code, Article 80, includes specific requirements for the safe storage and handling of hazardous materials. These requirements reduce the potential for a release of hazardous materials and for mixing of incompatible chemicals, and specify the following design features to reduce the potential for a release of hazardous materials that could affect public health or the environment:

- Separation of incompatible materials with a noncombustible partition;
- Spill control in all storage, handling, and dispensing areas; and
- Separate secondary containment for each chemical storage system. The secondary containment must hold the entire contents of the tank, plus the volume of water needed to supply the fire suppression system for a period of 20 minutes in the event of a catastrophic spill.

The California Fire Code, Article 79, includes specific requirements for the safe storage and handling of flammable and combustible liquids. Specific requirements address fire protection; prevention and assessment of unauthorized discharges; labeling and signage; protection from sources of ignition; specifications for piping, valving, and fittings; maintenance of above ground tanks; requirements for storage vessels, vaults, and overfill protection; and requirements for dispensing, using, mixing, and handling of flammable and combustible liquids.

Transportation of Hazardous Wastes

Regulatory requirements for the transport of hazardous wastes in California are specified in 22 CCR, Division 4.5, Chapters 13 and 29. In accordance with these regulations, all hazardous waste transporters must have identification numbers, which are used to identify the hazardous waste handler and to track the waste from its point of origin to its final disposal disposition (DTSC, 2007). This number, issued by either USEPA or DTSC, depends on whether the waste is classified as hazardous by federal regulations or only under California regulations. Hazardous waste transporters must comply with the California Vehicle Code, California Highway Patrol regulations (13 CCR); the California State Fire Marshal regulations (19 CCR); and U.S. Department of Transportation regulations (Title 49 of the Code of Federal Regulations (CFR)); and USEPA regulations (Title 40 of the CFR). A hazardous waste manifest is required for transport of hazardous wastes. The hazardous waste manifest documents the legal transport and disposal of the waste, and is signed by the generator and transporter(s) of the waste as well as the disposal facility. California regulations specify specific cleanup actions that must be taken by a hazardous waste transporter in the event of a discharge or spill, and for the safe packaging and transport of hazardous wastes.

Waste Classification Criteria

In accordance with 22 CCR Section 66261.20, et seq., excavated soil would be classified as a hazardous waste if it exhibits the characteristics of ignitability, corrosivity, reactivity, or toxicity. A waste is considered toxic in accordance with 22 CCR Section 66261.24 if it contains:

- Total concentrations of certain substances at concentrations greater than the Total Threshold Limit Concentration (TTLC);
- Soluble concentrations greater than the Soluble Threshold Limit Concentration(STLC);
- Soluble concentrations of certain substances greater than federal toxicity regulatory levels using the Toxicity Characteristic Leaching Procedure (TCLP); or
- Specified carcinogenic substances at a single or combined concentration of 0.001 percent.

A waste is considered hazardous by state and federal regulations if the soluble concentration exceeds the federal regulatory level as determined by the TCLP. Because the TCLP involves a 20-to-1 dilution of the sample, the total concentration of a substance in the soil would need to exceed 20 times the regulatory level for the soluble concentration to exceed the regulatory level in the extract. A waste is also considered hazardous under state regulations if the soluble contaminant concentration exceeds the STLC as determined by the Waste Extraction Test (WET) method. Because the WET is performed using a 10-to-1 dilution of the sample, the total concentration of a substance would need to exceed 10 times the STLC for the soluble concentration to possibly exceed the STLC in the extract. A waste may also be classified as toxic if testing indicates toxicity greater than the specified criteria.

Hazardous Materials Worker Safety Requirements

The state regulations concerning the use of hazardous materials in the workplace are included in 8 CCR, and include requirements for safety training, availability of safety equipment, accident and illness prevention programs, hazardous substance exposure warnings, and emergency action and fire prevention plan preparation. The California Division of Occupational Safety and Health (CalOSHA) also enforces hazard communication program regulations, which contain worker safety training and hazard information requirements, such as procedures for identifying and labeling hazardous substances, communicating hazard information relating to hazardous substances and their handling, and preparation of health and safety plans to protect workers. CalOSHA standards are generally more stringent than federal OSHA regulations.

Local

Los Angeles County Fire Department Wildfire Action Plan

In 2009, the LACFD adopted a Wildfire Action Plan, which contains guidelines that recommend fire prevention measures such as creating defensible space and completing fire-resistive retrofits in homes (LACFD 2009). In addition, this plan provides residents with information regarding emergency preparedness and planning in the event of a wildfire.

Los Angeles County Operational Area Emergency Response Plan

In 1998, the County of Los Angeles adopted the Los Angeles County Operational Area Emergency Response Plan, which provides emergency planning for the Los Angeles County Operational Area, an area that includes the project area. The purpose of this plan is to increase cooperation and coordination between relevant government agencies and jurisdictions, in order to

increase efficiency and minimize losses in the event of an emergency or disaster within the Operational Area (County of Los Angeles 1998).

Hazardous Materials Fire Code Requirements

As the CUPA, the LACFD enforces the hazardous materials-related standards of the California Fire Code, including requirements for signage of hazardous materials storage areas, storage of flammable materials, secondary containment for storage containers, and separation of incompatible chemicals.

General Plans

Although local building and zoning ordinances generally are not applicable to most water and wastewater infrastructure projects (per California Government Code Section 53091(d) and 53091(e)), all available General Plans for jurisdictions in the project areas have been reviewed for policies relevant to the proposed project.

Bell (2010)

Policy SE 2: The City will establish and enforce standards to reduce unacceptable levels of fire and geological risk.

Bellflower (1995)

Policy LU 2.6: Restrict intensive uses and activities in areas where natural and/or man-made hazards occur.

Policy SE 1.4: Review and improve the City's disaster preparedness and Emergency response capabilities. Continue to update the City's Multihazard Functional Plan for Emergency Operations every five years.

Carson (2004)

Goal SAF-4: Minimize the threat to the public health and safety and to the environment posed by a release of hazardous materials.

Policy SAF-4.1: Strictly enforce federal, state and local laws and regulations relating to the use, storage, and transportation of toxic, explosive, and other hazardous and extremely hazardous materials to prevent unauthorized discharges.

Policy SAF-4.3: Through the planning and business permit processes, continue to monitor the operations of businesses and individuals which handle hazardous materials.

Policy SAF-4.4: Explore the possibility of identifying specific routes for the transport of hazardous materials, to include both railroad and street systems.

Policy SAF 4.8: Maintain cooperative relationships with the chemical handlers, response agency and community representatives though such organizations as South Bay Community Awareness and Emergency Response (CAER), to ensure an informed and coordinated response to chemical emergencies.

Cerritos (2004)

Goal SAF-3: Minimize the threat of life and property associated with the transport, use, storage and disposal of toxic and/or hazardous materials.

Policy SAF-3.1: Encourage the proper disposal of household hazardous waste through the dissemination of information through educational and outreach activities.

Policy SAF-3.2: Monitor facilities or businesses that utilize, store or handle hazardous materials to ensure practices and procedures will reduce the threat of damage to life and property.

Policy SAF-3.3: Enforce Federal, State, and local laws and regulations relating to the use, storage, transport and clean-up of toxic, explosive and other hazardous materials to prevent unauthorized discharges.

Policy SAF-3.4: Identify specific routes, both street and railroad systems, for the safe transport of hazardous materials in and through the City.

Policy SAF-3.5: Continue to support regional and State efforts in controlling point and non-point sources of water pollution.

Goal SAF-5: Reduce the potential for injury and property damage associated with the failure, damage or rupture of underground pipelines.

Policy SAF-5.1: Ensure that disaster response agencies, such as the Los Angeles County Fire Protection District have access to data related to pipeline routing, locations, depth and shut-off information.

Policy SAF-5.2: Ensure the accuracy of existing as-built plans indicating pipeline locations.

Policy SAF-5.3: Utilize GIS as a tool to accurately record the location of all potential underground pipeline hazards.

Policy SAF-5.4: Coordinate with agencies operating under ground lines to determine potential threats of rupture.

Policy SAF-5.5: Require all underground pipeline and related structures be designed, constructed and maintained to resist stress caused by lateral forces during periods of seismic activity.

Policy SAF-5.6: Coordinate the abandonment and/or removal of outdated and unused pipelines with required regulations. City of Cudahy General Plan

Cudahy (1992)

Goal PSE 1: The City of Cudahy will work to provide an environment that is reasonably safe from hazards.

Policy 1.2: The City of Cudahy will support the enforcement of state and federal laws on the control of hazardous wastes, landfills, and other issues.

Policy 1.5: The City of Cudahy will establish emergency procedures for evacuation and /or relief for identified hazards in the City.

Policy 1.7: The City of Cudahy will develop and implement programs to assist residents and businesses to dispose of household quantities of hazardous materials.

Policy 1.9: The City of Cudahy will encourage the remediation of historic dumpsites and other identified contaminated sites in the City.

City of Downey (2005)

Goal SE 5.2: Protect the health, safety, and welfare of residents, workers, and visitors from the improper use, storage, handling, and disposal of hazardous materials.

Policy 5.2.1: Monitor the generation, storage, and disposal of hazardous materials.

Policy 5.2.2: Prevent contamination from hazardous materials

El Segundo (1992)

Goal HM1: Protect health and safety of citizens and businesses within El Segundo and neighboring communities.

Objective HM2-1: Maintain and update a comprehensive emergency plan consisting of measures to be taken during and after hazardous materials spills.

Goal HM5: Assist in meeting State and county goals to reduce hazardous waste generation to the maximum extent possible.

Objective HM5-1: Identify all generators and transporters of hazardous materials and wastes within the City, and either establish a system to monitor the transportation and disposal of these wastes or access the existing State system.

Goal HM6: Identify areas within the City potentially suitable for siting hazardous waste management facilities consistent with the criteria presented in the LACoHWMP and consistent with the City General Plan.

Huntington Park (1991)

Goal SE 4.0: minimize risks to life and property associated with handling, transporting, treating, generating, and storage of hazardous materials.

Policy 4.1: Locate new and relocate existing land uses involved in production, storage, transportation, handling, and/or disposal of hazardous materials a safe distance from other land uses that may be adversely affected by such activities.

Policy 4.2: Encourage and support the proper disposal of household waste and waste oil. Monitory dry cleaners, film processors, auto service establishments, and other businesses generation hazardous waste materials to ensure compliance with approved disposal procedures.

Policy 4.5: Cooperate with the County in local implementation of applicable portions of the *Los Angeles Hazardous Waste Management Plan.*

Industry (2014)

Goal S4: Reduced potential for hazardous materials exposure and contamination.

Policy S4-2: Require that the users of hazardous materials be adequately prepared to prevent and mitigate hazardous materials releases.

Policy S4-3: Discourage new sensitive land uses from locating near existing sites that use, store, or generate large quantities of hazardous materials.

Lakewood (2010)

Policy 1.4: Require that those uses which generate, store, process, or transport hazardous waste are sited in a matter such that residents, and accessory residential uses, including schools, parks, hospitals, and places of employment are adequately protected from potential environmental impacts.

Policy 1.2: Ensure that City transportation routes that are utilized by hazardous waste haulers will not pose a threat to the safety of residents due to spills or accidents and are in conformance with Lakewood's "Multihazard Functional Plan for Emergency Operations."

Policy 6.1: Utilize siting criteria which guarantees that uses which generate, store, process, or haul hazardous waste will be adequately buffered from environmentally sensitive areas such as parks, natural waterways, and areas located in seismic safety zones.

Policy 6.2: Encourage and promote innovative technology which pre-treats hazardous waste products prior to disposal.

Goal SE 7.0: To ensure that the generation of hazardous waste is reduced, through elimination or recycling, to the maximum extent feasible.

Policy 7.1: Adopt waste minimization as a first priority for hazardous waste management in Lakewood.

Policy 8.3: Maintain an updated inventory of businesses that handle, store, process and/or transport substantial amounts of hazardous waste.

Long Beach (1973-2010)

Management Goals: 5. Establish safety guidelines to evaluate all potential safety hazards and mitigate existing problems.

Development Goals: 4. Continue to identify existing or proposed uses or activities that may pose safety hazards.

Protection Goals: 2. Protect existing land uses from the intrusion of safety hazards.

Protection Goals: 3. Reduce public exposure to safety hazards.

Protection Goals: 9. Continue to inform the public of potential safety hazards and what to do in times of emergencies.

Los Angeles (1973-2012)

Goal SE 1: A city where potential injury, loss of life, property damage and disruption of the social and economic life of the City due to fire, water related hazard, seismic event, geologic conditions, or release of hazardous materials disasters is minimized.

Policy 1.1.4: Health/environmental protection. Protect the public and workers from the release of hazardous materials and protect City water supplies and resources from contamination resulting from accidental release or intrusion resulting from a disaster event, including protection of the environmental and public from potential health and safety hazards associated with program implementation.

Norwalk (1996)

Objective 1: To avoid unnecessary exposure to hazards and continue operation of critical facilities after an emergency.

Policy 5: New development and other land use entitlements should be reviewed by emergency response agencies to ensure that public safety can be adequately provided.

Objective 2: To prepare the City for effective response to catastrophe.

Policy 2: Ensure that emergency preparedness is the mutual responsibility of City agencies, residents, and the business community.

Pico Rivera (1993)

Goal EME B: To create a secure public environment which minimizes potential loss of life and property damage, as well as social, economic, and environmental disruption resulting from natural and man-made disasters.

Objective B.4: Protect life and property from the potential detrimental effects (short- and long-term) of the transportation, storage, treatment, and disposal of hazardous materials and wastes in the city.

South Gate (2009)

Goal HC 8: Reduced risks to the community from earthquakes and other natural and manmade hazards

Objective HC 8.2: Establish and maintain an effective emergency response program to respond to disasters and maintain continuity of life-support functions during an emergency

Goal HC 9: To protect the community from the harmful effects of hazardous materials and waste

Policy HC 9.1.1: The City will regularly update Hazardous Waste Management procedures and actively implement appropriate Hazardous Waste Management policies recommended by the Los Angeles county Emergency Survival Platform

Policy HC 9.1.2: The City will enforce state and local codes that regulate the use, storage and transportation of hazardous materials in order to prevent, contain and effectively respond to accidental releases.

Policy HC 9.1.3: The City should monitor the use and release of hazardous materials in the City

Policy HC 9.1.4: The City should, to the extent possible, ensure on a case by case basis that new development near known locations of hazardous waste or materials is suitable for human habitation and does not pose higher than average health risks from exposure to hazardous material.

Vernon (2007)

Goal S-1: Minimize the risk to public health, safety, and welfare associated with the presence of natural and human-caused hazards.

Policy S-1.4: Maintain the public water distribution and supply system facilities to provide adequate capacity to meet both every day and emergency fire-flow needs.

Goal S-2: Provide a high degree of protection for all residents and workers from hazardous materials and the hazards associated with transport of such materials.

Policy S-2.1: Continue to support and encourage State efforts to identify existing or previously existing hazardous waste generators or disposal sites in the City of Vernon.

Policy S-2.2: Continue to require every business to maintain a list of the chemicals and other hazardous materials used or stored on site on appropriate material safety data sheets

and otherwise in accordance with law, and to provide that list to the Fire Department and Environmental Health Department. Require that the Fire Department and Environmental Health Department to maintain a list of such materials and the location where they are stored or used to permit emergency personnel to respond appropriately, if required.

Goal S-3: Maintain high standards for the provision of the City emergency services.

Policy S-3.2: Require businesses handling, transporting, or producing materials considered acutely hazardous to prepare contingency plans for accidents involving these chemicals.

Goal S-4: Provide a high degree of protection for all workers and residents in the event of any disaster.

Policy S-4.2: Review the design of new development projects to consider public safety and issues such as emergency access, defensible space, and overall worker safety.

4.7.3 Impacts and Mitigation Measures

Significance Criteria

The criteria used to determine the significance of impacts related to hazards and hazardous materials are based on Appendix G of the *CEQA Guidelines*. The proposed project would result in a significant impact with respect to hazards or hazardous materials quality if it would:

- Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.
- 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.
- Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.
- Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment.
- 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 result in a safety hazard for people residing or working in the project area.
- 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.

- 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.

A discussion of the impacts and mitigation measures for the proposed project are presented below.

Impacts Discussion

Private Airstrip

The GBMP does not propose any projects within the vicinity of a private airstrip. As a result, no impacts would occur and no mitigation is required.

Wildland Fires

Proposed GBMP facilities would be located primarily within paved and unpaved roadway ROWs or immediately adjacent vacant lands. Lands adjacent to the proposed facilities are largely urbanized and/or industrialized and are not within FHSZs. Because the various project sites are surrounded by developed parcels and the immediate vicinity of the does not contain any wildland-urban interfaces that are susceptible to wildland fires, there would be no impacts associated with wildland fires.

Routine Hazardous Materials Transport, Use, and Disposal

Impact 4.7-1: The proposed project would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. (Less than Significant)

Construction activities required for implementation of the proposed projects under both Concept A and Concept B would potentially involve drilling, trenching, excavation, grading, and other ground-disturbing activities. Construction activities would be required for the installation of new water facilities throughout the project area, including the installation of new pipelines, injection and extraction wells, and treatment facilities. The ultimate location and design of the treatment facilities is not fully known at this time. Individual projects would undergo subsequent environmental evaluation under CEQA, and would be designed to avoid and/or minimize environmental impacts wherever feasible.

The anticipated construction activities described above would temporarily require the transport, use, and disposal of hazardous materials including gasoline, diesel fuel, hydraulic fluids, paint, and other similarly related materials. Construction activities would require the use of heavy equipment that would contain oil, gasoline, or other fluids that would likely be stored on and transported to the project site during the construction period.

Accidental release of these materials could occur during routine transport, disposal, or use, and could potentially injure construction workers, contaminate soil, and/or affect nearby groundwater or surface water bodies. Impacts associated with accidental release, although likely localized, could potentially create a significant hazard to the public or the environment. WRD or another implementing agency would be required to comply with all relevant and applicable federal, state and local laws and regulations that pertain to the transport, storage, use, and disposal of hazardous materials and waste during construction of proposed facilities. Because the implementing agency would be required to comply with all relevant laws associated with the accidental release of hazardous materials construction impacts would be less than significant for both Concept A and Concept B.

Operation of expanded treatment plant facilities under both Concept A and Concept B, including the proposed Satellite AWTF (Concept B, Project C10), would require routine transport and use of new chemicals for purposes of producing advanced treated recycled water. The implementing agency shall be required to comply with all relevant and applicable federal, State and local laws and regulations that pertain to the transport, storage, and use of hazardous materials during operation of proposed facilities. Compliance with these laws would minimize the potential hazard to the public or environment due to routine transport, storage, and use of hazardous materials. Impacts would be less than significant under both Concept A and Concept B.

Mitigation Measures

None required.

Significance Determination: Less than significant.

Accidental Release of Hazardous Materials

Impact 4.7-2: The proposed project could 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. (Less than Significant with Mitigation)

Construction activities and operations associated with implementation of the proposed project could create additional significant hazards to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials. The potential exists for accidents to occur during construction activities and through routine operation and maintenance activities, which could result in the release of hazardous materials into the environment.

Construction of the proposed project could result in the exposure of construction workers and nearby residents to potentially contaminated soils or groundwater due to improper use, storage, or disposal of hazardous materials and/or leakage from underground storage tanks or other chemical containers on site. Implementation of **Mitigation Measure HAZ-1** and **HAZ-2** would reduce these potentially hazardous impacts from construction activities to a less than significant level under Concept A and Concept B.

Once constructed, operations at new facilities, such as upgraded or expanded treatment plants, that use regulated and hazardous materials, would be required to operate in accordance with all State and Federal laws and regulations that oversee the use and disposal of hazardous substances. For example, the California Accidental Release Prevention (CalARP) Program requires facilities that use regulated substances to develop a Risk Management Plan (RMP). A RMP would be required for the proposed Satellite AWTF (Project C10); the RMP would be kept on file with the Los Angeles County Fire Department. Existing treatment plants that undergo expansion will require an updated RMP to include new facilities and any associated hazardous materials use, storage, or transport. The RMP is a public document that reflects a facility's overall effort to manage and prevent risks associated with the storage, use, and/or processing of regulated substances.

The California Hazardous Materials Release Response Plans and Inventory Program (CCR Title 19, Division 2, Chapter 4) requires facilities that store hazardous materials onsite to prepare a Hazardous Materials Business Plan (HMBP) that includes an inventory of hazardous substances and an Emergency Response Plan (ERP). The HMBP is submitted to local health and fire departments. In the event of an accident, the release of hazardous materials must be immediately reported to local fire and emergency personnel and appropriate county and state agencies.

Expansion of existing treatment plants or implementation of the proposed Satellite AWTF (Project C10) would require delivery of chemicals. The transport of hazardous materials is regulated by Caltrans. Transporters of hazardous waste would be required to be certified by Caltrans. All transport of hazardous materials would be tracked by Caltrans and delivery vehicles would be required to utilize roadways approved for transportation of hazardous materials. Thus, the proposed projects would not create a significant hazard to the public due to the extensive regulations already in place regarding the transport of hazardous materials.

Implementation of the RMP, HMBP, and ERP, as required, and compliance with all laws and regulations governing the use, transport, and disposal of hazardous substances would reduce potential risks to the public and environment to less than significant levels in the event of an accidental release of hazardous materials during operations associated with the proposed project.

Mitigation Measures

HAZ-1: Contingency Plan for Contaminated Soil or Groundwater. Prior to commencement of construction requiring excavation, the implementing agency shall require its construction contractor to consult with appropriate regulatory agencies to prepare a Contingency Plan that outlines how to dispose of any contaminated soil or groundwater that may be encountered during construction. If contaminated soil and/or groundwater are encountered or if suspected contamination is encountered during project construction, work shall be halted in the area, and the Contingency Plan shall be implemented.

HAZ-2: Hazardous Materials Management Spill Prevention and Control Plan. Before commencement of construction activities requiring the storage of hazardous materials on site, the implementing agency shall require its construction contractor to prepare a Hazardous Materials Management Spill Prevention and Control Plan that includes a

project-specific contingency plan for hazardous materials and waste operations. The Plan shall be applicable to all construction activities, and shall establish policies and procedures according to federal and California OSHA regulations for hazardous materials. Elements of the Plan shall include, but not be limited to the following:

- A discussion of hazardous materials management, including delineation of hazardous material storage areas, access and egress routes, waterways, emergency assembly areas, and temporary hazardous waste storage areas;
- Notification and documentation of procedures; and
- Spill control and countermeasures, including employee spill prevention/response training.

Significance Determination: Less than significant with mitigation.

Hazardous Materials Near Schools

Impact 4.7-3: Construction of the proposed project could emit hazardous emissions or handle hazardous or acutely hazardous material, substances, or waste within one-quarter mile of an existing or proposed school. (Less than Significant with Mitigation)

Due to the potentially extensive nature of facilities associated with implementing the proposed project, including proposed recharge sites, future well sites, and pipeline construction, it is possible that construction of proposed facilities would occur within one-quarter mile (1,320 feet) of schools in the following districts:

Los Angeles Unified School District	ABC Unified School District
El Segundo Unified School District	Norwalk-La Mirada Unified School District
Manhattan Beach Unified School District	Whittier Union High/Little Lake City Elementary
Redondo Beach Unified School District	Downey Unified School District
Torrance Unified School District	Montebello Unified School District
Long Beach Unified School District	El Rancho Unified School District
Paramount Unified School District	Whittier Union High/Whittier City Elementary
Bellflower Unified School District	

Based on preliminary locations of proposed GBMP projects as identified in the Map Atlas in Appendix B, the following schools could be located within one quarter-mile of proposed facilities:

TABLE 4.7-1
SCHOOLS WITHIN ONE QUARTER-MILE OF PROPOSED PROJECT FACILITIES

Project	School	
W1, W3	St. Anthony Elementary School	El Segundo Middle School
W4	Normont Elementary School Wilmington Middle School Halldale Elementary School	Meyler Street Elementary School President Avenue Elementary School
C1, C2, C7, C8	Everest College, City of Industry Solid Faith Christian School	Family Life Center Christian Academy
C3, C4, C9	Rio Vista Elementary School Mary E. Meller Elementary School Immaculate Heart Academy Alameda Elementary School Sussman Middle School Los Angeles County Special Education Gaulin Elementary School Lewis Elementary School	St. Dominic Savior Elementary School St. John Bosco High School Frank E. Woodruff Elementary School Washington Elementary School American Beauty College St. Bernard School Las Flores Elementary School
C5	Alhadi School	Park Avenue Elementary School
C6	Rio Vista Elementary School Mary E. Meller Elementary School Immaculate Heart Academy Alameda Elementary School Sussman Middle School Los Angeles County Special Education Gaulin Elementary School Lewis Elementary School St. Dominic Savior Elementary School St. John Bosco High School Frank E. Woodruff Elementary School	Washington Elementary School American Beauty College St. Bernard School Las Flores Elementary School St. Marianne School Aeolian Elementary School Los Nietos Elementary School Columbus Continuation School Downey Adult School New Harvest Christian School Calvary Chapel Christian School
C10	Just Beginning Inc. Birdielee V. Bright Elementary School Foshay Learning Center Lenicia B. Weemes Elementary William Jefferson Clinton Middle School Animo Jackie Robinson High School Dr. Theodore T. Alexander Science Center Maple Primary Center Synergy Charter Academy Thomas Jefferson Senior High School Wadsworth Avenue Elementary Student Empowerment Academy Ascot Avenue Elementary Arco Iris Primary Center Los Angeles Academy Middle School Lillian Street Elementary School United Education Institute	Pacific Boulevard School Huntington Park College-Ready Academy Huntington Park Senior High Loma Vista Elementary Maywood Baptist Pilgrim Academy Maywood Christian School Thomas A. Edison Middle School Miramonte Elementary Centennial College Preparatory Academy Florence Avenue Elementary School Charles Drew Middle School Parmelee Avenue Elementary School Seventy-Fifth Street Elementary School Mary McLeod Bethune Middle School Sixty-Eighth Street Elementary School Sixty-First Street Elementary School West Vernon Avenue Elementary School

SOURCE: ESA, 2013

In addition to the districts listed above, it is possible that facilities that have not yet been sited would involve construction within one-quarter mile of other schools within the project area. Because construction activities could potentially involve hazardous materials or substances, the proposed project would have the potential to emit hazardous emissions or handle hazardous materials, substances, or waste within a quarter mile of an existing or proposed school. Adherence to requirements set forth in Mitigation Measures HAZ-1 and HAZ-2 would reduce the

impact to a less than significant level. In addition, implementation of **Mitigation Measures TR-1** and **TR-6** (see **Chapter 4.13, Transportation and Traffic**) would require implementing agencies to coordinate with local school districts to ensure that construction activities do not impact local schools. Impacts under both Concept A and Concept B would be less than significant with mitigation

Mitigation Measures

Implementation of **Mitigation Measures HAZ-1** and **HAZ-2.**

Implementation of **Mitigation Measures TR-1** and **TR-6**.

Significance Determination: Less than significant with mitigation.

Impact 4.7-4: Operation of the proposed treatment facilities could emit hazardous emissions or handle hazardous or acutely hazardous material, substances, or waste within one-quarter mile of an existing or proposed school. (Less than Significant)

There would be no potential hazardous emissions associated with operation of proposed conveyance infrastructure or wells. However, operation of the proposed Satellite AWTF (Project C10), as well as operation of expanded treatment facilities (Projects W1,, W3, W4, C0-B, C1, C2, C3, C4), would have the potential to release hazardous materials within a quarter-mile of existing or proposed schools (see Table 4.7-1). Expanded treatment facilities may result in the storage, use, and disposal of small amounts of new chemicals onsite. But such treatment facilities would already have a HMBP, RMP, and ERP on file that would require updating to include the new facilities and chemicals. The implementing agency of the new Satellite AWTF would have to prepare a RMP to be kept on file with the Los Angeles County Fire Department and the USEPA. A HMBP and ERP also would be required. Implementation of these plans would reduce risks to any schools within a quarter-mile of Project C10 to less than significant levels, which may include the following:

- Birdielee V. Bright Elementary
- Foshay Learning Center
- Just Beginning, Inc.
- Lenicia B. Weemes Elementary

Impacts would be considered less than significant for both Concept A and Concept B. No mitigation is required.

Mitigation Measures

None required.

Significance Determination: Less than significant.

Hazardous Materials Sites

Impact 4.7-5: The proposed project could be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, could create a significant hazard to the public or the environment. (Less than Significant with Mitigation)

The hazardous sites analysis undertaken for this project, including records search on the SWRCB GeoTracker and the DTSC EnviroStor databases, revealed multiple listed and active sites within the project area. The GBMP would include construction of injection and extraction wells as well as conveyance infrastructure, and it is possible that contaminated soil and/or groundwater could be encountered during excavation posing a health hazard to construction crews, the public, and the environment. Adhering to Mitigation Measures HAZ-1 and HAZ-2 set forth above, in addition to **Mitigation Measure HAZ-3** below, would reduce impacts associated with hazardous materials to a less than significant level. The analysis of operational impacts associated with hazardous materials sites, mobilization of soil and groundwater contaminants, and groundwater quality can be found in **Chapter 4.9, Groundwater**.

Mitigation Measures

Implementation of **Mitigation Measures HAZ-1** and **HAZ-2.**

HAZ-3: Conduct Environmental Site Assessments. Prior to the initiation of any construction requiring ground-disturbing activities, the implementing agencies shall complete Phase I Environmental Site Assessments (ESA) for soil and groundwater contamination in the project areas. The recommendations set forth in the Phase I ESA shall be implemented to the satisfaction of applicable agencies before and during construction. If the Phase I ESA indicates the potential for hazardous concentrations of contamination within the construction zone, Phase II studies will be completed before construction begins. Phase II studies shall include soil and groundwater sampling and analysis for anticipated contaminants. The Phase II sampling is intended to identify how to dispose of any potentially harmful material from excavations, and to determine if construction workers need specialized personal protective equipment.

Significance Determination: Less than significant with mitigation.

Hazards near Public Airports

Impact 4.7-6: The proposed project would be located within two miles of Los Angeles International Airport and could result in a safety hazard for people residing or working in the project area. (Less than Significant)

The following five airports are located in WRD's service area boundaries: (1) Compton/Woodley Airport; (2) Hawthorne Airport/Jack Northrop Field; (3) Torrance Airport/Zamperini Field; (4) Long Beach Airport; and (5) Los Angeles International Airport (LAX). **Figure 4.10-1** (see Chapter 4.10 Land Use) depicts the locations of these airports.

No proposed GBMP projects in the Central Basin would be located within two miles of a public airport. There would be no impacts associated with safety hazards for people residing or working in the area from implementation of Concepts A or B in the Central Basin.

Two projects in the West Coast Basin would be located within the AIA for LAX. As shown in Figure 4.10-1, Project W1 under Concept A and Project W3 under Concept B would include new pipelines and pump stations between the HTP and ECLWRF. These facilities would be within the AIA for LAX. Pipelines are anticipated to be constructed below the ground surface within existing roadway ROW. Pump station locations have not yet been determined, but they are anticipated to be constructed aboveground along the same ROW as the pipelines structures or at either the HTP or ECLWRF. None of the facilities proposed as part of Projects W1 and W3 are anticipated to be in excess of 200 vertical feet. Projects W1 and W3 would not adversely affect airport operations in terms of flight patterns, safety, light, or navigation. As a result, impacts associated with safety hazards for people residing or working in the area are considered less than significant from implementation of Concepts A or B in the West Coast Basin.

Mitigation Measures

None required.

Significance Determination: Less than significant.

Emergency Response Plan

Impact 4.7-7: Construction of the proposed project could impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. (Less than Significant)

Construction activities associated with implementation of GBMP projects for both Concept A and Concept B include installations of pipelines within roadway rights-of-way. This construction activity, and other anticipated construction activities associated with the GBMP, could potentially result in lane or roadway closures or block access to roadways and driveways for emergency vehicles. Such temporary construction-related impacts would not significantly impair implementation of, or physically interfere with, an adopted emergency response plan or emergency evacuation plan. During construction activities in transportation corridors, construction contractors would be required to comply with local regulations to notify emergency responders of lane restrictions. The impact would be less than significant.

Significance Determination: Less than significant.

TABLE 4.7-2
HAZARDS AND HAZARDOUS MATERIALS IMPACT SUMMARY

	Concept A		Concept B	
Impact	**Impact Determination**	**Mitigation Summary**	**Impact Determination**	**Mitigation Summary**
Private Airstrip: The proposed GBMP does not include any project within the vicinity of a private airstrip.	No impact	None required	No Impact	None Required
Wildlands: The proposed GBMP does not include any projects in the immediate vicinity of wildlands and would not increase risk of wildland fires.	No impact	None required	No Impact	None Required
Routine Hazardous Materials Transport, Use, and Disposal: The proposed project would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.	Less Than Significant	None Required	Less Than Significant	None Required
Accidental Release of Hazardous Materials: The proposed project could 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.	Less Than Significant With Mitigation	HAZ-1, HAZ-2	Less Than Significant With Mitigation	HAZ-1, HAZ-2
Hazardous Materials Near Schools: Construction of the proposed project could emit hazardous emissions or handle hazardous or acutely hazardous material, substances, or waste within one quarter-mile of an existing or proposed school.	Less Than Significant With Mitigation	HAZ-1, HAZ-2, TR-1, TR-6	Less Than Significant With Mitigation	HAZ-1, HAZ-2, TR-1, TR-6
Hazardous Materials Near Schools: Operation of the proposed treatment facilities could emit hazardous emissions or handle hazardous or acutely hazardous material, substances, or waste within one-quarter mile of an existing or proposed school.	Less Than Significant	None Required	Less Than Significant	None Required

TABLE 4.7-2
HAZARDS AND HAZARDOUS MATERIALS IMPACT SUMMARY

	Concept A		Concept B	
Impact	**Impact Determination**	**Mitigation Summary**	**Impact Determination**	**Mitigation Summary**
Hazardous Materials Sites: The proposed project could be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, could create a significant hazard to the public or the environment.	Less Than Significant With Mitigation	HAZ-1, HAZ-2, HAZ-3	Less Than Significant With Mitigation	HAZ-1, HAZ-2, HAZ-3
Safety hazards associated with Los Angeles International Airport: The proposed project would be located within two miles of Los Angeles International Airport and could result in a safety hazard for people residing or working in the project area.	Less Than Significant	None Required	Less Than Significant	None Required
Interference with and emergency response or evacuation plan: Construction of the proposed project would impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.	Less Than Significant	None Required	Less Than Significant	None Required

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4.8 Surface Hydrology and Water Quality

This section describes local surface water resources and discusses regional water quality issues. This section also evaluates the GBMP's potential to impact surface water resources in the project area, and describes mitigation measures that would reduce impacts to a less-than-significant level.

4.8.1 Environmental Setting

Project Area

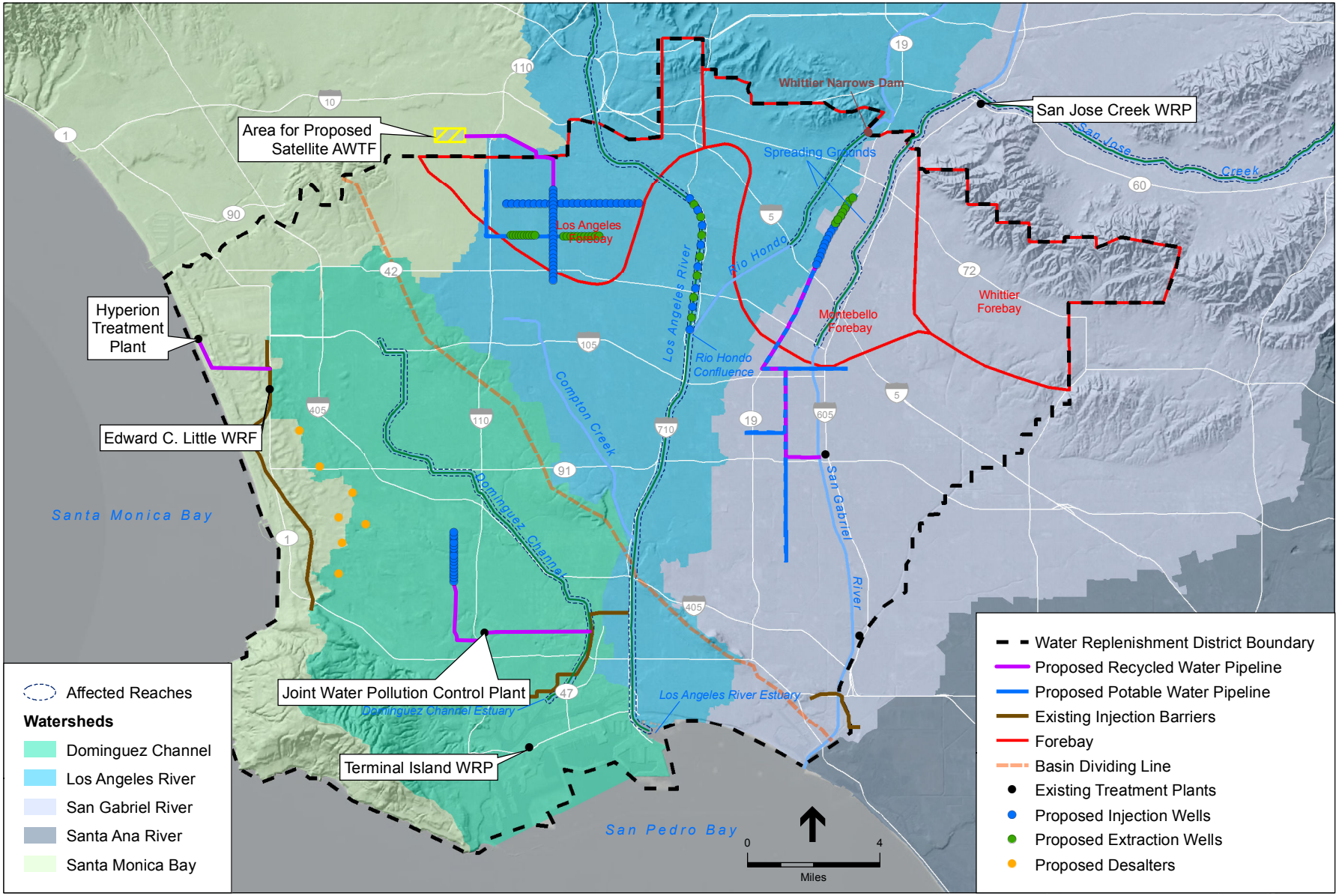
For purposes of the analysis of surface water resources, the greater project area includes primarily WRD's service area, which is located in the Los Angeles Basin (See Section 4.5 Geology, Soils and Seismicity for more information about the Los Angeles Basin). Some components located just outside of the service area to the north are also part of the project area (see Figure 3-1 in Chapter 3.0 Project Description).

Climate and Precipitation

The GBMP area is located in the southeastern portion of the Los Angeles Regional Water Quality Control Board's (LARWQCB) jurisdiction. The coastal plains within this region have a Mediterranean climate with mild rainy winters and warm dry summers, while the inland slopes and basins have more extreme temperatures and less precipitation. These variations of climate within the region can be attributed to variable topography. Prevailing winds from the west and northwest carry moist air from the Pacific Ocean over thirty-five miles inland until it is forced upward by the San Gabriel Mountains, which are located north of the project area,. The resulting rainfall occurs mostly between November and March, followed by dry summer months. Periodic drought conditions are also known to occur within the area (LARWQCB, 1994). The average annual rainfall within the Los Angeles Basin is approximately 14.5 inches (Western Regional Climate Center, 2012).

Surface Water

The project area overlaps with all four major watersheds or hydrologic units of the South Coast Hydrologic Region Los Angeles Planning Area: Santa Monica Bay, Dominguez Channel, Los Angeles River, and San Gabriel River (see **Figure 4.8-1**) (DWR, 2009). These four watersheds are described below.



SOURCE: ESA, 2012.

WRD - Groundwater Basins Master Plan . 120192

Figure 4.8-1

Watersheds and Key Surface Water Features

The Santa Monica Bay Watershed

Located in the western portion of the project area, the topography of the Santa Monica Bay Watershed consists of steep mountains, coastal sand dunes, and several broad, gently sloping alluvial valleys. The coastal margin and portions of interior valleys are urbanized. Healthy riparian habitats continue to exist because many of the mountainous canyons remain undeveloped. Malibu Creek and Topanga Creeks are two of the several smaller sub-watersheds located in this watershed. Malibu Creek drains the southern Simi Hills, western San Fernando Valley, and the western Santa Monica mountains. Malibu creek enters the Pacific Ocean at Malibu lagoon (DWR, 2009).

The Dominguez Channel Watershed

The Dominguez Channel Watershed is located in the southwest portion of the project area, and is defined by a complex network of storm drains and smaller flood control channels. The Dominguez Channel extends from the Los Angeles International Airport to the Los Angeles Harbor and drains a large portion of the cities of Inglewood, Hawthorne, El Segundo, Gardena, Lawndale, Redondo Beach, Torrance, Carson and Los Angeles (DWR, 2009).

The Los Angeles River Watershed

The Los Angeles River watershed runs through the center of the project area and drains into the Los Angeles River. The Los Angeles River enters the project area through the Los Angeles Narrows and across the Los Angeles Forebay, one of the two forebays in the project area.[1] The Los Angeles River continues to flow south across the project area until draining into the San Pedro Bay. The river has eight major tributaries: the Burbank Western Channel, Pacoima Wash, Tujunga Wash, Verdugo Wash, Arroyo Seco, Rio Hondo and Compton Creek. The watershed contains 22 lakes and flood control reservoirs, as well as several spreading grounds. The Los Angeles River was channelized between 1914 and 1970 to control the runoff and flood events in the region. Currently, over 90 percent of the Los Angeles River is concrete-lined (DWR, 2009).

The San Gabriel River Watershed

The San Gabriel River Watershed is located in the eastern part of project area, extending from the Puente Hills south to San Pedro Bay. The San Gabriel River and the Rio Hondo (which is part of the Los Angeles River watershed) drain the San Gabriel Valley, located northeast of the project area, and enter into the project area through the Whittier Narrows and across the Montebello Forebay. Although the watershed includes portions of 37 incorporated cities, only 26 percent of its total land area is developed. Flows in the San Gabriel River are diverted into four different spreading grounds and impounded behind several rubber dams in order to control storm water flow (DWR, 2009).

[1] A forebay is an area of unconfined aquifers that allow percolation of surface water to replenish the basins (WRD, 2004).

Key Surface Water Features

The following key surface water features within the GBMP area are either located adjacent to proposed project facilities or potentially affected by the proposed GBMP facilities (**Figure 4.8-1**).

- The **Dominguez Channel Estuary** is the section of the Dominguez Channel between the Pacific Ocean and Willow Street.
- **Reach 2 of the Los Angeles River** extends from Carson Street to Figueroa Street**.** The proposed Project C5 ARRF facilities would be located along this section of the Los Angeles River and would divert up to 5,000 AFY of storm water that normally flows to the ocean into spreading basins for injection into the groundwater basin.
- **Reach 1 of the Los Angeles River** is the section of river between the Los Angeles Estuary and Carson Street. This section of channel is located downstream from the proposed Project C5 AARF facilities and downstream of the Rio Hondo confluence. Storm water diversion occurring upstream at the AARF facilities would affect this section of the Los Angeles River.
- The **Los Angeles River Estuary,** also known as Queensway Bay, is the section of river below Willow St that drains into the San Pedro Bay. Storm water diversion occurring upstream at the Project C5 AARF facilities would affect this section of the Los Angeles River.
- **Reach 2 of the Rio Hondo** is the length of river extending from I-5 to the Whittier Narrows Dam. This section of river is adjacent to the Rio Hondo Coastal Spreading Grounds (RHCSG), one of two Montebello Forebay Spreading Ground (MFSG) inundation areas. As conceptualized in Projects, C1, C2, and C3, AWT from LCWRP and SJCWRP would be replenished via percolation in both spreading grounds. The proposed Project C4 injection wells and Project C6 extraction wells would be located 0.5 miles west of this waterbody.
- **Reach 3 of the San Gabriel River** is the length of river between the Whittier Narrows Dam and San Jose Creek.
- **Reach 2 of the San Gabriel River** is the section of river extending from Firestone Boulevard to the Whittier Narrows Dam. This section of river is adjacent to the San Gabriel Coastal Spreading Grounds (SGCSG), one of two MFSG inundation areas. As conceptualized in Projects C1, C2, and C3, AWT from LCWRP and SJCWRP would be replenished via percolation in both spreading grounds. The proposed Project C4 injection wells and Project C6 extraction wells would be located 0.5 miles east of this waterbody.
- **Reach 1 of San Jose Creek** is the section of creek splitting from the San Gabriel River extending to Temple Avenue..

Surface Water Quality

The headwaters of major waterways located in the project area begin in relatively pristine areas of the Santa Monica and San Gabriel Mountain Ranges (DWR, 2009). Downstream of these areas,

water flows through urbanized foothill and valley areas, and high density residential and industrial coastal areas, eventually discharging into highly utilized recreational beaches and harbors. The greatest threat to the water quality of rivers and streams within the project area and vicinity is uncontrolled pollutants from nonpoint sources throughout the four watersheds (LARWQCB, 1994).

In 2010, the State of California published an updated list of impaired water bodies pursuant to provisions of Clean Water Act Section 303(d). All eight of the key surface water features within the project area are listed as impaired for various constituents, as shown in **Table 4.8-1**.

TABLE 4.8-1
303(D) IMPAIRED WATERBODIES WITHIN THE PROJECT AREA

Waterbody	Pollutant	Source
Dominguez Channel Estuary (Unlined portion below Vermont Ave)	Ammonia	Point Source, Nonpoint Source
	Benthic Community Effects	Point Source, Nonpoint Source
	Benzo(a)pyrene (3,4-Benzopyrene -7-d)	Source Unknown
	Benzo[a]anthracene	Source Unknown
	Chlordane (tissue)	Point Source, Nonpoint Source
	Chrysene (C1-C4)	Source Unknown
	Coliform bacteria	Point Source, Nonpoint Source
	DDT (tissue & sediment)	Point Source, Nonpoint Source
	Dieldrin (tissue)	Point Source, Nonpoint Source
	Lead (tissue)	Point Source, Nonpoint Source
	PCBs (Polychlorinated biphenyls)	Source Unknown
	Phenanthrene	Source Unknown
	Pyrene	Source Unknown
	Sediment Toxicity	Surface Runoff, Nonpoint Source, Atmospheric Deposition, Urban Runoff/Storm Sewers
	Zinc (sediment)	Point Source, Nonpoint Source
Los Angeles River Reach 2 (Carson St to Figueroa St)	Ammonia	Point Source, Nonpoint Source
	Coliform bacteria	Nonpoint Source
	Copper	Source Unknown
	Lead	Point Source, Nonpoint Source
	Nutrients (Algae)	Point Source, Nonpoint Source
	Trash	Urban Runoff/Storm Sewers, Nonpoint Source, Surface Runoff

TABLE 4.8-1
303(D) IMPAIRED WATERBODIES WITHIN THE PROJECT AREA

Waterbody	Pollutant	Source
Los Angeles River Reach 1 (Estuary to Carson St)	Ammonia	Point Source, Nonpoint Source
	Cadmium	Source Unknown
	Coliform Bacteria	Point Source, Nonpoint Source
	Copper, Dissolved	Point Source, Nonpoint Source
	Cyanide	Source Unknown
	Diazinon	Source Unknown
	Lead	Point Source, Nonpoint Source
	Nutrients (Algae)	Point Source, Nonpoint Source
	Trash	Urban Runoff/Storm Sewers, Surface Runoff, Nonpoint Source
	Zinc, Dissolved	Point Source, Nonpoint Source
	pH	Point Source, Nonpoint Source
Los Angeles River Estuary (Below Willow St)	Chlordane	Nonpoint Source
	DDT	Nonpoint Source
	PCBs	Nonpoint Source
	Sediment Toxicity	Source Unknown
	Trash	Nonpoint Source, Urban Runoff/Storm Sewers, Surface Runoff
Rio Hondo Reach 2 (At Spreading Grounds)	Coliform bacteria	Point Source, Nonpoint Source
	Coliform bacteria	Point Source
	Cyanide	Other
San Gabriel River Reach 3 (Whittier Narrows Dam to Ramona)	Indicator bacteria	Source Unknown
San Gabriel River Reach 2 (Firestone to Whittier Narrows Dam)	Coliform bacteria	Source Unknown
	Cyanide	Source Unknown
	Lead	Point Source, Nonpoint Source
	Pathogens	Source Unknown
San Jose Creek Reach 1 (SG Confluence to Temple St)	Ammonia	Point Source, Nonpoint Source
	Coliform bacteria	Source Unknown
	Total Dissolved Solids	Source Unknown
	Toxicity	Source Unknown
	pH	Source Unknown

SOURCE: SWRCB, 2010.

As shown in Table 4.8-1, the types and sources of impairment for relevant 303(d) listed waters vary depending by waterbody. The Dominguez Channel Estuary has the highest number of pollutant types, including various metals, nutrients, pathogens, pesticides, organics and toxics. The Los Angeles River Estuary is impaired by pesticides, other organics, toxicity and trash.

Reaches 1 and 2 of the Los Angeles River are impaired by various metals, nutrients, pathogens, and trash. Reach 2 of the Rio Hondo is impaired by pathogens and inorganics. Reach 2 of the San Gabriel River is impaired by metals and pathogens. Reach 3 of the San Gabriel River is impaired by indicator bacteria. Reach 1 of San Jose Creek is impaired by pathogens, nutrients, salinity, and toxics. The sources for these pollutants are nonpoint sources, point sources, unknown sources, urban runoff/storm sewers, surface runoff, and atmospheric deposition (SWRCB, 2010).

The 1994 Water Quality Control Plan (or "Basin Plan") for the Los Angeles Region specifies water quality objectives for all surface waters within the Los Angeles region (LARWQCB, 1994). The Basin Plan includes specific water quality objectives for Reaches 1 and 2 of the Los Angeles River, Reach 2 of the Rio Hondo River, and Reaches 2 and 3 of the San Gabriel River. Water quality objectives specified by the Basin Plan for the Los Angeles River and San Gabriel River include total dissolved solids (TDS), sulfate, chloride, boron, nitrogen (as nitrate) and sodium absorption ratio (SAR) (LARWQCB, 1994). These objectives are shown in **Table 4.8-2**. The Basin Plan also lists current beneficial uses for the key surface water features in the project area, as shown in **Table 4.8-3**.

TABLE 4.8-2
WATER QUALITY OBJECTIVES FOR KEY SURFACE WATER FEATURES

Watershed/ Stream[a] Reach	TDS (mg/L)	Sulfate (mg/L)	Chloride (mg/L)	Boron (mg/L)	Nitrogen[c] (mg/L)	SAR (mg/L)
Los Angeles River Reach 1	1500	350	150	g	8	g
Los Angeles River Reach 2	1500	350	150	g	8	g
Rio Hondo Reach 2	750	300	150	g	8	g
San Gabriel River Reach 2	750	300	150	1.0	8	g
San Gabriel River Reach 3	750	300	150	1.0	8	g

a. All references to watersheds, streams and reaches include all tributaries. Water quality objectives are applied to all waters tributary to those specifically listed in the table.
b. Where naturally occurring boron results in concentrations higher than the stated objective, a site-specific objective may be determined on a case-by-case basis.
c. Nitrate-nitrogen plus nitrite-nitrogen (No3-N + NO2N). The lack of adequate nitrogen data for all streams precluded the establishment of numerical objectives for all streams.
d. Sodium absorption ration (SAR) predicts the degree to which irrigation water tends to enter into cation-exchange reactions in soil. SAR = Na+/((Ca++ + MG++)/2)1/2

SOURCE: LARWQCB, 1994.

TABLE 4.8-3
BENEFICIAL USES OF KEY SURFACE WATER FEATURES IN THE PROJECT AREA

Beneficial Uses	Dominguez Channel Estuary	Los Angeles River Estuary	Los Angeles River Reach 1	Los Angeles River Reach 2	Rio Hondo Reach 1	Rio Hondo Reach 2	San Gabriel River Reach 1	San Gabriel River Reach 2	San Gabriel River Reach 3	San Jose Creek Reach 1
Municipal and Domestic Supply (MUN)	--	--	P*	P*	P*	P*	P*	P*	P*	P*
Industrial Service Supply (IND)	--	E	P	P	--	--	--	P	--	--
Industrial Process Supply (PROC)	--	--	P	--	--	--	--	P	--	--
Agricultural Supply (AGR)	--	--	--		--	--	--	--	--	--
Groundwater Recharge (GWR)	--	--	E	E	I	I	--	I	I	I
Freshwater Replenishment (FRSH)	--	--	--	--	--	--	--	--	--	--
Navigation (NAV)	P	E	--	--	--	--	--	--	--	--
Hydropower Generation (POW)	--	--	--	--	--	--	--	--	--	--
Commercial and Sport Fishing (COMM)	E	E	--	--	--	--	--	--	--	--
Aquaculture (AQUA)	--	--	--	--	--	--	--	--	--	--
Warm Freshwater Habitat (WARM)	--	--	E	E	P	P	P	I	I	I
Cold Freshwater Habitat (COLD)	--	--	--	--	--	--	--	--	--	--
Inland Saline Water Habitat (SAL)	--	--	--	--	--	--	--	--	--	--
Estuarine Habitat (EST)	E	E	--	--	--	--	--	--	--	--
Marine Habitat (MAR)	E	E	E	--	--	--	--	--	--	--
Wildlife Habitat (WILD)	E	E	E	P	I	I	P	E	E	E
Preservation of Biological Habitat (BIOL)	--	--	--	--	--	--	--	--	--	--
Rare, Threatened or Endangered Species (RARE)	--	Ee	E	--	--	--	--	E	--	--
Migration of Aquatic Organisms (MIGR)	--	Ef	P	--	--	--	--	--	--	--
Spawning, Reproduction, and/or Early Development (SPWN)	--	Ef	P	--	--	--	--	--	--	--
Shellfish Harvesting (SHELL)	--	P	Ps	--	--	--	--	--	--	--
Wetland (WET)	--	E	--	--	--	--	--	--	--	--

E: Existing beneficial use; P: Potential beneficial use; I: Intermittent beneficial use.
e: One or more rare species utilizes all ocean, bays, estuaries, and coastal wetlands for foraging and/or nesting. f:Aquatic organisms utilize all bays, estuaries, lagoons, and coastal wetlands, to a certain extent, for spawning and early development.
This may include migration into areas which are heavily influenced by freshwater inputs. * Asterisked MUN designations are designated under SB 88-63 and RB 89-03.

SOURCE: LARWQCB 2005a.

Flooding

FEMA Flood Hazards

The Federal Emergency Management Agency (FEMA) identifies areas throughout the United States that are at risk for flooding. The FEMA Flood Insurance Rate Map identifies areas that have a one percent or greater risk (100-year flood area) of being inundated by a flood event in a given year. Because the key surface waters in the project area are channelized and concrete-lined, the corresponding flood zones are narrow and contained.

Two of the proposed GBMP projects include facilities that would be located in flood zones. Maps showing FEMA flood hazard areas features in the vicinity of the GBMP projects are provided in **Appendix I**. First, FEMA maps indicate that the five lower injection and extraction wells and spreading basins associated with Project C5 in the Central Basin would be located in a 100-year flood area surrounding the Los Angeles River (see Figure I-5 in Appendix I). Second, in a 2012 levee certification analysis, the Los Angeles County Flood Control District (LACFCD) determined that the section of Dominguez Channel levy extending from the Del Amo Boulevard Bridge to the Los Angeles Harbor is no longer able to contain a 100-year flood event. LACFCD published a preliminary map showing the estimated extent of the flood zone in order to determine new insurance needs. In the West Coast Basin, the project facilities would not be located in a flood zone (see Figures I-1, I-2, and I-3 in Appendix I).

Dam Inundation Areas

Flooding from dam failure can result from both natural and human causes, including earthquakes, erosion, improper siting and/or design, and rapidly rising floodwater during heavy storms. The type of failure, ranging from instantaneous to gradual, is dependent on the building material of the dam. Dam failure can potentially cause loss of life and property damage, displacement of persons residing in the inundation path, and damage to infrastructure.

There are several dams and reservoirs throughout the project area. The Whittier Narrows Dam is the closest to the project area, located on the Rio Hondo about two miles upstream of the MFSG. The Whittier Narrows Dam received a Dam Safety Action Class (DSAC) II in 2008. Failure at dams with a DSAC II rating could begin during normal operations or be initiated as the consequence of an event. The likelihood of failure from one of these occurrences, prior to remediation, is too high to assure public safety. The combination of life or economic consequences with probability of failure is very high (USACE, 2008). This dam inundation area extends south to the Pacific Ocean between I-710 and Moody St (WCA, 2011).

All proposed Central Basin projects would be located in a dam inundation area (Los Angeles County, 2012).

Tsunami and Seiche Hazard Areas

A tsunami is a very large wave that is caused by an underwater earthquake or volcanic eruption and that often causes extreme destruction when it strikes land. A seiche is an oscillating wave in an enclosed or semi-enclosed body of water (i.e., lake or bay) caused by seismic or atmospheric

disturbances such as wind. The California Emergency Management Agency (CalEMA) has identified the tsunami inundation hazard zone for coastal areas of the state including the County of Los Angeles (CalEMA, 2009). The hazard zone primarily hugs the shoreline, with some exception in the areas of marinas and ports, such as Marina Del Rey and the Ports of Los Angeles and Long Beach. In the West Coast Basin, proposed GBMP facilities would be near tsunami inundation areas in the City of Los Angeles and City of El Segundo. The HTP is located on the edge of the tsunami inundation area. The City of El Segundo General Plan states that along the City's coastal areas, tsunamis and seiches associated with seismic events could cause devastating damage to the HTP and other facilities (El Segundo, 1992). The City of Los Angeles General Plan lists tsunamis and seiches as water action hazards.

4.8.2 Regulatory Framework

Federal

Clean Water Act (CWA)

Regulatory authorities exist on both the state and federal levels for the control of water quality in California. The U.S. Environmental Protection Agency (USEPA) is the federal agency, governed by the CWA, responsible for water quality management. The purpose of the CWA is to protect and maintain the quality and integrity of the nation's waters by requiring states to develop and implement state water plans and policies. Section 303 of the CWA requires states to establish water quality standards consisting of designated beneficial uses of water bodies and water quality standards to protect those uses for all Waters of the United States.

Under Section 303(d) of the CWA, states, territories, and authorized tribes are required to develop lists of impaired waters. Impaired waters are waters that do not meet water quality standards, even after point sources of pollution have installed the minimum required levels of pollution control technology. The law requires that these jurisdictions establish a priority ranking for listed waters and develop action plans to improve water quality. This process includes development of Total Maximum Daily Loads (TMDL) that set discharge limits for non-point source pollutants.

CWA Section 402: National Pollutant Discharge Elimination System (NPDES)

Section 402 of the CWA regulates construction-related storm water discharges to surface waters through the NPDES program, administered by the USEPA with implementation authority delegated to the SWRCB, in California. An NPDES permit is required for all projects that disturb one or more acre of land. Therefore, the proposed project would require an NPDES permit from the LARWQCB.

As part of the permitting effort, the project operator is required to file a public Notice of Intent (NOI), to discharge storm water associated with the project. As part of the NPDES program, the project operator is required to develop a Storm Water Pollution Prevention Plan (SWPPP), which includes best management practices (BMPs) to be implemented to prevent soil erosion and discharge of other construction-related pollutants that could contaminate nearby surface waters. Permittees are further required to conduct periodic monitoring and reporting to ensure that BMPs are correctly implemented and effective in controlling the discharge of storm water-related

pollutants. The SWPPP and all associated BMPs must meet the requirements of the NPDES General Permit for construction storm water discharge (see below).

Safe Drinking Water Act

The Safe Drinking Water Act (SDWA) is the principal federal law in the United States that ensures safe drinking water for the public. Pursuant to the Act, the EPA is required to set standards for drinking water quality and oversee all states, localities, and water suppliers who implement these standards.

SDWA applies to every public water system in the United States. There are currently more than 160,000 public water systems providing water to almost all Americans at some time in their lives. The Act does not cover private wells.

The SDWA requires the EPA to establish National Primary Drinking Water Regulations (NPDWRs) for contaminants that may cause adverse public health effects. The regulations include both mandatory levels (Maximum Contaminant Levels, or MCLs) and non-enforceable health goals (Maximum Contaminant Level Goals, or MCLGs) for each included contaminant.

National Flood Insurance Program (NFIP)

FEMA is responsible for managing the NFIP, which makes federally-backed flood insurance available for communities that agree to adopt and enforce floodplain management ordinances to reduce future flood damage.

The NFIP, established in 1968 under the National Flood Insurance Act, requires that participating communities adopt certain minimum floodplain management standards, including restrictions on new development in designated floodways, a requirement that new structures in the 100-year flood zone be elevated to or above the 100-year flood level (known as base flood elevation), and a requirement that subdivisions be designed to minimize exposure to flood hazards.

To facilitate identifying areas with flood potential, FEMA has developed Flood Insurance Rate Maps that can be used for planning purposes, including floodplain management, flood insurance, and enforcement of mandatory flood insurance purchase requirements. Los Angeles County is a participating jurisdiction in the NFIP and, therefore, all new development must comply with the minimum requirements of the NFIP.

State and Regional

Department of Water Resources (DWR)

DWR's major responsibilities include preparing and updating the California Water Plan to guide development and management of the state's water resources; planning, designing, constructing, operating, and maintaining the State Water Resources Development System; regulating dams; providing flood protection; assisting in emergency management to safeguard life and property; educating the public; and serving local water needs by providing technical assistance. In addition, DWR cooperates with local agencies on water resources investigations; supports watershed and river restoration programs; encourages water conservation; explores conjunctive use of ground

and surface water; facilitates voluntary water transfers; and, when needed, operates a state drought water bank.

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act (Water Code Sections 13000 et seq.), passed in 1969, requires protection of water quality by appropriate design, sizing, and construction of erosion and sediment controls. The Porter-Cologne Act established the SWRCB and divided California into nine regions, each overseen by a RWQCB. The SWRCB is the primary state agency responsible for protecting the quality of the state's surface and groundwater supplies and has delegated primary implementation authority to the nine RWQCBs. The Porter-Cologne Act assigns responsibility for implementing CWA Sections 401 through 402 and 303(d) to the SWRCB and the nine RWQCBs.

The Porter-Cologne Act requires the development and periodic review of water quality control plans (Basin Plans) that designate beneficial uses of California's major rivers and groundwater basins and establish narrative and numerical water quality objectives for those waters, provide the technical basis for determining waste discharge requirements, identify enforcement actions, and evaluate clean water grant proposals. The Basin Plans are updated every three years. Compliance with Basin Plans is primarily achieved through implementation of the NPDES, which regulates waste discharges as discussed above.

The project area is located within the jurisdiction of the Los Angeles RWQCB- Region 4. The Basin Plan for the Los Angeles region defines a variety of water quality objectives for the hydrologic units (watersheds) within the project area.

Anti-Degradation Policy

The SWRCB's Anti-Degradation Policy, otherwise known as Resolution No. 68-16, sets specific restrictions for surface and groundwater that have higher than the required quality in order to avoid degradation of those water bodies (SWRCB, 2010). Requirements of this policy must be included within all Water Quality Control Plans throughout California (discussed below). Under this policy, actions that would lower the water quality in designated water bodies would only be allowed: if the action would provide a maximum benefit to the people of California, if it will not unreasonably affect beneficial uses, and if it will not lower water quality below applicable standards (SWRCB, 2010).

Water Quality Control Plan for the Los Angeles Region (Basin Plan)

The preparation and adoption of water quality control plans (Basin Plans) are required by the California Water Code (Section 13240). According to Section 13050 of the California Water Code, Basin Plans establish the beneficial uses to be protected for the waters within a specified area, water quality objectives to protect those uses, and an implementation program for achieving the objectives. Because beneficial uses, together with their corresponding water quality objectives, can be defined per federal regulations as water quality standards, the Basin Plans are regulatory references for meeting the state and federal requirements for water quality control. In relevant part, Article X, Section 2 of the California Constitution declares:

> "[B]ecause of the conditions prevailing in this State, the general welfare requires that the *water resources of the State be put to beneficial use to the fullest extent of which they are capable*, and that the waste or unreasonable use or unreasonable method of use of water be prevented, and that the conservation of such waters is to be exercised with a view to the reasonable and beneficial use thereof in the interest of the people and for the public welfare…" (emphasis added)

The *Water Quality Control Plan for the Los Angeles Region* (Basin Plan) is designed to preserve and enhance water quality and protect beneficial uses of all waters. Specifically, it:

1. Designates beneficial uses for surface and ground waters;
2. Sets narrative and numerical objectives that must be attained or maintained to protect the designated beneficial uses and conform to the state's anti-degradation policy; and
3. Describes implementation programs for achieving objectives to protect all waters in the Region.

In addition, the Basin Plan incorporates all applicable State and Regional Board plans and policies and other pertinent water quality policies and regulations, including the anti-degradation policy (LARWQCB, 1994).

Fish and Game Code Lake and Streambed Alteration Program

The California Department of Fish and Wildlife (CDFW) oversee the Lake and Streambed Alteration Program, which is governed under Section 1602 of the Fish and Game Wildlife (CDFW 2010). This program applies in instances where an activity may substantially adversely affect fish and wildlife resources. In those instances, the CDFW will require preparation of a Lake or Streambed Alteration Agreement, which contains a reasonable assessment of necessary conditions to protect those resources during construction and operation of proposed activities.

California Water Code Section 13260

California Water Code Section 13260 requires that any person discharging waste or proposing to discharge waste that could affect the quality of the waters of the state, other than into a community sewer system, must submit a report of waste discharge (ROWD) to the applicable RWQCB. Any actions related to the proposed project that would be applicable to California Water Code Section 13260 would be reported to LARWQCB.

SWRCB Recycled Water Policy

The statewide Recycled Water Policy (Resolution No 2009-0011) was adopted in February of 2009 by the SWRCB with the goal of encouraging the use of recycled water and local storm water, while protecting water quality. It requires local water and wastewater entities to collaborate with salt and nutrient contributing stakeholders to develop a Salt and Nutrient Management Plan (SNMP). SNMPs are required to be completed by 2014, with the purpose of facilitating basin-wide management of salts and nutrients from all sources in a manner that optimizes recycled water use while ensuring protection of groundwater supply and protects beneficial uses and human health. Stakeholders must develop implementation plans to meet

identified objectives for salts and nutrients, and the implementation plans must be approved by the Regional Board as amendments to the regional Basin Plan. The WRD is in the process of preparing a SNMP that will eventually be adopted by the LARWQCB as a Basin Plan amendment.

Statewide General NPDES Permit for Construction Activity

The State of California adopted a new Construction General Permit on September 2, 2009 (Order No. 2009-0009-DWQ as amended by 2010-0014-DWQ and 2012-0006-DWQ). The Construction General Permit regulates construction site storm water management. Dischargers whose projects disturb one or more acres of soil, or whose projects disturb less than one acre but are part of a larger common plan of development that in total disturbs one or more acres, are required to obtain coverage under the general permit for discharges of storm water associated with construction activity. Construction activity subject to this permit includes clearing, grading, and disturbances to the ground, such as stockpiling or excavation, but does not include regular maintenance activities performed to restore the original line, grade, or capacity of the facility.

To obtain coverage under this permit, project operators must electronically file Permit Registration Documents, which include a Notice of Intent, a SWPPP, and other compliance-related documents. An appropriate permit fee must also be mailed to SWRCB. The SWPPP identifies best management practices (BMPs) that must be implemented to reduce construction effects on receiving water quality based on potential pollutants. The BMPs identified are directed at implementing both sediment and erosion control measures and other measures to control potential chemical contaminants. The SWPPP also includes descriptions of the BMPs to reduce pollutants in storm water discharges after all construction phases have been completed at the site (post-construction BMPs).

The permit includes several new requirements (as compared to the previous Construction General Permit, 99-08-DWQ), including risk-level assessment for construction sites, an active storm water effluent monitoring and reporting program during construction (for Risk Level II and III sites), rain event action plans for certain higher risk sites, and numeric effluent limitations (NELs) for pH and turbidity as well as requirements for qualified professionals that prepare and implement the plan. The permit became effective July 1, 2010.

The latest Construction General Permit became effective on February 16, 2012. SWRCB Water Quality Order 2010-0014-DWQ eliminated the NELs for pH and turbidity for Risk Level III and linear utility project (LUP) Type 3, except for Active Treatment Systems (ATS). The Superior Court invalidated these NELs due to a lack of sufficient data support. Because receiving water monitoring was only required if NELs were exceeded, all receiving water monitoring requirements were also suspended. The SWRCB is considering modifying the existing Construction General Permit for the purpose of replacing NELs with receiving water monitoring triggers.

Each proposed facility would be assessed independently. If the anticipated level of disturbance is greater than one acre, a SWPPP must be prepared. If it is less than one acre, construction

activities would need to comply with the requirements as specified in the Los Angeles County Municipal Separate Storm Sewer System (MS4) Permit.

Statewide NPDES Permit for Industrial Activities

The current Industrial General Permit (Order No. 97-03-DWG, General Permit No. CAS000001) was last adopted in April of 1992 and applies to storm water associated with industrial operations, including sewage treatment systems. Under this permit, dischargers are required to eliminate unauthorized non-storm water discharges, develop and implement a SWPPP, and perform monitoring and reporting activities.

A new Industrial General Permit has been drafted and subject to public review, and is expected to be adopted in July of 2013. Upon implementation of applicable proposed facilities, this updated permit will likely be in effect. The new Industrial General Permit introduces several relevant changes. Firstly, the permit would require the implementation of all applicable and feasible minimum BMPs in combination with additional facility specific BMPs. The permit also requires that each facility has one staff or external personnel trained as a QISP (qualifying industrial storm water practitioner) to perform certain critical functions in order to ensure compliance. The new General Permit contains two types (annual and instantaneous maximum) numeric action levels (NALs) which serve as water quality thresholds for corrective action. If these are exceeded, agencies would be required to submit an Exceedance Response Action (ERA) report in which they evaluate their BMPs to ensure they meet best available technology (BAT) and best conventional pollutant control technology (BCT) standards. The permit would require dischargers to monitor for all components by which the receiving water body is impaired and requires treatment control BMPs to match design storm standards. The permit would provide an updated qualifying storm event (QSE) definition and also alters sampling protocols to allow a more reasonable time frame to gather initial discharge samples after the first QSE. The permit also would increase required sampling frequencies and do away with group monitoring (SWRCB, 2013).

Los Angeles County MS4 Permit

The Los Angeles County Municipal Separate Storm Sewer System (MS4) Permit was recently updated on December 28, 2012 (Order No. R4-2010-0175) and regulates municipal storm water and non-storm water discharges during the construction and operation of certain facilities. The proposed GBMP facilities would be located within the jurisdiction of 18 of the 84 municipal permittees (17 cities and Los Angeles County). The MS4 permit would apply to proposed construction activities disturbing less than an acre and the operation of proposed pipelines, wells, storage tanks, spreading basins, and pump stations.

Compliance with MS4 construction requirements includes implementation of minimal construction site BMPs for erosion, sediment, non-storm water management and waste management. During operation of proposed facilities under the MS4 permit, non-storm water discharges from the site would be prohibited (with some conditional exceptions). Storm water effluent must meet water-quality based effluent limitations (WQBELs), or water quality standards for discharge leaving the site, and must not cause or contribute to the exceedance of receiving

water limitations (water quality standards for receiving waters). The discharger would be required to prepare a Monitoring and Reporting Program (MRP), which includes outfall-based storm water monitoring data (where storm water exits the facility), wet and dry weather receiving water monitoring data, outfall-based non-storm water monitoring data and regional studies. The frequency of required monitoring and sampling activities varies with the waterbody. If it is determined that a receiving water limitation is being exceeded by effluent from the proposed facilities, the discharger would be required to submit an Integrated Monitoring and Compliance Report. This report would be used to determine additional measures to prevent or reduce pollutants contributing to the exceedance of receiving water limitations.

Dischargers must also comply with the requirements of the Illicit Connections and Illicit Discharges (IC/ID) Elimination Program required under the MS4 permit. This program requires the detection, investigation and elimination of illicit surface water connections and discharges from the site throughout its operation. Illicit discharges are defined as any discharge or connection to the municipal separate storm sewer system that is not composed entirely of storm water, except for waters allowed under an NPDES permit. These non-storm water discharges occur as a result of illegal connections to the storm drain system, which can be either intentional or unknown. The program requires the facilities to promote and respond to public input regarding suspected IC/ID coming from the site.

Los Angeles County Department of Public Health

The Los Angeles County Department of Public Health oversees the construction of groundwater wells within the project area. As part of the Department's Public Health Drinking Water Program, the completion of a permit application is required for the construction and/or decommissioning of wells, including injection and extraction wells.

LARWQCB Groundwater Dewatering General Permit

The LARWQCB General NPDES Permit No. CAG994004 (Order No. 97-043) covers discharges of treated and untreated groundwater generated from permanent or temporary dewatering operations, including groundwater generated from well drilling, construction or development and purging of wells. This permit ensures the pollutant concentrations in the discharge will not violate any water quality objectives for receiving waters, including discharge prohibitions. Required groundwater samples taken prior to discharging operations determine whether or not another permit may apply or whether the water must be treated prior to being discharged. Dischargers must submit a Report of Waste Discharge (ROWD) prior to permit authorization, including a feasibility study on reuse/alternative disposal methods, a description of groundwater treatment collection and discharge system, a flow diagram, chemicals that will be used, etc. An ongoing monitoring and reporting program is also required under this permit.

Local

General Plans

Although local building and zoning ordinances generally are not applicable to most water and wastewater infrastructure projects (per Government Code Section 53091(d) and 53091(e)), all

available General Plans for jurisdictions in the project areas have been reviewed for policies relevant to the proposed project. Select policies are highlighted below.

Carson (2004)

Goal OSC-2: Protection and conservation of Carson's water resources.

Policy OSC-2.1: Maintain and improve water quality.

Policy OSC-2.2: Continue to monitor land uses discharging into water sources and water recharge areas to prevent potential contamination from hazardous or toxic substances.

Policy OSC-2.2: Minimize soil erosion and siltation from construction activities through monitoring and regulation.

Policy OSC-2.3: Conserve the water supply available to the City and promote water conservation in the management of public properties.

Policy OSC-2.5: Facilitate the completion of the infrastructure of the reclaimed water facility in the City of Carson.

Cerritos (2004)

Goal SAF-1: Protect Cerritos residents from potential flood hazards, including dam inundation.

Policy SAF-1.1: Manage development activities so that flooding damage will be avoided.

SAF-1.2: Minimize potential flood damage through the identification of necessary storm drain improvements.

SAF-1.4: Continue the maintenance of flood control facilities within Cerritos to ensure their efficient operation.

El Segundo (1992)

Policy PS2-1.4: Identify potential high-risk inundation coastal areas and manage them to reduce risk.

Goal PS5: Protect public health, safety, and welfare from natural and man-made flood and inundation hazards. Minimize injury, loss of life, property damage, and economic and social disruption caused by flood and inundation hazards.

Policy PS5-1.2: Continue to monitor and improve the effectiveness of existing flood control systems to ensure that there is adequate capacity to protect existing and proposed development from storm water runoff.

Industry (2014)

Policy RM 1-1: Work with local water providers to construct, maintain, and upgrade our water supply, transmission, storage, and treatment facilities to support existing and new development.

Los Angeles, City of (1973-2012)

Goal 1: A city where potential injury, loss of life, property damage and disruption of the social and economic life of the City due to fire, water related hazard, seismic event, geologic conditions or release of hazardous materials disasters is minimized.

Objective 1.1: Implement comprehensive hazard mitigation plans and programs that are integrated with each other and with the City's comprehensive emergency response and recovery plans and programs.

Los Angeles County of (1980)

Policy 1: Increase [water] service efficiencies, both within individual agencies and among agencies performing similar functions, while striving to reduce costs.

Policy 2: Improve coordination among operating agencies of all water and waste management systems.

Policy 6: Increase storage of potable water in underground aquifers through greater use of spreading grounds.

Policy 18: Provide protection for groundwater recharge areas to ensure water quality and quantity.

Policy 19: Avoid or mitigate threats to pollution of the ocean, drainage ways, lakes and groundwater reserves.

Policy 20: Design flood control facilities to minimize alteration of natural stream channels.

Policy 21: Design and construct new water and waste management facilities to maintain or protect existing riparian habitats.

Policy 22: Design water and waste management systems which enhance the appearance of the neighborhoods in which they are located and minimize negative environmental impacts.

Policy 25: Encourage development and application of water conservation, including recovery and reuse of storm and waste water.

Goal: Minimize injury, loss of life, property damage and economic and social disruption caused by flood and inundation hazards.

Policy 11: Continue to review proposals and projects for expansion of existing development and construction of new facilities, especially critical facilities, within areas subject to floods and other high-risk inundation areas, and disapprove projects which cannot mitigate the hazards to the satisfaction of responsible agencies.

Policy 12: Promote the use of flood plain management measures in high risk inundation areas, and require expansion of existing and proposed new developments to be flood-proofed and secured to minimize future flood losses.

Policy 14: Upgrade protection of the public from inundation hazards caused by structural failure and/or breaching of water storage tanks, debris basins, or dam and reservoir facilities.

Maywood (No Date Available)

Goal 3: Provide for the proper management of natural resources both in the city and region are so that they may be protected for the benefit of present and future residents.

Policy 3.1: Develop and enforce local criteria of air and water quality so that the city may reduce its share of these regional problems.

Pico Rivera (1993)

Objective B.6: Maintain adequate systems for water supply and distribution; wastewater collection and treatment, solid waste collection and disposal; and energy distribution which are capable of meeting the needs of the residents of Pico Rivera.

Policy B.6.2: Discuss with the involved agencies the long-term supply of reclaimed wastewater, including service to potential future uses within the City or its sphere of influence.

Goal 3: Protect and preserve the City's water quality.

Policy 3.1: Continue efforts with the Southeast Water Coalition to ensure that water supplies are properly planned, conserved, protected and managed.

Policy 3.2: Continue to coordinate water programs with other water agencies to ensure the preservation and improvement of water quality and the conservation of water.

South Gate (2009)

Goal 3: Enhanced utilization of the Los Angeles River and the Rio Hondo Channel as open space.

Objective GC 3.1: Improve access to the use of the Los Angeles River and Rio Hondo Channel.

Policy 4: New development, redevelopment, landscaping, and infrastructure along the Los Angeles River and the Rio Hondo Channel should utilize xeriscaping and native plants and enhance riparian habitat, wherever feasible.

Policy 6: The City may support regional or multi-jurisdictional efforts to improve the riverfront and to naturalize the river in a manner that restores the ecological functioning of the area.

Objective GC 4.1: Encourage appropriate flood control and prevent negative impacts of new development on flood-control efforts.

Policy 2: New development in South Gate should not exacerbate potential flooding hazards.

Policy 3: The City will provide continued support for the Los Angeles County Drainage Project (LACDP), which reduces the flood risk in a significant portion of the City.

Policy 6: The Public Works Department will continue to identify and enforce NPDES provisions within the City.

Vernon (2007)

Goal R-1: Conserve and protect the region's water and energy resources.

Policy R-1.2: Seek and pursue the most practicable and cost-effective means of implementing Nation Pollutant Discharge Elimination Systems requirements.

4.8.3 Impacts and Mitigation Measures

Significance Criteria

The criteria used to determine the significance of impacts related to hydrology and water quality are based on Appendix G of the *CEQA Guidelines.* The proposed project would result in a significant impact to surface water hydrology or water quality if it would:

- Violate any water quality standards or waste discharge requirements;
- Substantially alter the existing drainage pattern of a site or area through the alteration of the course of a stream or river in a manner that would result in substantial erosion or siltation on- or off-site;
- Substantially alter the existing drainage pattern of a site or area through the alteration of the course of a stream or river, or by other means, substantially increase the rate or amount of surface runoff in a manner that would result in onsite or offsite flooding;
- Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff;
- Otherwise substantially degrade water quality;
- Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other authoritative flood hazard delineation map;
- Place within a 100-year flood hazard area structures that would impede or redirect flood flows;
- 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;
- Expose people or structures to a significant risk of loss, injury or death involving inundation by seiche, tsunami, or mudflow.

A discussion of the impacts and mitigation measures for the proposed project are presented below.

Impacts Discussion

Water Quality Standards and Waste Discharge Requirements

Impact 4.8-1: During construction of proposed facilities pollutants could be introduced to surface waters via runoff from construction sites and violate water quality standards or waste discharge requirements. (Less than Significant)

Construction of projects under both Concept A and Concept B would require the use of heavy equipment and construction-related chemicals, such as fuels, oils, grease, solvents and paints that would be stored in limited quantities onsite. In the absence of proper controls, these construction activities could result in accidental spills or disposal of potentially harmful materials used during construction that could wash into and pollute surface waters or groundwater. Materials that could potentially contaminate the construction area from a spill or leak include diesel fuel, gasoline, lubrication oil, hydraulic fluid, antifreeze, transmission fluid, lubricating grease, and other fluids.

Because the proposed GBMP projects would be implemented incrementally over time, there would not be a single construction discharge permitting process. Instead, as construction of each of the proposed projects is initiated, individual construction discharge permits would be acquired. Where the anticipated total disturbance for a facility would be greater than one acre, the implementing agency would be required to acquire coverage under the statewide Construction General Permit (CGP) (SWRCB Water Quality Order 2009-0009-DWQ) by submitting a Notice of Intent to comply with the CGP and preparing and implementing a SWPPP, among other things. The SWPPP would include BMPs to control erosion, sedimentation, and hazardous materials release from construction sites into surface waters. Compliance with the SWPPP BMPs and other conditions of the CGP and SWPPP would ensure impacts to water quality are less than significant.

If anticipated disturbance is less than one acre, the CGP would not apply to the facility in question. Instead, the facility would be required to comply with minimum BMPs as specified by the Los Angeles County MS4 Permit (RWQCB Order No. R4-2010-0175), which would implement BMPs to provide erosion control, sediment control, and waste management strategies for construction sites. Adherence to these conditions would ensure that potential water quality degradation associated with construction activities would be minimized to less than significant levels.

In select areas, shallow groundwater may be present and could potentially interfere with construction activities, requiring groundwater dewatering in support of construction. If groundwater dewatering is determined to be necessary during construction, a Notice of Intent to comply with LARWQCB Groundwater Dewatering General Permit (Order No. 97-043) would be required. Dewatering typically involves the extraction of shallow groundwater and subsequent discharge into nearby storm drains or other receiving bodies, in order to facilitate the construction of underground facilities, such as pipelines or structural building foundations for pump station housing or treatment plant facilities. Compliance with the conditions of this general permit would ensure that dewatering discharges would not elevate pollutant concentrations beyond existing water quality limitations, or otherwise deleteriously affect beneficial use of receiving waters.

Compliance with the above-mentioned permits during implementation of all Concept A and Concept B facilities would minimize potential release of pollutants via storm water runoff from construction sites and reduce the potential for violation of water quality standards and waste discharge requirements to less than significant levels. No mitigation is required.

Mitigation Measures

None required.

Significance Determination: Less than significant.

Impact 4.8-2: Operation of projects that divert storm water from rivers could affect water quality downstream. (Less than Significant)

As a part of Concept B (Project C5), approximately 5,000 AFY of storm water would be diverted from Reach 2 of the Los Angeles River into spreading basins for groundwater recharge. This would decrease the amount of storm flows reaching downstream portions of Reaches 2 and 1 and in the Estuary of the Los Angeles River. These sections of the Los Angeles River are listed on the state 303(d) list for impairment due to metals, nutrients, pathogens, pesticides, organics, sediment toxicity, and trash. Operation of Project C5 would divert storm water during periods of high flow. Water quality impairment in these reaches is largely influenced by dry weather flows that consist of treatment plant discharges and urban runoff. Storm flows also contains contaminants that are washed to the lower reaches of the watershed and ultimately to the estuaries and ocean. Diversion of storm flows from the rivers would slightly reduce this pollutant loading to the lower reaches. The proposed diversions would not affect dry weather conditions. Therefore, storm flow diversions would result in a less than significant impact to surface water quality.

Mitigation Measures

None required.

Significance Determination: Less than significant.

Drainage Patterns

Impact 4.8-3: The placement of new aboveground project facilities could alter the existing drainage patterns of project sites and affect erosion, siltation, or flooding. (Less than Significant with Mitigation)

The proposed Concept A and Concept B project facilities would not alter the course of a stream or river. The surface waters located adjacent to the proposed project facilities are channelized and thus have a set drainage pattern. Proposed facility operations would not involve the alteration of these channels, nor are they expected to increase the flow within these channels. As a result, there would be no increase in erosion or siltation along river or stream channels and no associated potential for flooding or exceedance of existing storm water drainage systems.

Implementation of proposed GBMP projects could alter existing drainage patterns at each project site in other ways. The construction of proposed Concept A and Concept B facilities would require activities such as pavement breaking, ditching, and excavation, which would temporarily alter each site's existing ground surface and drainage patterns. Compliance with the CGP or Los

Angeles County MS4 Permit, as described previously, would require the implementation of BMPs that manage overland runoff from construction sites and establish permanent drainage pathways to stabilized outlets. With implementation of such BMPs and compliance with conditions of required permits governing storm water runoff from construction sites, potential onsite and offsite flooding impacts would be reduced to less than significant levels and discharges from construction sites would not exceed the capacity of existing storm water drainage systems. Erosion or siltation from construction sites also would be minimized to less than significant levels.

Operation of proposed GBMP projects also would not permanently alter existing site drainage patterns. The presence of new facilities at each project site and changes in the extent of permeable or impermeable surfaces would alter the direction and volume of overland flows during both wet and dry periods. During project design, overland flows and drainage at each project site would be assessed and drainage facilities designed such that no net increase in runoff would occur, in accordance with the Los Angeles County MS4 Permit. As required by **Mitigation Measure HYDRO-1**, a grading and drainage plan would be developed during project design and implemented to ensure no increase in offsite discharges would occur and no substantial increase in erosion or sedimentation would occur. This also would ensure no substantial increases in onsite or offsite flooding would occur and that the existing capacity of storm water drainage systems would not be exceeded. Impacts would be less than significant with mitigation.

Mitigation Measures

> **HYDRO-1: Implementation of a Grading and Drainage Plan.** Prior to construction of project facilities, the implementing agencies shall prepare a grading and drainage plan that identifies anticipated changes in flow that would occur on site and minimizes any potential increases in discharge, erosion, or sedimentation potential in accordance with applicable regulations and requirements for the County of Los Angeles and/or the city in which the facility would be located. In addition, all new drainage facilities shall be designed in accordance with standards and regulations set forth in the Hydrology Manual of the Los Angeles County Department of Public Works. The plan shall identify and implement retention basins, best management practices, and other measures to ensure that potential increases in storm water flows and erosion would be minimized, in accordance with local requirements.

Significance Determination: Less than significant with mitigation.

Flood Hazards: Housing and Structures

Impact 4.8-4: The proposed GBMP projects would potentially locate new facilities within a 100-year flood hazard area where flood flows could be impeded. (Less than Significant)

The Draft GBMP does not include construction of housing and therefore would not place new housing within a flood hazard area. Only one proposed GBMP projects would have components potentially located in areas designated as 100-year flood zones: Concept B Project C5 along the

Los Angeles River. A small segment of the Project C5 spreading basin and some injection and extraction wells would be located within the 100-year flood zone of the Los Angeles River. However, the spreading basin would result in a widening of the Los Angeles River channel and the conversion of the concrete-lined bottom of the channel to sediment in order to allow for percolation. This would increase the area through which flood flows would pass and increase the permeability of the channel itself. The injection and extraction wells, although concrete and impermeable, would act as an active source of replenishment of water within the channel into the groundwater basin. Therefore, the Project C5 spreading basin and well would decrease flood flows downstream. Impacts would be less than significant for both Concept A and Concept B.

Mitigation Measures

None required.

Significance Determination: Less than significant.

Flood Hazards: Levee or Dam Failure

Impact 4.8-5: The proposed project could expose structures to a significant risk of loss, including flooding as a result of the failure of a levee or dam. (Less than Significant)

Concept A

Increasing storm flow diversions to the Rio Hondo Coastal Spreading Grounds (Project C6) would not alter upstream water flow to the Whittier Narrows Dam. The proposed increases in storm flow diversion to the RHCSG and the SGCSG would reduce downstream flow in the Rio Hondo and the San Gabriel River. The proposed project facilities would not result in an exacerbation of flows in any levied areas within the project area attributing to their potential failure.

All Concept A projects in the Central Basin would be located in a dam inundation area. However, the flood inundation area is a pre-existing condition within the project area, and the placement of the proposed project facilities in the inundation area would not exacerbate this condition. The proposed facilities would be non-habitable, and thus would not increase the amount of people living within the inundation area. The proposed facilities would not require regular staffing, and would therefore not increase the amount of people in the inundation area. The aboveground facilities would be subject to the pertinent local jurisdiction's structural safety requirements and insurance programs should inundation occur. The proposed pipelines would not be affected by inundation as they would run underground. Therefore, the proposed Concept A facilities would not expose people or structures to any risk of loss, injury or death involving flooding due to failure of a levee or dam. There would be no significant impact.

Concept B

Although directly adjacent to the Los Angeles River, the implementation of C5 project facilities would not interfere with, disturb, or otherwise decrease the stability of these levies or reduce their ability to contain 100-year flood flows within the channel. Similar to Concept A, the proposed

increases in storm water diversion to C5 spreading basins would reduce flow levels in downstream areas of the Los Angeles River, and thus would not contribute to the failure of downstream levees via flow increases. Other proposed facilities would not affect or alter flow within the channels.

The proposed C5 and C10 project facilities would be located in the Whittier Dam inundation area. The proposed C10 AWTF would require regular staffing and thus may introduce people into to the potential effects of dam failure. However, the proposed C10 facility would not involve physical interference with or disturbance to Whittier Dam. Potential risk of catastrophic dam failure is extremely low and this facility would not contribute to an increase in that risk. The remaining Concept B facilities would not require regular staffing, and would be subject to the same safety and insurance requirements mentioned above in the Concept A analysis. There would be no significant impact.

Mitigation Measures

None required.

Significance Determination: Less than significant.

Tsunami, Seiche or Mudflow

Impact 4.8-6: Proposed facilities in the West Coast Basin could be located in tsunami inundation areas or seiche hazard areas, potentially exposing structures to significant risk of loss. (Less than Significant)

In general, the proposed GBMP projects would be located in relatively flat areas that would not be susceptible to mudflows. However, proposed projects to be located near the coast in the cities of El Segundo and Los Angeles would potentially be located near tsunami inundation areas and/or seiche hazard areas (Los Angeles County, 2009). The City of El Segundo General Plan states that along the City's coastal areas, tsunamis and seiches associated with seismic events could cause devastating damage to the HTP and other facilities (El Segundo, 1992).

Both the Los Angeles and El Segundo general plans provide measures that address these risks. The El Segundo Emergency Operations Plan (EOP) addresses preparedness in the case of a tsunami and other seismic events by providing a basis for operations and critical resource management strategies (El Segundo, 2003). The City of Los Angeles General Plan lists specific base building elevations, breakwater maintenance, and a tsunami alert program as mitigation for the potential threat of a tsunami. Water level regulation, structural containment and retrofitting, and inundation maps for water storage facilities are listed as mitigation for seiches (City of Los Angeles, 1996). Furthermore, the Los Angeles Tsunami Response Plan Annex lists operation concepts, alert procedures, refuge centers and evacuation routes in the case of a tsunami (City of Los Angeles, 2008).

Tsunamis and seiches are extremely rare events. The HTP is an existing facility, and the proposed GBMP would not add new aboveground facilities to this treatment plant. The proposed facilities in the West Coast Basin that would be near tsunami and seiche hazard areas would primarily be underground pipelines (Projects W1, and W3). Due to the subsurface nature of proposed facilities near such hazard areas and the existing implementation of tsunami and seiche mitigation strategies, the risk of exposing new structures to risk of loss due to inundation by tsunami or seiche would be extremely low. Impacts would be less than significant for both Concept A and Concept B.

Mitigation Measures

None required.

Significance Determination: Less than significant.

TABLE 4.8-4
SURFACE HYDROLOGY AND WATER QUALITY IMPACT SUMMARY

	Concept A		Concept B	
Impact	**Impact Determination**	**Mitigation Summary**	**Impact Determination**	**Mitigation Summary**
Water Quality Standards and Waste Discharge Requirements: During construction of proposed facilities pollutants could be introduced to surface waters via runoff from construction sites and violate water quality standards or waste discharge requirements.	Less than Significant	None required.	Less than Significant	None required.
Water Quality Standards and Waste Discharge Requirements: Operation of projects that divert storm water from rivers could affect pollutant loads downstream and further exacerbate existing water quality impairment.	Less than Significant	None required.	Less than Significant	None required.
Drainage Patterns: The placement of new aboveground project facilities could alter the existing drainage patterns of project sites and affect erosion, siltation, or flooding.	Less than Significant with Mitigation	**HYDRO-1:** Implementation of a Grading and Drainage Plan.	Less than Significant with Mitigation	**HYDRO-1:** Implementation of a Grading and Drainage Plan.
Flood Hazards: Housing and Structures: The proposed GBMP projects would potentially locate new facilities within a 100-year flood hazard area where flood flows could be impeded.	Less than Significant	None required.	Less than Significant	None required.
Flood Hazards: Levee or Dam Failure: The proposed project could expose structures to a significant risk of loss, including flooding as a result of the failure of a levee or dam.	Less than Significant	None required.	Less Than Significant	None required.
Tsunami, Seiche, or Mudflow: Proposed facilities in the West Coast Basin could be located in tsunami inundation areas or seiche hazard areas, potentially exposing structures to significant risk of loss.	Less than Significant	None required.	Less Than Significant	None required.

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4.9 Groundwater

This section describes the hydrogeologic setting and addresses the groundwater impacts associated with implementation of the proposed projects, which would include the construction and operation of wells and recharge facilities. This section includes a description of the existing groundwater resources in the project area and an evaluation of potential effects on these resources, including groundwater hydrology and water quality.

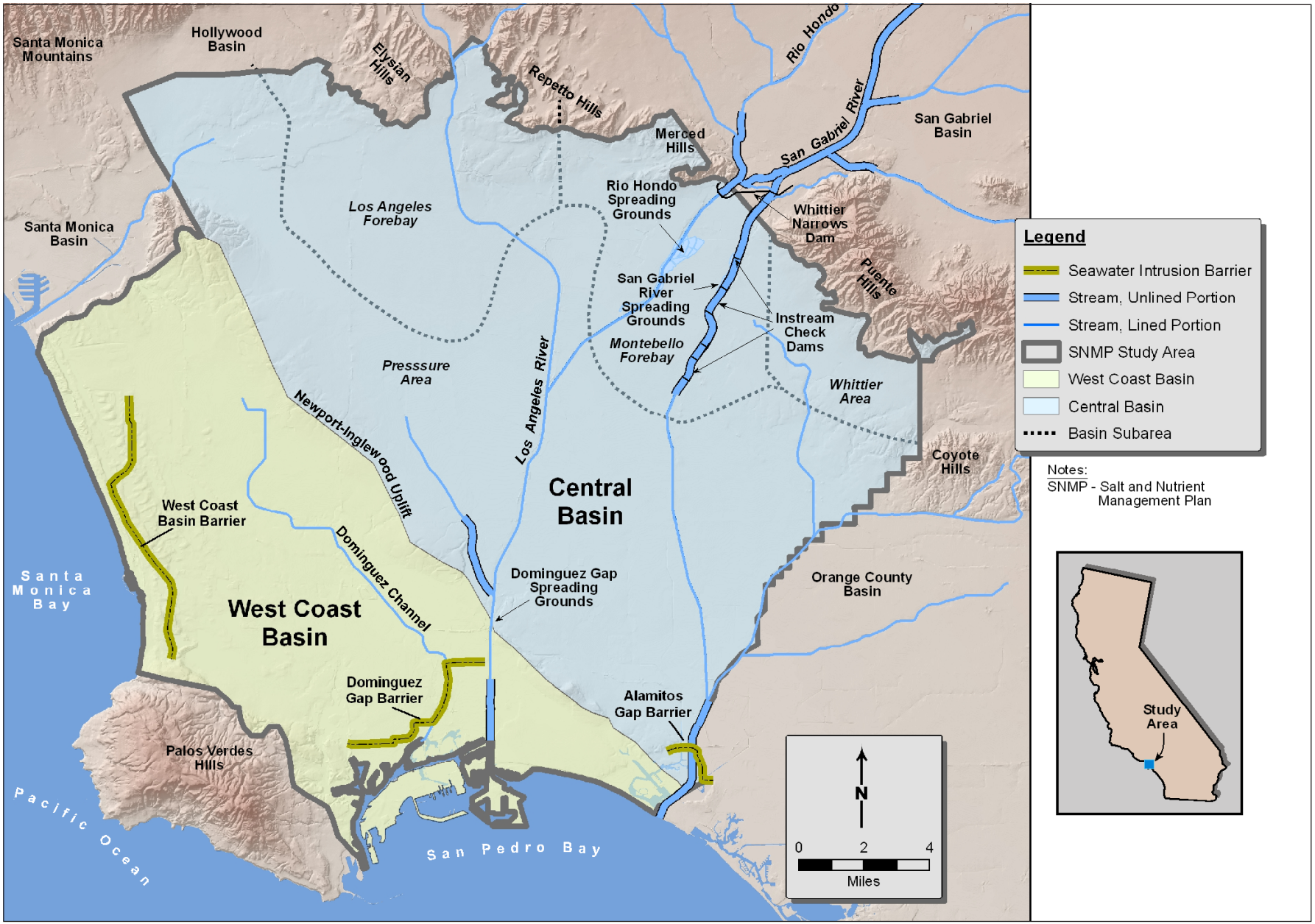
4.9.1 Environmental Setting

The GBMP encompasses most of the West Coast and Central groundwater basins. **Figure 4.9-1** illustrates the physiographic features of the Central Basin and the West Coast Basin (together "CBWCB"). The Central Basin covers approximately 270 square miles and is bounded on the north by the Main San Gabriel Basin, on the west by the Newport-Inglewood Uplift, and on the southeast by the Los Angeles-Orange County line and the Orange County Groundwater Basin. The Central Basin is divided into four subareas including the Los Angeles Forebay, Montebello Forebay, Whittier Area, and Pressure Area (**Figure 4.9-1**). The West Coast Basin covers approximately 140 square miles and is bounded by the Newport-Inglewood Uplift on the northeast, by the Santa Monica Basin on the north, and by the Pacific Ocean and Palos Verdes Hills on the west and south.

Groundwater is extracted from the CBWCB and used for water supply (i.e., drinking water, irrigation, commercial/industrial activities, etc.). Pumpers in the Basins include water providers, industries, municipalities, and small private interests. Production wells are located throughout the CBWCB. Management of replenishment in the Basins has been the responsibility of WRD since 1959. Imported water, in combination with recycled water and some storm water, was used historically for replenishment; and replenishment with recycled water has increased in recent years through the expanded use of spreading basins and injection wells. Additional information on WRD's role and responsibilities and groundwater management activities can be found in Chapter 2 of this EIR.

Climatic Conditions

The climate in the Los Angeles area ranges from subtropical along the Pacific Ocean to semi-arid in the Central Basin. Nearly all precipitation in the region occurs during the months of December through March. During the summer months, precipitation is infrequent and dry periods can often last several months. Precipitation varies considerably from year to year. At the Los Angeles County Department of Public Works (LACDPW) Downey Station (located in the City of Downey in the Central Basin), precipitation measurements between 1971 and 2010 varied between 2.8 and 33.9 inches per year with an average of 14.6 inches, similar to the 14.5 inches of average annual rainfall reported by the Western Regional Climate Center for the Los Angeles Basin (Western Regional Climate Center, 2012).



SOURCE: Todd Groundwater, 2014

WRD - Groundwater Basins Master Plan . 120192

Figure 4.9-1

Central Basin and West Coast Basin

Geology and Aquifers

The Central Basin and West Coast Basin are characterized by a layered aquifer/aquitard system. Where these sediments are sufficiently thick and transmissive to supply quantities of water to wells for beneficial use, they are termed aquifers. An aquitard, or confining unit, is made up of less permeable (low hydraulic conductivity) silt and clay layers that separate the aquifers.

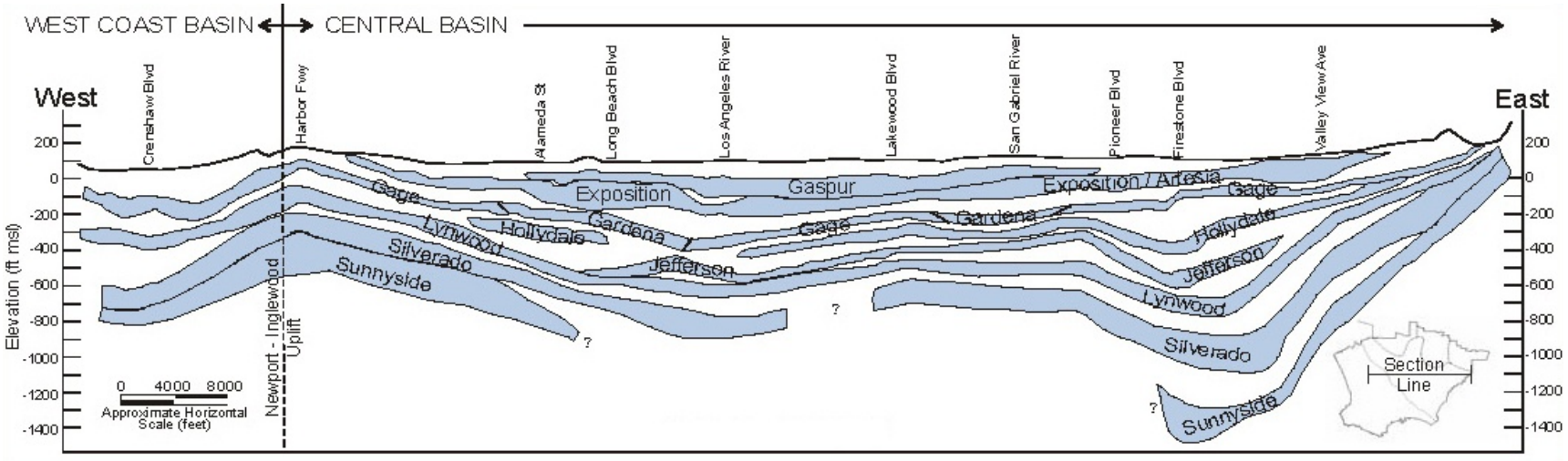
The CBWCB are comprised of unconsolidated gravel, sand, silt, and clay. These materials were deposited from the erosion of nearby hills and mountains and from ancient beaches and shallow ocean floors that covered the area in the past (WRD, 2004). Underlying these sediments are basement rocks that generally do not provide sufficient quantities of groundwater for pumping and define the base of the groundwater basins.

Aquifer depths can reach more than 2,200 feet in the Central Basin and 1,500 feet in the West Coast Basin, although production wells generally do not need to be constructed this deep to extract sufficient water. The sedimentary deposits in the Los Angeles and Montebello forebays generally thicken and deepen toward the south toward the pressure area of the Central Basin.

The Central Basin is geologically divided into four subareas, including the Los Angeles Forebay, Montebello Forebay, Whittier Area, and Pressure Area. The forebays are areas where confining layers are thin or absent and infiltration of precipitation and surface water can recharge deeper potable production aquifers. The Central Basin Pressure Area, largest of the four subareas, is characterized by aquifers that are confined by relatively impermeable clay layers over most of the area. Thus, the groundwater basin is generally unconfined in the forebay areas and confined in the pressure area (Figure 4.9-1).

The Central Basin consists of several layers of aquifers as demonstrated in **Figure 4.9-2**. Typically, starting from the lower layers, the Sunnyside Aquifer, also known as the Lower San Pedro Aquifer, is overlain by the Silverado Aquifer. The aquifer layers continue to the surface as follows: Lynwood, Jefferson, Hollydale, Gage, Exposition, and Gaspur Aquifers. Some of the aquifers pinch out and do not occur in all portions of the Central Basin. The Sunnyside, Silverado, and Lynwood Aquifers yield a majority of the potable groundwater in the Central Basin. The shallower aquifers (Jefferson, Hollydale, Gage, Exposition, and Gaspur) locally produce smaller volumes of potable water (Metropolitan, 2007). In the Pressure Area, the aquifers are separated by thick aquitards, creating confined conditions and protection from surface contamination (Metropolitan, 2007). Groundwater enters the forebay areas through surface and subsurface flow and by direct percolation of precipitation, stream flow, irrigation, and managed aquifer recharge at spreading facilities and the seawater intrusion barrier.

Figure 4.9-3 shows groundwater elevations and direction of groundwater flow in the Central Basin and West Coast Basin. Generally groundwater flows from the northeastern edge of the Central Basin toward a pumping depression in the southwest.



From: WRD, Fall 2004, modified from DWR, 1961

Notes:

WRD - Water Replenishment District of Southern California

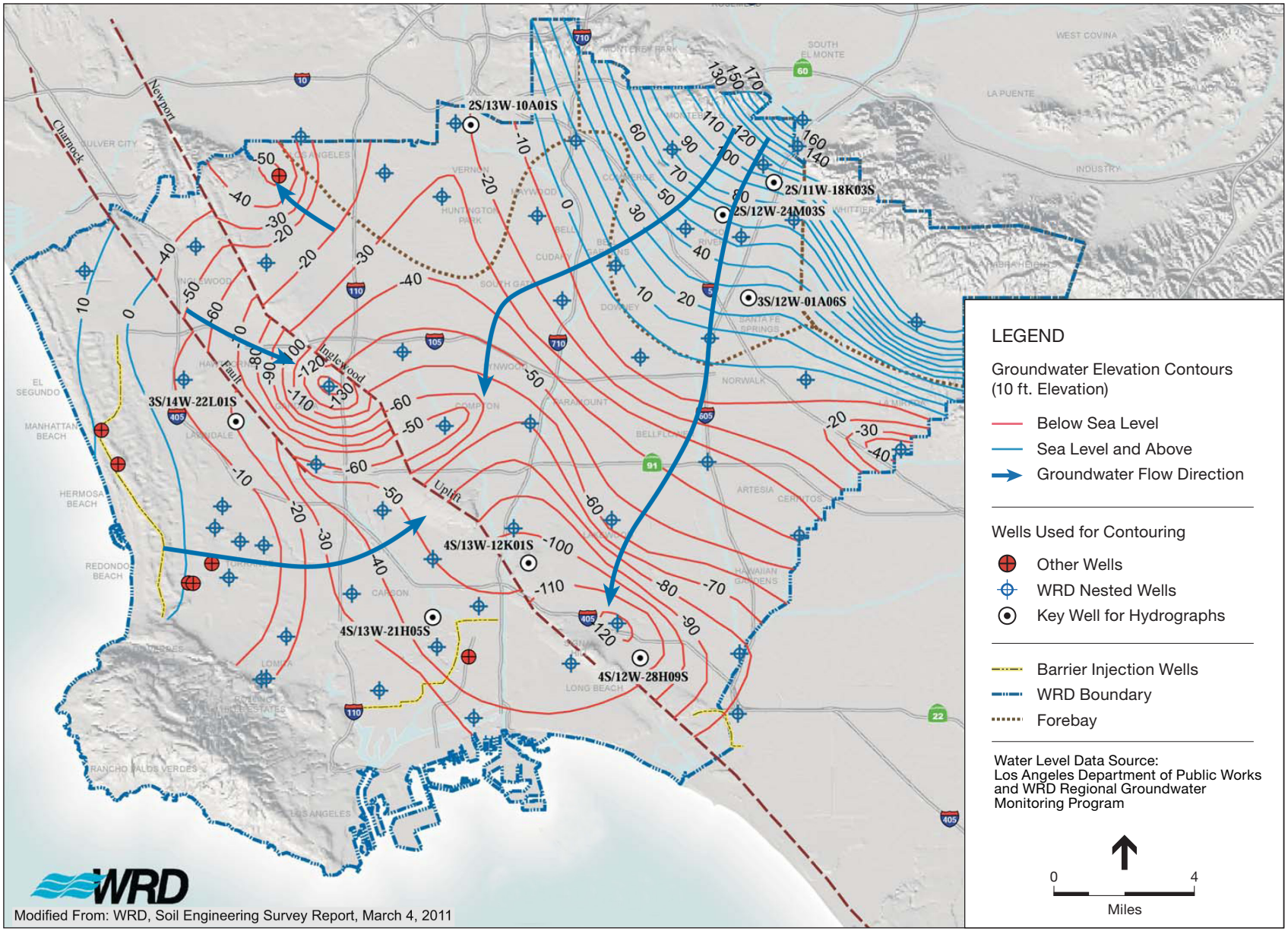
DWR - California Department of Water Resources

Ft-msl - Feet above mean sea level

SOURCE: Todd Groundwater, 2014

Figure 4.9-2

DWR-Defined Aquifer System



SOURCE: Todd Groundwater, 2014

Figure 4.9-3
Groundwater Elevation Contours, Fall 2010

Hundreds of production wells are spread out across the Central Basin (**Figure 4.9-4**), which extract groundwater from various aquifers depending on the needs of the local municipalities.

The West Coast Basin has similar aquifer layering to the Central Basin, although the Jefferson, Hollydale, and Exposition Aquifers are absent (Figure 4.9-2). The Sunnyside/Lower San Pedro Aquifer is the deepest aquifer and is not significantly tapped by water supply wells. The Silverado Aquifer is the most productive aquifer in the basin, and the Lynwood and Gage Aquifers produce good yields but with poorer water quality. The Gaspur Aquifer occurs in limited areas and is typically not used for water supply. Natural recharge primarily comes from the subsurface inflow from the Central Basin and other adjacent basins and surface inflow into the upper aquifers from rainfall and irrigation. Significant managed aquifer recharge occurs at two seawater intrusion barriers.

Groundwater generally flows from west to east towards inland pumping depressions (Figure 4.9-3). There are fewer production wells in this basin and groundwater production is less than in the Central Basin (Figure 4.9-4). The Pacific Ocean borders this basin to the west, and as a result of inland pumping, sea water intrusion has occurred in multiple aquifers. Two seawater intrusion barriers – the West Coast Basin Barrier Project (WCBBP) and Dominquez Gap Barrier Project (DGBP) – are located along the Santa Monica Bay and the San Pedro Bay coastlines to address the problem and minimize any additional intrusion (Figure 4.9-1). A third intrusion barrier, the Alamitos Gap Barrier Project (AGBP) is located at the southeast corner of the Central Basin as well.

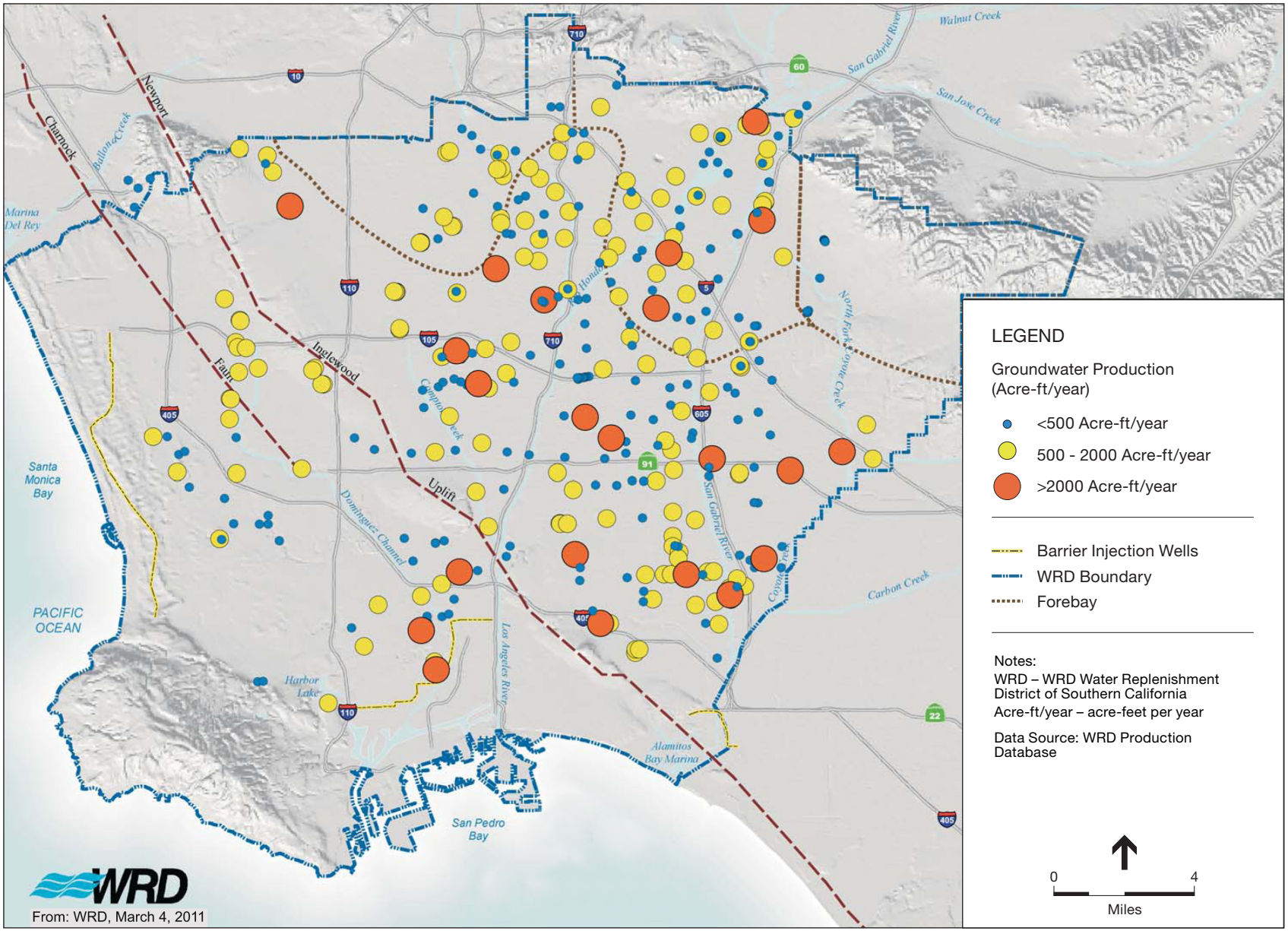
Aquifer Properties

Aquifer properties describe the ease or rate at which groundwater travels through the subsurface and how much water is contained within an aquifer or confining unit. Based on flow paths presented by the USGS (2003), the groundwater velocity in the vicinity of the Montebello Forebay is about 3 feet per day (ft/d), while the USGS reported average velocities from 0.1 to 2.1 ft per day along Santa Monica Bay and from 0.1 to 1.0 ft/day along San Pedro Bay in the West Coast Basin.

Groundwater Recharge

Natural Recharge

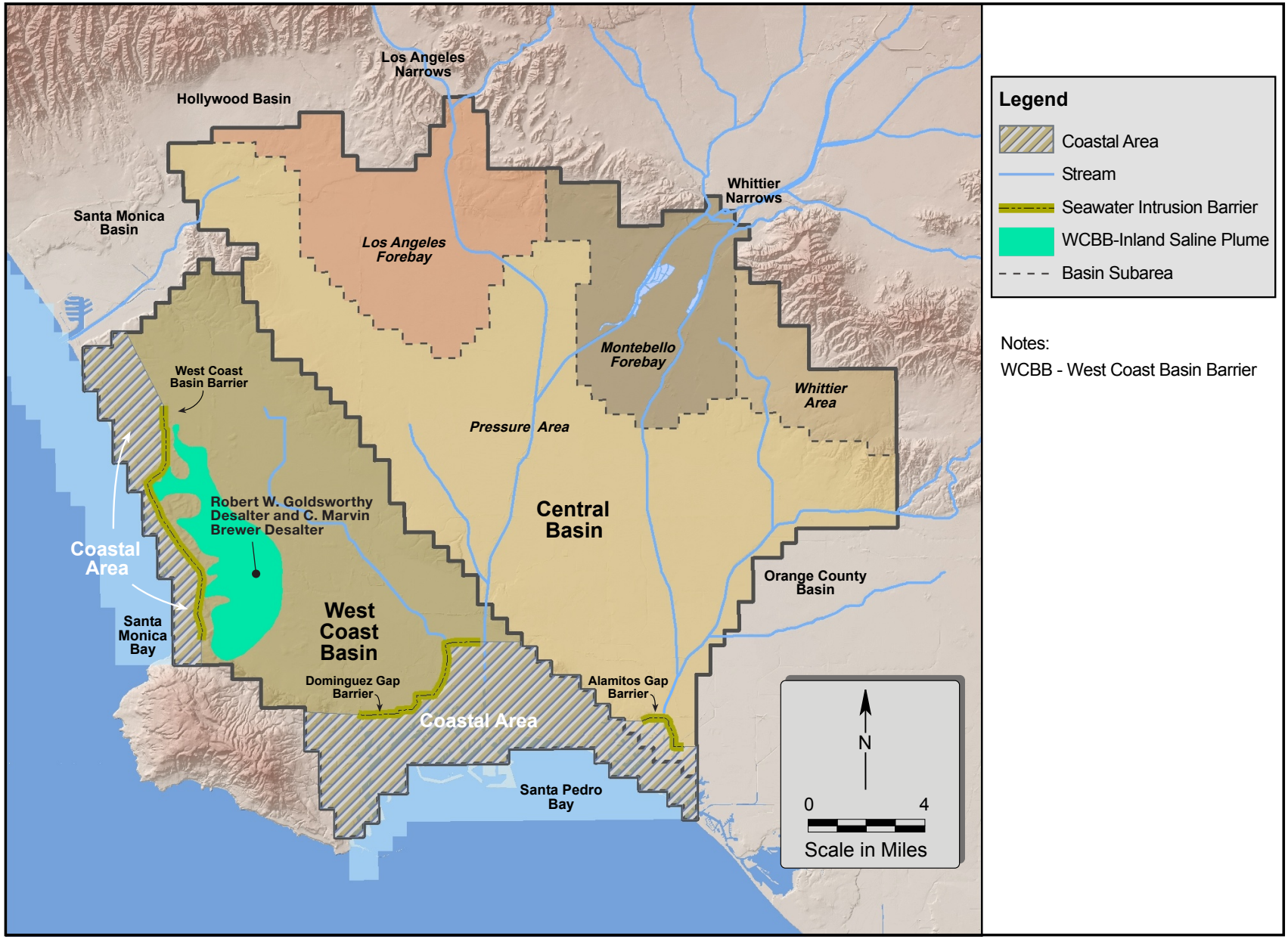
The Montebello and Los Angeles forebays in the Central Basin are areas where confining layers (aquitards) are thin or absent and infiltration of precipitation and surface water can recharge deeper potable production aquifers (e.g., recharge areas) (**Figure 4.9-5**). The Los Angeles Forebay historically was recharged by the Los Angeles River. Recharge in the Los Angeles Forebay has been substantially reduced since the river channel was lined with concrete.



SOURCE: Todd Groundwater, 2014

Figure 4.9-4

Groundwater Production, Water Year 2009-2010



SOURCE: Todd Groundwater, 2014

Figure 4.9-5

Basin Subareas, Coastal Areas, and Saline Plume

The Central Basin Pressure Area and West Coast Basin are characterized by aquifers that are generally confined by relatively impermeable clay layers over most of the area (DWR, 1961). Natural recharge to these areas is primarily from subsurface groundwater inflow from adjacent subareas and basins. Due to the pumping depressions that exist in the Central Basin and West Coast Basin, very little groundwater discharges or leaves the basins as subsurface outflow, demonstrated by the direction of groundwater flow shown in Figure 4.9-3.

Managed Aquifer Recharge

As described previously in Chapter 2, several facilities have been constructed and are operated to artificially recharge the CBWCB, referred to as managed aquifer recharge (MAR). Facilities include spreading grounds, instream recharge, and seawater intrusion barriers.

There are three spreading grounds and one instream recharge facility used for MAR in the Central and West Coast basins, including the Rio Hondo Coastal Spreading Grounds (RHSG) and San Gabriel Coastal Spreading Grounds (SGSG) (collectively, the Montebello Forebay Spreading Grounds, or MFSG), instream facilities in the San Gabriel River that are part of the SGSG, and the Dominguez Gap Spreading Grounds (DGSG). Recharge also occurs behind the Whittier Narrows Dam.

The RHSG and SGSG located downstream of the Whittier Narrows Dam recharge substantial amounts of water in the Montebello Forebay (Figure 4.9-1). Instream infiltration in the San Gabriel River is enhanced by the presence of inflatable rubber dams along the unlined stretch of the river. Recycled water has been delivered for recharge in the Montebello Forebay since 1962. Currently, water delivered to MFSG includes a mix of tertiary treated recycled water, untreated water imported from the Colorado River and SWP, and local water/storm water.

The DGSG is located along the Los Angeles River near the boundary between the Central Basin and West Coast Basin (Figure 4.9-1). The sources of water for the spreading grounds are controlled flows from the Los Angeles River low-flow channel and uncontrolled flows from storm drains.

There are three seawater intrusion barriers in the Central and West Coast basins including the WCBBP and DGBP in the West Coast Basin and the AGBP located in the Central Basin and adjacent Orange County Basin (Figure 4.9-1). Currently, treated imported water along with advanced water treatment (AWT) recycled water is injected into the WCBBP, DGBP, and AGBP.

Water Levels and Flow

Before the 20th century, groundwater flowed from the Central Basin and West Coast Basin south and westward and discharged into the Santa Monica and San Pedro bays. Since then, discharge has been dominated by pumping from wells. By the 1920s, owing to development of groundwater resources, water levels were below sea level in much of the CBWCB, resulting in seawater intrusion along the coastal areas (USGS, 2004). Adjudication of the basins to limit pumping and initiation of MAR have resulted in increased groundwater levels and reduced inland flow of seawater past the barriers.

Figure 4.9-3 shows the Fall 2010 groundwater elevation contour map for the main producing aquifer (WRD, 2011). The general direction of groundwater flow is shown by the arrows depicted on the figure. The Newport-Inglewood Uplift is a partial barrier to groundwater flow, causing differences in water levels on opposite sides of the fault system (although some subsurface water flows from the Central Basin into the West Coast Basin across the Newport-Inglewood Uplift).

In the Central Basin, groundwater levels are highest in the Montebello Forebay, where the San Gabriel Basin groundwater flows into the Central Basin and significant groundwater recharge occurs. Due to the significant MAR in the Montebello Forebay, there is a persistent mound in the groundwater table and a radial pattern of flow away from the forebay.

With the exception of the Montebello Forebay and along the WCBBP, the majority of groundwater levels in the CBWCB are below sea level, which is why continued injection at the seawater intrusion barriers is needed to prevent saltwater intrusion.

In the Los Angeles Forebay, groundwater flows generally from east to west toward a pumping depression in the Central Basin Pressure Area. In the Whittier Area, groundwater flows from the edge of the northern Puente Hills southward into the Central Basin Pressure Area.

In the West Coast Basin, groundwater levels are highest along the WCBBP and decrease inland reaching the lowest elevation near the Newport-Inglewood Uplift. Groundwater flow in the West Coast Basin is generally from west to east.

As mentioned above, due to the pumping depressions in the basins, very little groundwater discharges or leaves the basins as subsurface flow. The flow patterns described based on the Fall 2010 groundwater elevation contour map (Figure 4.9-3) are generally representative of recent conditions because MAR operations and groundwater pumping are relatively stable influences on the flow regime. Nonetheless, groundwater pumping in the Central Basin can fluctuate seasonally.

The USGS/GBMP modeling work describes the vertical movement of groundwater. Because most (about 80%) of the active groundwater extraction is from deeper aquifers, vertical groundwater flow directions are downward in most areas of the CBWCB. Groundwater levels in both the CBWCB are monitored on a continuous basis by WRD's Regional Groundwater Monitoring Program. Currently, the monitoring Program consists of a network of over 300 wells at 55 locations throughout WRD's service area in the CBWCB.

Storage Capacity

The California Department of Water Resources (DWR) has estimated that the total storage in the Central Basin is approximately 13.8 million acre-feet (AF), and total storage in the West Coast Basin is approximately 6.5 million AF (DWR, 1961). Usable storage in both basins combined is estimated to be approximately 1.1 million AF. Available storage in the Central Basin is 330,000 AF and in the West Coast Basin is 120,000 AF, assuming that the basins can be filled to within 75 feet of the ground surface (WRD, 2006).

As discussed in the previous section, groundwater levels vary across the Central Basin and West Coast Basins and therefore, some areas have more available storage than others. In particular, groundwater levels are typically mounded in the Montebello Forebay due to MAR operations as shown in Figure 4.9-3. Groundwater levels in the vicinity of the spreading grounds can rise to near the ground surface following wet periods when large volumes of storm water are recharged. These high groundwater conditions eliminate storage capacity and reduce percolation rates.

Groundwater Recharge Sources

Sources of water for use and recharge in the CBWCB include storm water, imported water, groundwater, and recycled water.

Storm Water

Storm water is not used for direct (potable) water supply in the CBWCB; however, it is actively captured and recharged through replenishment spreading operations conducted by LACDPW and WRD in the MFSG. It is also captured and recharged through instream recharge in the San Gabriel River in the Montebello Forebay (Figure 4.9-1). A small amount of surface water is also recharged in the DGSG and behind the Whittier Narrows Dam.

Imported Water

Imported water is used for water supply (i.e., drinking water, irrigation, commercial/industrial activities, etc.) and replenishment in the CBWCB. The primary source of imported water is Metropolitan. Metropolitan imports water from the Colorado River Aqueduct (CRA) and State Water Project (SWP); untreated imported water is delivered to the Montebello Forebay spreading facilities and treated imported water is injected into the seawater intrusion barriers and used for water supply.

Recycled Water

In the CBWCB, recycled water has many uses, including groundwater recharge, urban landscape irrigation, agricultural irrigation, industrial and commercial process water, recreational facilities, and wildlife habitat maintenance. Treatment plants that produce recycled water used in the CBWCB are owned and operated by LACSD, WBMWD, the City of Los Angeles, and WRD. See Table 3-3 in Chapter 3 for a list of treatment plants producing recycled water within the WRD service area.

Recycled Water Groundwater Recharge Projects

There are four recycled water recharge projects located in the CBWCB including the following:

Montebello Forebay Project (MFSG). This project is the joint responsibility of WRD, LACSD, and LACDPW. Tertiary treated recycled water, untreated Colorado River Water and SWP water (imported water) supplied by Metropolitan, and local storm water are sources of managed groundwater replenishment. WRD manages the Central Basin and purchases recycled water and imported water; LACSD produces the recycled water; and LACDPW operates and maintains the spreading facilities. The project first began using recycled water in 1962. On average approximately 50,000 acre-feet per year (AFY) of recycled water has been available for

groundwater replenishment. The project is allowed to use recycled water up to 45% of the volume of all replenishment sources to the Forebay (as determined over a 10-year period). The Groundwater Replenishment Improvement Project (GRIP) project will replace the 21,000 AFY of imported water used for replenishment with 11,000 AFY of tertiary recycled water and 10,000 AFY of advanced treated recycled water by 2018.

Alamitos Gap Barrier Project (AGBP). The AGBP is jointly owned by LACDPW and Orange County Water District and is operated/maintained by LACDPW under the direction of a Joint Management Committee. The AGBP was established to prevent seawater intrusion and replenish groundwater resources in the Central Basin and Orange County Basin. The LVLWTF, which is owned by WRD and operated by the Long Beach Water Department, provides advanced water treatment (AWT) of tertiary treated recycled water supplied by LACSD for injection into the barrier. The AGBP first began using AWT recycled water in 2005 (approximately 2,000 AFY) using a 50:50 blend of recycled water and treated imported water. The LVLWTF has been expanded and the permit for the LVLWTF/barrier project has been amended to allow injection of 100% recycled water.

West Coast Basin Barrier Project (WCBBP). The WCBBP, owned and operated by LACDPW, was established to prevent seawater intrusion and replenish groundwater resources in the West Coast Basin. The ECLWRF, which is owned by WBMWD, produces the AWT recycled water. The project first began using AWT recycled water in 1994 and started out with a 50:50 blend of recycled water and treated imported water and then was increased to a 75:25 blend. In 2014, the ECLWRF was expanded to provide 100% recycled water for injection at the WCBBP.

Dominquez Gap Barrier Project (DGBP). The DGBP, owned and operated by the LACDPW, was established to prevent seawater intrusion and replenish groundwater resources in the West Coast Basin. The project first began using recycled water in 2003. The project is allowed to use up to a 50:50 blend of AWT recycled water produced by the City of Los Angeles' TIWRP and treated imported water. The TIWRP is currently being expanded to provide 100% AWT recycled water by 2018.

Existing Groundwater Quality

In general, groundwater in the main producing aquifers of the CBWCB is of good quality. Localized areas of marginal to poor quality water exist, primarily at the basin margins where seawater intrusion occurred in the past and also in mostly shallow groundwater near contamination sites.

Between the 1900s and 1950s, groundwater was an important factor in urbanization of the CBWCB. Excessive over pumping in the CBWCB caused severe overdraft (e.g., lowered groundwater levels) and created an inland hydraulic gradient that resulted in seawater intrusion, which contaminated the coastal groundwater aquifers. To address this problem and halt the intrusion, three seawater intrusion barriers were constructed. While the water injection activities at the barriers were successful in halting further seawater intrusion, these efforts could not address the seawater which had already intruded into the CBWCB before the barriers were constructed. These large plumes of high-TDS water, referred to as "saline plumes," are trapped

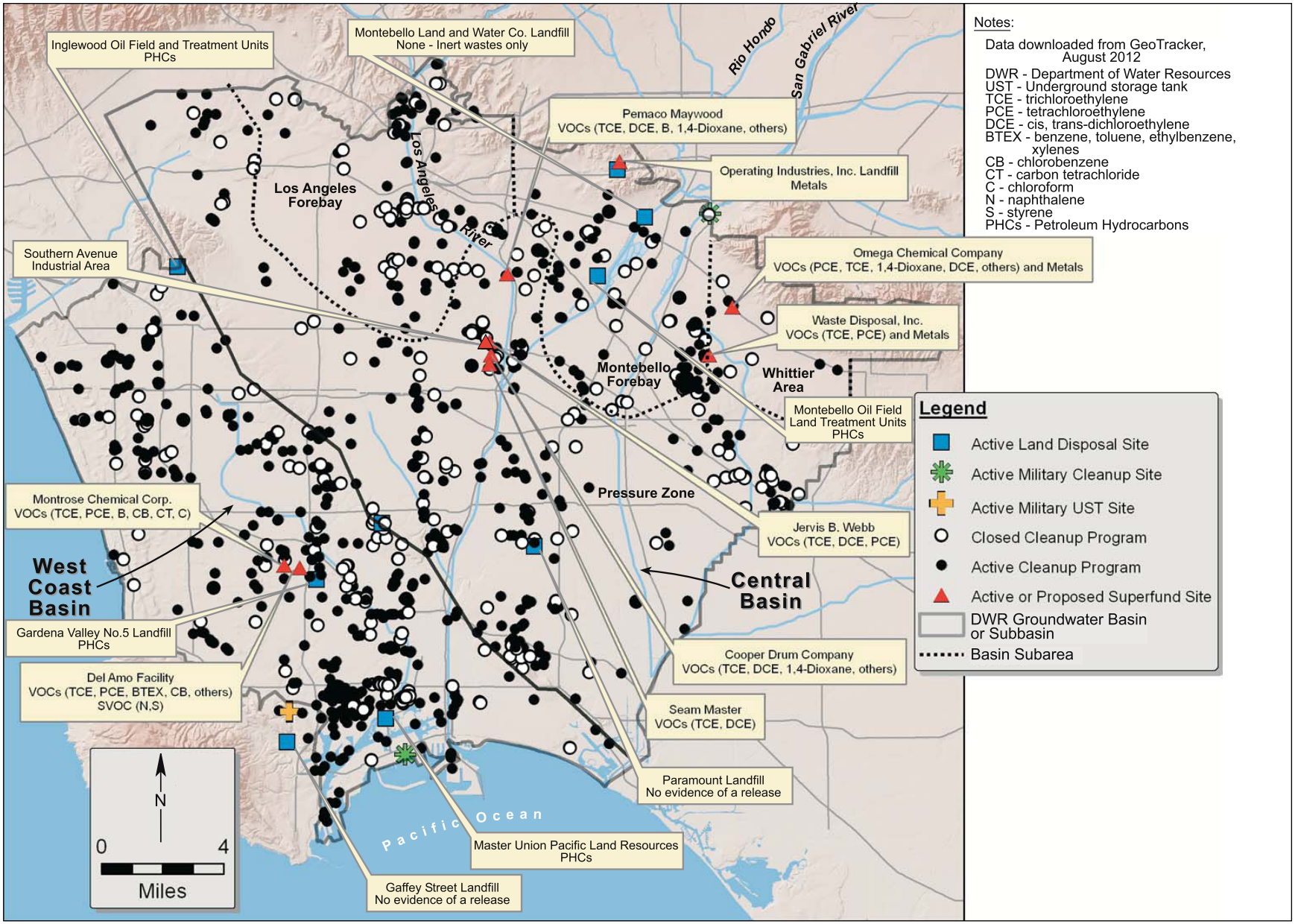
inland of the injection wells, thereby degrading significant volumes of groundwater with high concentrations of chloride and total dissolved solids (TDS) and decreasing the ability of affected aquifers to provide groundwater storage.

Groundwater quality in the CBWCB also reflects current and historical land uses. As a highly urban area, commercial and industrial activities have resulted in environmental releases due to leaking aboveground and underground storage tanks, leaking sewer and oil pipelines, spills, and illegal discharges. As shown in **Figure 4.9-6** and **4.9-7** there are many contaminated sites including leaking underground storage tank sites in the Central Basin and West Coast Basins and many have contaminated groundwater with localized plumes of petroleum fuels, solvents, and other hazardous substances. These plumes are typically found in shallow groundwater. However, as the aquifers and confining layers in these alluvial basins are typically inter-fingered[1], the quality of groundwater in the deeper production aquifers is threatened by the migration of pollutants from the upper aquifers. Downward migration of contaminants is of particular concern in the forebay areas where aquifers are in hydraulic communication and there is a downward vertical gradient. Proposed GBMP projects that recharge the shallow aquifers have the potential to mobilize shallow contamination and alter groundwater flow directions.

While TDS is used as the main indicator to evaluate the GBMP projects with respect to water quality impacts, other constituents can be introduced or mobilized by MAR projects. Accordingly, existing groundwater quality with respect to selected constituents is discussed below.

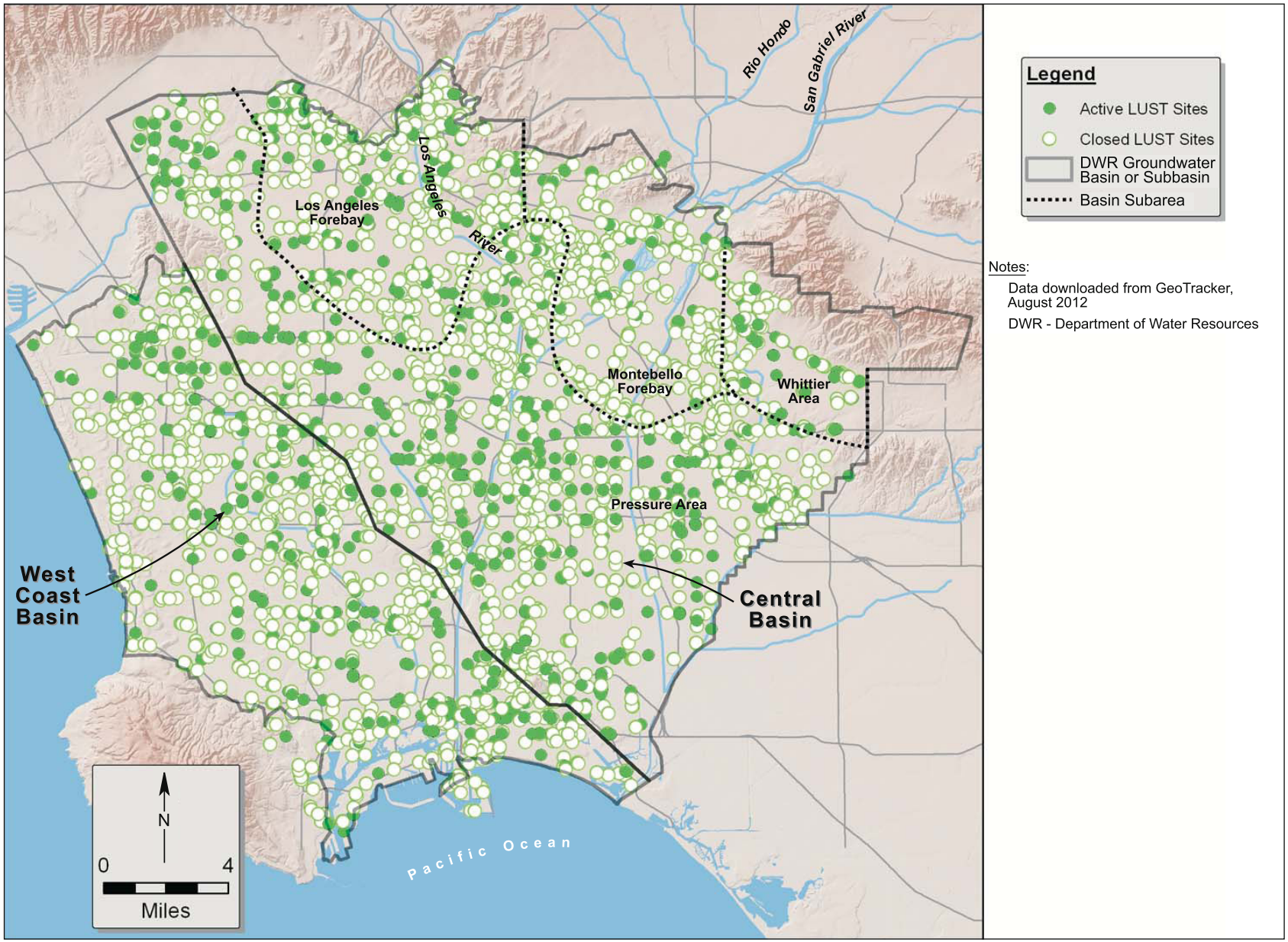
Appendix E includes a Technical Memorandum prepared by Nellor Environmental Associates summarizing the most recent regulations relating to constituents of emerging concern (CECs).

[1] "Interfinger" means to grade or pass from one material (typically fine-grained) into another (typically coarse-grained) through a series of interpenetrating wedge-shaped layers. This can result in hydraulic connections between fine and coarse grounded layers.



SOURCE: Todd Groundwater, 2014

Figure 4.9-6
Environmental Release Sites



SOURCE: Todd Groundwater, 2014

WRD - Groundwater Basins Master Plan . 120192

Figure 4.9-7

Leaking Underground Storage Tank Sites

Total Dissolved Solids

Total salinity is commonly expressed in terms of TDS as milligrams per liter (mg/L). For broad planning purposes, TDS can be used as an indicator to compare GBMP projects on the basis of water quality impacts. While TDS can be an indicator of anthropogenic impacts, there are also natural background TDS concentrations in groundwater. The background TDS concentrations in groundwater can vary considerably based on purity and crystal size of the minerals, rock texture and porosity, the regional structure, origin of sediments, the age of the groundwater, and many other factors (Hem, 1989).

The Basin Specific Basin Plan Objective (BSBPO) for TDS in the Central Basin is 700 mg/L and 800 mg/L in the West Coast Basin. The average TDS concentrations in various replenishment water supplies described in the GBMP (CH2M, 2012), and in blended recharge water and in each groundwater basin calculated as part of the Salt and Nutrient Management Plan (SNMP) process (Todd Engineers, 2015) are provided in **Table 4.9-1**. The impact of various GBMP projects on TDS groundwater quality can be assessed by comparing the volumes and concentrations of the replenishment water supplies for different project scenarios with average existing groundwater quality.

TABLE 4.9-1
TOTAL DISSOLVED SOLID CONCENTRATIONS FOR GBMP REPLENISHMENT SUPPLIES AND GROUNDWATER BASINS

Supply	TDS Concentration (mg/L)	Reference
Recycled Water – 100% FAT	100	MWH, 2009
WCBBP Recharge Blend [c]	264	Todd Engineers, 2015
Storm Water [a]	271	LADPW, 2010
ABP Recharge Blend [c]	302	Todd Engineers, 2015
WCBBP Recharge Blend [c]	320	Todd Engineers, 2015
Recycled Water – 100% NF	340	CH2M, 2012a
MFSG Recharge Blend [c]	419	Todd Engineers, 2015
Imported Water (Existing Conditions) [b]	439	Metropolitan, 2010b
Central Basin Groundwater [d]	529	Todd Engineers, 2015
Recycled Water – Ozone/BAC/GAC	567	CH2M, 2012a
Recycled Water – Tertiary (SJCWRP)	567	CH2M, 2012b
West Coast Basin Groundwater [d]	890	Todd Engineers, 2015

SJCWRP – San Jose Creek Water Reclamation Plant
NF – nanofiltration
GAC – granular active carbon
MFSG – Montebello Forebay Spreading Grounds
FAT – full advance treatment
BAC – biological activated carbon
GBMP – Groundwater Basins Master Plan
AWT – advanced water treatment

a average value for wet weather months
b average of Colorado River Aqueduct (628 mg/L) and State Water Project (250 mg/L)
c averages based on recharge blend of storm water, imported water, and recycled water in MFSG, and imported and AWT recycled water in seawater barriers from WY 2001 to 2010
d averages based on most recent five years of water quality data (2007 to 2012); saline impacted areas near the coast and seaward of the seawater intrusion barriers are not included in the basin averages

Based on five years of water quality data (2007 through 2012), the average TDS concentrations in the Central Basin and West Coast Basin were calculated as part of the SNMP development (Todd Engineers, 2015). In the Central Basin, the average TDS is 529 mg/L, which is below the BSBPO of 700 mg/L. For the West Coast Basin, the average TDS is 890 mg/L, which is above the BSBPO of 800 mg/L. This is due to significant inland saline plumes with high TDS concentrations. Current implementation measures including the seawater barriers and desalters appear to be reducing overall TDS levels in the West Coast Basin (Todd Engineers, 2015).

Arsenic

Arsenic is an element found in the earth's crust and thus, can occur naturally in groundwater. Natural sources of arsenic in groundwater include weathering and erosion of rocks. Groundwater contamination with arsenic can also result from industrial releases. Arsenic is classified as a known human carcinogen and also causes other health effects, such as high blood pressure, diabetes, and vascular and skin effects.

Arsenic is detected at concentrations above drinking water standards in about 20% of WRD monitoring wells (WRD, 2012). The widespread distribution of arsenic detections in ambient groundwater indicates it is largely naturally occurring as a result of leaching from formation deposits.

Arsenic can be mobilized at AWT recycled water surface spreading and injection sites due to leaching of naturally-occurring arsenic-bearing formations.

Manganese

Manganese is a naturally occurring constituent in groundwater. Elevated manganese concentrations are objectionable in water for aesthetic rather than health reasons. Manganese in water causes black staining, which is more unsightly and harder to remove than those caused by iron. Manganese is frequently detected in ambient groundwater in production wells in the CBWCB at concentrations above the secondary drinking water standard. The widespread distribution of elevated manganese concentrations in ambient groundwater indicate elevated manganese detections are naturally occurring.

N-Nitrosodimethylamine (NDMA)

NDMA contamination in groundwater in California is typically related to the disposal of liquid rocket fuels associated with the aerospace industry. NDMA is also generated as a byproduct of wastewater treatment disinfection using chloramines. NDMA is a probable human carcinogen. It has no regulated drinking water standard or primary maximum contaminant level (MCL), but has a notification level of (NL) of 10 nanograms per liter (ng/L). Notification levels are health-based advisory levels established by California Department of Public Health (CDPH) for chemicals in drinking water that lack MCLs. When chemicals are found in drinking water supplies at concentrations greater than their NLs, certain requirements and recommendations apply to water purveyors. NDMA is detected in tertiary treated recycled water recharged at the MFSG and in AWT recycled water delivered to the seawater intrusion barriers.

LACSD has conducted extensive studies of the fate and transport of NDMA near its WRPs and in the Montebello Forebay. The studies found that NDMA in recycled water is significantly attenuated in 1) surface water likely through UV attenuation processes as the water travels from the WRP effluent discharge locations to the spreading grounds and 2) through soil aquifer treatment (likely bioattenuation processes) in the subsurface. The studies concluded that NDMA in recycled water recharged in the spreading grounds does not impact nearby water supply wells.

1,4-Dioxane

1,4-Dioxane is used primarily as a solvent in the manufacture of chemicals and as a laboratory reagent. It is frequently found at contaminated sites where 1,1,1-trichloroethane (1,1,1-TCA) was used for degreasing. 1,4-Dioxane is also a trace chemical found in cosmetics, detergents, and shampoos. It is highly soluble and mobile in groundwater and has been detected in recycled water. On November 22, 2010, the State Water Resources Control Board (SWRCB) Division of Drinking Water (DDW), formerly California Department of Public Health (CDPH), revised the NL for 1,4-dioxane from 3 μg/L to a more stringent NL of 1 μg/L, to reflect an update in the risk analysis announced by the USEPA in August 2010.

The SWRCB DDW recommends that 1,4-dioxane is a chemical for which additional monitoring may be appropriate near recycled water groundwater recharge projects (CDPH, 2011). Therefore, 1,4-dioxane is currently monitored in recycled water and groundwater near the spreading grounds and seawater barriers to ensure compliance with regulatory requirements.

Constituents of Emerging Concern (CECs)

CECs include several types of chemicals such as (i) pesticides, (ii) pharmaceuticals and ingredients in personal care products, (iii) veterinary medicines, (iv) endocrine disruptors, and others. CECs generally have no established water quality standards or NLs. These chemicals may be present in recycled water at very low concentrations and are now detected as the result of more sensitive analytical methods. Information regarding their health significance is evolving with the development of acceptable daily intake levels and drinking water equivalent levels; however, information is lacking on the full spectrum of potential CECs and their health significance in mixtures.

The LARWQCB has taken actions to begin to address CECs and has begun to include requirements for CEC Special Studies in NPDES permits for Publicly Owned Treatment Works (POTWs) in the region. The LACSD has begun monitoring effluent for CECs at the water reclamation plants that supply recycled water to the Central Basin. CEC monitoring requirements have been included in permits issued for the injection of recycled water at the ABP, WCBBP, and WCBBP.

The USGS (2009) has conducted some groundwater monitoring for CECs in the CBWCB under the Groundwater Ambient Monitoring and Assessment (GAMA) program (http://pubs.usgs.gov/ds/387/). No CECs were detected at elevated concentrations. Appendix E includes a Technical Memorandum prepared by Nellor Environmental Associates summarizing the most recent regulations relating to CECs.

Contamination Sites in the Central and West Coast Basins

Figure 4.9-6 shows all active contamination sites in the CBWCB including land disposal sites, military sites, cleanup program sites, and active or proposed Superfund sites. Active sites refer to properties currently being investigated or cleaned up under regulatory agency review or oversight. Inactive sites indicate cases that have been closed by the relevant regulatory agency.

For Superfund sites and active land disposal sites, call-out boxes show the name of the site and the main constituents of concern (COCs). Figure 4.9-7 shows active and inactive leaking underground storage tank (LUST) sites. The primary COCs associated with LUST sites are petroleum hydrocarbons and gasoline additives.

As shown in Figures 4.9-6 and 4.9-7, there are thousands of release sites in the CBWCB. Nonetheless, relatively few sites have impacted water quality in the deeper water supply aquifers. WRD has been tracking and working in close consultation with the regulatory agencies to provide data and technical support to expedite investigations and cleanups at priority groundwater contaminated sites within the basins. Priority environmental sites were selected by WRD based on certain criteria such as hydrogeology, depth and concentration of the contaminants, fate and transport of the COCs, distance to nearby water supply wells, presence of contaminated drinking water wells in the site vicinity, proximity to recharge areas, and status of site characterization/remediation. **Figure 4.9-8** provides the locations of priority contamination sites.

Groundwater Modeling

The WRD/USGS groundwater flow model was updated through water year 2010 as part of the analysis for the Draft GBMP. The updated model was then used to project groundwater levels and storage conditions for various operating conditions in the West Coast and Central Basins over a 40-year period, simulating water years 2011 through 2050. The model update included extending four principal stresses and one boundary condition as described below:

- Mountain front and interior recharge
- Recharge of storm water, imported water, and recycled water at the MFSG
- Injection of imported water and advanced treated recycled water into the three barriers
- Inclusion of additional production wells installed since 2000 and pumping
- Constant hydraulic heads along the Orange County boundary

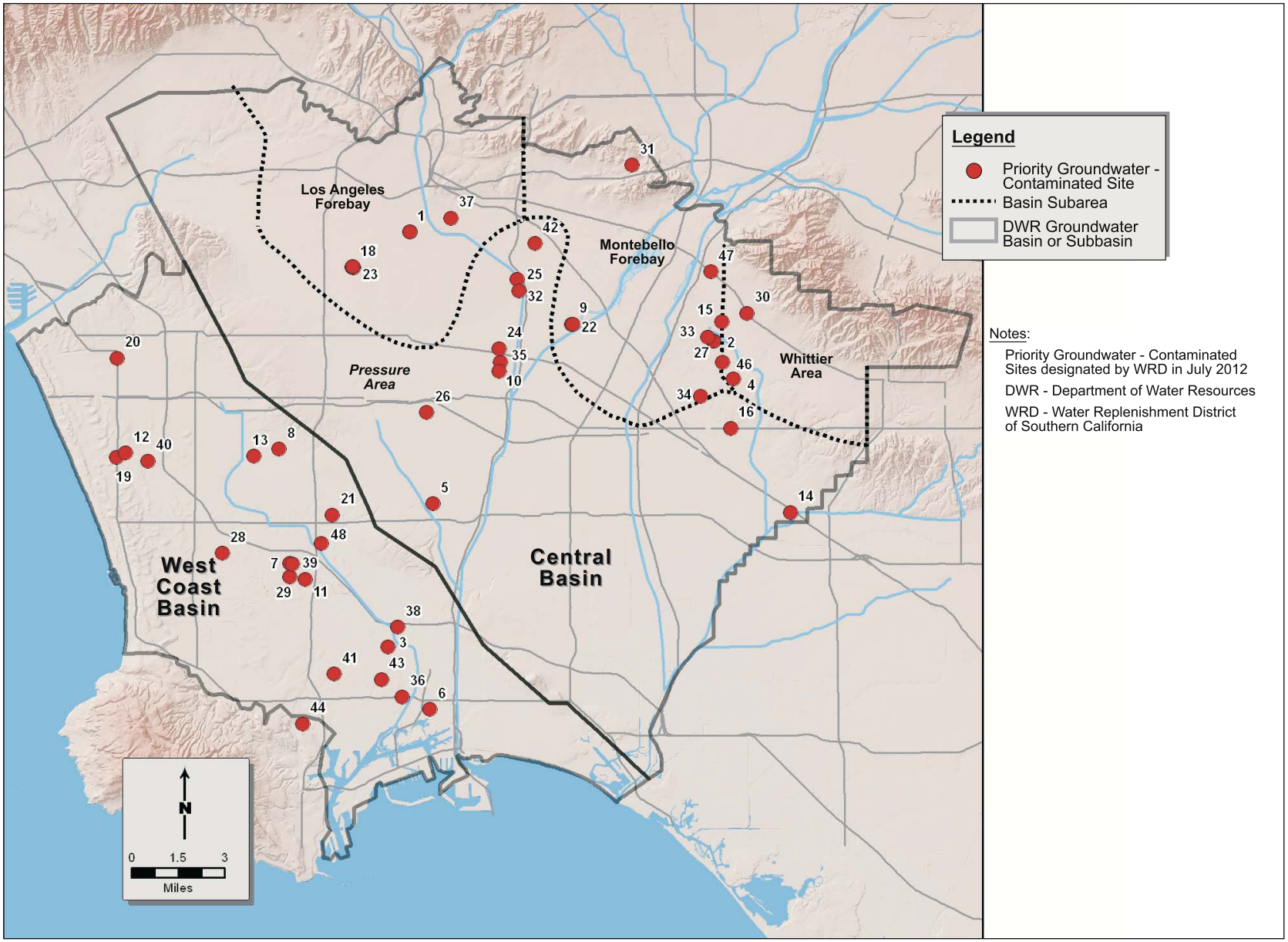
Each of these stresses was updated for water years 2001 through 2010, which was the extent of available data for most of these data sets. The updated WRD/USGS groundwater flow model was run to create groundwater level conditions at the end of water year 2010, which were used as the initial condition for subsequent modeling simulations.

The updated model was then used to simulate groundwater levels and cumulative groundwater storage in the groundwater basins in response to changes in water replenishment and pumping conditions from 2011 through 2050. The simulation conditions included combinations of operating conditions wherein one basin is pumped within or above its APA/water rights, while

the other basin is being pumped within or above its APA/water rights. The simulations modeled implementation of the scenarios listed in **Tables 4.9-2** and **4.9-3**.

Tables 4.9-2 and 4.9-3 summarize existing basin operational conditions and the scenarios for future operations considered in the Draft GBMP. The scenarios represent combinations of different proposed GBMP projects listed in Table 3-5 of this EIR. (e.g., in the Central Basin, Scenario CB-A1 implements Project C1, and Scenario CB-A3 implements Project C1 and C2.) The scenarios in Table 4.9-2 and 4.9-3 are those determined to be feasible for implementation and are thus carried forward for evaluation in this EIR. The analysis of impacts to groundwater is organized by scenario.

The key objectives of the scenarios are to significantly reduce imported water use by providing increased groundwater pumping from the basins at levels potentially at or above the adjudicated pumping limit for the West Coast Basin and APA for the Central Basin, respectively. The increased recharge needed to support increased pumping would come from increased storm water capture and increased recharge with tertiary and/or AWT recycled water. Increased recharge could also be supported by in-lieu practices such as substituting direct-use recycled water for pumped groundwater. Recharge mechanisms considered include both surface spreading and injection wells. Increased recharge and/or changes in the sources of recharge water would potentially take place in the Montebello Forebay, Los Angeles Forebay, and the WCBBP, ABP, and WCBBP. Increased pumping would occur at existing wells and new wells located in the Montebello Forebay and Los Angeles Forebay and within the saline plume located inland of the WCBBP.



SOURCE: Todd Groundwater, 2014

WRD - Groundwater Basins Master Plan . 120192

Figure 4.9-8

Priority Environmental Release Sites

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TABLE 4.9-2
WEST COAST BASIN GBMP SCENARIOS

GBMP Scenario	Description	Concept	Pumping			Replenishment Source Water		Replenishment Volume (All Injection)				New Replenishment (Compared to Existing Conditions) (AFY)	Extraction	
			Existing (AFY)	Additional (AFY)	Total (AFY)	Facility	Type	WCBB (AFY)	DGB (AFY)	New Injection Wells (AFY)	Total Replenishment (AFY)			
Existing Conditions	Continued Existing Operations [a]		42,000	0	**42,000**	MWD	Imported	0	3,000		3,000	**0**		
						ECLWRF	AWT RW	16,000	0		16,000			
						TIWRP	AWT RW	0	3,000		3,000			
							Total	**16,000**	**6,000**		**22,000**			
WCB-A1	Increase basin pumping to adjudicated water rights[b]: * AWT water replaces all imported water +16,500 AWT WCBB Injection +1,500 AWT DGB Injection	A	42,000	22,468	**64,468**	ECLWRF	AWT RW (Existing)	17,000	0		17,000	**18,000**	1) Extraction assumed **shifting of pumping from oil refineries to major water rights holders with high imported water use** at expanded or new wells at existing well sites **(per GBMP Scenario A1a)**.	2) Extraction assumed shifting of pumping from oil refineries to major water rights holders with high imported water use at expanded or new wells at existing well sites as well as **installation of desalters for remediation of the saline plume (per GBMP Scenario A1c).**
							AWT RW (New)	15,500	0		15,500			
							Subtotal	32,500	0		32,500			
						TIWRP	AWT RW (Existing)	0	5,000		5,000			
							AWT RW (Expanded)	0	2,500		2,500			
							Subtotal	0	7,500		7,500			
							Total	**32,500**	**7,500**		**40,000**			
WCB-B1	Increase basin pumping above adjudicated water rights[b]: * AWT replaces all imported water +24,000 AWT WCBB Injection +9,000 AWT DBG Injection +15,000 AWT Mid-basin Injection	B	42,000	52,468	**94,468**	ECLWRF	AWT RW (Existing)	17,000	0	0	17,000	**48,000**	Extraction assumed shifting of pumping from oil refineries to major water rights holders **and additional pumping above the basin water rights by 3 major water rights holders with high imported water use** at expanded or new wells at existing well sites as well as **installation of desalters for remediation of the saline plume (per GBMP Scenario A1c)**.	
							AWT RW (New)	23,000	0	0	23,000			
							Subtotal	40,000	0	0	40,000			
						TIWRP	AWT RW (Existing)	0	5,000	0	5,000			
							AWT RW (New)	0	8,000	0	8,000			
							Subtotal	0	13,000	0	13,000			
						JWPCP	AWT RW (New)	0	2,000	15,000	17,000			
							Total	**40,000**	**15,000**	**15,000**	**70,000**			

NOTES:
"Existing Operations" reflects typical current operations (approximate average during 2010-2015)
Assumes implementation of the noted changes relative to Existing operations

TABLE 4.9-3
CENTRAL BASIN GBMP SCENARIOS

GBMP Scenario	Description	Concept	Pumping			Replenishment Source Water		Montebello Forebay		Los Angeles Forebay		Alamitos Barrier	Total Injection (AFY)	Surface Spreading MFSG (AFY)	Total Replenishment (AFY)	New Replenishment (Compared to Existing Conditions) (AFY)
			Existing (AFY)	Additional (AFY)	Total (AFY)	Facility	Type	Spreading Grounds (Existing)	Injection Wells (New)	Injection Wells (New)	AARF Injection (New)	Injection Wells (Existing)				
Existing Conditions [c]	Continued Existing Operations [a]		195,500	0	**195,500**	LOCAL	Storm	57,000				0	0	57,000	57,000	**0**
						MWD	Imported	21,000				3,000	3,000	21,000	24,000	
						SJC/WN/PO WRPs	Tertiary RW	50,000				0	0	50,000	50,000	
						LVLWTF	AWT RW	0				3,000	3,000	0	3,000	
							Total	**128,000**				**6,000**	**6,000**	**128,000**	**134,000**	
CB-A1	Increase basin pumping to APA: * GRIP (11,000 Tertiary, 10,000 AWT MFSG Spreading) +2,000 AWT ABP Injection +10,000 Tertiary MFSG Spreading	A	195,500	21,867	**217,367**	LOCAL	Storm	57,000				0	0	57,000	57,000	**12,000**
						MWD	Imported	0				0	0	0	0	
						GRIP (SJCWRP)	Tertiary RW	11,000				0	0	11,000	11,000	
							AWT RW	10,000				0	0	10,000	10,000	
						SJCWRP	Tertiary RW	60,000				0	0	60,000	60,000	
						LVLWTF	AWT RW (Existing)	0				8,000	8,000	0	8,000	
							Total	**138,000**				**8,000**	**8,000**	**138,000**	**146,000**	
CB-A2	Increase basin pumping to APA: * GRIP (11,000 Tertiary, 10,000 AWT MFSG Spreading) +2,000 AWT ABP Injection +5,000 Tertiary MFSG Spreading +5,000 AWT MFSG Spreading	A	195,500	21,867	**217,367**	LOCAL	Storm	57,000	0			0	0	57,000	57,000	**12,000**
						MWD	Imported	0	0			0	0	0	0	
						GRIP	Tertiary RW	11,000	0			0	0	11,000	11,000	
							AWT RW	10,000	0			0	0	10,000	10,000	
						SJCWRP	Tertiary RW	55,000	0			0	0	55,000	55,000	
						LCWRP	AWT RW (New)	5,000	0			0	0	5,000	5,000	
						LVLWTF	AWT RW (Existing)	0	0			8,000	8,000	0	8,000	
							Total	**138,000**	**0**			**8,000**	**8,000**	**138,000**	**146,000**	
CB-A3	Increase basin pumping to APA: * GRIP (11,000 Tertiary, 10,000 AWT MFSG Spreading) +2,000 AWT ABP Injection +5,000 AWT MFSG Spreading +5,000 AWT MFSG Injection	A	195,500	21,867	**217,367**	LOCAL	Storm	57,000	0			0	0	57,000	57,000	**12,000**
						MWD	Imported	0	0			0	0	0	0	
						GRIP	Tertiary RW	11,000	0			0	0	11,000	11,000	
							AWT RW	10,000	0			0	0	10,000	10,000	
						SJCWRP	Tertiary RW	50,000	0			0	0	50,000	50,000	
						SJCWRP	AWT RW (New)	5,000	0			0	0	5,000	5,000	
						LCWRP (or SJCWRP)	AWT RW (New)	0	5,000			0	5,000	0	5,000	
						LVLWTF	AWT RW (Existing)	0	0			8,000	8,000	0	8,000	
							Total	**133,000**	**5,000**			**8,000**	**13,000**	**133,000**	**146,000**	
CB-A4	Increase basin pumping to APA: * GRIP (11,000 Tertiary, 10,000 AWT MFSG Spreading) +2,000 AWT ABP Injection +5,000 Los Angeles River Storm Water ARRF +5,000 Tertiary MFSG Spreading	A	195,500	21,867	**217,367**	LOCAL	Storm	57,000			5,000	0	5,000	57,000	62,000	**12,000**
						MWD	Imported	0			0	0	0	0	0	
						GRIP	Tertiary RW	11,000			0	0	0	11,000	11,000	
							AWT RW	10,000			0	0	0	10,000	10,000	
						SJCWRP	Tertiary RW	55,000			0	0	0	55,000	55,000	
						LCWRP	AWT RW (New)	0			0	0	0	0	0	
						LVLWTF	AWT RW (Existing)	0			0	8,000	8,000	0	8,000	
							Total	**133,000**			**5,000**	**8,000**	**13,000**	**133,000**	**146,000**	
CB-B1	Increase pumping above APA: * GRIP (11,000 Tertiary, 10,000 AWT MFSG Spreading) +2,000 AWT ABP Injection +17,000 Stormwater Capture MFSG Spreading +5,000 Los Angeles River Storm Water ARRF +27,580 Tertiary MFSG Spreading +18,190 AWT MFSG Injection (9,500 LCWRP + 8,690 SJCWRP)	B	195,500	79,637	**275,137**	LOCAL	Storm	74,000	0		5,000	0	5,000	74,000	79,000	**69,770**
						MWD	Imported	0	0		0	0	0	0	0	
						GRIP	Tertiary RW	11,000	0		0	0	0	11,000	11,000	
							AWT RW	10,000	0		0	0	0	10,000	10,000	
						SJCWRP	Tertiary RW	77,580	0		0	0	0	77,580	77,580	
						SJCWRP & LCWRP	AWT RW (New)	0	18,190		0	0	18,190	0	18,190	
						LVLWTF	AWT RW (Existing)	0	0		0	8,000	8,000	0	8,000	
							Total	**172,580**	**18,190**		**5,000**	**8,000**	**31,190**	**172,580**	**203,770**	

TABLE 4.9-3
CENTRAL BASIN GBMP SCENARIOS

GBMP Scenario	Description	Concept	Pumping			Replenishment Source Water		Montebello Forebay		Los Angeles Forebay		Alamitos Barrier	Total Injection (AFY)	Surface Spreading MFSG (AFY)	Total Replenishment (AFY)	New Replenishment (Compared to Existing Conditions) (AFY)
			Existing (AFY)	Additional (AFY)	Total (AFY)	Facility	Type	Spreading Grounds (Existing)	Injection Wells (New)	Injection Wells (New)	AARF Injection (New)	Injection Wells (Existing)				
CB-B2	Increase pumping above APA: * GRIP (11,000 Tertiary, 10,000 AWT MFSG Spreading) +2,000 AWT ABP Injection +17,000 Stormwater Capture MFSG Spreading +5,000 Los Angeles River Storm Water ARRF +27,580 Tertiary MFSG Spreading +18,190 AWT MFSG Injection (9,500 LCWRP + 8,690 SJCWRP) +45,480 AWT Los Angeles Forebay Injection from new Satellite AWTF	B	195,500	125,117	**320,617**	LOCAL	Storm	74,000	0	0	5,000	0	5,000	74,000	79,000	**115,250**
						MWD	Imported	0	0	0	0	0	0	0	0	
						GRIP	Tertiary RW	11,000	0	0	0	0	0	11,000	11,000	
							AWT RW	10,000	0	0	0	0	0	10,000	10,000	
						SJCWRP	Tertiary RW	77,580	0	0	0	0	0	77,580	77,580	
						SJCWRP, LCWRP & New WRP	AWT RW (New)	0	18,190	45,480	0	0	63,670	0	63,670	
						LVLWTF	AWT RW (Existing)	0	0	0	0	8,000	8,000	0	8,000	
							Total	**172,580**	**18,190**	**45,480**	**5,000**	**8,000**	**76,670**	**172,580**	**249,250**	

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4.9.2 Regulatory and Legal Framework

This section addresses the roles of various water agencies, basin judgments and agreements, management plans and programs, and monitoring programs. Particular focus is placed on regulation of groundwater pumping and recharge programs, including locations of facilities, sources of water (including quantity, quality, and facilities for treatment, storage and conveyance) and operations.

Federal

Clean Water Act

The Clean Water Act (CWA) establishes the basic structure for regulating discharges of pollutants into the waters of the United States and regulating quality standards for surface waters. The basis of the CWA was enacted in 1948 and was called the Federal Water Pollution Control Act, but the Act was significantly reorganized and expanded in 1972. This legislation serves as the basis for the Porter-Cologne Water Quality Act described below.

Superfund Act

Superfund is the name given to the environmental program established to address abandoned hazardous waste sites. It is also the name of the fund established by the Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended. This law was enacted in the wake of the discovery of toxic waste dumps such as Love Canal and Times Beach in the 1970s. It allows the United States Environmental Protection Agency (USEPA) to clean up such sites and to compel responsible parties to perform cleanups or reimburse the government for USEPA-lead cleanups. There are numerous Superfund sites that have been identified in the CBWCB as shown in **Figure 4.9-3**.

State

Porter-Cologne Water Quality Act

The Porter-Cologne Water Quality Control Act, also known as the California Water Code, is California's statutory authority for the protection of water quality. Under this act, the State must adopt water quality policies, plans, and objectives that protect the State's waters. The act sets forth the obligations of the State Water Resources Control Board (SWRCB or State Board) and Regional Water Quality Control Boards (RWQCBs or Regional Boards) pertaining to the adoption of Basin Plans and establishment of water quality objectives. Unlike the federal CWA, which regulates only surface water, the Porter-Cologne Act regulates both surface water and groundwater and this authority serves as the basis for Waste Discharge Requirements issued to recycled water producers by the RWQCBs. The Porter-Cologne Water Quality Act is promulgated in the California Code of Regulations Title 22. Title 22 includes treatment and reuse requirements for recycled water projects throughout California.

Water Quality Control Plan

The Los Angeles RWQCB's Water Quality Control Plan (Basin Plan) is designed to preserve and enhance water quality and protect the beneficial uses of all regional waters. Specifically, the

Basin Plan (i) designates beneficial uses for surface and groundwater, (ii) sets narrative and numerical objectives that must be attained or maintained to protect the designated beneficial uses and conform to the state's anti-degradation policy, and (iii) describes implementation programs to protect all waters in the Region. In addition, the Basin Plan incorporates (by reference) all applicable State and Regional Board plans and policies and other pertinent water quality policies and regulations.

Anti-Degradation Policy

The SWRCB's Anti-Degradation Policy, otherwise known as Resolution No. 68-16, sets specific restrictions for surface and groundwater that have higher than the required quality in order to avoid degradation of those water bodies (SWRCB, 2010). Requirements of this policy must be included within all Basin Plans throughout California (discussed above). Under this policy, actions that would lower the water quality in designated water bodies would only be allowed if the action would provide a maximum benefit to the people of California, if it will not unreasonably affect beneficial uses, and if it will not lower water quality below applicable standards (SWRCB, 2010).

Water Recycling Requirements

The Los Angeles RWQCB Basin Plan requires that a discharge permit be obtained for the use of recycled water. Water Recycling Requirements (WRR) are prepared on a case-by-case basis for reuse of Title 22 recycled water as well as for discharge of fully advanced treated water intended for groundwater recharge or injection. WRRs are generally issued to the wastewater treatment agency but also cover intended uses, such as WRD and LACDPW uses of recycled water for groundwater recharge.

Water Recycling Policy and Salt and Nutrient Management Plans

In February 2009, the State Water Resources Control Board (SWRCB) adopted Resolution No. 2009-0011, which established a statewide Recycled Water Policy. Draft amendments to the Recycled Water Policy were released in May 2012, September 2012, October 2012 (SWRCB hearing change sheets), and January 2013. The Recycled Water Policy Amendment was adopted by the SWRCB on January 22, 2013. The Recycled Water Policy encourages increased use of recycled water and local storm water. It also requires local water and wastewater entities, together with local salt/nutrient contributing stakeholders to develop a Salt and Nutrient Management Plan (SNMP) for each groundwater basin and subbasin in California. WRD and Stakeholders with water quality interests inside the WRD service area (e.g., water wholesalers and purveyors, LACSD, LACDPW, etc.) have prepared a SNMP for the Central Basin and West Coast Basin (Todd Engineers, 2015). The plan includes an implementation plan to manage salts and nutrients on a sustainable basins and a salt and nutrient groundwater monitoring program with reporting to the RWQCB required every three years. Groundwater quality trends for salts and nutrients were assessed to ensure attainment of water quality objectives defined in the RWQCB Basin Plan and protection of beneficial uses. The plan will be reassessed every 10 years to determine if the implementation plan remains effective in protecting groundwater beneficial uses.

Recycled Water Groundwater Recharge Projects

Prior to June 18, 2014, the Water Recycling Criteria (California Code of Regulations Title 22) included narrative requirements for planned groundwater recharge projects that use recycled water. The regulations required that recycled water must be at all times of a quality that fully protects public health and that the SWRCB DDW recommendations would be made on an individual case basis and taking into consideration all relevant aspects of each project, including the following factors: treatment provided; effluent quality and quantity; spreading area operations; soil characteristics; hydrogeology; residence time; soil aquifer treatment capacity; and distance to withdrawal.

Final groundwater recharge regulations were adopted and went into effect June 18, 2014. The new regulations (CWC sections 13500-13529.4) outline permit requirements for groundwater recharge potable reuse projects in California. The regulations cover surface recharge and subsurface injection and transfer permitting responsibilities from the CDPH to the SWRCB DDW. The key provisions (summarized in detail in Table 4-1 of Appendix E) include protocols to provide for source control, water quality control, retention time, emergency response planning, monitoring programs, operational plans, management plans, reporting requirements, and public review requirements.

Sustainable Groundwater Management Act

The Sustainable Groundwater Management Act (SGMA) was signed into law on September 16, 2014. It recognizes groundwater as an integral part of the state's water supply and provides a framework for managing groundwater in a sustainable way throughout the State of California. The SGMA specifically:

- Requires all high- and medium-priority basins in the State (as defined by DWR) to have sustainable groundwater basins. Some basins are already sustainable (like the West Coast Basin and Central Basin whereas others are not sustainable (such as some in California's Central Valley).
- Establishes a definition of sustainable groundwater management.
- Establishes a framework for local agencies to develop plans and implement strategies to sustainably manage groundwater resources.
- Sets a 20-year timeline for implementation.
- Exempts adjudicated basins (including West Coast Basin and Central Basin) from most of the requirements defined in the SGMA.

Adjudicated basins (such as the West Coast and Central basins) are exempt from most of the SGMA requirements. In the case of adjudicated basins, SGMA requires the submittal of annual reports, similar to the ones already prepared as part to the adjudications, to DWR. Therefore, the Watermaster Reports and WRD's annual Engineering Survey and Report will suffice as SGMA compliance.

However, there are some areas of the West Coast Basin and Central Basin where the geologic boundaries defined by DWR in their Bulletin 118 do not line up exactly with the adjudicated boundaries established by the courts, and these "fringe areas" may need to be rectified. DWR is currently drafting regulations to provide additional boundary realignment guidance, which is anticipated to be available soon. WRD will be working with the DWR and other local entities as needed to determine if the boundaries should be modified or if monitoring of the fringe areas will be required

Local

West Coast Basin Adjudication (Judgment)

The West Coast Basin has total adjudicated rights of 64,468.25 AFY, which is based on historical use and not the safe yield of the basin. It also includes provisions for carryover of unused rights, over-pumping, leasing, and sale of rights. In addition, as a result of a December 2014 Amendment, the Judgment contains provisions for the use of available storage space and the transfer of Watermaster from the California Department of Water Resources to a local governance structure composed of water rights holders and WRD. The new Watermaster is composed of three constituent bodies with different functions.

The first arm is the Administrative Body, to administer the Watermaster accounting and reporting functions. The Water Replenishment District of Southern California was appointed by the court to fulfill this role.

The second arm is the Water Rights Panel which enforces issues related to the pumping rights within the adjudication. The Water Rights Panel is made up of five water rights holders. Current members of the Water Rights Panel are the City of El Segundo, City of Torrance, City of Manhattan Beach, California Water Service Company and Tesoro Refining and Marketing.

The third arm is the Storage Panel which is comprised of the Water Rights Panel and the WRD Board of Directors, which together approve certain groundwater storage efforts. The Storage Panel will review and approve review of projects identified in Concept B of the GBMP.

As noted in the Judgment for the Storage Panel's review and approval of storage projects, nothing in the Judgment shall alter a Party's duty to comply with CEQA or other applicable legal requirements. In addition, a project proponent must demonstrate that the likely rise in water levels would be minimal and that the project will not cause material physical harm.

Central Basin Adjudication (Judgment)

The Central Basin has total adjudicated rights of 267,900 AFY, but limits pumping to an Allowable Pumping Allocation (APA) of 217,367 AFY. It also includes provisions for carryover of unused rights, over-pumping, leasing, and sale of rights. In addition, as a result of a December 2013 Amendment, the Judgment contains provisions for the use of available storage space and the transfer of Watermaster from the California Department of Water Resources to a local governance structure composed of water rights holders and WRD. The new Watermaster is composed of three constituent bodies with different functions.

The first arm is the Administrative Body, to administer the Watermaster accounting and reporting functions. The Water Replenishment District of Southern California was appointed by the court to fulfill this role.

The second arm is the Water Rights Panel which enforces issues related to the pumping rights within the adjudication. The Water Rights Panel is made up of seven water rights holders. Current members of the Water Rights Panel are the City of Downey, Golden State Water Company, City of Lakewood, City of Long Beach, Montebello Land and Water Company, City of Signal Hill and the City of Paramount.

The third arm is the Storage Panel which is comprised of the Water Rights Panel and the WRD Board of Directors, which together approve certain groundwater storage efforts. The Storage Panel will review and approve review of projects identified in Concept B of the GBMP.

As noted in the Judgment for the Storage Panel's review and approval of storage projects, nothing in the Judgment shall alter a Party's duty to comply with CEQA or other applicable legal requirements.

4.9.3 Impacts and Mitigation Measures

This section focuses on the GBMP scenarios described in **Table 4.9-2 and 4.9-3** and assesses the potential water level and water quality impacts associated with implementation of the scenarios. Potential mitigation measures that address significant impacts are identified and described.

Significance Criteria

The criteria used to determine the significance of impacts related to groundwater and groundwater quality are based on Appendix G of the *CEQA Guidelines*. A proposed scenario would result in a significant impact to groundwater if it would:

- Violate any water quality standards or waste discharge requirements;
- 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; or
- Otherwise substantially degrade water quality.

A discussion of the impacts and mitigation measures for the proposed project are presented below.

Impacts Discussion

Potential impacts to groundwater from surface recharge, injection, or extraction projects are divided into water quality impacts, water level impacts, and cumulative impacts.

Groundwater Quality

Impact 4.9-1: Implementation of GBMP projects could affect groundwater quality. (Less than Significant with Mitigation).

Three potential impacts to groundwater quality have been identified:

1) Recharge and injection water quality may negatively impact groundwater quality by introducing salts and other contaminants.
2) Recharge and injection water may leach minerals present in the unsaturated zone or aquifer formations.
3) Increased injection and recharge may affect groundwater quality at existing production wells due to an increased hydraulic gradient that increases the travel velocities, bringing existing production wells within the response retention time or pathogen reduction time.

West Coast Basin

TDS

Under both Scenarios WCB-A1 and WCB-B1, TDS levels in recharged water into the West Coast Basin would decrease compared with historic conditions because AWT recycled water has a lower TDS concentration than imported water historically used as blend water in the injection barrier system. **Table 4.9-4** shows the volume-weighted average TDS concentration of the source waters injected into the West Coast Basin. As shown in the table, the weighted average of recharge water for both Scenarios WCB-A1 and WCB-B1 is 100 mg/L compared with 298 mg/L under existing conditions in the West Coast Basin. This reduced TDS concentration in introduced replenishment water would result in lower salt concentrations in groundwater than under existing conditions. Furthermore, installation of new extraction wells in the area of the WCBBP saline plume proposed with scenario WCB-A1 would improve groundwater quality in this localized area by remediating the saline groundwater plume.

TABLE 4.9-4
VOLUME-WEIGHTED TOTAL DISSOLVED SOLID CONCENTRATIONS FOR GBMP REPLENISHMENT SUPPLIES IN WEST COAST BASIN

GBMP Scenario	Concept	TDS Volume Weighted Average of Injection and Spreading (mg/L)
Existing Conditions[a]		298
WCB-A1[b]	A	100
WCB-B1[b]	B	100

a For barriers; volumes and distribution of imported water/recycled water based on 2009-10; for MFSG, volume and distribution is 10-year average (2000-01 to 2009-10), Appendix C, GBMP, July 2012.
b Assumes implementation of the noted changes relative to Existing operations. See Table 4.9-2.

In addition, WRD has prepared a Salt and Nutrient Management Plan (SNMP) as required by the RWQCB that estimates TDS concentrations in the Central and West Coast basins based on current conditions and proposed future recharge and injection projects. The SNMP includes some of the proposed GBMP projects. The SNMP has been adopted by the RWQCB as an amendment

to the Basin Plan. The purpose of the SNMP is to monitor and manage salt and nutrient loading in the region to ensure the highest and best uses of the groundwater resources are protected from degradation.

Other Introduced Contaminants

Future operations of the barrier systems will result in injection of recycled water without dilution. As the volume of AWT recycled water injected into the groundwater in the WCBBP and DGBP increases, the very low levels of NDMA, 1,4-dioxane, CECs, and other contaminants potentially introduced to the groundwater from this water source would increase. Other constituents such as TDS and chloride will decrease. Groundwater recharge and injection projects using recycled water are subject to permits from the SWRCB DDW as described above. The permits require extensive analysis of source water quality, treatment system designs, soil aquifer treatment characteristics, and aquifer retention time. The permits require publically available monitoring and reporting of recycled water and groundwater quality to assess the response of groundwater quality to recharge projects. Appendix E includes a Technical Memorandum prepared by Nellor Environmental Associates that provides an updated overview of the recycled water use regulations in California. The Technical Memorandum concludes that within the current regulatory context, "properly designed and operated projects that use recycled water for groundwater replenishment provide protection from microbiological and chemical contaminants comparable to or better than what the public experiences in many drinking water supplies today."

Historical groundwater monitoring at the WCBBP has not found any degradation to groundwater quality from these constituents. The RWQCB currently requires groundwater monitoring to be conducted near the WCBBP as a condition of the WRR discharge permit. Performance criteria for water quality constituents are established in the RWQCB WRRs for the WCBBP. If concentrations of constituents in AWT water exceed those stipulated in the RWQCB WRRs, they can potentially be mitigated with additional treatment measures at the WRPs. Currently, as the WCBBP moves toward 100% recycled water, the treatment processes at the WRPs has been upgraded to include advanced oxidation with hydrogen peroxide and ultraviolet radiation. **Mitigation Measures GW-Q1**, **GW-Q2**, and **GW-Q3** require that groundwater monitoring continues and that treatment modifications will be implemented if necessary to ensure non-degradation of groundwater quality.

In-Situ Entrainment

Another potential impact to water quality could result due to mobilization of naturally occurring constituents, such as arsenic and manganese. Since the injection barrier already injects water into the injection zone, the increased AWT recycled water volume is not expected to substantially increase the risk of mobilizing naturally occurring constituents. Nonetheless, the on-going monitoring will detect increases in levels of these constituents. As outlined in **Mitigation Measure GW-Q3**, this potential impact would be mitigated through WRP treatment system modifications, wellhead treatment, or by blending with other water sources.

Retention Times

Increased volumes of water replenished through injection may cause the travel times between injection locations and production wells to decrease. If travel times decrease below what is required in the WRRs, steps may be taken to mitigate the impacts as outlined in **Mitigation Measure GW-Q4**, such as decreasing the amount of water recharged or moving impacted production wells to more distant locations.

Mitigation Measures

GW-Q1: WRD and implementing agencies shall continue to conduct groundwater quality monitoring near seawater barrier injection wells for Concept A projects. Monitored constituents shall include, but not be limited to, those required by the RWQCB recycled water permits. The monitoring results shall be made publically available.

GW-Q2: The Watermaster Storage Panel shall ensure that implementing agencies of Concept B projects follow the review and approval provisions described in the Judgment and that adequate monitoring is provided to ensure no material physical harm.

GW-Q3: In the event that groundwater monitoring detects elevated concentrations of TDS, wastewater indicator contaminants, naturally occurring contaminants, or other legacy contaminants, WRD and the Watermaster Storage Panel shall ensure that implementing agencies coordinate measures to protect drinking water quality that could include AWT system modifications, injection system modifications, production wellhead treatment, blending of injection water with other water sources, production well relocation, or provision of alternative water supplies to the affected water purveyor.

GW-Q4: WRD and the Watermaster Storage Panel shall ensure that implementing agencies monitor travel times between injection locations and production wells as required by the RWQCB. If monitoring determines that retention times are insufficient to meet permit requirements, WRD and the Watermaster Storage Panels shall coordinate with implementing agencies to inactivate affected wells until recharge activities can be managed to restore appropriate retention times.

Significance Determination: Less than significant with mitigation.

Central Basin

TDS

As mentioned for the West Coast Basin, TDS concentrations in AWT recycled water are lower than tertiary treated recycled water and imported water (Table 4.9-1). The Draft GBMP projects would reduce the use of imported water and develop additional recycled water replenishment sources. Relative to existing conditions, the increase or decrease of salts in groundwater would depend upon the mixture of additional types of recycled water used for recharge, since in general tertiary recycled water has a higher TDS than imported water, and AWT recycled water has a lower TDS than imported water (Table 4.9-1). Under Concept A, Scenarios CB-A1 through CB-A4 all result in net increases in the volume of tertiary and AWT recycled water used for recharge,

and eliminate imported water (Table 4.9-3). Scenario CB-A1 includes the greatest amount of tertiary recycled water, and as such would have the greatest potential to increase TDS concentration in groundwater relative to existing conditions. As shown in **Table 4.9-5**, the TDS weighted average of recharge water for scenario CB-A1 is 394 mg/L, which is less than the TDS weighted average under existing conditions, 409 mg/L. This reduced TDS concentration in introduced replenishment water would result in lower salt concentrations in groundwater than under existing conditions.

Under Concept B, both Scenarios CB-B1 and CB-B2 would include the same volume of tertiary recycled water. Scenario CB-B1 includes less AWT water than CB-B2; and as a result the TDS weighted average of recharge water for Scenario CB-B1 (369 mg/L) is greater than the TDS weighted average of recharge water for Scenario CB-B2 (320 mg/L). Both values are less than existing conditions and are below the basin plan objective for the Central Basin of 700 mg/L. This reduced TDS concentration in introduced replenishment water would result in lower salt concentrations in groundwater than under existing conditions. Therefore, there would be no violation of water quality standards or substantial degradation of groundwater quality. The proposed project would not degrade groundwater quality substantially or affect its beneficial use and therefore, the impact would be less than significant.

TABLE 4.9-5
VOLUME-WEIGHTED TOTAL DISSOLVED SOLID CONCENTRATIONS FOR GBMP REPLENISHMENT SUPPLIES IN CENTRAL BASIN

GBMP Scenario[a, b]	Concept	TDS Volume Weighted Average of Injection and Spreading (mg/L)
Existing Conditions[a]		409
CB-A1	A	394
CB-B1	B	369
CB-B2	B	320

a For barriers; volumes and distribution of imported water/recycled water based on 2009-10; for MFSG, volume and distribution is 10-year average (2000-01 to 2009-10), Appendix C, GBMP, July 2012.
b Assumes implementation of the noted changes relative to Existing operations. See Table 4.9-3.

In addition, WRD has prepared a SNMP as required by the RWQCB that estimates TDS concentrations in the CBWCB based on current conditions and proposed future recharge and injection projects. The SNMP includes some of the proposed GBMP projects. The SNMP has been adopted by the RWQCB as an amendment to the Basin Plan. The purpose of the SNMP is to monitor and manage salt and nutrient loading in the region to ensure the highest and best uses of the groundwater resources are protected from degradation.

Other Contaminants

The previous AGBP permit allowed for injection of up to 50% recycled water blended with50% imported water. The AGBP permit has recently been modified to allow up to 100% recycled water injection. Under Concept A, Scenario CB-A3 also includes new AWT recycled water injection wells in the Montebello Forebay. Under Concept B, Scenario CB-B2 would introduce

AWT injection to the Los Angeles Forebay. New injection of AWT recycled water in injection wells will introduce water of different quality into the subsurface. As the volume of AWT recycled water injected into the groundwater increases, the very low levels of NDMA, 1,4-dioxane, CECs, and other contaminants potentially introduced to the groundwater from this water source would increase. Groundwater recharge and injection projects using recycled water are subject to permits from the SWRCB DDW as described above. The permits require extensive analysis of source water quality, treatment system designs, soil aquifer treatment characteristics, and aquifer retention time. The permits require publically available monitoring and reporting of recycled water and groundwater quality to assess the response of groundwater quality to recharge projects. Appendix E includes a Technical Memorandum prepared by Nellor Environmental Associates that provides an updated overview of the recycled water use regulations in California. The Technical Memorandum concludes that within the current regulatory context, "properly designed and operated projects that use recycled water for groundwater replenishment provide protection from microbiological and chemical contaminants comparable to or better than what the public experiences in many drinking water supplies today."

Historical groundwater monitoring at the barrier has not found any degradation to groundwater quality from these constituents attributable to recycled water injection. The RWQCB currently requires groundwater monitoring to be conducted near the AGBP as a condition of the WRR discharge permit. Performance criteria for water quality constituents are established in the RWQCB WRRs for the AGBP. Groundwater quality monitoring will be required by the RWQCB in the WRRs for the additional injection wells proposed in Scenario CB-A3.

If concentrations of constituents in AWT water exceed those stipulated in the RWQCB WRRs, they can potentially be mitigated with additional treatment measures at the WRPs. The existing monitoring well network near the MFSG provides data on water quality that will continue to evaluate the effectiveness of the recycled water treatment systems and soil aquifer treatment. **Mitigation Measures GW-Q1** through **GW-Q6** require that implementing agencies continue monitoring and coordinating treatment modifications necessary to ensure non-degradation of groundwater quality in the Central Basin.

In-Situ Entrainment

Another potential impact to water quality could result due to mobilization of naturally occurring constituents, such as arsenic and manganese. Since the AGBP already introduces water into the production zones, the increased AWT recycled water volume is not expected to substantially increase the risk of mobilizing naturally occurring constituents. However, entrainment of naturally occurring constituents could potentially result within new injection areas and at surface recharge of AWT recycled water in the MFSG. This could slightly increase levels detected at the nearest monitoring wells.

If groundwater elevations increased above historic highs, new areas could be saturated that could entrain naturally occurring constituents as well as legacy contamination from overlying land uses. It is noted that the MFSG have operated historically with mounded groundwater conditions and new projects are not expected to significantly alter groundwater levels or flow patterns over

historical highs. Environmental release sites are shown in Figures 4.9-6, 4.9-7, and 4.9-8. WRD currently conducts groundwater quality monitoring on a regional basis. Pumpers also collect groundwater quality samples as required by the SWRCB DDW. WRD would manage groundwater levels to avoid entraining these areas of known contamination. Implementation of **Mitigation Measure GW-Q7** will ensure that WRD manages groundwater levels to avoid mobilization of shallow contamination caused by years of overlying uses.

If levels of contamination increase in any monitoring or production wells directly as a result of elevated groundwater levels, as outlined in Mitigation Measure GW-Q3, WRD would require that implementing agencies modify WRP treatment systems (i.e., to minimize the effects of aggressive water), provide wellhead treatment, coordinate the replacement of water supply such as imported water, or blend the recharged water with other less oxidized water sources.

Retention Times

Increased volumes of water replenished through spreading and/or injection may cause the travel times between recharge and injection locations and production wells to decrease due to increased hydraulic gradients. If travel times decrease below what is required in the WRRs, steps may be taken to mitigate the impacts as outlined in Mitigation Measure GW-Q4, such as decreasing the amount of water recharged or moving impacted production wells to more distant locations.

Mitigation Measures

Implement **GW-Q1** through **GW-Q4**

GW-Q5: WRD shall continue to conduct groundwater quality monitoring near the MFSG and ABP. Monitored constituents shall include, but not be limited to, those required by the RWQCB recycled water permits including TDS, metals, and wastewater indicator constituents. The monitoring results will be made publically available.

GW-Q6: WRD and the Watermaster Storage Panel shall require that future groundwater recharge projects are designed with groundwater monitoring capabilities sufficient to evaluate water quality in proximity to the recharge areas. The groundwater monitoring program will be approved by the RWQCB or SWRCB DDW.

GW-Q7: WRD and the Watermaster Storage Panel shall ensure that groundwater levels are monitored and managed in areas of known contamination to avoid mobilizing naturally occurring and/or anthropogenic contaminants.

Significance Determination: Less than significant with mitigation.

Groundwater Levels

Two potential impacts to water levels from surface recharge, injection, or extraction scenarios have been identified:

1) Increased extraction has the potential to reduce the groundwater in storage and deplete groundwater supplies.
2) Groundwater levels could increase or decrease.

Impact 4.9-2: Implementation of GBMP projects could affect groundwater storage and groundwater levels. (Less than Significant with Mitigation)

The scenarios listed in Table 4.9-2 and 4.9-3 for Concept A and B were modeled in combination, simultaneously in both basins, using the USGS MODFLOW program. The scenarios were comprised of different combinations of GBMP projects and management actions. The scenarios were modeled to assess various impacts to basin operating conditions. The scenario combinations simulated groundwater levels and cumulative groundwater storage in the basins in response to differing water replenishment and pumping conditions of each scenario. The results of the modeling indicated that basins were reasonably balanced across the range of operating conditions represented by the GBMP scenarios over the 40-year simulation period. The results of the modeling are included in Section 4 of the Draft GBMP (CH2M, 2012).

West Coast Basin

Groundwater Supplies

The GBMP modeling shows overall water balance in the basin under both Scenario WCB-A1 and WCB-B1 with no significant change in groundwater levels compared with historical operations of the basin. Implementation of the GBMP projects would provide for future groundwater sustainability and decreased reliance on imported water supplies.

Groundwater Levels

Groundwater levels in the West Coast Basin are monitored on a continuous basis by WRD as part of its Regional Groundwater Monitoring Program. The Regional Groundwater Monitoring Program consists of a network of over 300 wells at 55 locations throughout WRD's service area in the CBWCB. Water levels in most wells are measured every six hours with automatic data loggers, and levels in all wells are measured by field staff a minimum of four times per year. WRD publishes an annual Regional Groundwater Monitoring Report which documents groundwater levels.[2]

The West Coast Basin is generally confined, with water production occurring predominantly in the Silverado, Lynwood, and Gage aquifers. Historical data indicate that the WCBBP has been operated with no observed significant water level impacts on shallow structures or induced liquefaction. Water levels are not expected to rise to near the ground surface near the barriers. Under Concept A, increases in replenishment are expected to be met with commensurate

[2] Source: http://www.wrd.org/engineering/groundwater-los-angeles.php?url_proj=regional-groundwater-monitoring-program

increases in pumping up to adjudicated water rights. Similarly, under Concept B, pumping also may match increased replenishment. The GBMP modeling assumed these conditions for scenarios WCB-A1 and WCB-B2, and as a result, modeling results indicated that groundwater elevations throughout the Central Basin would not change relative to existing conditions (CH2M, 2012). This is illustrated in the hydrographs and associated groundwater elevation contours included in Section 4 of the GBMP, such as Figure 4-13 (CH2M, 2012).

Additional modeling for the GBMP was performed to evaluate the impact of the likely utilization of all available storage space without a corresponding increase in extraction. This differs from the Concept B projects, which include an acre-foot of increased extraction for each acre-foot of additional injection.

In the West Coast Basin, the modeling assumed that the available storage would be filled using Carryover Conversion (i.e. the conversion of an unused adjudicated right to a storage right as described in the Judgment). Since the West Coast Basin is a pressure aquifer system, replenishment of this storage would occur only after the stored water is extracted, causing water levels at the seawater intrusion barriers to drop below protective elevation. As such, there is no additional water introduced to the basin during the modeling period, and therefore, no increase in water levels. The proposed project would not alter water levels in the West Coast Basin; impacts are less than significant.

Mitigation Measures

None required

Significance Determination: Less than significant.

Central Basin

Groundwater Supplies

The GBMP modeling shows overall water balance in the basin under each of the Central Basin Scenarios with a slight lowering of groundwater levels compared with historical operations of the basin. Implementation of the GBMP would provide for future groundwater sustainability and decreased reliance on imported water supplies.

Groundwater Levels

Groundwater levels in the Central Basin are monitored on a continuous basis by WRD as part of its Regional Groundwater Monitoring Program. The Regional Groundwater Monitoring Program consists of a network of over 300 wells at 55 locations throughout WRD's service area in the CBWCB. Water levels in most wells are measured every six hours with automatic data loggers, and levels in all wells are measured by field staff a minimum of four times per year. WRD publishes an annual Regional Groundwater Monitoring Report which documents groundwater levels.[3]

[3] Source: http://www.wrd.org/engineering/groundwater-los-angeles.php?url_proj=regional-groundwater-monitoring-program=

Under Concept A, increases in replenishment are expected to be met with commensurate increases in pumping up to the adjudicated APA. Similarly, under Concept B, pumping also may match increased replenishment. As a result, groundwater elevations would not change significantly. The GBMP modeling assumed these conditions for scenarios CB-A1 through CB-A4, CB-B1, and CB-B2, and as a result, the modeling results indicated that groundwater elevations throughout the Central Basin would not change significantly relative to existing conditions (CH2M, 2012). This is illustrated in the hydrographs and associated groundwater elevation contours provided in Section 4 of the GBMP, such as Figures 4-18, 4-23, and 4-28 (CH2M, 2012).

Additional modeling for the GBMP was performed to evaluate the impact of the likely utilization of all available storage space without a corresponding increase in extraction. This differs from the Concept B projects, which include an acre-foot of increased extraction for each acre-foot of additional injection and/or spreading.

In the Central Basin, the modeling assumed that the 220,000 acre-feet of storage would be filled using combination of Carryover Conversion (130,400 acre-feet) and additional spreading at the MFSG (89,600 acre-feet). It was assumed that replenishment of 1/3 of the Carryover Conversion, 43,500 acre-feet, and all of the 89,600 acre-feet of MFSG spreading would occur at the MFSG within 7 years of the 10-year modeling period.

The results of the model run showed the increase in water levels is relatively minimal, with the highest increase of 15 feet occurring at and near the MFSG where replenishment of storage water occurs (WRD, 2015). Natural groundwater levels from very wet years can cause water levels around the spreading grounds to rise 20 to 40 feet or more without storage. The increase in groundwater levels decreases with distance from the MFSG. In the vicinity of Interstate 105 and the existing Caltrans dewatering facilities, the model results indicate that groundwater levels may increase by five to 10 feet. However, this increase also is similar to fluctuations in natural groundwater levels during wet years without storage.

Nonetheless, in the event that groundwater levels increased in the shallow aquifer due to increased recharge from the MFSG or other proposed recharge and injection locations, subsurface structures and utilities could become inundated, potentially compromising their functions. Implementation of **Mitigation Measures GW-L1** and **GW-L2** would ensure that WRD monitors groundwater levels and implements measures to ensure groundwater levels do not impact subsurface structures.

The groundwater modeling for each of the Central Basin scenarios found less extreme groundwater level fluctuation near the MFSG due to the more consistent tertiary recycled water recharge compared with historical operations, when imported water could be highly variable from year to year. The MFSG has been operated historically for many years and periods of high groundwater have occurred after extended periods of above normal rainfall. While these events have reduced percolation capacity, they have not resulted in any reported significant water level impacts on shallow structures.

Under Scenario CB-B1, the GBMP modeling found that groundwater levels rise close to the groundwater surface during wet years. These extended periods of high groundwater could have impacts not demonstrated through previous historical operations such as flooding of subsurface structures, liquefaction, reduced percolation capacity, and reduced soil aquifer treatment. These potential impacts should be further investigated through additional groundwater modeling if this scenario moves forward. Additional extraction wells could potentially be installed to mitigate the groundwater mounding.

Implementation of the GBMP projects would increase the reliability of replenishment water to the region, resulting in better reliability than under current conditions. WRD's mandate to facilitate access to water supplies within the adjudicated limits would not change with implementation of the GBMP. Each of the projects identified in the GBMP promote increased groundwater supply reliability. Therefore, the project would not increase the potential for water levels to decrease below screened intervals of production wells compared to existing conditions.

Mitigation Measures

GW-L1: Prior to installing new injection or extraction well fields for Concept B projects, WRD and the Watermaster Storage Panel shall ensure that implementing agencies conduct groundwater modeling near the affected areas sufficient to estimate extraction and injection capacities at specific locations and to avoid impacts to neighboring production well operations.

GW-L2: WRD shall continue to monitor groundwater levels throughout the West Coast Basin and Central Basin to identify areas of elevated groundwater levels. WRD and the Watermaster Storage Panel shall ensure that, where necessary, future Concept B groundwater recharge projects are designed with groundwater monitoring capabilities sufficient to evaluate and minimize impacts of shallow groundwater on subsurface and surface infrastructure.

Significance Determination: Less than significant with mitigation.

TABLE 4.9-4
GROUNDWATER QUALITY AND GROUNDWATER LEVEL IMPACT SUMMARY

	Concept A		Concept B	
Impact	**Impact Determination**	**Mitigation Summary**	**Impact Determination**	**Mitigation Summary**
Groundwater Quality: Implementation of GBMP projects could affect groundwater quality.	Less than Significant with Mitigation	Implement Mitigation Measures GW-Q1-GW-Q7	Less than Significant with Mitigation	Implement Mitigation Measures GW-Q1-GW-Q7

References – Groundwater

CH2M HILL in association with RMC, 2012a. *Draft Report Groundwater Basins Master Plan.* Prepared for Water Replenishment District of Southern California, July 2012.

CH2M HILL in association with RMC, 2012b. *Alternatives Analysis Report Groundwater Reliability Improvement Program Recycled Water Project Final Draft.* Prepared for Water Replenishment District of Southern California, July 2012.

Los Angeles County Department of Public Works (LACDPW), 2010. *2009-2010 Stormwater Monitoring Report.*

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Western Regional Climate Center. (2012). Climate Summary: Downey Fire Dept., California (042494). Accessed at <http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca2494> on January 7, 2013.

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4.10 Land Use and Planning

This section describes the land uses associated with proposed Draft GBMP projects, which include wells, conveyance infrastructure, and treatment facilities. This section summarizes the applicable regulatory framework within the multiple municipalities and identifies impacts to land use that could occur as a result of implementation of the proposed GBMP.

4.10.1 Environmental Setting

WRD Service Area

WRD's service area is located in the Los Angeles Basin in southern Los Angeles County and encompasses 420 square miles including both the West Coast Basin and Central Basins (Figure 1-1). The service area borders Interstate 605 (I-605) on the eastern side, Orange County on the southeastern side, San Pedro Bay on the southern side, Santa Monica Bay on the western side, and I-10 on the northern side extending through downtown Los Angeles to Interstate 60 on the northeastern side. WRD's service area is located in the Los Angeles Coastal Plain and is highly urbanized (GBMP, 2012).

Project Area

The proposed projects and management strategies included in the Draft GBMP are located primarily within WRD's service area, with some components located just outside of the service area to the north (see Figure 3-1). The proposed facilities would be constructed in 17 municipalities and unincorporated areas of Los Angeles County. The affected cities in the West Coast Basin include: Carson, El Segundo, Los Angeles, and unincorporated parts of Los Angeles County. The affected cities in the Central Basin include: Bell, Bellflower, Cerritos, Cudahy, Downey, Huntington Park, Industry, Lakewood, Long Beach, Los Angeles, Maywood, Norwalk, Pico Rivera, South Gate, Vernon, and unincorporated parts of Los Angeles County. The land uses in these cities and unincorporated parts of Los Angeles County consist primarily of residential, commercial, and industrial land uses. The coastal zone encompasses a margin of land at the western edge of the WRD service area and extends three miles out to sea. Several proposed projects are in the vicinity of the shoreline. Projects W1 and W3 may be in the coastal zone depending on the pipeline alignment route, although Hyperion Treatment Plant (HTP) is not in the coastal zone. The recycled water pipeline component of Projects W1 and W3 within the Vista Del Mar ROW would be located within the coastal zone.

Existing Land Use Designations

Existing General Plan land use designations in and around the project areas are described below and summarized in **Table 4.10-1**. Land use designations are taken from the Southern California Association of Governments (SCAG) 2008 GIS General Plan Dataset. SCAG is the nation's largest metropolitan planning organization and periodically compiles comprehensive data on jurisdictions within its planning area (SCAG 2013). The latest dataset available is from 2008 and includes land use designations from each jurisdiction's General Plan adopted by the year 2008.

TABLE 4.10-1
LAND USE DESIGNATIONS BY GBMP PROJECT

GBMP Project	Jurisdictions	Proposed Facility Type	Land Use Designations	Surrounding Land Uses
West Coast Basin				
W1 and W3	• El Segundo • Los Angeles	Recycled Water Pipeline	TRU, IND, OFF, MCI, OSR	TRU, OFF, MCI, OSR
		Treatment Facility (ECLWRF)	PF[a]	OSR, IND
		Treatment Facility (HTP)	PF[b]	OSR, TRU
		Treatment Facility (JWPCP)	IND	SFR, COM, MCI
W4	• Unincorporated Los Angeles County (West Carson) • Carson	Recycled Water Pipeline	TRU	SFR, IND
		Injection Wells	TRU	SFR, EDU, IND
		Treatment Facility (JWPCP)	IND, TRU	SFR, COM, MCI, TRU
Central Basin				
C1, C2, C7, C8	• Industry • Pico Rivera • Unincorporated Los Angeles County	Treatment Facility (SJCWRP)	IND	OSR, TRU
C3, C4, C9	• Pico Rivera • Downey • Cerritos • Bellflower	Recycled Water Pipeline	TRU	SFR, IND, COM, TRU
		Injection Wells	TRU	SFR, IND
		Treatment Facility (LCWRP)	TRU	TRU, OSR
C6	• Pico Rivera • Downey • Bellflower • Norwalk • Lakewood • Long Beach	Potable Water Pipeline	TRU	SFR, IND, COM, TRU
		Extraction Wells	TRU	SFR, COM
C5	• Vernon • Bell • Cudahy • South Gate	Injection and Extraction Wells	TRU, WAT	TRU, IND, MFR, MCI
C10	• Los Angeles • Huntington Park • Vernon • Maywood • Unincorporated Los Angeles County	Recycle Water Pipeline	TRU	SFR, MFR, IND, TRU
		Potable Water Pipeline	TRU	SFR, MFR, IND, TRU
		Injection Wells	TRU	SFR, MFR, IND, TRU
		Extraction Wells	TRU	SFR, MFR, IND, TRU
		New Satellite AWTF	MFR[c], PF[d], TRU	SFR, MFR, TRU

a The City of El Segundo classifies ECLWRF as Public Facilities (Pf) while SCAG categorizes the facility as Educational (EDU).
b The City of Los Angeles classifies HTP as Public Facilities (PF) while SCAG categorizes this designation as Educational (EDU).
c The City of Los Angeles land use designations are used for the analysis of this facility instead of SCAG data, and include Neighborhood Commercial, General Commercial, Los Density Residential, Low Medium I Multiple Family Residential, Low Medium II Multiple Family Residential, Medium Multiple Family Residential, Public Facilities. The City of Los Angeles Land Use Element consists of the plans for each of the City's 35 Community Plan Areas. Land Use designations depicted on the Land Use Maps for each Community Plan are described in the City's Zoning Ordinance.
d The City of Los Angeles classifies project area land use designations as Public Facilities (Pf) while SCAG categorizes the area as Educational (EDU).

Abbreviations

AG	Agricultural	MCI	Mixed Commercial and Industrial	PF	Public Facilities
COM	Commercial and Services	MU	Mixed Urban	SFR	Single Family Residential
EDU	Educational	MFR	Multi-Family Residential	TRU	Transportation/Utilities
FAC	Facilities	OFF	General Office	WAT	Water
IND	Industrial	OSR	Open Space and Recreation		
MIL	Military Installations	OR	Other Residential		

SOURCES: Southern California Association of Governments (SCAG), *2008 GIS General Plan Dataset*, 2008; County of Los Angeles, 1980.

When compiling land use information from each jurisdiction, SCAG creates land use designation categories that can be applied generally to all municipal land use designations. For the purposes of this analysis, SCAG categories are primarily used. Land Use Designation figures for each GBMP Project listed in Table 3-5 are provided in **Appendix F**. Corresponding land use designations for proposed facilities and surrounding areas are summarized in **Table 4.10-1**.

West Coast Basin

Projects W1 and W3 would be located in the cities of El Segundo and Los Angeles. The City of El Segundo is a coastal city which contains primarily industrial and suburban residential land uses (El Segundo, 1992). Near the project areas, the City of Los Angeles is primarily characterized by Open Space and Public Facilities land uses along the Pacific Ocean.

Projects W1 and W3 include recycled water pipelines that would be located mostly within existing Transportation/ Utilities Rights-of Way (ROW) (**Figure F1** in Appendix F). Land use designations for the proposed facilities and adjacent properties are provided in Table 4.10-1. The proposed recycled water pipeline would connect the HTP to ECLWRF mainly within Transportation/ Utilities ROW, and may cross the northeast corner of the designated Industrial land use at the corner of Sepulveda Blvd and El Segundo Blvd to avoid that intersection. The proposed recycled pipelines would then partially traverse a designated Commercial and Services land use before crossing a designated Open Space and Recreation land use (See Figure F1 in Appendix F) and end at ECLWRF.

Projects W4 would be located in the southern West Coast Basin cities of Carson, Los Angeles, and portions of unincorporated Los Angeles County including West Carson. This area is highly urbanized. Existing land use designations surrounding proposed projects are predominantly Industrial, Transportation/Utilities, and Single Family Residential (SCAG, 2008) (see Table 4.10-1). Project W4 include pipelines that would be located within existing Transportation/ Utilities ROW as shown in **Figures F-2** in Appendix F. Project W4 would include treatment facilities at the JWPCP, which is a designated Industrial land use. For Project W4, the recycled water pipeline route would cross under Interstate 110 just west of the JWPCP. Injection wells would also be installed for Project W4 primarily within existing ROW.

Central Basin

Projects C0-A, C0-B, C1, C2, C3, C4 and C9, which would expand surface spreading at MFSG, would be located in the cities of Industry, Pico Rivera, Downey, Cerritos, Norwalk, Lakewood, Bellflower, Long Beach, and unincorporated portions of Los Angeles County. A large part of the project areas are developed with residential, commercial and industrial land uses. Proposed facilities would be constructed within designated Transportation/Utilities, Industrial, and Public Facilities land uses described in Table 4.10-1 and shown in **Figure F-3** in Appendix F. In addition, some proposed pipelines would cross major freeways and intersections. The recycled water pipeline for Project C3 and C4 would cross under I-5 and I-105 in Downey (Figure F-3). The potable water pipeline for Project C6 would cross under I-5 and I-105 in Downey, and SR-91in Bellflower (**Figure F-5** in Appendix F).

Projects C5 and C10 would be located in the cities of Los Angeles, Huntington Park, Vernon, Maywood, Bell, Cudahy, South Gate, and portions of unincorporated Los Angeles County. The majority of the proposed facilities are located in southeast Los Angeles, in an area that contains a balanced combination of Residential, Mixed Commercial and Industrial, and Industrial land uses.

Project C5 would involve construction of injection wells and extraction wells primarily within the Los Angeles River ROW which is designated as a Transportation/Utilities and Water land use (See **Figure F-4** in Appendix F). Components of Project C5 would also be located within an easement directly adjacent along I-710 (GBMP, page 3-27). As shown in Figure F-4, there are existing Transportation/Utilities land use designations along portions of the Los Angeles River adjacent to I-710.

Project C10 would construct new recycled pipelines, potable pipelines, injection wells, and extraction wells primarily within roadway ROW within the cities of Los Angeles, Huntington Park, Vernon, Maywood, and unincorporated parts of Los Angeles County (see **Figure F-6** in Appendix F). The proposed recycled water pipeline and potable water pipeline would cross under I-110 in two places in the City of Los Angeles (Figure F-6). The precise location for the proposed Satellite AWTF has not been determined; however, the facility is anticipated to be constructed in south Los Angeles (City District 08). Figure F-6 in Appendix F includes the proposed general area within which the facility would be constructed. Land use designations in the City of Los Angeles for the proposed location are included in Table 4.10-1, and include mostly Multi-Family Residential, Public Facilities, and Transportation/Utilities.

Airports

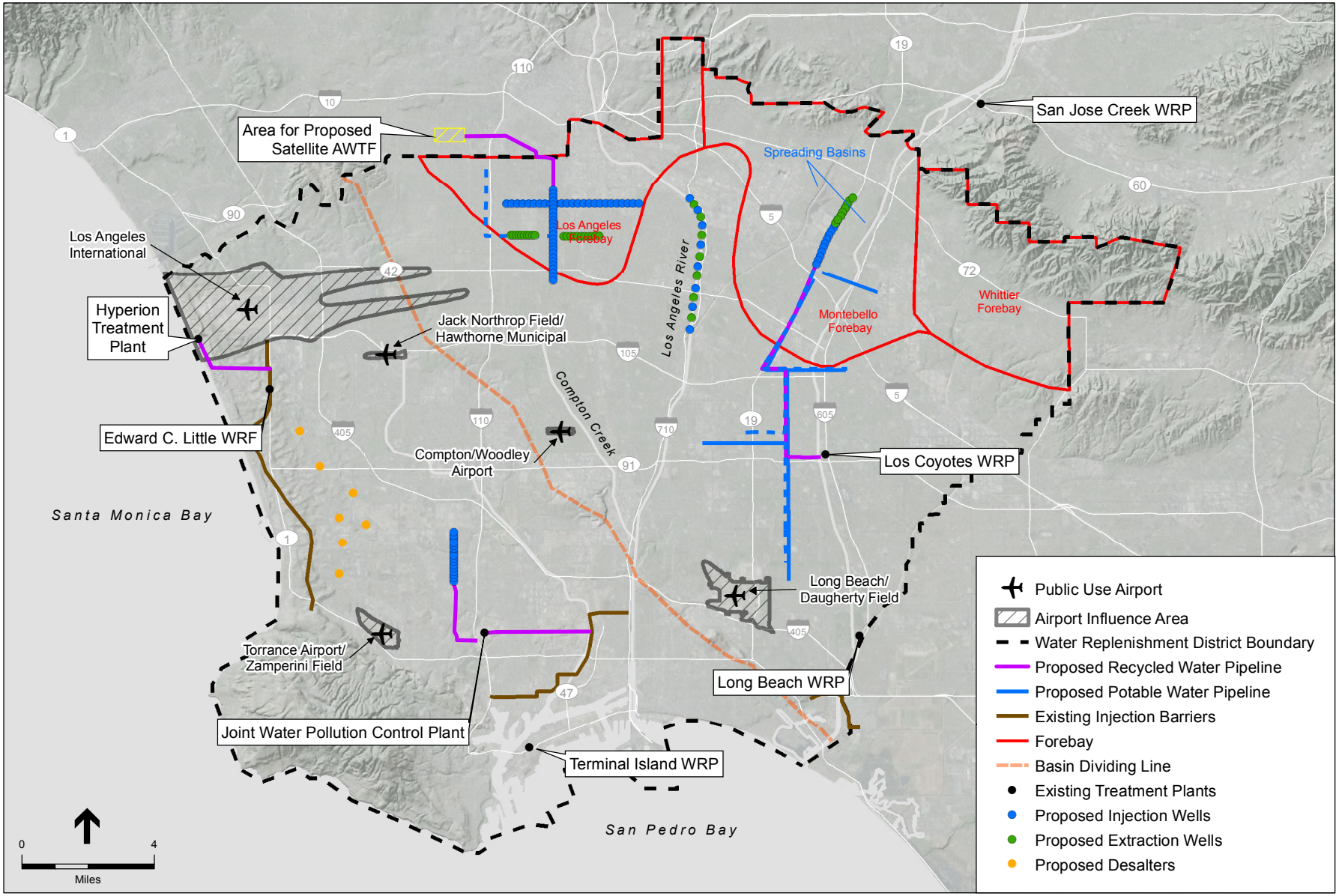
There are five airports located within the WRD's service area. Airport locations are shown in **Figure 4.10-1**.

Compton/Woodley Airport

Compton/Woodley Airport is located in the City of Compton and is owned by the County of Los Angeles. It is the oldest, continuously operating airport in the Los Angeles Basin. The surrounding land uses are residential, commercial, and industrial. No proposed facilities are located within the Airport Influence Area (AIA) (County of Los Angeles, 1991).

Hawthorne Municipal Airport/ Jack Northrop Field

Hawthorne Municipal Airport/ Jack Northrop Field is a public use airport owned by the City of Hawthorne, with surrounding residential, commercial, and industrial land uses. The City of Hawthorne is currently preparing an update to the 1990 Airport Noise Compatibility Study. No proposed facilities are located within the airport's AIA (County of Los Angeles, 1991).



SOURCE: ESA, 2012.

WRD - Groundwater Basins Master Plan . 120192

Figure 4.10-1

Public Use Airports

Torrance Airport/ Zamperini Field

Torrance Airport/ Zamperini Field is a general aviation airport owned and operated by the City of Torrance. The airport Master Plan approved in 1981 proposed airport development that would result in decreased noise impacts. As a result noise impacts have declined over the years (City of Torrance, 2012). Surrounding land uses are commercial, industrial, recreational, and residential. No proposed facilities are located within the airport's AIA (County of Los Angeles, 1991).

Long Beach Municipal Airport

Long Beach Municipal Airport is a scheduled air carrier airport owned and operated by the City of Long Beach. Surrounding land uses are recreational, commercial, residential, and industrial. No proposed facilities are located within the airport's AIA (County of Los Angeles, 1991).

Los Angeles International Airport

Los Angeles International Airport (LAX) is owned by the City of Los Angeles and is operated by Los Angeles World Airports (LAWA), a proprietary department of the City of Los Angeles. Surrounding land uses are industrial, commercial, and residential. The LAX Master Plan was approved in 2004, and provides plans to accommodate projected growth through the year 2015.

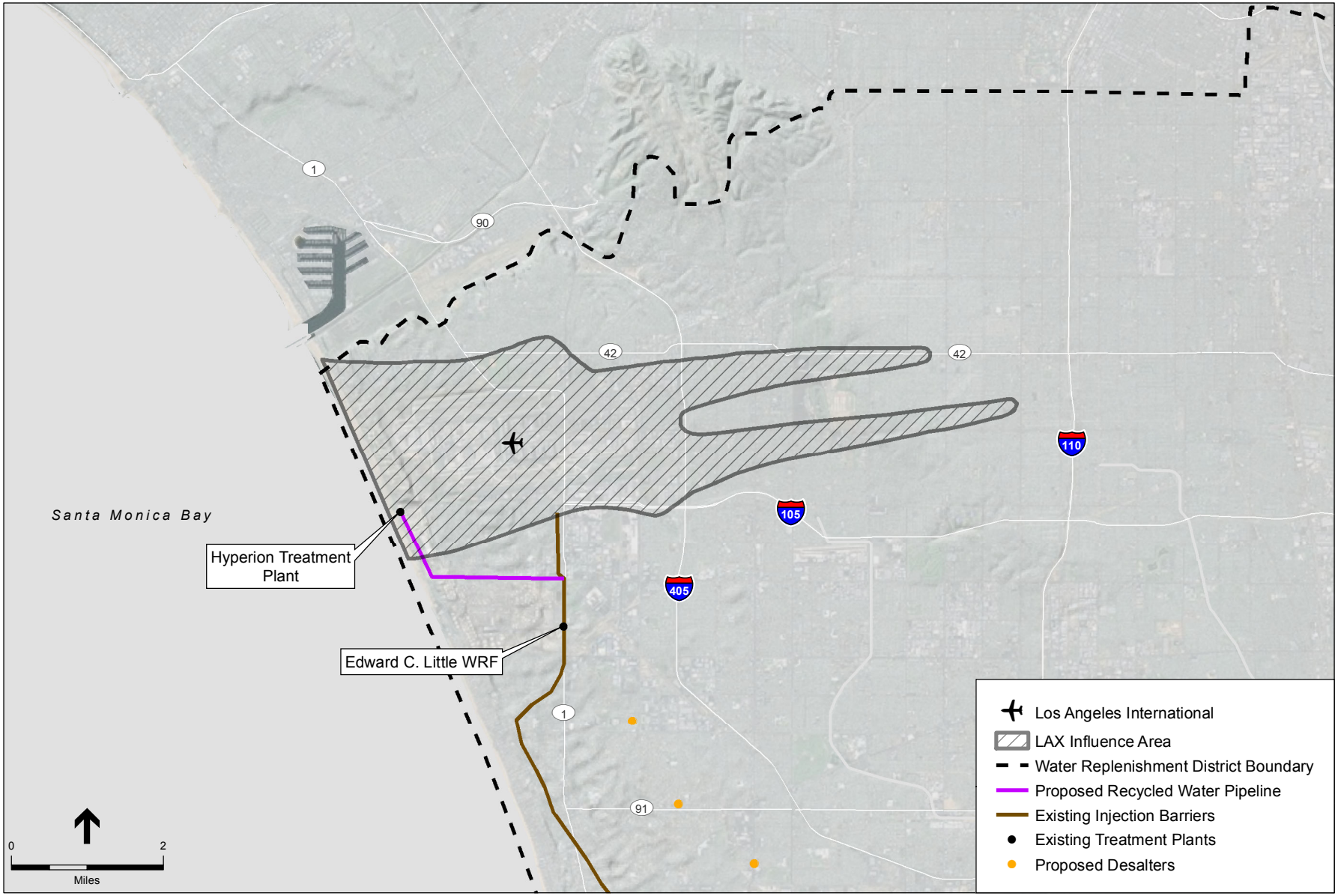
At the same time, the City of Los Angeles developed the LAX Specific Plan which provided regulatory guidance for implementing the LAX Master Plan. The Specific Plan Amendment Study was subsequently released and identifies potential alternatives to projects proposed as part of the LAX Master Plan. In addition the study focuses on security, traffic, and aviation activity of alternatives, and associated environmental analysis (Los Angeles World Airports, 2012). Projects W1 and W3 would be located within LAX's AIA (See **Figure 4.10-2**).

4.10.2 Regulatory Framework

Federal

Federal Aviation Administration

The Federal Aviation Administration (FAA) is the branch of the U.S. Department of Transportation with regulatory responsibility for civil aviation. The FAA is responsible for establishing policies and regulations to ensure the safety of the traveling public. FAA Advisory Circular (AC) 150/5200-33B addresses hazardous wildlife attractants on or near airports (FAA, 2007). This Advisory Circular is intended to provide guidance on siting certain land uses that have the potential to attract potentially hazardous wildlife to a public-use airport or its vicinity. The FAA Advisory Circular recommends against "land use practices that attract or sustain populations of hazardous wildlife within the vicinity of airports or cause movement of hazardous wildlife onto, into, or across the approach or departure airspace, aircraft movement area, loading ramps, or aircraft parking area of airports."



SOURCE: ESA, 2012.

WRD - Groundwater Basins Master Plan . 120192

Figure 4.10-2

Los Angeles International Area of Influence

State

Caltrans Division of Aeronautics

The State Aeronautics Act[1] requires local jurisdictions that operate public airports to establish Airport Land Use Commissions (ALUCs) or an equivalent designated body to protect the public health, safety, and welfare. The ALUCs or equivalent are responsible for promoting the orderly expansion of airports and adoption of land use measures by local public agencies to minimize exposure to excessive noise and safety hazards near airports. Each ALUC or equivalent designated body is responsible for preparing and maintaining an Airport Land Use Compatibility Plan (ALUCP) that identifies compatible land uses near each public use airport within its jurisdiction. The ALUCP must provide policies for reviewing certain types of development that occur near airports. State law requires consistency between airport land use compatibility plans and any associated general plans. Caltrans is responsible for the review and approval of all ALUCPs within the State of California.

California Coastal Commission

The California Coastal Commission (CCC) is a state agency that works in conjunction with local cities and counties to plan and regulate the use of land and water in the coastal zone. The coastal zone covers the entire shoreline of California and varies in width depending on the region. The CCC regulates development activities in the coastal zone. The CCC was established by the California Coastal Act of 1976. Local Coastal Programs (LCP) are approved by the CCC to allow local jurisdictions to guide development in the coastal zone. LCPs require a Coastal Development Permit (DCP) for development in the coastal zone.

Local

Los Angeles County Airport Land Use Plan

The State Aeronautics Act of the PUC establishes statewide requirements for airport land use compatibility planning and requires nearly every county to create an ALUC or alternative designated body to implement these requirements. Los Angeles County established a county-wide ALUC, which is charged with the responsibility of preparing and implementing an airport land use plan (ALUP).

An ALUP provides for the orderly growth of an airport and the area surrounding the airport, excluding existing land uses. Its primary function is to safeguard the general welfare of people and property within the airport vicinity and the public in general. The *Los Angeles County Airport Land Use Plan* (ALUP) includes several components:

- *Los Angeles Airport Land Use Commission Review Procedures* (Review Procedures), adopted on December 1, 2004. The Review Procedures are County-wide procedures that apply to all 11 public-use airports in the County.

[1] The State ALUC law is contained in Public Utilities Code Article 3.5, State Aeronautics Act, Section 21661.5, Section 21670 *et seq*., and Government Code Section 65302.3 *et seq*.

- Airport Land Use Plan, adopted December 19, 1991. Although some of the county-wide policies addressed in this plan have been superseded by the 2004 Review Procedures, the 1991 plan includes background on compatibility issues and each airport for which the ALUC is responsible for policy development.
- Other airport-specific plans, including the Torrance Municipal Airport Master Plan (1981) and the Compton/Woodley Airport Layout Plan (2003)[2].

Taken together, these document components define the procedures and criteria through which the County can address, evaluate, and review airport compatibility issues in the vicinity of any of its public use airports.

The ALUC has identified the Airport Influence Area (AIA) for each public use airport in Los Angeles County. The AIA is the geographic area that could be affected by present or forecasted aircraft operations and the area in which new land uses or changes in land uses could cause adverse effects to flight operations and safety. Proposals for development within an AIA, as defined by the adopted ALUP, are reviewed for their consistency with ALUP compatibility criteria.

General Plans

Although local building and zoning ordinances generally are not applicable to most water and wastewater infrastructure projects (per Government Code Section 53091(d) and 53091(e)), the following compilation of local land use policies would be applicable to proposed projects.

Bell (1996)

Policy 10: Expand public facilities to meet community needs and demands.

Policy 19: Coordinate closely with agencies responsible for public services and facilities.

Carson (2004)

Policy LU-7.4: Through the discretionary review process, ensure that the siting of any land use which handles, generates, and/or transports hazardous substances will not negatively impact existing sensitive receptor land uses.

Policy LU-IM-7.7: Utilize the site development permit process and the California Environmental Quality act in the review of proposed development projects to promote compatibility and minimize environmental impacts. Where uses are marginally compatible, require a Conditional Use Permit and consider special mitigation measures.

Cudahy (1992)

Policy 1.3. Enhance the quality of the environment through the enforcement of land use controls as a means to preserve the environment and to reduce pollution, traffic congestion, and overcrowding.

[2] The Hawthorne Municipal Airport update to the 1990 Airport Noise Compatibility Study is currently being prepared but has not yet been approved.

Policy 1.7. Work to reduce existing incompatible land uses in various areas in the City.

Policy 1.12. Develop requirements for uses that have the potential to disrupt neighborhood quality due to excessive traffic, unusual hours of operation, and other adverse impacts on residences and land uses.

Policy 6.5. Monitor the availability and adequacy of public services (water distribution, water quality, fire, police, waste disposal, and library services) in the City to ensure services are not overburdened by future demand.

Policy 6.6. Regularly conduct an analysis of existing infrastructure and public service capacities to assess the need for capital improvements and service improvements.

Downey (2005)

No applicable policies.

El Segundo (1992)

Policy LU1-5.6: Require all projects to adhere to the processing and review requirements found in the City Zoning Ordinance and the guidelines for implementation of the California Environmental Quality Act (CEQA).

Goal LU7: Provide the highest quality public facilities, services, and public infrastructure possible to the community.

Objective LU7-1: Provide the highest and most efficient level of public services and public infrastructure financially possible.

Policy LU7-1.2: No new development shall be allowed unless adequate public facilities are in place or provided for.

Policy LU7-1.4: Storm drain flood control facilities shall be maintained throughout the City to protect residents and structures from an anticipated 50-year flood.

Policy LU7-2.5: All public facilities and utilities should be designed to enhance the appearance of the surrounding areas in which they are located.

Objective LU7-3: Provide adequate maintenance for all public infrastructure facilities within the City.

Policy LU7-3.1: The City shall continue the identification of need for infrastructure maintenance and replacement, and program that maintenance and replacement through the Capital Improvements Program (CIP), which is tied to the City budget.

Huntington Park (1991, as Amended in 1996)

Goal 4.0: Accommodate new development that is coordinated with the production of infrastructure and public services.

Industry (2012)

Policy LU5-1 Maintain a high quality appearance and functionality of public lands, properties, and right-of-way, including sidewalks, street trees/landscaping, curbs, and street lighting.

Lakewood

No Lakewood General Plan Land Use element found.

Long Beach (1989)

No applicable goals or policies found.

Los Angeles, City of

Policy 1-6.2: Ensure the availability of adequate sewers, drainage facilities, fire protection services and facilities and other public utilities to support development within hillside areas.

Los Angeles, County of (1980)

LU Policy 8: Protect the character of residential neighborhoods by preventing the intrusion of incompatible uses that would cause environmental degradation such as excessive noise, noxious fumes, glare, shadowing, and traffic.

LU Policy 13: Prevent inappropriate development in areas that are environmentally sensitive or subject to severe natural hazards, and in areas where essential services and facilities do not exist and are not planned.

LU Policy 30: Promote improved jurisdictional coordination of land use policy matters between the County, cities, adjacent counties, special districts, and regional and subregional agencies.

Maywood

No Land Use Element General Plan found.

Norwalk

No General Plan found.

Pico Rivera (1993)

Objective A.7: Maintain adequate land for educational, cultural, recreational, and public service activities to meet the needs of Pico Rivera residents.

Policy A.7.1: Promote the availability of public facilities to meet the needs of Pico Rivera residents.

Policy A.9.3: Establish and maintain regular lines of communication with local, regional, State, and federal agencies whose planning programs may affect Pico Rivera's residents and businesses.

Goal B: To coordinate development activity with the provision of public services and facilities in order to eliminate gaps in service provision, maximize the utilization of existing

and proposed public facilities, provide efficient and economical public services, and to achieve the equitable sharing of costs of such services and facilities.

Goal B.6: Maintain adequate systems for water supply and distribution; wastewater collection and treatment, solid waste collection and disposal; and energy distribution which are capable of meeting the needs of the residents of Pico Rivera.

Policy B.6.2: Discuss with the involved agencies the long-term supply of reclaimed wastewater, including service to potential future uses within the City or its sphere of influence.

Objective B.7: Maintain a balance between available infrastructure facilities and public services and the type, rate, intensity, and timing of new development so as to eliminate potential impact of new development upon the services and facilities enjoyed by existing residents and businesses.

Policy B.7.2: Coordinate the long-term provision of utility services, including water, wastewater, electricity, natural gas, solid waste, etc. to assure adequate future levels of service for City residents.

South Gate (2009)

Objective CD 2.6: Ensure that existing and future development is adequately serviced by infrastructure and public services.

Objective GC 3.1: Improve access to and use of the Los Angeles River and Rio Hondo Channel.

Objective CG 3.1, Policy P.4: New development, redevelopment, landscaping, and infrastructure along the Los Angeles River and the Rio Hondo Channel should utilize xeriscaping and native plants and enhance riparian habitat, wherever feasible.

Goal PF 5: A water system that meets the projected demand for all users and seeks ways to reduce demand.

Objective PF 5.1: Ensure that a reliable water supply can be provided within the City's service area, while remaining sensitive to the climate.

Objective PF 5.1, Policy P.4: Water distribution infrastructure will be replaced as needed to improve water delivery and fire flow as well as to maintain healthy and safe drinking water for all residents and businesses. To the extent feasible, the replacement should be concurrent with major infrastructure or development projects within the City.

Objective PF 5.2: Promote water conservation and increase the use of reclaimed and recycled water.

Objective PF 5.2, Policy P.1: The City will seek to build an integrated, extensive system of reclaimed and recycled water.

Objective PF 5.2, Policy P.6: The City will promote water conservation in its own operations and through public education, incentive programs, and standards for new and retrofitted development. The City will work with other agencies such as the Central Basin Municipal Water District, the Water Replenishment District, the Metropolitan Water District and Golden State Water Company to promote water conservation.

Objective PF 5.3: Promote coordination between land use planning and water facilities and service.

Goal PF 7: To collect, store and dispose of stormwater in a way that is safe, sanitary, and environmentally acceptable

- **Vernon** (2007)

  No applicable goals and policies for the proposed projects.

L.A. Airport/El Segundo Dunes Specific Plan (City of Los Angeles)

The City of Los Angeles adopted Ordinance No. 167,940 to preserve approximately 302 acres of open space west of LAX within the Westchester-Playa del Rey Community Plan area. The objective of the plan is to restore and maintain the Dunes Habitat Preserve to provide a permanent designation for dune-sensitive species.

El Segundo Dunes Significant Ecological Area (County of Los Angeles)

The County of Los Angeles designated the El Segundo Dunes as Significant Ecological Area (SEA) No. 28 in the 1976 Revised Los Angeles County General Plan. The SEA is part of the Los Angeles County General Plan Conservation/Open Space Element but does not change planning and zoning designations. However, a SEA Conditional Use Permit is required for development within an SEA. The proposed project facilities are not located in the SEA No. 28.

City of El Segundo Local Coastal Program

The City of El Segundo LCP was approved by the CCC in 1982. The El Segundo LCP is small (200 yards in width and .8 miles in length) and mainly includes part of the Chevron Marine Terminal and an SCE Electric Generating Station. None of the proposed project areas are within the City of El Segundo LCP.

City of Los Angeles Airport/El Segundo Dunes Local Coastal Program (Not yet approved)

The City of Los Angeles Airport/El Segundo Dunes LCP was denied by the CCC in 1985 and the city currently has no LCP. Land in this area is under the permitting jurisdiction of the CCC.

4.10.3 Impacts and Mitigation Measures

Significance Criteria

The criteria used to determine the significance of impacts related to Land Use and Planning are based on Appendix G of the *CEQA Guidelines*. The proposed project would result in a significant impact to Land Use and Planning if it would:

- Physically divide an established community;
- Conflict with existing or future airport operations or conflict with an approved plan, such as an airport Master Plan, Airport Layout Plan, or ALUCP;
- 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 purposed of avoiding or mitigating an environmental effect; or
- Conflict with any applicable habitat conservation plan or natural community conservation plan.

A discussion of the impacts and mitigation measures for the proposed project are presented below.

Impacts Discussion

The precise design, location and configuration of facilities associated with each GBMP management strategy and project have not yet been finalized and are subject to change. Proposed facilities include aboveground structures such as treatment plant expansions, pump stations, and wellheads. Other facilities would be located belowground, specifically pipelines facilities and groundwater wells. Land use impacts associated with underground facilities would be short-term in nature and would only occur during the construction phase of project implementation. Long-term land use impacts would be associated with aboveground structures.

Divide an Established Community

Proposed facilities for projects associated with both Concept A and Concept B are anticipated to be constructed primarily within existing roadway ROW, the Los Angeles River ROW, the Rio Hondo River ROW, and within boundaries of existing treatment plant facilities or directly adjacent to those facilities on compatible land uses. The exception to this would be the proposed Satellite AWTF that is part of Project C10 under Concept B. The exact location of this new treatment facility has not been identified but would likely be located in the south Los Angeles community within City District 08, which is primarily urban built-up land. There are no features of the GBMP projects that would create a barrier or physically divide an establish community. The only linear project features would be pipelines located underground, which once constructed would have no lasting aboveground effects. Aboveground facilities would be integrated into the urban landscape or located at or adjacent to existing treatment facilities and would not be considered features with potential to divide a community. There would be no impact.

Habitat Conservation Plans and Natural Community Conservation Plans

The project areas associated with proposed GBMP facilities are located primarily within WRD's service area in a developed area of Los Angeles County. Projects W1 and W3 would not be located within the L.A. Airport/El Segundo Dunes Specific Plan area (City of Los Angeles) or the El Segundo Dunes Significant Ecological Area (County of Los Angeles), which are the closest natural community planning areas to proposed project sites. There are no other adopted Habitat Conservation Plans (HCPs) or Natural Community Conservation Plans (NCCPs) that include the project areas. As a result of GBMP implementation and operation, there would be no conflict with existing conservation plans. No impact would occur.

Airport Land Use Plan

Impact 4.10-1: Proposed facilities in the West Coast Basin would be located within the LAX airport influence area (AIA) and could conflict with the Los Angeles County Airport Land Use Plan policies. (Less than Significant with Mitigation)

No proposed GBMP projects in the Central Basin would be located within an airport AIA. There would be no conflicts with ALUPs resulting from implementation of Concepts A or B in the Central Basin.

Two projects in the West Coast Basin would be located within the AIA for LAX. As shown in Figure 4.10-2, Project W1 under Concept A and Project W3 under Concept B would include new pipelines and pump stations between the HTP and ECLWRF. These facilities would be within the AIA for LAX. Pipelines are anticipated to be constructed below the ground surface within existing roadway ROW. Pump station locations have not yet been determined, but they are anticipated to be constructed aboveground along the same ROW as the pipelines structures or at either the HTP or ECLWRF. None of the facilities proposed as part of Projects W1 and W3 are anticipated to be in excess of 200 vertical feet.

Mitigation Measure LU-1 would require implementing agencies to submit designs for Project W1 to the Los Angeles County ALUC for review and comment prior to final design to ensure compatibility with the AIA. The potential short-term impacts associated with the construction of the proposed facilities would be potentially significant due to their close proximity to the airport. The presence of construction equipment, particularly cranes and lights, could pose hazards to aircraft operations. Construction within the AIA would comply with the Los Angeles County ALUC and FAA regulations. None of the proposed projects would include components that could intrude in navigable airspace. Implementation of Mitigation Measures LU-1 would minimize potential impacts associated with construction of the Projects W1 and W3 to less than significant levels.

Mitigation Measures

LU-1: For project components occurring within an AIA, the implementing agencies shall submit their proposed project plans to the Los Angeles County ALUC for review and comment prior to final design.

Significance Determination: Less than significant with mitigation.

Compatibility with Land Use Plans and Policies

Impact 4.10-2: Proposed project facilities may be incompatible with neighboring land uses or conflict with local zoning ordinances. (Less than Significant with Mitigation)

Land Use Designation figures that show local jurisdictions and land uses at and in the vicinity of proposed GBMP projects are provided in Appendix F.

Conveyance (Pump Stations and Pipelines)

Concept A projects in the West Coast Basin and Central Basin include potable and recycled water pipelines and pump stations. These projects would be located in the cities of Bellflower, Cerritos, Downey, El Segundo, Industry, Lakewood, Long Beach, Los Angeles, Norwalk, Pico Rivera, and unincorporated parts of Los Angeles County. Pipelines and pump stations would be installed primarily within existing Transportation/ Utilities ROW to the extent feasible and would not conflict with land use designations or be incompatible with neighboring land uses. Some pipelines may be installed across other designated land uses, such as General Commercial and Open Space land uses [3] (Project W1) in the City of El Segundo. General Commercial land uses permits all retail, hotel, major medical facilities, and offices not exceeding 5,000 feet, and does not allow for utility easements. Open Space land uses permits usable or visual open space which includes utility easements. Per Government Code Section 53091, building ordinances of local cities or counties do not apply to the location or construction of facilities for the projection, generation, storage, treatment, or transmission of water or wastewater. Therefore, any project facilities that conflict with local General Plan land use designations would not be subject to a conditional use permit or general plan amendment. In addition, pipelines such as those associated with Project W1 would be underground once constructed and would not pose long-term incompatibility with land uses. The pipeline would be constructed in a coastal zone designated by the CCC if the alignment is installed within the Vista Del Mar ROW. During the final design phase, implementing agencies would determine the precise location of the pipeline route and may be required to prepare and submit a CDP to the CCC for construction of the pipeline within the coastal zone. For aboveground facilities such as pump stations, the locations of which have yet to be determined, implementation of **Mitigation Measure LU-2** would ensure that siting studies are conducted to determine the most suitable locations to place facilities during final design to

[3] As shown in Figure F-1, SCAG designates this land as Commercial and Services and Open Space. For this analysis, the City of El Segundo General Plan classifications are used to assess compatibility with General Plan land use designations.

minimize incompatibility with neighboring land uses. Impacts would be less than significant with mitigation.

Similar to Concept A, Concept B projects in the West Coast Basin (W3 and W4) and Central Basin (C6 through and C10) include pipelines and pump stations that would be located primarily within existing Transportation/ Utilities ROW in the cities of Los Angeles, El Segundo, Carson, Huntington Park, Vernon, Maywood, and unincorporated Los Angeles County. Similar to Concept A, some pipelines may be installed across other designated land uses. The pipeline associated with Project W3 may follow the same alignment as the pipeline associated with Project W1 described above. Per Government Code Section 53091, there would be no conflict with local General Plan land use designations and for underground pipelines, no long-term incompatibility with neighboring land uses. Similar to Concept A, the locations of pump stations associated with Concept B projects have yet to be determined. Implementation of **Mitigation Measure LU-2** would ensure that siting studies are conducted to determine the most suitable locations to place facilities during final design to minimize incompatibility with neighboring land uses. Impacts would be less than significant with mitigation.

Injection and Extraction Wells

New injection and exaction wells would be implemented under both Concept A and Concept B. Implementation of injection and extraction wells would result in minimal above ground facilities. The proposed injection and extraction wells would be installed in the cities of Huntington Park, Los Angeles, Maywood, Pico Rivera, Vernon, and within unincorporated portions of Los Angeles County. Injection and extraction wells would be constructed primarily within existing roadway ROW and within the Los Angeles River ROW. Injection and extraction well projects are, therefore, not anticipated to conflict with land use designations or surrounding land uses. The locations of proposed wells are preliminary and subject to change. In addition, the locations of desalter wells associated with Project W2 have not yet been identified. As such, implementation of **Mitigation Measure LU-2** would ensure that siting studies are conducted to determine the most suitable locations to place facilities during project design to avoid conflicts with land use designations and land use compatibility. Impacts would be less than significant with mitigation for both Concept A and Concept B.

Treatment Plants

Upgrades to treatment plants proposed as part of Concept A would be implemented at the ECLWRF in El Segundo, the SJWRP in unincorporated Los Angeles, and the LCWRP in the City of Cerritos. While exact dimensions and plans have not yet been proposed, construction of proposed facilities is anticipated to occur within existing treatment plant boundaries. As such, there would no conflicts with land use designations or existing neighboring land uses.

Facilities proposed as part of Project W1 at the ECLWRF in El Segundo include expansion of treatment facilities either within or directly adjacent to the facility. Land uses surrounding the ECLWRF as described in Section 4.10.1 and shown on Figure F-1 in Appendix F are designated

as Open Space, and Light and Heavy Industrial.[4] Per Government Code Section 53091, Project W1 would not conflict with local General Plan land use designations. Zoning ordinances do apply to wastewater treatment facilities. If proposed treatment facilities would be located on adjacent lands with incompatible zoning designations, then implementing agencies would be required to obtain proper approval from local jurisdictions prior to constructing such facilities. Implementation of **Mitigation Measure LU-3** would ensure compatibility of wastewater treatment facilities with local zoning ordinances. Impacts would be less than significant with mitigation for Concept A.

Upgrades to treatment plants proposed as part of Concept B would be implemented at ECLWRF in El Segundo (Project W3), the JWPCP in the City of Carson (Projects W4), and the new Satellite AWTF in the City of Los Angeles (Project C10). Similar to Concept A, upgrades occurring within existing treatment plant boundaries would not conflict with land use designations or surrounding land uses.

Facilities proposed as part of Project W3 at the ECLWRF in El Segundo are similar to those described above for Concept A. The same impacts would occur and the same mitigation applies (Mitigation Measure LU-3). The location of the proposed Satellite AWTF (Project C10) has not yet been determined. Figure F-6 in Appendix F shows the general area within which the facility would be constructed. Land use designations in this area are residential and commercial. Per Government Code Section 53091, Project C10 would not conflict with local General Plan land use designations. However, as a wastewater treatment facility, the new Satellite AWTF would be subject to local zoning regulations. Implementation of **Mitigation Measure LU-2** would ensure that siting studies are conducted to determine the most suitable locations to place facilities during final design. Implementation of **Mitigation Measure LU-3** would ensure compatibility of wastewater treatment facilities with local zoning ordinances. Impacts would be less than significant with mitigation for Concept B.

Mitigation Measures

LU-2: Implementing agencies shall conduct siting studies to determine the most suitable locations to place facilities, taking into consideration surrounding land uses. Siting studies shall consider existing and planned land uses in the vicinity of the project. Projects shall be located in areas with compatible neighboring land uses wherever possible.

LU-3: Implementing agencies shall obtain encroachment permits, easements, conditional use permits (CUPs), or variances as required from local agencies with jurisdiction over project sites, as required. Implementing agencies shall comply with all terms and conditions of such permits.

Significance Determination: Less than significant with mitigation.

[4] The Heavy Industrial land use designation is not located directly adjacent to the ECLWRF as shown in Figure F-1 but is connected via a short Transportation/Utilities ROW.

TABLE 4.10-2
LAND USE AND PLANNING IMPACT SUMMARY

	Concept A		Concept B	
Impact	**Impact Determination**	**Mitigation Summary**	**Impact Determination**	**Mitigation Summary**
Divide an Established Community: There are no project features that would divide an established community.	No impact.	None required.	No impact.	None required.
HCPs and NCCPs: There are no project components that would be located within an HCP, NCCP, or other conservation plan area.	No impact.	None required.	No impact.	None required.
Airport Land Use Plan: Proposed facilities in the West Coast Basin would be located within the LAX airport influence area (AIA) and could conflict with the Los Angeles County Airport Land Use Plan policies**.**	Less than Significant with Mitigation	Implement Mitigation Measure LU-1	Less than Significant with Mitigation	Implement Mitigation Measure LU-1
Compatibility with Land Use Plans and Policies: Proposed project facilities may be incompatible with neighboring land uses or conflict with local zoning ordinances.	Less than Significant with Mitigation	Implement Mitigation Measure LU-2, LU-3	Less than Significant with Mitigation	Implement Mitigation Measure LU-2, LU-3

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4.11 Noise

This section analyzes the potential noise and groundborne vibration impacts that would result from implementation of the GBMP projects. The analysis provides an overview of the fundamental principles of noise and vibration, describes the existing noise environment in the GBMP area, presents a summary of applicable regulations, estimates future noise levels at surrounding land uses resulting from construction and operation of the proposed project, identifies the potential for significant impacts, and, where necessary provides mitigation measures to address significant impacts.

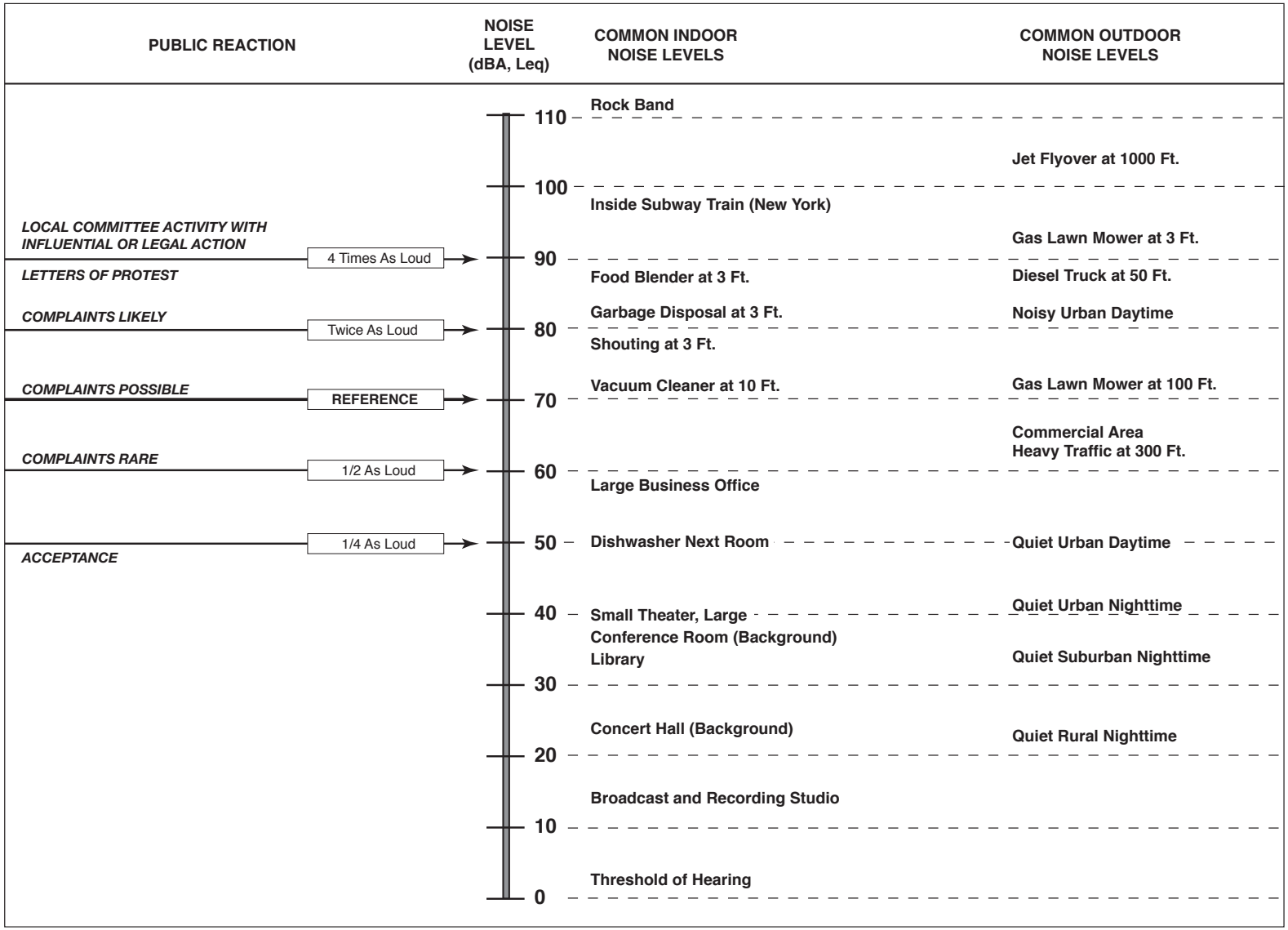
4.11.1 Environmental Setting

Environmental Noise Fundamentals

Noise is generally defined as unwanted sound. Sound, traveling in the form of waves from a source, exerts a sound pressure level (referred to as sound level) that is measured in decibels (dB), which is the standard unit of sound amplitude measurement. The dB scale is a logarithmic scale that describes the physical intensity of the pressure vibrations that make up any sound, with 0 dB corresponding roughly to the threshold of human hearing and 120 to 140 dB corresponding to the threshold of pain. Pressure waves traveling through air exert a force registered by the human ear as sound.

Sound pressure fluctuations can be measured in units of hertz (Hz), which correspond to the frequency of a particular sound. Typically, sound does not consist of a single frequency, but rather a broad band of frequencies varying in levels of magnitude. When all the audible frequencies of a sound are measured, a sound spectrum is plotted consisting of a range of frequencies spanning 20 to 20,000 Hz. The sound pressure level, therefore, constitutes the additive force exerted by a sound corresponding to the sound frequency/sound power level spectrum.

The typical human ear is not equally sensitive to all frequencies of the audible sound spectrum. As a consequence, when assessing potential noise impacts, sound is measured using an electronic filter that de-emphasizes the frequencies below 1,000 Hz and above 5,000 Hz in a manner corresponding to the human ear's decreased sensitivity to extremely low and extremely high frequencies. This method of frequency weighting is referred to as A-weighting and is expressed in units of A-weighted decibels (dBA). A-weighting follows an international standard methodology of frequency de-emphasis and is typically applied to community noise measurements. Some representative noise sources and their corresponding A-weighted noise levels are shown in **Figure 4.11-1**.



SOURCE: ESA, 2013.

WRD - Groundwater Basins Master Plan . 120192

Figure 4.11-1
Effects of Noise on People

Noise Exposure and Community Noise

An individual's noise exposure is a measure of noise over a period of time. A noise level is a measure of noise at a given instant in time. The noise levels presented in Figure 4.11-1 are representative of measured noise at a given instant in time; however, they rarely persist consistently over a long period of time. Rather, community noise varies continuously over a period of time with respect to the contributing sound sources of the community noise environment. Community noise is primarily the product of many distant noise sources, which constitute a relatively stable background noise exposure, with the individual contributors unidentifiable. The background noise level changes throughout a typical day, but does so gradually, corresponding with the addition and subtraction of distant noise sources such as traffic and atmospheric conditions. What makes community noise constantly variable throughout a day, besides the slowly changing background noise, is the addition of short duration single event noise sources (e.g., aircraft flyovers, motor vehicles, sirens), which are readily identifiable to the individual.

These successive additions of sound to the community noise environment change the community noise level from instant to instant, requiring the measurement of noise exposure over a period of time to legitimately characterize a community noise environment and evaluate cumulative noise impacts. This time-varying characteristic of environmental noise is described using statistical noise descriptors. The most frequently used noise descriptors are summarized below:

L_{eq}: The L_{eq}, or equivalent sound level, is used to describe noise over a specified period of time in terms of a single numerical value. The L_{eq} of a time-varying signal and that of a steady signal are the same if they deliver the same acoustic energy over a given time. The L_{eq} may also be referred to as the average sound level.

L_{max}: The maximum, instantaneous noise level experienced during a given period of time.

L_x: The noise level exceeded a percentage of a specified time period. The "x" represents the percentage of time a noise level is exceeded. For instance, L_{50} and L_{90} represents the noise levels that are exceeded 50 percent and 90 percent of the time, respectively.

Ldn: Also termed the DNL, the L_{dn} is the average A-weighted noise level during a 24-hour day, obtained after an addition of 10 dBA to measured noise levels between the hours of 10:00 P.M. to 7:00 A.M. to account nighttime noise sensitivity.

CNEL: CNEL, or Community Noise Equivalent Level, is the average A-weighted noise level during a 24-hour day that is obtained after an addition of 5 dBA to measured noise levels between the hours of 7:00 P.M. to 10:00 P.M. and after an addition of 10 dBA to noise levels between the hours of 10:00 P.M. to 7:00 A.M. to account for noise sensitivity in the evening and nighttime, respectively.

Effects of Noise on People

Noise is generally loud, unpleasant, unexpected, or undesired sound that is typically associated with human activity that is a nuisance or disruptive. The effects of noise on people can be placed into three categories:

- Subjective effects (e.g., annoyance, dissatisfaction);
- Interference effects (e.g., communication, sleep, and learning interference);
- Physiological effects (e.g., startle response); and
- Physical effects (e.g., hearing loss).

Although exposure to high noise levels has been demonstrated to cause physical and physiological effects, the principal human responses to typical environmental noise exposure are related to subjective effects and interference with activities. Interference effects of environmental noise refer to those effects that interrupt daily activities and include interference with human communication activities, such as normal conversations, watching television, telephone conversations, and interference with sleep. Sleep interference effects can include both awakening and arousal to a lesser state of sleep. With regard to the subjective effects, the responses of individuals to similar noise events are diverse and are influenced by many factors, including the type of noise, the perceived importance of the noise, the appropriateness of the noise to the setting, the duration of the noise, the time of day and the type of activity during which the noise occurs, and individual noise sensitivity..

Overall, there is no completely satisfactory way to measure the subjective effects of noise, or the corresponding reactions of annoyance and dissatisfaction on people. A wide variation in individual thresholds of annoyance exists, and different tolerances to noise tend to develop based on an individual's past experiences with noise. Thus, an important way of predicting a human reaction to a new noise environment is the way it compares to the existing environment to which one has adapted (i.e., comparison to the ambient noise environment). In general, the more a new noise level exceeds the previously existing ambient noise level, the less acceptable the new noise level will be judged by those hearing it. With regard to increases in A-weighted noise level, the following relationships generally occur:

- Except in carefully controlled laboratory experiments, a change of 1 dBA cannot be perceived;
- Outside of the laboratory, a 3 dBA change is considered to be a barely perceivable difference;
- A change in noise levels of at least 5 dBA is considered to be a readily perceivable difference; and
- A change in noise levels of 10 dBA is subjectively heard as doubling of perceived loudness.

These relationships occur in part because of the logarithmic nature of sound and the decibel system. The human ear perceives sound in a non-linear fashion; hence the decibel scale was developed. Because the decibel scale is based on logarithms, two noise sources do not combine in a simple additive fashion, rather logarithmically. For example, if two identical noise sources produce noise levels of 50 dBA the combined sound level would be 53 dBA, not 100 dBA.

Noise Attenuation

Stationary point sources of noise, including stationary mobile sources such as idling vehicles, attenuate (lessen) at a rate between 6 dBA for hard sites and 7.5 dBA for soft sites for each doubling of distance from the reference measurement. Hard sites are those with a reflective surface between the source and the receiver such as parking lots or smooth bodies of water. No excess ground attenuation is assumed for hard sites and the changes in noise levels with distance (drop-off rate) is simply the geometric spreading of the noise from the source. Soft sites have an absorptive ground surface such as soft dirt, grass or scattered bushes and trees. In addition to geometric spreading, an excess ground attenuation value of 1.5 dBA (per doubling distance) is normally assumed for soft sites. Line sources (such as traffic noise from vehicles) attenuate at a rate between 3 dBA for hard sites and 4.5 dBA for soft sites for each doubling of distance from the reference measurement (Caltrans, 1998).

Fundamentals of Vibration

As described in the Federal Transit Administration's (FTA) *Transit Noise and Vibration Impact Assessment*, ground-borne vibration can be a concern for nearby neighbors of a transit system route or maintenance facility, causing buildings to shake and rumbling sounds to be heard (FTA, 2006). In contrast to airborne noise, ground-borne vibration is not a common environmental problem. It is unusual for vibration from sources such as buses and trucks to be perceptible, even in locations close to major roads. Some common sources of ground-borne vibration are trains, buses on rough roads, and construction activities such as blasting, pile-driving and operation of heavy earth-moving equipment.

There are several different methods that are used to quantify vibration. The peak particle velocity (PPV) is defined as the maximum instantaneous peak of the vibration signal. The PPV is most frequently used to describe vibration impacts to buildings. The root mean square (RMS) amplitude is most frequently used to describe the effect of vibration on the human body. The RMS amplitude is defined as the average of the squared amplitude of the signal. Decibel notation (Vdb) is commonly used to measure RMS. The relationship of PPV to RMS velocity is expressed in terms of the "crest factor," defined as the ratio of the PPV amplitude to the RMS amplitude. Peak particle velocity is typically a factor of 1.7 to 6 times greater than RMS vibration velocity (FTA, 2006). The decibel notation acts to compress the range of numbers required to describe vibration. Typically, ground-borne vibration generated by man-made activities attenuates rapidly with distance from the source of the vibration. Sensitive receptors for vibration include structures (especially older masonry structures), people (especially residents, the elderly, and sick), and vibration sensitive equipment.

The effects of ground-borne vibration include movement of the building floors, rattling of windows, shaking of items on shelves or hanging on walls, and rumbling sounds. In extreme cases, the vibration can cause damage to buildings. Building damage is not a factor for most projects, with the occasional exception of blasting and pile-driving during construction. Annoyance from vibration often occurs when the vibration exceeds the threshold of perception by only a small margin. A vibration level that causes annoyance will be well below the damage threshold for

normal buildings. The FTA measure of the threshold of architectural damage for conventional sensitive structures is 0.2 in/sec PPV (FTA, 2006).

In residential areas, the background vibration velocity level is usually around 50 VdB (approximately 0.0013 in/sec PPV). This level is well below the vibration velocity level threshold of perception for humans, which is approximately 65 VdB. A vibration velocity level of 75 VdB is considered to be the approximate dividing line between barely perceptible and distinctly perceptible levels for many people (FTA, 2006).

Project Area

Existing Noise Conditions

The project area encompasses the West Coast Basin and Central Basin (see Figure 3-1). Sources of noise in the project area are typical of those found in urban environments and include, but not limited to, traffic, construction work, commercial operations, human activities, emergency vehicles, aircraft overflights, etc. The dominant source of noise within the project area is generally related to transportation. Vehicular traffic creates noise on roads and highways in residential, commercial, industrial, and mixed-use areas. Aircraft traffic in the project area is generally localized around airports, specifically Compton/Woodley Airport, Hawthorne Municipal Airport/Jack Northrop Field, Torrance Airport/Zamperini Field, Long Beach Municipal Airport, and Los Angeles International Airport. Both freight and passenger rail systems as well as mass transit systems (e.g. – Metrolink) create noise within the project area, though it is localized along tracks and Metro stops. Industrial-zoned areas within the project area may also generate high noise levels from the operation of stationary equipment.

Existing Groundborne Vibration Conditions

Aside from periodic construction work that may occur throughout the project area, other sources of groundborne vibration in the project area vicinity include heavy-duty vehicular travel (e.g., refuse trucks, delivery trucks, and transit buses) on local roadways. Trucks and buses typically generate groundborne vibration velocity levels of around 63 VdB, and these levels could reach 72 VdB where trucks and buses pass over bumps in the road (FTA, 2006). In terms of PPV levels, a heavy-duty vehicle traveling at a distance of 50 feet can result in a vibration level of approximately 0.001 inch per second.

Sensitive Receptors

Some land uses are more sensitive to noise levels than others due to the types of activities typically associated with the uses. Residences, hotels, schools, rest homes, and hospitals are generally more sensitive to noise than commercial and industrial land uses. Given the large geographic region and urbanized nature of the project area, a variety of noise-sensitive land uses are located in the vicinity of the proposed GBMP projects. These sensitive land uses include, but are not limited to, residences, schools, hospitals, hotels/motels, etc.

As shown in Table 4.7-1, various GBMP projects would occur within one-quarter mile of approximately 81 schools in 15 districts. Pipelines and conveyance infrastructure for most of the

GBMP projects are aligned along roads that cross through a variety of residential land use types, including single-family, multi-family, and other dwelling units. Of the three planned treatment plant expansions, only the satellite advanced water treatment facility (C10) is sited in proximity to sensitive residential receptors. Cedar Sinai Medical Center is located a little over half a mile from the ECLWRF, which will undergo both on and offsite expansion under proposed Projects W1 and W3.

4.11.2 Regulatory Framework

Detailed below is a discussion of the relevant regulatory setting and noise regulations, plans, and policies.

Federal

Noise Standards

There are no federal noise standards that directly regulate environmental noise related to the construction or operation of the proposed project. With regard to noise exposure and workers, the Office of Safety and Health Administration (OSHA) regulations safeguard the hearing of workers exposed to occupational noise. Federal regulations also establish noise limits for medium and heavy trucks (more than 4.5 tons, gross vehicle weight rating) under 40 Code of Federal Regulations (CFR), Part 205, Subpart B. The federal truck pass-by noise standard is 80 dBA at 15 meters from the vehicle pathway centerline. These controls are implemented through regulatory controls on truck manufacturers.

Federal Transit Authority Vibration Standards

The FTA has adopted vibration standards that can be used to evaluate potential building damage impacts related to construction activities. The vibration damage criteria adopted by the FTA are shown in **Table 4.11-1**.

TABLE 4.11-1
CONSTRUCTION VIBRATION DAMAGE CRITERIA

Building Category	PPV (in/sec)
I. Reinforced-concrete, steel or timber (no plaster)	0.5
II. Engineered concrete and masonry (no plaster)	0.3
III. Non-engineered timber and masonry buildings	0.2
IV. Buildings extremely susceptible to vibration damage	0.12

SOURCE: Federal Transit Administration, Transit Noise and Vibration Impact Assessment, May 2006.

In addition, the FTA has also adopted standards associated with human annoyance for groundborne vibration impacts for the following three land-use categories: (1) Vibration Category 1 – High Sensitivity, (2) Vibration Category 2 – Residential, and (3) Vibration Category 3 – Institutional. The FTA defines Category 1 as buildings where vibration would interfere with

operations within the building, including vibration-sensitive research and manufacturing facilities, hospitals with vibration-sensitive equipment, and university research operations. Vibration-sensitive equipment includes, but is not limited to, electron microscopes, high-resolution lithographic equipment, and normal optical microscopes. Category 2 refers to all residential land uses and any buildings where people sleep, such as hotels and hospitals. Category 3 refers to institutional land uses such as schools, churches, other institutions, and quiet offices that do not have vibration-sensitive equipment, but still have the potential for activity interference.

Under conditions where there are an infrequent number of events per day, the FTA has established thresholds of 65 VdB for Category 1 buildings, 80 VdB for Category 2 buildings, and 83 VdB for Category 3 buildings.[1] Under conditions where there are an occasional number of events per day, the FTA has established thresholds of 65 VdB for Category 1 buildings, 75 VdB for Category 2 buildings, and 78 VdB for Category 3 buildings.[2] No thresholds have been adopted or recommended for commercial and office uses.

State

Department of Health Services Noise Standards

The California Department of Health Services (DHS) has established guidelines for evaluating the compatibility of various land uses as a function of community noise exposure. These guidelines for land use and noise exposure compatibility are shown in **Table 4.11-2**. In addition, Section 65302(f) of the California Government Code requires each county and city in the state to prepare and adopt a comprehensive long-range general plan for its physical development, with Section 65302(g) requiring a noise chapter to be included in the general plan. The noise chapter must: (1) identify and appraise noise problems in the community; (2) recognize Office of Noise Control guidelines; and (3) analyze and quantify current and projected noise levels.

The State of California also establishes noise limits for vehicles licensed to operate on public roads. For heavy trucks, the state pass-by standard is consistent with the federal limit of 80 dB. The state pass-by standard for light trucks and passenger cars (less than 4.5 tons, gross vehicle rating) is also 80 dBA at 15 meters from the centerline. These standards are implemented through controls on vehicle manufacturers and by legal sanction of vehicle operators by state and local law enforcement officials.

1 "Infrequent events" is defined by the FTA as being fewer than 30 vibration events of the same kind per day.
2 "Occasional events" is defined by the FTA as between 30 and 70 vibration events of the same source per day.

TABLE 4.11-2
COMMUNITY NOISE EXPOSURE (CNEL)

Land Use	Normally Acceptable[a]	Conditionally Acceptable[b]	Normally Unacceptable[c]	Clearly Unacceptable[d]
Single-family, Duplex, Mobile Homes	50 - 60	55 - 70	70 - 75	above 75
Multi-Family Homes	50 - 65	60 - 70	70 - 75	above 75
Schools, Libraries, Churches, Hospitals, Nursing Homes	50 - 70	60 - 70	70 - 80	above 80
Transient Lodging – Motels, Hotels	50 - 65	60 - 70	70 - 80	above 75
Auditoriums, Concert Halls, Amphitheaters	---	50 - 70	---	above 70
Sports Arena, Outdoor Spectator Sports	---	50 - 75	---	above 75
Playgrounds, Neighborhood Parks	50 - 70	---	67 - 75	above 75
Golf Courses, Riding Stables, Water Recreation, Cemeteries	50 - 75	---	70 - 80	above 80
Office Buildings, Business and Professional Commercial	50 - 70	67 - 77	above 75	---
Industrial, Manufacturing, Utilities, Agriculture	50 - 75	70 - 80	above 75	---

[a] Normally Acceptable: Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction without any special noise insulation requirements.
[b] Conditionally Acceptable: New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.
[c] Normally Unacceptable: New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.
[d] Clearly Unacceptable: New construction or development should generally not be undertaken.

SOURCE: Office of Planning and Research, State of California Genera Plan Guidelines, October 2003 (in coordination with the California Department of Health Services).

The state has also established noise insulation standards for new multi-family residential units, hotels, and motels that would be subject to relatively high levels of transportation-related noise. These requirements are collectively known as the California Noise Insulation Standards (Title 24, California Code of Regulations). The noise insulation standards set forth an interior standard of 45 dBA Ldn in any habitable room. They require an acoustical analysis demonstrating how dwelling units have been designed to meet this interior standard where such units are proposed in areas subject to noise levels greater than 60 dBA Ldn. Title 24 standards are typically enforced by local jurisdictions through the building permit application process.

Vibration Standards

There are no state vibration standards applicable to the proposed project. Moreover, according to the California Department of Transportation's (Caltrans) *Transportation- and Construction-Induced Vibration Guidance Manual* (2004), there are no official Caltrans standards for vibration. However, this manual provides guidelines for assessing vibration damage potential to various types of buildings, ranging from 0.08-0.12 in/sec PPV for extremely fragile historic buildings, ruins, and ancient monuments to 0.50-2.0 in/sec PPV for modern industrial/commercial buildings.

Local

Los Angeles County Code

The following portions of the County Code are relevant to the proposed project:

Noise Regulation

12.08.390 Exterior Noise Standards:

Unless otherwise herein provided, the following exterior noise levels shall apply to all receptor properties within a designated noise zone (**Table 4.11-3**):

TABLE 4.11-3
LOS ANGELES COUNTY EXTERIOR NOISE STANDARDS

Affected Land Uses (Receiving Noise)	Daytime Leq (7 am- 10 pm)	Nighttime Leq (10 pm- 7 am)
Residential	50 dBA	45 dBA
Commercial Properties	60 dBA	55 dBA
Industrial Properties	70 dBA	70 dBA

SOURCE: Los Angeles County Code (Ord. 11778 § 2 (Art. 4 § 403), 1978: Ord. 11773 § 2 (Art. 4 § 403), 1978.)

The exterior noise levels shown in Table 4.11-3 are meant to be further applied as noise standards based on the duration of the noise; i.e., the louder the noise, the shorter the time it can last. The County Municipal Code uses a number of noise metrics to define the permissible noise levels. These metrics include L_{50}, L_{25}, $L_{8.3}$, $L_{1.7}$, and L_0, and are based upon a one hour timeframe which indicates exceedances of 50, 25, 8.3, and 1.7 percent of the time, plus the maximum sound level during that time period. The following noise standards should be applied to the exterior noise levels provided in Table 4.11-3:

- Standard No. 1 shall be the exterior noise level which may not be exceeded for a cumulative period of more than 30 minutes in any hour. Standard No. 1 shall be the applicable noise level from Table 4.11-3; or, if the ambient L_{50} exceeds the forgoing level, then the ambient L_{50} becomes the exterior noise level for Standard No. 1.
- Standard No. 2 shall be the exterior noise level which may not be exceeded for a cumulative period of more than 15 minutes in any hour. Standard No. 2 shall be the applicable noise level from Table 4.11-3 plus 5 dB(A); or, if the ambient L_{25} exceeds the forgoing level, then the ambient L_{25} becomes the exterior noise level for Standard No. 2.
- Standard No. 3 shall be the exterior noise level which may not be exceeded for a cumulative period of more than five minutes in any hour. Standard No. 3 shall be the applicable noise level from Table 4.11-3 plus 20 dB(A); or, if the ambient $L_{8.3}$ exceeds the forgoing level, then the ambient $L_{8.3}$ becomes the exterior noise level for Standard No. 3.
- Standard No. 4 shall be the exterior noise level which may not be exceeded for a cumulative period of more than one minute in any hour. Standard No. 4 shall be the

applicable noise level from Table 4.11-3 plus 15 dB(A); or, if the ambient L1.7 exceeds the forgoing level, then the ambient L1.7 becomes the exterior noise level for Standard No. 4.

- Standard No. 5 shall be the exterior noise level which may not be exceeded for any period of time. Standard No. 5 shall be the applicable noise level from Table 4.11-3 plus 20 dB(A); or, if the ambient L_0 exceeds the forgoing level, then the ambient L_0 becomes the exterior noise level for Standard No. 5.

12.08.400 Interior Noise Standards:

The established interior noise standards for dwelling units in the County based on the allowable interior noise levels shown in **Table 4.11-4**.

TABLE 4.11-4
COUNTY OF LOS ANGELES INTERIOR NOISE STANDARDS FOR DWELLING UNITS

Noise Zone	Designated Land Use	Time Interval	Allowable Interior Noise Level (dBA)
All	Multifamily	10:00 pm to 7:00 am	40
	Residential	7:00 am to 10:00 pm	45

SOURCE: County of Los Angeles Ordinance No. 11743, Section 12.08.400.

The following interior noise standards for dwelling units have been assigned to the interior noise levels shown in Table 4.11-4:

- Standard No. 1. The applicable interior noise level for cumulative period of more than five minutes in any hour; or
- Standard No. 2. The applicable interior noise level plus 5 dB(A) for a cumulative period of more than one minute in any hour; or
- Standard No. 3. The applicable interior noise level plus 10 dB(A) or the maximum measured ambient noise level for any period of time.

12.08.440 Construction Noise:

With respect to construction noise in the County, both the working hours and maximum levels of construction equipment and activity noise that are allowable from both mobile and stationary equipment are defined by land use and shown in **Table 4.11-5**.

TABLE 4.11-5
COUNTY OF LOS ANGELES CONSTRUCTION NOISE STANDARDS

	Residential Structures					
	Single-Family		Multi-Family		Semi-Residential/Commercial	
Allowable Work Dates & Hours	**Mobile Equipment [a]**	**Stationary Equipment [b]**	**Mobile Equipment [a]**	**Stationary Equipment [b]**	**Mobile Equipment [a]**	**Stationary Equipment [b]**
Daily 7:00 am to 8:00 P.M.[c]	75 dBA	60 dBA	80 dBA	65 dBA	85 dBA	70 dBA
Daily 8:00 pm to 7:00 A.M.[d]	60 dBA	50 dBA	64 dBA	55 dBA	70 dBA	60 dBA
Business Structures						
Daily				85 dBA		

[a] Represents maximum noise levels for nonscheduled, intermittent, short-term operation (less than 10 days).
[b] Represent maximum noise level for repetitively scheduled and relatively long-term operation (periods of 10 days or more).
[c] Exception for Sundays and legal holidays.
[d] Includes all day Sunday and legal holidays.

SOURCE: County of Los Angeles Ordinance No. 11743, Section 12.08.440.

12.12.030 Construction Noise Prohibited When: Except as otherwise provided in this chapter, a person, on any Sunday, or at any other time between the hours of 8:00 p.m. and 6:30 a.m. the following day, shall not perform any construction or repair work of any kind upon any building or structure, or perform any earth excavating, filling or moving, where any of the foregoing entails the use of any air compressors; jackhammers; power-driven drill; riveting machine; excavator, diesel-powered truck, tractor or other earth moving equipment; hand hammers on steel or iron, or any other machine, tool, device or equipment which makes loud noises to the disturbance of persons occupying sleeping quarters in a dwelling, apartment, hotel, mobile home, or other place of residence. (Ord. 9818 § 1, 1969: Ord. 8594 § 6, 1964.)

12.12.060 Exemptions--Work by public utilities—Conditions: The provisions of Section 12.12.030 do not apply to the construction, repair or excavation by a public utility which is subject to the jurisdiction of the Public Utilities Commission as may be necessary for the preservation of life or property, and where such necessity makes it necessary to construct, repair or excavate during the prohibited hours. (Ord. 8594 § 10, 1964.)

Vibration Regulation

12.08.350 Vibration: "Vibration" means the minimum ground or structure-borne vibrational motion necessary to cause a normal person to be aware of the vibration by such direct means as, but not limited to, sensation by touch or visual observations of moving objects. The perception threshold shall be presumed to be a motion velocity of 0.01 in/sec over the range of 1 to 100 Hertz.

12.08.056 Vibration: Operating or permitting the operation of any device that creates vibration which is above the vibration perception threshold of any individual at or beyond the property

boundary of the source if on private property, or at 150 feet (46 meters) from the source if on a public space or public right-of-way is prohibited. The perception threshold shall be a motion velocity of 0.01 in/sec over the range of 1 to 100 Hertz.

City Municipal Codes

The GBMP would implement projects in various cities. The cities that have applicable noise and vibrations ordinances are described below.

Carson

The City of Carson has adopted the L.A. County Noise Ordinance in its entirety, with the following amendments:

> **Amendment 5502(b) to Los Angeles County Noise Standards Section 12.08.390: Exterior Noise Standards** (see Table 4.11-3)
>
> 12.08.390B. Unless otherwise herein provided, no person shall operate or cause to be operated, any source of sound at any location within the unincorporated county, or allow the creation of any noise on property owned, leased, occupied or otherwise controlled by such person which causes the noise level, when measured on any other property either incorporated or unincorporated, to exceed any of the following exterior noise standards:
>
> Standard No. 1 shall be the exterior noise level which may not be exceeded for a cumulative period of more than 15 minutes in any 30 minute period. Standard No. 1 shall be the applicable noise level from subsection A of this Section; or, if the ambient L50exceeds the foregoing level, then the ambient L50 becomes the exterior noise level for Standard No. 1.
>
> Standard No. 2 shall be the exterior noise level which may not be exceeded for a cumulative period of more than 7.5 minutes in any 30 minute period. Standard No. 2 shall be the applicable noise level from subsection A of this Section plus 5dB; or, if the ambient L25 exceeds the foregoing level, then the ambient L25 becomes the exterior noise level for Standard No. 2.
>
> Standard No. 3 shall be the exterior noise level which may not be exceeded for a cumulative period of more than 2.5 minutes in any 30 minute period. Standard No. 3 shall be the applicable noise level from subsection A of this Section plus 20dB; or, if the ambient L8.3 exceeds the foregoing level, then the ambient L8.3 becomes the exterior noise level for Standard No. 3.
>
> Standard No. 4 shall be the exterior noise level which may not be exceeded for a cumulative period of more than 30 seconds in any 30 minute period. Standard No. 4 shall be the applicable noise level from subsection A of this Section plus 15dB; or, if the ambient L1.7 exceeds the foregoing level, then the ambient L1.7 becomes the exterior noise level for Standard No. 4.

Standard No. 5 shall be the exterior noise level which may not be exceeded for any period of time. Standard No. 5 shall be the applicable noise level from subsection A of this Section plus 20dB; or, if the ambient L0 exceeds the foregoing level then the ambient L0 becomes the exterior noise level for Standard No. 5.

Amendment 5502(c) to Los Angeles County Noise Standards Section 12.08.440: Noise Control Ordinances:

12.08.440B1. Noise Restrictions at Affected Structures. The contractor shall conduct construction activities in such a manner that the maximum noise levels at the affected buildings will not exceed those listed in the following schedule:

1. At Residential Structures.

a. Mobile Equipment. a) Maximum noise levels for non-scheduled, intermittent, short-term operations of twenty (20) days or less for construction equipment:

CITY OF CARSON CONSTRUCTION NOISE STANDARDS, 20 DAYS

	Single-family Residential	Multi-family Residential
Daily, except Sundays and legal holidays, 7:00 a.m. to 8:00 p.m.	75dBA	80dBA
Daily, 8:00 p.m. to 7:00 a.m. and all day Sunday and legal holidays	60dBA	64dBA

b) Maximum noise level for repetitively scheduled and relatively long-term operation of twenty-one (21) days or more for construction equipment:

CITY OF CARSON CONSTRUCTION NOISE STANDARDS, 21+ DAYS

	Single-family Residential	Multi-family Residential
Daily, except Sundays and legal holidays, 7:00 a.m. to 8:00 p.m.	65dBA	70dBA
Daily, 8:00 p.m. to 7:00 a.m. and all day Sunday and legal holidays	55dBA	60dBA

Cerritos

Chapter 22.80 Section 210 – Locations where determinations are to be made regarding compliance.

The determination of the existence of any dangerous or objectionable condition shall be made at the location of the use creating such condition or at any point where the existence of such condition may be more apparent. Measurements necessary for enforcement of environmental performance standards pertaining to noise, vibration, odor, or glare, shall

be taken not closer than at the lot lines of the establishment or use, or at any point on an adjacent property where the nuisance is greater, except that in multi-family developments measurements shall be taken at the outside boundaries of dwelling units and related private open spaces.

22.80 Section 460 – Vibration.

No vibration (other than from transportation facilities or temporary construction work) shall be permitted which is discernible without instruments at the points of measurement specified in Section 22.80.210.

Chapter 22.80 Section 480 – Noise

In all districts in the city, the following noise standards, unless otherwise specifically indicated, shall apply:

(1) Maximum sound level. No noise shall be generated which causes the maximum sound level (noise level) at any point on property lines surrounding the premises on which noise is produced to exceed the background (ambient noise) including traffic noise by five dBA measured at the same point, or the following limits, whichever is greater:

Zone or Development Area	Maximum Sound Levels dB(A)
Residential or agricultural	50
Commercial	60
Industrial	70

Provided further that the sound level at the boundary line between land use areas shall not exceed the average of the maximum permitted sound level for each such area noted above.

(2) Negative corrections. The sound level limits must be adjusted by addition of the following corrections:

Type of Noise	Correction, (Decibels)
Steady noise without impulse or prominent pure tones (such as rain noise)	0
Steady impulsive noise (such as hammering or riveting)	-5
Steady audible tone components (such as whine, screech, hum)	-5

(3) Positive corrections. One of the following corrections may be applied to the limits and corrections noted above only between the hours of seven a.m. and seven p.m., except for uses in or adjacent to residential areas.

Frequency of Occurrence	Correction, (Decibels)
Noise occurring not more than fifteen minutes per hour	+5
Noise occurring not more than five minutes per hour	+10
Noise occurring not more than one minute per hour	+15

(4) Measurement:

(a) Sound level (noise level) shall be measured with a sound level meter satisfying the specifications of the American National Standard Specifications (S1.4-1961, as amended), which has had its acoustic calibration checked within the previous seven days,

(b) Measurements shall be made on the nearest property line which faces the noise source, or at any point on an adjacent property where the noise is greater,

(c) Measurements shall be made on the "A" weighted scale, with fast response, following the manufacturer's instructions,

(d) Measurement must be made out of doors with the microphone at a height of not less than four feet above the ground,

(e) Care shall be taken to avoid readings which are influenced by such extraneous sources as wind, electrical interference, or unusual background (ambient) noise,

(f) Noise level shall be determined by taking an average of at least three maximum deflections of the pointer.

(5) Exemptions. The provisions for noise limits shall not be applied to occasional use of equipment for maintenance of any lot or buildings or for building construction, for which a valid building permit has been issued, between the hour of seven a.m. and seven p.m. or for any public works activities or civic event which are authorized by the city.

Downey

Section 4600.2. Noises: Equipment and Machinery.

(a) No person shall use, operate, or permit to be used or operated within any R-1, R-2, or R-3 Zone, as defined in Chapter 1 of Article IX of this code, any power tool, machine, or equipment, or any other tool, machine, or equipment, between the hours of 10:00 p.m. and 7:00 a.m. in such a manner that the noise therefrom disturbs or interferes with the peace, comfort, or welfare of the neighboring inhabitants.

(b) No person shall use, operate, or permit to be used or operated within any commercial (C) or manufacturing (M) Zone, as defined in Chapter 1 of Article IX of this code, which is within three hundred (300′) feet of a residential use, any power tool, machine, or equipment, or any other tool, machine, or equipment, between the hours of 10:00 p.m. and 7:00 a.m. in such a manner that the noise there from disturbs or interferes with the peace, comfort, or welfare of the neighboring residential inhabitants.

Section 4606.5. Construction Projects.

Construction, repair or remodeling equipment and devices and other related construction noise sources shall be exempted from the provisions of this chapter provided a valid permit for such construction, repair, or remodeling shall have been obtained from the City. In any circumstance other than emergency work, no repair or remodeling shall take place between the hours of 9:00 p.m. of one day and 7:00 a.m. of the following day, and no repair or remodeling shall exceed eighty-five (85) db(A) across any property boundary at any time during the course of a twenty-four (24) hour day.

El Segundo

Section 7-2-4 – Noise Standards:

No person shall, at any location within the City, create any noise, nor shall any person allow the creation of any noise within the person's control on public or private property (hereinafter "noise source"), which causes the noise level when measured on any other property (hereinafter "receptor property"), to exceed the applicable noise standard, except as set forth in subsection C1 of this Section.

A. Residential Property: Five (5) dBA above the ambient noise level.

B. Commercial and Industrial Property: Eight (8) dBA above the ambient noise level.

C. 1. Increases to the noise standards as set forth in subsection A and B of this section may be permitted in accordance with the following:

Noise Standards Adjustments

Permitted Increase (dBA)	Duration of Increase (minutes)*
0	30
5	15
10	5
15	1
20	less than 1
* Cumulative minutes per hour	

2. If the receptor property is located on a boundary between two (2) different noise zones, the lower noise level standard applicable to the quieter zone shall apply.

Section 7-2-10 D – Construction Noise:

Noise sources associated with or vibration created by construction, repair, or remodeling of any real property, provided said activities do not take place between the hours of six o'clock (6:00) P.M. and seven o'clock (7:00) A.M. Monday through Saturday, or at any time on Sunday or a Federal holiday, and provided the noise level created by such activities does not exceed the noise standard of sixty five (65) dBA plus the limits specified in subsection 7-2-4C of this Chapter as measured on the receptor residential property line and provided any vibration created does not endanger the public health, welfare and safety.

Huntington Park

9-3.103 General Standards

27. Vibration. Any existing or proposed use generating vibrations that can or may be considered a nuisance/hazard on any adjacent parcel shall have the source of the vibration muffled or controlled in order to prevent the issuance, continuance or recurrence of the disturbing vibrations.

9-3.504 Excessive noise prohibited.

It shall be unlawful for any person to willfully make or continue, or willfully cause to be made or continue, any loud, unnecessary or unusual noise that disturbs the peace or quiet of any neighborhood or constitutes a public nuisance.

9-3.506 Exceptions to provisions.

5. Noise sources associated with construction, repair, remodeling or grading of any real property, provided the activities do not take place between the hours of 7:00 p.m. and 7:00 a.m. on weekdays, including Saturdays, or at any time on Sundays or Federal holidays;

6. Noise sources associated with the maintenance of real property, provided the activities do not take place between 8:00 p.m. and 7:00 a.m. on weekdays, including Saturdays, or earlier than 9:00 a.m. on Sundays and Federal holidays;

Industry

The Municipal Code of the City of Industry currently does not identify any established construction or operational noise and vibration standards with the exception of:

9.31.050 Disturbances.

No person shall disturb the peace and quiet of any park by:

A. Making any unduly loud or unusual noise;

B. Tooting, blowing, or sounding any siren, horn signal, or noisemaking device except in connection with an athletic or other event where such conduct is specifically permitted;

C. Indulging in any obscene, violent or riotous conduct; or

D. Using any vulgar, profane, or indecent language.

Lakewood

Section 8.36.010 – Noise Control

A. General Prohibition. It is unlawful for any person to cause, or for any person in possession of property to allow to originate from the property, sound that is a public disturbance noise.

B. Public Disturbances. The following sounds are public disturbance noises in violation of this article:

> 8. Sounds originating from construction sites, including but not limited to sounds from construction equipment, power tools and hammering between the hours 10:00pm and 7:00am on weekday and 10:00pm and 9:00am on weekends

9368 B. (d) Noise levels shall not exceed 60 dBA as measured at the property line of residentially zoned property, or otherwise shall not exceed 70 dBA.

9376. Air Conditioners, Mechanical Equipment and Machinery Noise in Residential Areas: No person within any area of the City zoned for residential use or any area adjacent thereto shall own, possess, control, or maintain any machinery, equipment, pumps, fans, air conditioning or air-handling apparatus, or similar mechanical devices which cause the noise level at the property line of any property zoned for residential uses to exceed the sound pressure level permitted herein by more than five decibels. The production or maintenance of any sound in excess of said levels is hereby declared to be an unnecessary interference with the enjoyment of residential property and contrary to the public health and general welfare. The ownership, maintenance, operation, or control of any such machinery or equipment producing said excess sound pressure levels is here declared to be a public nuisance.

9376.2 Same: Location of Mechanical Equipment. No such sound producing machinery, equipment, pumps, fans, air conditioners, air handling apparatus, or similar mechanical devices shall be installed, located, or maintained in any residential zone unless so installed, or maintained in the manner or fashion determined by the Director of Community Development, or his authorized representative, as to not unreasonably interfere with the enjoyment or use of life and property in the vicinity.

Long Beach

8.80.202: Construction activity—Noise regulations.

The following regulations shall apply only to construction activities where a building or other related permit is required or was issued by the building official and shall not apply to any construction activities within the Long Beach harbor district as established pursuant to section 201 of the city charter.

A. Weekdays and federal holidays. No person shall operate or permit the operation of any tools or equipment used for construction, alteration, repair, remodeling, drilling, demolition or any other related building activity which produce loud or unusual noise which annoys or disturbs a reasonable person of normal sensitivity between the hours of seven p.m. and seven a.m. the following day on weekdays, except for emergency work authorized by the building official. For purposes of this section, a federal holiday shall be considered a weekday.

B. Saturdays. No person shall operate or permit the operation of any tools or equipment used for construction, alteration, repair, remodeling, drilling, demolition or any other related building activity which produce loud or unusual noise which annoys or disturbs a reasonable person of normal sensitivity between the hours of seven p.m. on Friday and nine a.m. on Saturday and after six p.m. on Saturday, except for emergency work authorized by the building official.

C. Sundays. No person shall operate or permit the operation of any tools or equipment used for construction, alteration, repair, remodeling, drilling, demolition or any other related building activity at any time on Sunday, except for emergency work authorized by the building official or except for work authorized by permit issued by the noise control officer.

D. Owner's/employer's responsibility. It is unlawful for the landowner, construction company owner, contractor, subcontractor or employer of persons working, laboring, building, or assisting in construction to permit construction activities in violation of provisions in this section.

E. Sunday work permits. Any person who wants to do construction work on a Sunday must apply for a work permit from the noise control officer. The noise control officer may issue a Sunday work permit if there is good cause shown; and in issuing such a permit, consideration will be given to the nature of the work and

its proximity to residential areas. The permit may allow work on Sundays, only between nine a.m. and six p.m., and it shall designate the specific dates when it is allowed.

F. Enforcement. Notwithstanding the provisions of sections 8.80.370 and 8.80.380, this section may be enforced by a police officer.

Los Angeles

SEC. 41.40. Noise Due to Construction, Excavation Work – When Prohibited

(a) No person shall, between the hours of 9:00 P.M. and 7:00 A.M. of the following day, perform any construction or repair work of any kind upon, or any excavating for, any building or structure, where any of the foregoing entails the use of any power driven drill, riveting machine excavator or any other machine, tool, device or equipment which makes loud noises to the disturbance of persons occupying sleeping quarters in any dwelling hotel or apartment or other place of residence. In addition, the operation, repair or servicing of construction equipment and the job-site delivering of construction materials in such areas shall be prohibited during the hours herein specified

Section 112.05. Maximum Noise Level of Powered Equipment or Powered Hand Tools:

Between the hours of 7:00 a.m. and 10:00 p.m., in any residential zone of the City or within 500 feet thereof, no person shall operate or cause to be operated any powered equipment or powered hand tool that produces a maximum noise level exceeding the following noise limits at a distance of 50 feet therefrom:

(a) 75dB(A) for construction, industrial, and agricultural machinery including crawler-tractors, dozers, rotary drills and augers, loaders, power shovels, cranes, derricks, motor graders, paving machines, off-highway trucks, ditchers, trenchers, compactors, scrapers, wagons, pavement breakers, compressors and pneumatic or other powered equipment;

(b) 75dB(A) for powered equipment of 20 HP or less intended for infrequent use in residential areas, including chain saws, log chippers and powered hand tools;

(c) 65dB(A) for powered equipment intended for repetitive use in residential areas, including lawn mowers, backpack blowers, small lawn and garden tools and riding tractors;

The noise limits for particular equipment listed above in (a), (b) and (c) shall be deemed to be superseded and replaced by noise limits for such equipment from and after their establishment by final regulations adopted by the Federal Environmental Protection Agency and published in the Federal Register.

Said noise limitations shall not apply where compliance therewith is technically infeasible. The burden of proving that compliance is technically infeasible shall be upon

the person or persons charged with a violation of this section. Technical infeasibility shall mean that said noise limitations cannot be complied with despite the use of mufflers, shields, sound barriers and/or other noise reduction device or techniques during the operation of the equipment.

Maywood

5-23.02 Noise Control – Policy, intent, and purpose: In order to control unnecessary, excessive, and annoying noise in the City, it is hereby declared to be the policy of the City to prohibit such noise generated from any source as specified in this chapter. It is determined that certain noise levels are detrimental to the public health, welfare, and safety and contrary to the public interest, and, therefore, the Council does ordain and declare that creating, maintaining, or causing, or allowing to be created, caused, or maintained, any noise in a manner prohibited by, or not in conformity with, the provisions of this chapter shall be a public nuisance and shall be punishable as such.

5-23.07 - Exterior noise standards.

(a) The following noise standards, unless otherwise specifically indicated, shall apply to all receptor properties within the designated noise zones:

Noise Zone	Type of Land Use (Receptor Property)	Time Interval	Allowable Exterior Noise Level
I	Single-family, double-family, or multiple-family residential	10:00 p.m. — 7:00 a.m. 7:00 a.m. — 10:00 p.m.	55 dBA 60 dBA
II	Commercial	10:00 p.m. — 7:00 am. 7:00 am. — 10:00 p.m.	65 dBA 70 dBA
III	Manufacturing or industrial	Any time	75 dBA

(b) No person, in any location within the City, shall create any noise, or allow the creation of any noise, on property owned, leased, occupied, or otherwise controlled by such person (referred to in this chapter as "noise source") which causes the noise level when measured on any property (referred to in this chapter as "receptor property") to exceed:

(1) The applicable noise standard for a cumulative period of more than thirty (30) minutes in any hour; or

(2) The applicable noise standard plus five (5) dBA for a cumulative period of more than fifteen (15) minutes in any hour; or

(3) The applicable noise standard plus ten (10) dBA for a cumulative period of more than five (5) minutes in any hour; or

(4) The applicable noise standard plus fifteen (15) dBA for a cumulative period of more than one minute in any hour; or

(5) The noise standard plus twenty (20) dBA for any period of time.

(c) In the event the ambient noise level exceeds any of the noise limit categories set forth in subsections (l), (2), or (3) of subsection (b) of this section, the cumulative period applicable to such category shall be increased to reflect the ambient noise level. In the event the ambient noise level exceeds the third noise limit category, the maximum allowable noise level under such category shall be increased to reflect the maximum ambient noise level.

(d) If the receptor property is located on a boundary between two (2) different noise zones, the noise level standard applicable to the quieter noise zone shall apply.

(e) If the noise source is continuous and cannot reasonably be discontinued or stopped for a time period whereby the ambient noise level can be determined, the measured noise level obtained while the source is in operation shall be compared directly to the receptor property's designated land use and for the time of day the noise level is measured.

5-23.11(c) Exemptions: Noise sources associated with the construction, repair, remodeling, or grading of any real property or during authorized seismic surveys provided such activities do not take place between the hours of 8:00 p.m. and 7:00 a.m. on weekdays, including Saturdays, or at any time on Sunday or a Federal holiday, and provided the noise level created by such activities does not exceed the noise standard of seventy (70) dBA plus the limits specified in Section 5-23.08 of this chapter as measured on residential property and does not endanger the public health, welfare, and safety.

Norwalk

9.04.150 Particular acts.

D. Exhausts. The discharge into the open air of the exhaust of any steam engine, stationary internal combustion engine, motor boat or motor vehicle, except through a muffler or other device which effectively prevents loud or explosive noises;

E. Construction or Repairing of Buildings. The erection (including excavation), demolition, alteration, construction or repair of any building other than between the hours of seven a.m. and six p.m. or sunset, whichever is later, except in the case of urgent necessity in the interest of public health and safety, and then only with a permit from the Director of Building and Safety, which permit may be granted for a period not to exceed three days while the emergency condition continues, and which permit may be renewed for periods of three days or less while the emergency continues; if the Director of Building and Safety should determine that public health, safety, comfort and convenience will not be impaired by the erection, demolition, alteration or repair of any building or the

excavation of sites other than streets and highways within the hours of six p.m. or sunset, whichever is later, and seven a.m., or any part, and that substantial loss or inconvenience would result to any party in interest denied permission to do so, he or she may grant permission for such work, or any part, to be done, within the hours of six p.m. or sunset, whichever is later, and seven a.m., or any day, or at such times within such hours as he or she shall fix in accordance with such determination;

H. Engines and Motors. The operation of any electric motor or engine, the starting or running of which is attended by sudden, loud or unusual noise, unless such motor is enclosed within a sound-insulated structure so as to prevent such noise from being plainly audible at a distance of fifty (50) feet from such structure, or within ten (10) feet of any residence;

Pico Rivera

8.40.010 Unnecessary noises prohibited.

A. No person shall make, cause or suffer, or permit to be made, upon any premises owned, occupied or controlled by him, any unnecessary noises or sounds which are physically annoying to persons of ordinary sensitiveness, or which are so harsh or so prolonged or unnatural or unusual in their use, time or place as to occasion physical discomfort to the inhabitants of any neighborhood.

South Gate

11.29.120 General noise regulation: It shall be unlawful for any person to willfully make or continue, cause or to allow on his property to be made or continued, a loud, unnecessary or unusual noise (including animal noises, e.g., dog barking) which disturbs the peace and quiet of any neighborhood or which causes any discomfort or annoyance to any reasonable person of normal sensitiveness residing in the area.

11.29.150 Designated noise zones: Receptor properties hereinafter described are hereby assigned to the following noise zones:

NOISE ZONE I	Noise Sensitive Area
NOISE ZONE II	Residential properties
NOISE ZONE III	Commercial properties
NOISE ZONE IV	Industrial properties

(Ord. 1627 § 3 (part), 8-27-84)

11.29.160 Maximum permissible sound levels by receiving land use: No person shall operate or cause to be operated on property owned, leased, occupied or otherwise controlled by such person, any source of sound in such manner as to create a sound level which exceeds by 5 decibels or more, inclusive of the ambient, the higher of the following: (1) the limits set forth for the receiving land use category in the table below, as

adjusted by using the duration correction adjustment set forth in the succeeding paragraph; or, (2) the actual measured ambient noise level, when measured at property boundary of the closest adjoining parcel of land occupied by human beings at the time of the noise emission.

Receiving Land Use Category	Time	Sound Level Limit (dBA)
Noise Zone I (Noise Sensitive Area)	Anytime	45
Noise Zone II	7:00 am - 10:00 pm	50
(Residential)	10:00 pm - 7:00 am	40
Noise Zone III (Commercial)	Anytime	55
Noise Zone IV (Industrial)	Anytime	65

Duration Correction Adjustment

The time duration allowances shown below shall be added to the limiting levels above, for sound levels lasting less than one hour.

Duration (less than)	Allowance
30 min./hour (50%)	+ 3 dBA
15 min./hour (25%)	+ 6 dBA
10 min./hour (16%)	+ 8 dBA
5 min./hour (8%)	+ 11 dBA
2 min./hour (3%)	+ 15 dBA

Vernon

The following noise standards, unless otherwise specifically indicated, shall apply to all lots within the designated noise zones, measured cumulatively with existing noise from all businesses on the lot.

Noise Zone	Time Interval	Allowable Exterior Noise
Lots located within one tenth (1/10) of a mile of any resident or school located in Vernon or abutting communities.	10:00 p.m. to 7:00 a.m.	60 dBA
	7:00 a.m. to 10:00 p.m.	65 dBA
All other lots	Any time	75 dBA

(Ord. No. 1139, § 26.4.1-5.)

General Plans

Although local building and zoning ordinances generally are not applicable to most water and wastewater infrastructure projects (per California Government Code Section 53091(d) and 53091(e)), all available General Plans for jurisdictions in the project area have been reviewed for policies relevant to the proposed project. Relevant policies are highlighted below.

Bellflower (1995)

Policy 1.4: Limit construction activities which impact adjacent residential uses to the hours of 7 a.m. to 8 p.m. during weekdays and Sundays.

Policy 1.5: Require construction activities to incorporate feasible and practical techniques which minimize noise impacts on adjacent areas.

Carson (2004)

Goal: N-1: Maximize efficiency in noise abatement efforts through clear and effective policies, plans and ordinances.

Policy N-1.1: Continue to implement the City‘s Noise Ordinance and Noise Control Program.

Cerritos (2004)

Goal N-1: Reduction in noise impacts from transportation sources.

Policy N-1.1: Mitigate transportation equipment impacts at construction sites.

Goal N-2: Develop measures to control non-transportation noise impacts.

Policy N-2.3: Ensure noise mitigation techniques are incorporated into all construction-related activities.

Cudahy (1992)

Goal 2: The City of Cudahy will prohibit unnecessary noise which is detrimental to the public.

Policy 2.2: The City of Cudahy will control at their sources, any sounds which exceed accepted community noise levels.

Policy 2.3: The City of Cudahy will limit construction activities to daytime hours to reduce construction noise impacts.

Downey (2005)

Goal 6.1: Minimize noise impacts onto noise-sensitive uses.

Policy 6.1.1.1: Enforce noise standards.

Program 6.1.1.2: Ensure that new developments within areas with exterior noise at unacceptable levels are designed to maintain interior noise levels at acceptable levels.

Program 6.1.1.3: Continue to enforce provisions prohibiting construction activities during noise-sensitive hours.

Goal 6.3: Minimize noise impacts on noise-sensitive land uses.

Policy 6.3.1: Minimize the amount of noise generated by land uses.

Program 6.3.1.9: Concentrate construction activities producing the most noise during the midday hours to minimize impacts onto nearby residents.

Program 6.3.1.10: Encourage the use of noise suppression equipment.

El Segundo (1992)

Goal N1: Encourage a high quality environment within all parts of the City of El Segundo where the public's health, safety, and welfare are not adversely affected by excessive noise.

Policy N1-1.8: Continue to Develop zoning, subdivision, and development controls to prevent future encroachment of noise-sensitive uses into present or planned industrial or transportation system noise-impacted zones where adverse effects cannot be adequately mitigated.

Policy N1-2.1: Require all new projects to meet the City's Noise Ordinance Standards as a condition of building permit approval.

Policy N1-3.1: Encourage site planning to be consistent with the existing and future noise environment and promote development standards in which noise-sensitive projects and residences are mitigated from major noise sources. Short-term and long-term noise control measures should be formulated in a manner compatible with community needs and expectations.

Policy N1-3.3: Employ effective noise mitigation techniques through appropriate provisions in the building code, subdivision procedures, and zoning and noise ordinances.

Huntington Park (1991)

Goal 5.0: Develop measures to control non-transportation noise impacts.

Policy 5.3: Reduce noise generated impacts by building activities by requiring sound attenuation devices on construction equipment.

Industry (2012)

Goal S6: An environment where noise does not adversely affect sensitive land uses.

Policy S6: Address noise impacts through the effective enforcement of the noise ordinance, project and environmental review, and compliance with state and federal noise standards.

Lakewood (2010)

Goal 1: Maintain or reduce noise levels throughout the City.

Policy 1: Ensure that new and expanded commercial projects do not generate adverse impacts on adjacent residential areas.

Long Beach (1973-2010)

General Goal: Respond to demands for a reasonably quiet environment which is compatible with both existing ambient noise levels and continuing building and industrial development.

Goal 1: To reduce the level of noise exposure to the population caused by demolition and construction activities.

Goal 2: To reduce the level of outdoor noise exposure to the population generated by industries.

Los Angeles, City of (1973-2012)

Goal 1: A city where noise does not reduce the quality of urban life.

Objective 2 (Nonairport): Reduce or eliminate nonairport related intrusive noise, especially relative to noise sensitive uses.

Policy 2.2: Enforce and/or implement applicable city state and federal regulations intended to mitigate proposed noise producing activities, reduce intrusive noise and alleviate noise that is deemed a public nuisance.

Los Angeles, County of (1980)

Goal N-1: An environment that is protected from unacceptable levels of noise.

Policy N 1.2: Employ effective noise abatement measures to achieve acceptable levels of noise as defined by the Los Angeles County Exterior Noise Standards.

Policy N 1.3: Ensure cumulative impacts related to noise do not exceed excessive levels.

Maywood (No date available)

Goal 1: Prohibit any unnecessary, excessive, offensive noises, or increase in noise levels over acceptable levels, which are detrimental to the public health and welfare.

Policy 1.2: Control any sounds which exceed community accepted levels at their source through enforcement.

Policy 1.3: Provide assistance to all persons, groups, or organizations engaged in developing and implementing noise abatement procedures and/or programs.

Policy 1.4: Prevent an increase in acceptable ambient levels of sound in the residential areas of the community by implementing local noise standards.

Policy 1.5: Where appropriate, require sound attenuation walls to separate commercial and industrial uses from noise-sensitive land uses, such as schools and homes.

Norwalk (1996)

Goal: To reduce the number of people exposed to excessive noise and minimize the future effect of noise in the City.

Goal: To ensure that land uses are compatible with existing and future noise levels

Objective: To have noise levels in all areas of the City meet the minimum standards of land use compatibility established in the Noise Element, especially adjacent to noise sensitive uses.

Policy: Discourage truck traffic from using local residential streets

Policy: Ensure that proposed noise sources are reduced below a level of significance and properly muffled to prevent noise impacts on neighboring properties.

Pico Rivera (1993)

Objective B.3: Protect residents from the harmful and annoying effects of exposure to excessive noise.

Policy B.3.1: Ensure that the maximum acceptable noise levels described in the General plan are not exceeded.

Policy B.3.4: Minimize the impact of noise by incorporating noise attenuation measures into the design of new developments.

South Gate (2009)

Goal N 1: Reduce noise levels created by construction and maintenance activities.

Objective N1.1: Minimize noise levels from construction and maintenance equipment, vehicles, and activities.

Policy 1: Construction activities will be prohibited between the hours of 7:00 PM to 8: 00 AM Monday through Saturday and on Sundays and Federal holidays.

Policy 2: Construction noise reduction methods will be employed to the maximum extent feasible. These measures may include, but not limited to, shutting off idling equipment, installing temporary acoustic barriers around stationary construction noise sources, maximizing the distance between construction equipment staging areas and occupied sensitive receptor areas, and use of electric air compressors and similar power tools, rather than diesel equipment.

Policy 3: Prior to approval of project plans and specifications by the City, project applicants and/or construction contractors will identify construction equipment and noise reducing measures, and the anticipated noise reduction.

Vernon (2007)

Goal N-2: Incorporate noise and vibration considerations into land use planning decisions.

Policy N-2.1: Consider the noise levels likely to be produced by any new businesses or substantially expanded business activities locating near existing noise-sensitive uses such as schools, community facilities, and residences, as well as adjacent to established businesses involving vibration-sensitive activities.

Goal N-3: Develop measures to control non-transportation noise and similar impacts.

Policy N-3.1: Continue to enforce the noise and vibration performance standards in the City Code to mitigate conflicts among neighboring uses.

4.11.3 Impacts and Mitigation Measures

Significance Criteria

Based on the *CEQA Guidelines*, a project would have a significant effect on the environment with respect to noise and/or groundborne vibration if it would result in:

- Exposure of persons to, or generation of, noise levels in excess of standards established in the local general plan or noise ordinance of the cities in the project area, or applicable standards of other agencies;

- Exposure of persons to, or generation of, excessive ground-borne vibration or ground-borne noise levels;
- A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project;
- A substantial temporary or periodic increase in ambient noise levels in the project vicinity above existing levels existing without the project;
- Exposure of people residing or working in the project area to excessive noise levels 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; or
- Expose people residing or working in the project area to excessive noise levels for a project located in the vicinity of a private airstrip.

Noise Criteria

For the purpose of determining whether the proposed project would result in the exposure of persons to, or generate, noise levels that would exceed established noise standards, the project's construction and stationary operational noise levels occurring in the various municipalities within the project area would result in a significant impact if the construction noise regulations of those respective municipalities are violated and the operational noise standards of those respective cities are exceeded. For instance, noise impacts from construction activities could exceed noise thresholds and could result in a significant construction impact if the construction activity occurred outside of the permitted daytime construction hours or if the noise levels generated exceed the construction noise standards established in the applicable city's/county's municipal code.

The *CEQA Guidelines* do not define the levels at which permanent and temporary increases in ambient noise are considered "substantial." Therefore, with regard to determining whether the project would result in a permanent and/or temporary increase in ambient noise levels in the project vicinity, the significance of the proposed project's noise impacts can be determined by comparing estimated project-related noise levels to existing baseline (no-project) noise levels to assess the magnitude of increase in ambient noise levels. Generally speaking, the average healthy ear can barely perceive a noise level change of 3 dBA. A change from 3 to 5 dBA may be noticed by some individuals who are sensitive to changes in noise. A 5 dBA increase is readily noticeable, while the human ear perceives a 10 dBA increase as a doubling of sound. Thus, for the purpose of conducting a conservative analysis, an increase in the noise environment of 5 dBA or greater at an off-site sensitive receptor during project-related construction activities, which would be temporary and short-term, is considered to constitute a significant noise impact with regard to a temporary substantial increase in ambient noise levels.

With regard to determining noise impacts associated with permanent increases in ambient noise levels generated from project operations, some guidance as to the significance of changes in ambient noise levels is provided by the 1992 findings of the Federal Interagency Committee on Noise (FICON), which assessed the annoyance effects of changes in ambient noise levels

resulting from aircraft operations. The recommendations are based upon studies that relate aircraft noise levels to the percentage of persons highly annoyed by the noise. Annoyance is a summary measure of the general adverse reaction of people to noise that generates speech interference, sleep disturbance, or interference with the desire for a tranquil environment. Although the FICON recommendations were specifically developed to assess aircraft noise impacts, it has been asserted that they are applicable to all sources of noise described in terms of cumulative noise exposure metrics such as the L_{dn}, as shown in **Table 4.11-6**.

TABLE 4.11-6
MEASURES OF SUBSTANTIAL INCREASE FOR NOISE EXPOSURE

Ambient Noise Level without Project (L_{dn})	Significant Impact Assumed to Occur if the Project Increases Ambient Noise Levels By:
<60 dB	+ 5.0 dB or more
60-65 dB	+ 3.0 dB or more
>65 dB	+ 1.5 dB or more

SOURCE: Federal Interagency Committee on Noise (FICON), 1992.

Based on the noise criteria presented in Table 4.11-6, the proposed project would result in a significant operational noise impact if a mobile noise source (e.g., project-related traffic on local roadways) or stationary noise source (e.g., new treatment system, pump stations, etc.) associated with the project would result in increased noise levels of 1.5 dBA L_{dn} or more in an ambient noise environment greater than 65 dBA L_{dn}; or increased noise of 3 dBA L_{dn} or more in an ambient noise environment between 60 and 65 dBA L_{dn}; or increased noise of 5 dBA L_{dn} or more in an ambient environment of less than 60 dBA L_{dn}. The FICON thresholds are representative of noise increases from long-term (e.g., permanent) noise sources that could adversely affect sensitive receptors. The rationale for the Table 4.11-6 criteria is that as ambient noise levels increase, a small increase in decibel levels is sufficient to cause significant annoyance. The quieter the ambient noise level is, the more the noise can increase (in decibels) before it causes significant annoyance. Although an increase in the ambient noise environment may be significant based on the thresholds, if there are no sensitive receptors located in the vicinity of a project-related noise source that would be adversely impacted, then the noise would be deemed less than significant.

Vibration Criteria

The *CEQA Guidelines* also do not define the levels at which groundborne vibration or groundborne noises are considered "excessive." Thus, in terms of construction-related vibration impacts on buildings, the adopted guidelines/recommendations by the FTA to limit groundborne vibration based on the age and/or condition of the structures that are located in close proximity to construction activity are used in this analysis to evaluate potential groundborne vibration impacts. Based on the FTA criteria, construction impacts relative to groundborne vibration would be considered significant if any of the following were to occur:

- Project construction activities would cause a PPV groundborne vibration level to exceed 0.5 inches per second at a reinforced concrete, steel, or timber building;

- Project construction activities would cause a PPV groundborne vibration level to exceed 0.3 inches per second at any engineered concrete and masonry building;
- Project construction activities would cause a PPV groundborne vibration level to exceed 0.2 inches per second at any non-engineered timber and masonry buildings; or
- Project construction activities would cause a PPV ground-borne vibration level to exceed 0.12 inches per second at any buildings "extremely susceptible to vibration damage" (i.e., a historical building).

In terms of groundborne vibration impacts associated with human annoyance, this analysis uses the FTA's vibration impact thresholds for sensitive buildings, residences, and institutional land uses under conditions where there are an infrequent number of events per day. These thresholds are 65 VdB at buildings where vibration would interfere with interior operations, 80 VdB at residences and buildings where people normally sleep, and 83 VdB at other institutional buildings (FTA, 2006). The 65 VdB threshold applies to typical land uses where vibration would interfere with interior operations, including vibration-sensitive research and manufacturing facilities, hospitals with vibration-sensitive equipment, and university research operations. Vibration-sensitive equipments include, but are not limited to, electron microscopes, high-resolution lithographic equipment, and normal optical microscopes. The 80 VdB threshold applies to all residential land uses and any buildings where people sleep, such as hotels and hospitals. The 83 VdB threshold applies to institutional land uses such as schools, churches, other institutions, and quiet offices that do not have vibration-sensitive equipment, but still have the potential for activity interference.

Methodology

Implementation of the proposed project would result in the introduction of new noise sources in the project area where project-related facilities are developed. The primary sources of noise associated with the proposed project would be construction activities throughout the project area and the operation of machinery at the project facilities once they have been built. Additionally, increases in ambient noise levels in the noise environment would also occur from project-related traffic volumes generated during operation, such as truck trips associated with treatment facility operation. Aside from noise levels, groundborne vibration would also be generated during the construction of the project facilities occurring throughout the project area by various construction-related activities and equipment.

To estimate the approximate noise levels that would be generated from project construction activities, data published by the United States Environmental Protection Agency (USEPA) for general outdoor construction activities and data published by the FTA identifying typical noise levels for individual pieces of construction equipment are used. Additionally, groundborne vibration levels resulting from project-related construction activities are estimated by data published by the FTA in its *Transit Noise and Vibration Impact Assessment* document for individual pieces of construction equipment.

For the purpose of this analysis, a qualitative evaluation of potential noise and groundborne vibration impacts to the surrounding noise environment during construction of project-related facilities and components is conducted. A qualitative, rather than a quantitative, analysis for construction noise impacts is warranted for the following reasons:

(1) The construction time periods for each of the project components are not known specifically;

(2) The proposed locations of individual project components is subject to change, and therefore

(3) The proximity of the individual project components to many sensitive receptors is also uncertain and subject to change.

For operational impacts, this analysis includes a qualitative discussion of potential noise impacts and establishes noise performance standards for potential operational noise impacts that are identified. The analysis of operational noise impacts focuses on aboveground facilities, such as treatment facilities, pump stations, injection wells, and extraction wells. There would be no noise impacts associated with operation of underground pipelines.

Impacts Discussion

Exceedance of Established Noise Standards

Impact 4.11-1: The short-term construction activities associated with the proposed project could 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. (Significant and Unavoidable with Mitigation)

Implementation of the GBMP would involve the installation of new treatment facilities, pipelines, pump stations, and injection or production wells within the project area. The construction activities would involve drilling of additional wells, trenching for new pipelines, and installation of any additional supporting infrastructure. While more than 14 preliminary GBMP projects have been identified to help satisfy the project's objectives for both Concept A and Concept B, the actual implementation of these GBMP projects would depend on various future considerations. Thus, it is expected that construction of the proposed GBMP projects would occur intermittently in the future based on consideration of the aforementioned considerations over time to determine the feasibility of implementing each GBMP project. Specific construction equipment lists, material lists, construction methods, construction schedules, and workforce details would be developed in the future as specific projects are planned and designed according to the management strategies in the GBMP.

The construction noise impacts associated with each individual GBMP project would be short-term in nature and limited to the period of time when construction activity is taking place for that particular project. Construction activity noise levels at and near construction areas within the project area would fluctuate depending on the particular type, number, and duration of usage of various pieces of construction equipment. Development may require the use of heavy construction equipment for activities such as site preparation, grading and excavation, trenching,

installation of piping and equipment, paving, and erection of structural elements and mechanical systems. Development activities could also involve the use of smaller power tools, generators, and other sources of noise. During each stage of development for each individual GBMP project, there would be a different mix of equipment operating and noise levels would vary based on the amount and type of equipment in operation and the location of the activity.

The USEPA has compiled data for outdoor noise levels for typical construction activities. These data are presented in **Table 4.11-7**. The noise levels shown in Table 4.11-7 represent composite noise levels associated with typical construction activities, which take into account both the number of pieces and spacing of heavy construction equipment that are typically used during each phase of construction. These noise levels would diminish rapidly with distance from the construction site at a rate of approximately 6 dBA per doubling of distance. For example, a noise level of 84 dBA L_{eq} measured at 50 feet from the noise source to the receptor would reduce to 78 dBA L_{eq} at 100 feet from the source to the receptor, and reduce by another 6 dBA L_{eq} to 72 dBA L_{eq} at 200 feet from the source to the receptor. **Table 4.11-8** shows typical maximum and average noise levels produced by various types of construction equipment.

TABLE 4.11-7
TYPICAL OUTDOOR CONSTRUCTION NOISE LEVELS

Construction Phase	Noise Level (dBA, L_{eq})[a]
Ground Clearing	84
Excavation	89
Foundations	78
Erection	85
Finishing	89

[a] Average noise levels correspond to a distance of 50 feet from the noisiest piece of equipment associated with a given phase of construction and 200 feet from the rest of the equipment associated with that phase.

SOURCE: USEPA, 1971.

All of the proposed GBMP projects, with the exception of Project C5, would include conveyance infrastructure (e.g., pipelines and pump stations). The pipelines included in these projects are anticipated to be constructed below the ground surface within existing roadway right-of-ways (ROWs) and onsite at the associated treatment facilities. While the locations of the pump stations associated with these projects have not been determined at this time, they are anticipated to be constructed along the same ROWs as the conveyance pipelines. In addition, Projects W1 (Concept A) and Projects W3 and C10 (Concept B) would include the on- and off-site expansion of treatment facilities, respectively. While Project W1 includes the on-site expansion of the ECLWRF, Projects W3 and C10 could require the construction of new water treatment facilities at off-site locations. Furthermore, the construction of new injection and extraction wells could also occur in the project area from implementation of Projects W2, C3, C4, and C5 under Concept A, and Projects W4, C6, C8, and C9 under Concept B. The wells are anticipated to be constructed primarily within existing roadway ROWs and within the Los Angeles River ROW.

The construction activities for each GBMP project would temporarily expose their respective existing off-site surrounding land uses to increased noise levels while construction activities are

TABLE 4.11-8
TYPICAL NOISE LEVELS FROM CONSTRUCTION EQUIPMENT

Construction Equipment	Maximum Noise Level (dBA, L_{max} at 50 feet)	Average Noise Level (dBA, L_{eq} at 50 feet)[a]
Air Compressor	80	76
Auger Drill Rig	85	78
Backhoe	80	76
Compactor	80	73
Concrete Mixer Truck	85	81
Concrete Pump Truck	82	75
Crane (Mobile)	85	77
Dozer	85	81
Drill Rig Truck	84	77
Dump Truck	84	80
Generator	82	79
Grader	85	81
Front End Loader	80	76
Jack Hammer	85	78
Paver	85	82
Pile –Driver (Impact)	101	94
Pile-Driver (Vibratory)	101	94
Pneumatic Tool	85	82
Scraper	85	81

[a] The average noise levels for the construction equipment at 50 feet were calculated from the maximum noise levels using the usage factors for each piece of equipment provided in the Federal Highway Administration's (FHWA) Roadway Construction Noise Model.

SOURCE: FHWA, 2006.

ongoing. As shown in Table 4.11-7, excavation activities can typically generate noise levels of 89 dBA L_{eq} at 50 feet from the construction noise source. Given the urbanized environment of the project area, many of the GBMP projects would be constructed in proximity or adjacent to existing land uses, including those that are noise-sensitive uses. In some cases, such as the construction of conveyance infrastructure along existing roadway ROWs, existing off-site land uses may be located less than 50 feet from the construction activities. Thus, the proposed project's construction activities would expose existing land uses located in proximity to the GBMP projects to increased temporary and intermittent noise levels that are substantially greater than existing ambient noise levels. The construction noise standards and/or regulations that would apply to each of the GBMP projects would depend on the agency with jurisdiction over each project location. Figure 2-1 shows the locations of the jurisdictions in the project area. Noise

during construction of pipelines, pump stations, and treatment facilities, depending upon the final location of facilities, may exceed local construction noise standards or violate local construction noise regulations.

It should be noted that the construction noise impacts at existing off-site receptors would be dependent on various factors, including the amount of construction activity occurring on a given day, the distance between the construction activities and the off-site receptors, the presence of any existing structures that may act as noise barriers for the off-site receptors, and the existing ambient noise levels at the off-site receptor locations. Some of the construction activities associated with the GBMP projects would also have relatively shorter durations and, consequently, less frequent noise impacts on nearby off-site uses. For instance, noise impacts from pipeline construction activities would be of much shorter duration than those for expansion of treatment facilities, since the construction activities would physically progress along the length of the ROW rather than remaining stationary at one location. Nonetheless, because it is anticipated that noise-sensitive land uses (e.g., residential uses, schools, hospitals, libraries, etc.) would likely be located in proximity to many of the proposed construction areas for the GBMP projects, the potential exists for these noise-sensitive land uses located throughout the project area to be exposed to noise levels in excess of the applicable daytime and nighttime noise standards established in their respective city's/county's general plan and municipal code. As a result, construction noise impacts would be potentially significant.

To reduce the construction noise impacts associated with the GBMP projects, **Mitigation Measure NOISE-1** would be implemented, which would require all construction activities to be conducted in accordance with the applicable local noise regulations and standards, the implementation of noise reduction devices and techniques during construction activities, and advance notification of the surrounding noise-sensitive receptors to a construction site about upcoming construction activities and their hours of operation. This would serve to reduce the construction-related noise levels at nearby receptors to the maximum extent feasible. However, there may be circumstances where the construction activities for a particular GBMP project are unable to comply with the local noise regulations and/or standards; for example, there may be instances where construction methods such as pile-driving or rock blasting are required in proximity to sensitive receptors. As shown in Table 4.11-8, an activity such as pile-driving can result in a maximum noise level of 101 dBA and an average noise level of 94 dBA at 50 feet from the noise source, which would be highly disruptive to nearby sensitive receptors. While a majority of the jurisdictions in the project area where construction activities could take place currently exempt construction noise from the established noise standards in their respective municipal codes, there are a few jurisdictions, such as the County of Los Angeles and the City of Carson, that have established noise standards for construction noise levels. As such, depending on which jurisdiction a particular GBMP project is located in, the recommended measures under **Mitigation Measure NOISE-1** may not reduce potential impacts to less-than-significant levels. Thus, through the environmental review and development permit process, subsequent project-specific analysis by implementing agencies of the GBMP projects would be needed to determine if construction noise levels would exceed the applicable standards in the local general plan or noise ordinance at nearby noise-sensitive receptors. For the purpose of this analysis, because of

the possibility that certain GBMP projects may not be able to comply with the applicable noise regulations and standards of their respective jurisdictions, this impact would be significant and unavoidable.

Furthermore, while the majority of the construction activities associated with the GBMP projects would occur during daytime hours, the construction of the injection and extraction wells may require drilling that occurs over 24 hours. Since all of the jurisdictions in the project area (the majority of which exempts construction noise from regulation by established exterior noise standards) do not have provisions that would allow for nighttime construction activities, a noise waiver would need to be obtained for these activities. Thus, **Mitigation Measure NOISE-2** would be implemented, which would require the implementing agencies of the GBMP projects that require 24-hour well drilling to obtain a noise waiver from the jurisdiction where the project is located. However, even with the issuance of a noise waiver, the increase in ambient noise levels at adjacent properties may still be substantial enough such that the nighttime exterior and/or interior noise standards for noise-sensitive uses (e.g., residential uses) in a particular jurisdiction may be exceeded. To address this noise impact, **Mitigation Measure NOISE-3** would be implemented, which would require injection and extraction wells to be located as far away from sensitive receptors as possible and that temporary noise barriers be erected where new wells are located in the immediate vicinity of sensitive receptors to the extent feasible. Nonetheless, despite the implementation of **Mitigation Measures NOISE-3**, it is anticipated that the noise levels from well drilling would still likely exceed the established local nighttime exterior noise levels for noise-sensitive land uses that are located adjacent to a well-drilling site, in particular residential uses. Thus, this noise impact for Concept A and Concept B is considered to be significant and unavoidable.

It should be noted that not all GBMP projects may result in a significant and unavoidable impact with regard to the construction noise impacts analyzed in this discussion, as the noise impacts associated with each GBMP project would be dependent on its location within the project area and the presence of nearby noise-sensitive receptors with the existing noise environment in the area. As discussed previously, it is anticipated that the implementing agencies of the GBMP projects would, through the environmental review process, consider each GBMP project associated on a case-by-case basis to ascertain whether an individual project would generate potentially significant noise impacts during construction. Therefore, the identification of a significant and unavoidable program-level impact in this EIR for the proposed project does not preclude the finding of future less-than-significant impacts for the individual GBMP development projects occurring in the project area.

Mitigation Measures

NOISE-1: The implementing agencies shall implement the following measures during construction:

- Include design measures where feasible to reduce the construction noise levels if necessary to comply with local noise ordinances. These measures may include, but are not limited to, the erection of noise barriers/curtains, use of advanced or state-of-the-art

mufflers on construction equipment, and/or reduction in the amount of equipment that would operate concurrently at the construction site.

- Place noise and groundborne vibration-generating construction activities whose specific location on a construction site may be flexible (e.g., operation of compressors and generators, cement mixing, general truck idling) as far as possible from the nearest noise- and vibration-sensitive land uses such as residences, schools, and hospitals.
- Minimize the effects of equipment with the greatest peak noise generation potential via shrouding or shielding to the extent feasible. Examples include the use of drills, pavement breakers, and jackhammers.
- Locate stationary construction noise sources as far from adjacent noise-sensitive receptors as possible, and require that these noise sources be muffled and enclosed within temporary sheds, insulation barriers if necessary to comply with local noise ordinances..
- Provide noise shielding and muffling devices on construction equipment per the manufacturer's specifications.
- If construction is to occur near a school, the construction contractor shall coordinate the with school administration in order to limit disturbance to the campus. Efforts to limit construction activities to non-school days shall be encouraged.
- For major construction projects, identify a liaison for surrounding residents and property owners to contact with concerns regarding construction noise and vibration. The liaison's telephone number(s) shall be prominently displayed at construction locations.
- For major construction projects, notify in writing all landowners and occupants of properties adjacent to the construction area of the anticipated construction schedule at least two weeks prior to groundbreaking.

NOISE-2: For construction activities during non-standard working hours or hours that are not exempt from compliance with applicable city or county noise ordinances (e.g., 24-hour well drilling), the implementing agency will secure a noise waiver from the appropriate jurisdiction if available.

NOISE-3: Injection and extraction wells shall be located as far from sensitive receptors as feasible. If new wells are to be constructed in the immediate vicinity of sensitive receptors, construction specification requirements shall include installation and maintenance of a temporary noise barrier (e.g. engineered sound wall or noise blanket) during 24-hour construction activities, to the extent feasible if necessary to comply with local noise ordinances. Specifications shall include use of appropriate materials that shall be installed to a height that intercepts the line of sight between the construction site and sensitive receptors in order to achieve maximum attenuation in an attempt to decrease construction area noise to as close as ambient noise levels as possible.

Significance Determination: Significant and unavoidable with mitigation

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Impact 4.11-2: The long-term operational activities associated with the proposed project could 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)

Once construction of a proposed GBMP project has been completed, the surrounding off-site land uses to that project would also be exposed to operational noise levels generated by the new aboveground facilities, including new treatment facilities, pump stations, and injection or production wells. As the newly constructed pipelines in the project area would be buried underground, no long-term operational noise impacts from these pipelines are anticipated. Of the aboveground facilities associated with the proposed GBMP projects, treatment facilities have the potential to generate the most operational noise due to operation of heating, ventilating, and air conditioning (HVAC) equipment and other mechanical equipment such as fans, pumps, air compressors, chillers, turbines, etc. Most projects under Concept A (W1, C0-B, C1, C3, C4) W3, W4) and Concept B (W3, W4, , C10) require upgraded, expanded, and/or new wastewater treatment systems, either within the boundaries of existing treatment facilities, adjacent to such facilities, or in the case of Project C10, at a location where no treatment facilities currently exist. Given the urbanized environment of the project area, many of the aboveground GBMP facilities could operate in proximity or adjacent to existing noise-sensitive land uses, such as residential uses, schools, hospitals, etc. For instance, the proposed treatment plant associated with Project C10 is preliminarily planned to be located in the Mid City area of the City of Los Angeles, and can potentially be located adjacent to residential land uses. Of the proposed treatment facility expansions at ECLWRF, TIWRP, and JWPCP, only JWPCP would be located adjacent to residential land uses. As the locations of proposed aboveground facilities identified in the GBMP have not been definitively determined at this time and are subject to change, and the specific types of mechanical equipment operating at the treatment facilities are unknown at this time, it is not possible to accurately predict the noise levels that would be generated by these facilities and experienced by off-site sensitive receptors. However, for the purpose of conducting a conservative analysis, it is anticipated that in situations where a new treatment facility, pump station, or well is located adjacent to noise-sensitive land uses, the operation of these facilities could potentially expose the adjacent sensitive receptors to noise levels that exceed local established exterior noise standards. To reduce the operational noise impacts of the project's aboveground facilities on nearby or adjacent noise-sensitive receptors, **Mitigation Measure NOISE-4** would be implemented, which requires operational noise levels of new facilities to be in compliance with the noise standards in the local noise ordinances. Impacts would be considered less than significant with mitigation for both Concept A and Concept B.

Mitigation Measures

NOISE-4: The implementing agencies shall require that all GBMP-related aboveground facilities that include stationary noise generating equipment (such as emergency generators, blowers, pumps, motors, etc.) minimize their audible noise levels by locating equipment

away from noise-sensitive receptor areas, installing proper acoustical shielding for the equipment, and incorporating the use of parapets into building design to meet the applicable city or county noise level requirements at neighboring property lines.

Significance Determination: Less than significant with mitigation

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Exposure to Vibration Levels

Impact 4.11-3: Project construction could expose persons and structures to excessive ground-borne vibration. (Significant and Unavoidable with Mitigation)

Construction of the GBMP projects would include activities such as grading, excavation, and drilling, which would have the potential to generate low levels of groundborne vibration. Persons residing and working in an area located in proximity to a construction site could be exposed to excessive groundborne vibration or groundborne noise levels related to construction activities. The results from vibration can range from no perceptible effects at the lowest vibration levels, to low rumbling sounds and perceptible vibrations at moderate levels, to slight structural damage at the highest levels. Site ground vibrations from construction activities very rarely reach the levels that can damage structures, but they can be perceived in the audible range and be felt in buildings very close to a construction site.

The various PPV and RMS velocity (in VdB) levels for the types of construction equipment that could operate during the construction of the GBMP projects are identified in **Table 4.11-9**. Based on the information presented in Table 4.11-9, vibration velocities could reach as high as approximately 1.518 inch-per-second PPV at 25 feet from the source activity when impact pile driving is used. This corresponds to a RMS velocity level (in VdB) of 112 VdB at 25 feet from the source activity.

Construction activities for the various GBMP projects would have the potential to impact their respective nearby sensitive receptors. Given the urbanized environment of the project area, the potential exists for construction of a GBMP project to be located within 25 feet of an adjacent land use. Consequently, existing off-site receptors that are located immediately adjacent to a construction site could be exposed to excessive groundborne vibration levels. While it is anticipated that construction of the proposed GBMP projects would employ conventional techniques and the equipment to be used would typically not cause excessive ground-borne vibration, drilling would be required during the installation of injection and extraction wells. Additionally, the installation of pipelines could also require jack and bore construction, depending on the local geology and location of the GBMP projects, which can result in vibration levels similar to well drilling operations. As shown in Table 4.11-9, drilling activities could generate peak vibration levels of 0.089 PPV and 87 RMS at a distance of 25 feet. Where potential adjacent receptors are located less than 25 feet from a construction site that employs drilling, the vibration levels experienced by these receptors would be even greater. Furthermore, although pile

TABLE 4.11-9
VIBRATION VELOCITIES FOR CONSTRUCTION EQUIPMENT

Construction Equipment		PPV at 25 feet (inches/second)[a]	RMS at 25 feet (VDB)[b]
Pile Drive (Impact)	Upper range	1.518	112
	Typical	0.644	104
Pile Driver (Sonic)	Upper range	0.734	105
	Typical	0.170	93
Large Bulldozer		0.089	87
Caisson Drilling		0.089	87
Loaded Trucks		0.076	86
Jackhammer		0.035	79
Small Bulldozer		0.003	58

SOURCE: FTA, 2006.

driving is not anticipated for the GBMP projects, under unforeseen circumstances where it would need to be employed, the vibration levels at nearby sensitive receptors, depending on their respective distances from the noise source, could be potentially result in building damage and human annoyance.

As the extent of development for all the proposed GBMP projects is unknown at this time and would be dependent upon various factors and considerations in the future, and given the short-term nature of construction events, it is anticipated that there would be an infrequent amount of vibration events per day at sensitive land use receptors resulting from project-related construction activities. However, depending on how close an actual receptor location is to a construction site, and the type of building the receptor is (e.g., engineered concrete and masonry building, non-engineered timber and masonry building, historical building, etc.), the vibration levels at a receptor location could exceed the FTA's vibration thresholds for building damage and human annoyance. As such, vibration impacts during construction associated with the proposed project on existing nearby receptors would be potentially significant.

Implementation of **Mitigation Measure NOISE-5**, which would prohibit the use of construction equipment that generates high levels of vibration (i.e., large bulldozers, loaded trucks, drill rigs, and jackhammers) within specific distances from existing land uses that are located near active construction areas, would reduce the construction-related vibration levels experienced by these existing off-site land uses. Additionally, implementation of **Mitigation Measure NOISE-6** would serve to ensure the safety of existing historic buildings by requiring a certified structural engineer to analyze and provide evidence that no structural damage would result at these buildings due to the project's construction activities. However, with respect to construction-related vibration impacts associated with building damage and human annoyance at nearby off-

site land uses, there could be instances where the measures recommended in **Mitigation Measure NOISE-5** may not be feasible at all construction locations associated with the proposed project. As most of the specific locations of the individual GBMP project components have not been finalized at this time, there could be potential scenarios where the site conditions of a future construction area would not allow for high-vibration construction equipment to be located at adequate distances away from adjacent land uses to render vibration impacts to be less than significant. Furthermore, in the event that construction methods such as pile-driving are necessary in proximity to sensitive land uses, vibration impacts would be significant. Thus, through the environmental review and development permit process, subsequent project-specific analysis by implementing agencies of the GBMP projects would be needed to determine if construction vibration levels generated by the projects would result in impacts related to building damage and human annoyance at nearby sensitive receptors. For the purpose of this analysis, because of the possibility that certain GBMP projects may not be able to feasibly implement the measures recommended in **Mitigation Measure NOISE-5**, this impact for both Concept A and Concept B would be significant and unavoidable.

It should be noted that not all GBMP projects may result in a significant and unavoidable impact with regard to the construction vibration impacts analyzed in this discussion, as the vibration impacts associated with each GBMP project would be dependent on its location and the presence and distance of nearby sensitive receptors to the construction area. As discussed previously, it is anticipated that the implementing agencies of the GBMP projects would, through the environmental review process, consider each GBMP project on a case-by-case basis to ascertain whether an individual project would generate potentially significant vibration impacts during construction. Therefore, the identification of a significant and unavoidable program-level impact in this EIR for the proposed project does not preclude the finding of future less-than-significant impacts for the individual GBMP development projects occurring in the project area.

Mitigation Measure

NOISE-5: The implementing agencies shall require the construction contractor(s) to implement the following measure:

- Ensure that the operation of construction equipment that generates high levels of vibration including, but not limited to, large bulldozers, loaded trucks, and drilling rigs, is minimized within 45 feet of existing residential structures and 35 feet of institutional structures (e.g., schools) during construction of the various GBMP projects. Use of small rubber-tired bulldozers shall be encouraged within these areas during grading operations to reduce vibration effects.

NOISE-6: Approval of construction permits shall ensure that where a GBMP project would be constructed adjacent to an existing or potential historic building, the implementing agency shall require by contract specifications that a certified structural engineer be retained to submit evidence that the operation of vibration-generating equipment associated with the construction activities would not result in any structural

damage to the adjacent historic building. Contract specifications shall be included in the construction documents for the applicable GBMP project development.

Significance Determination: Significant and unavoidable with mitigation

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Permanent Increase in Ambient Noise Levels

Impact 4.11-4: Operation of proposed GBMP projects, particularly treatment facilities, could increase ambient noise levels at nearby sensitive land uses. (Less than Significant with Mitigation)

As discussed under Impact 4.11-2, noise levels generated by operation of the GBMP projects would result from the aboveground facilities, including treatment facilities, pump stations, and injection and extraction wells. Noise levels from the treatment facilities would stem from the operation of HVAC equipment and other mechanical equipment such as fans, pumps, air compressors, chillers, turbines, etc. The noise levels generated from the project's aboveground facilities would vary depending on their size, intensity of equipment usage, and geographic location. Additionally, the operational noise impacts these aboveground facilities would have on nearby noise-sensitive receptors would also vary depending on the distance of the nearby receptors from the noise source and the existing ambient noise levels at the receptors. As discussed previously, with regard to determining noise impacts associated with permanent increases in ambient noise levels generated from project operations, the FICON noise criteria shown in Table 4.11-6 are used for the purpose of this analysis.

Since the preliminary siting of the aboveground facilities identified in the GBMP has not been finalized at this time and could be subject to change in the future, the existing ambient noise levels at potentially affected noise-sensitive receptors could not be determined at this time. As such, subsequent project-specific analysis would need to be conducted by implementing agencies of the GBMP projects through the environmental review and development permit process to determine if operational noise levels generated by the projects would result in noticeable increases in the ambient noise levels of existing noise-sensitive receptors. For the purpose of this analysis, it is assumed that noise-sensitive receptors that are located in proximity or adjacent to a proposed noise-generating operational facility could potentially be exposed to a noticeable increase in ambient noise levels. Given that many of the aboveground GBMP facilities would operate in the urbanized and developed areas in and around the WRD service area, these facilities could be located in proximity to noise-sensitive land uses (e.g., residential uses, schools, hospitals, etc.) and expose these uses to increased noise levels exceeding the FICON noise criteria. Thus, the project's operational noise impact related to a permanent increase in ambient noise levels at nearby noise-sensitive receptors for both Concept A and Concept B would be potentially significant.

While implementation of **Mitigation Measures NOISE-4** would require operational noise levels of the project's aboveground facilities to be in compliance with the noise standards in the local

noise ordinances. Therefore, operational noise impacts for Concept A and Concept B would be less than significant with mitigation.

Furthermore, the increase in traffic resulting from implementation of the proposed GBMP projects would increase the ambient noise levels at sensitive uses fronting or located in proximity to traveled roadways in and around the WRD service area. However, the traffic volumes associated with the GMBP projects would generally be minimal as worker and delivery trips would primarily be generated by operation of the water treatment facilities. While worker trips to the pump stations and injection and extraction wells would be required for inspection and maintenance purposes, it is anticipated that these visits would only occur periodically throughout the month. Due to the urban environment of the project area, the local roadway networks would be expected to consist of existing high traffic volumes that result in existing high traffic noise levels. With respect to traffic noise, it would generally require a doubling of traffic volumes on a roadway in order to increase the existing traffic noise levels by 3 dBA. As the traffic volumes generated by operation of the proposed treatment facilities is not expected to result in a doubling of traffic volumes on the local roadways, the noise impacts associated with the project's operational traffic noise levels for Concept A and Concept B would be less than significant.

Mitigation Measures

Implement **Mitigation Measure NOISE-4**.

Significance Determination: Less than significant

Temporary Increase in Ambient Noise Levels

Impact 4.11-5: Construction of proposed GBMP projects could increase ambient noise levels at nearby sensitive land uses. (Significant and Unavoidable with Mitigation)

During implementation of the proposed project, temporary or periodic increases in noise levels in and around the WRD service area would result primarily from construction activities associated with the GBMP projects. As discussed in Impact 4.11-1, the construction activities for each GBMP project would expose their respective nearby existing uses to increased noise levels. Where a construction site associated with the proposed project is located within 25 feet of an existing noise-sensitive land use, the resulting construction noise levels at that existing land use could reach as high as 95 dBA L_{eq} during excavation activities, which would result in a substantial noise increase over existing ambient noise levels at that existing land use. Under conditions where the distance between a construction site and an existing noise-sensitive land use is closer than 25 feet, the construction noise levels experienced by the existing land use would be even greater.

Through the environmental review and development approval process, the implementing agencies will consider all future GBMP projects on a case-by-case basis to ascertain whether an individual development would generate a substantial temporary or periodic increase in ambient noise levels at its surrounding off-site, noise-sensitive land uses. When necessary, the implementing agencies

would require mitigation measures to be implemented to minimize noise levels and reduce potentially significant impacts. However, for the purposes of this EIR, the criteria used to determine whether construction activities associated with the proposed project would result in a substantial temporary or periodic increase in ambient noise levels at off-site sensitive uses is a 5 dBA increase. As existing sensitive land uses in and around the WRD service area could potentially be located in proximity or adjacent to the future GBMP project sites, it is concluded in this analysis that the construction noise levels generated by the projects would result in a substantial temporary increase in ambient noise levels at those existing land uses. Although implementation of **Mitigation Measures NOISE-1** through **NOISE-3** would reduce construction noise levels associated with the proposed project to the maximum extent feasible, under circumstances where future construction sites are located immediately adjacent to existing sensitive land uses, the noise impacts related to a substantial temporary or periodic increase in ambient noise levels above levels existing without the proposed project would remain significant. Furthermore, if construction methods such as pile driving would be required, the noise levels experienced by nearby sensitive land uses would be even greater. Therefore, this impact for both Concept A and Concept B would be significant and unavoidable. The identification of a significant and unavoidable program-level impact in this EIR for the proposed project, however, does not preclude the finding of future less-than-significant impacts for the individual GBMP projects.

In addition to noise levels generated at construction sites, construction-related traffic volumes on local roadways would also raise the ambient noise levels along haul routes, depending on the number of haul trips made and types of vehicles used. Consequently, noise-sensitive land uses that front or are located in proximity to these roadways would be exposed to increased ambient noise levels. However, due to the urban environment of the project area, the local roadway networks would be expected to consist of existing high traffic volumes that result in existing high traffic noise levels. As the project's construction traffic for each GBMP project is not expected to result in a doubling of traffic volumes on a local roadway, the noise impacts associated with the project's construction traffic noise levels for Concept A and Concept B would be less than significant.

Overall, although the noise impact from the project's construction traffic would be less than significant, the noise impact at off-site sensitive land uses located in proximity to the GBMP construction sites for Concept A and Concept B would remain significant and unavoidable.

Mitigation Measures

Implement Mitigation Measures NOISE-1 through NOISE-3.

Significance Determination: Significant and unavoidable with mitigation

Public Airport Noise

Impact 4.11-6: Operation of project facilities within the boundaries of the land use plan of Los Angeles International Airport would not expose employees to excessive airport-related noise levels. (Less than Significant)

The proposed project could include the installation of new water conveyance facilities, specifically a recycled water pipeline, within the AIA of Los Angeles International Airport (LAX) (see Chapter 4.9, Land Use). However, no new office buildings or other occupied facilities would be installed within the vicinity of LAX or any other airport in the vicinity of proposed facilities, and maintenance and inspection of the proposed recycled water pipeline would be minimal during project operations. Therefore the proposed project would not introduce permanent future employees to an area within an AIA and as such would not expose persons to excessive airport-related noise levels. Exposure to airport noise would be a less than significant impact.

Mitigation Measures

None required.

Significance Determination: Less than significant

Private Airstrip

Impact 4.11-7: The proposed project would not expose people residing or working in the project area to excessive noise levels associated with a private airstrip. (No Impact)

The GBMP does not propose any projects within the vicinity of a private airstrip. As a result, no impacts would occur and no mitigation is required.

Mitigation Measures

None required.

Significance Determination: No Impact

TABLE 4.11-10
NOISE IMPACT SUMMARY

	Concept A		Concept B	
Impact	**Impact Determination**	**Mitigation Summary**	**Impact Determination**	**Mitigation Summary**
Exceedance of Established Noise Standards: The short-term construction activities associated with the proposed project could 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.	Significant and Unavoidable with Mitigation	NOISE-1, NOISE-2, NOISE-3	Significant and Unavoidable with Mitigation	NOISE-1, NOISE-2, NOISE-3
Exceedance of Established Noise Standards: The long-term operational activities associated with the proposed project could 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	NOISE-4	Less than Significant with Mitigation	NOISE-4
Exposure to Vibration Levels: Project construction could expose persons and structures to excessive ground-borne vibration.	Significant and Unavoidable with Mitigation	NOISE-5, NOISE-6	Significant and Unavoidable with Mitigation	NOISE-5, NOISE-6
Permanent Increase in Ambient Noise Levels: Operation of proposed GBMP projects, particularly treatment facilities, could increase ambient noise levels at nearby sensitive land uses.	Less than Significant with Mitigation	NOISE-4	Less than Significant with Mitigation	NOISE-4
Temporary Increase in Ambient Noise Levels: Construction of	Significant and Unavoidable with Mitigation	NOISE1, NOISE-2, NOISE-3	Significant and Unavoidable with Mitigation	NOISE-1, NOISE-2, NOISE-3

	Concept A		Concept B	
Impact	**Impact Determination**	**Mitigation Summary**	**Impact Determination**	**Mitigation Summary**
proposed GBMP projects could increase ambient noise levels at nearby sensitive land uses.				
Public Airport Noise: Operation of project facilities within the boundaries of the land use plan of Los Angeles International Airport would not expose employees to excessive airport-related noise levels.	Less than Significant	None Required	Less than Significant	None Required
Private Airstrip Noise: The proposed project would not expose people residing or working in the project area to excessive noise levels associated with a private airstrip.	No Impact	None Required	No Impact	None Required

References – Noise

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4.12 Traffic and Transportation

This section describes the existing traffic conditions and transportation system in the GBMP areas and the potential impacts associated with the implementation of the proposed GBMP. Impacts to traffic and transportation systems would be caused primarily by vehicle trips associated with construction and operation of proposed GBMP facilities. Therefore the project areas for impacts to traffic and transportation are defined by the local transportation networks in the vicinity of the proposed GBMP projects and secondarily affected regional transportation networks as well.

4.12.1 Environmental Setting

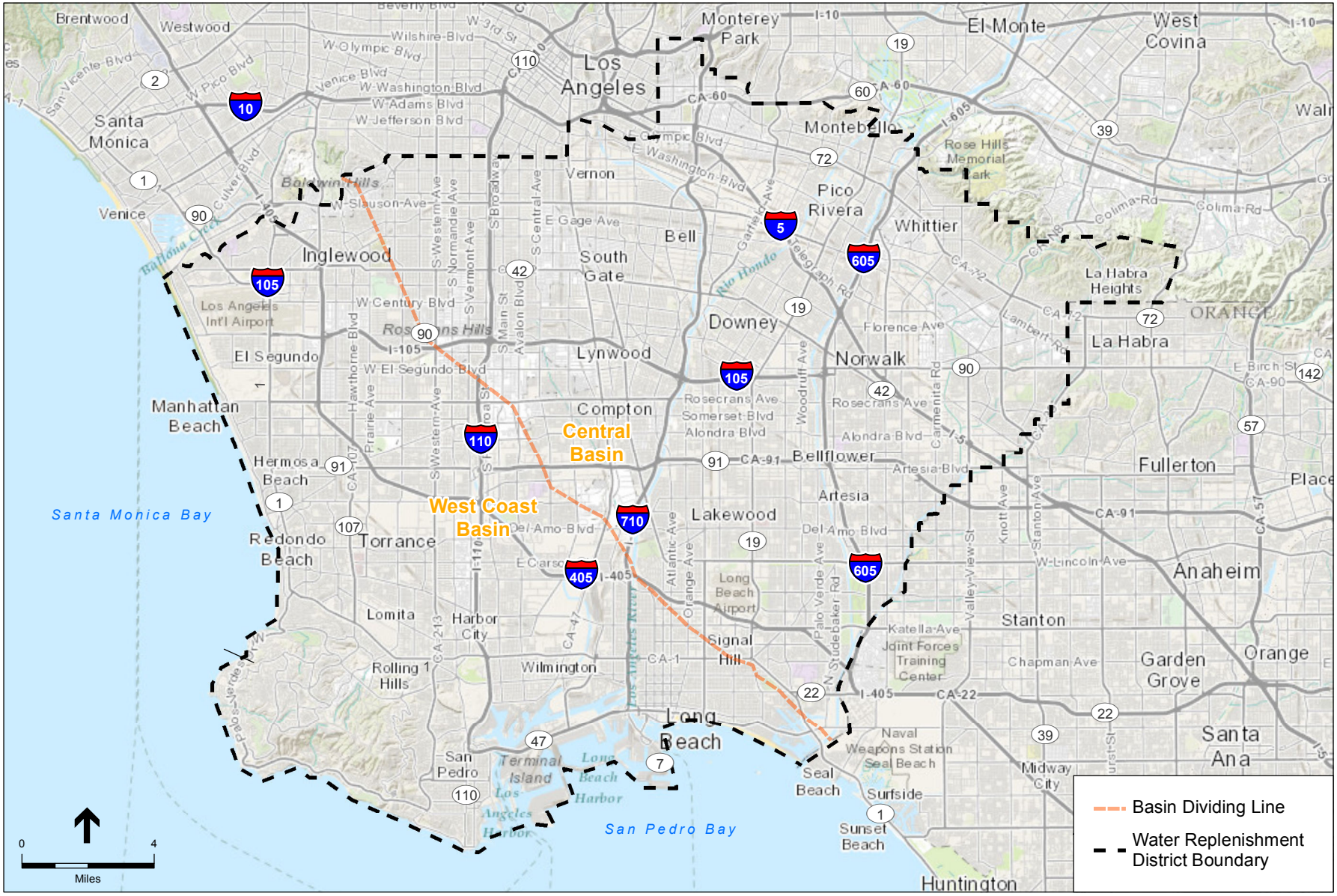
The proposed GBMP projects would be located in multiple jurisdictions within Los Angeles County. Proposed project facilities would be constructed in 17 municipalities and unincorporated areas of Los Angeles County. The cities include Bell, Bellflower, Carson, Cerritos, Cudahy, Downey, El Segundo, Huntington Park, Industry, Lakewood, Long Beach, Los Angeles, Maywood, Norwalk, Pico Rivera, South Gate, and Vernon. Transportation in this portion of southern Los Angeles County includes numerous major Interstates and California State Routes (SR). The project areas are characterized by some of the most congested and traveled roadways in Los Angeles County (City of Los Angeles, 1999).

Regional Transportation System

The major regional roadways in the WRD service area, including Interstates and California State Routes, are shown in **Figure 4.12-1**. The following **Table 4.12.1** lists regional roadways in proximity to the project areas:

TABLE 4.12-1
REGIONAL ROADWAYS IN PROJECT AREA

West Coast Basin	Central Basin
California State Route 1 (SR-1)	California State Route 19 (SR-19)
California State Route 103 (SR-103)	California State Route 60 (SR-60) California State Route 42 (SR-42)
California State Route 107 (SR-107)	California State Route 72 (SR-72)
California State Route 213 (SR-213)	California State Route 91 (SR-91)
California State Route 47 (SR-47)	Interstate 105 (I-105)
California State Route 91 (SR-91)	Interstate 110 (I-110)
Interstate 105 (I-105)	Interstate 405 (I-405)
Interstate 110 (I-110)	Interstate 5 (I-5)
Interstate 405 (I-405)	Interstate 605 (I-605)
Interstate 710 (I-710)	Interstate 710 (I-710)



SOURCE: USGS

WRD - Groundwater Basins Master Plan . 120192

Figure 4.13-1

Major Roads in WRD's Service Area

Major Roadways

The major Interstates and California State Routes described above provide regional and local access and circulation around and within the project areas. There are other major roadways in the vicinity of proposed GBMP projects, like collector and local streets that provide important local connection to the regional transportation system.

Definitions

Roadway classifications vary by local jurisdiction but are generally defined based on the significance of the roadway in providing access throughout the local or regional area. The definitions below are taken from the Federal Highway Administrations (FHWA) Functional Classification Guidelines (1989), the Caltrans Highway Design Manual (2012), and local jurisdictions that apply. The terms “street” and “roadway” can be used interchangeably.

The principal arterial system is intended to carry the majority of the trips entering and leaving the urban area. Principal arterials can include (1) Interstates, (2) other freeways and expressways, and (3) other principal arterials (with no control of access). The minor arterial street system should interconnect with and augment the urban principal arterial system and provide service to trips of moderate length at a somewhat lower level of travel mobility than principal arterials (FHWA).

Highways are generally public rights-of-way for the purpose of travel or transportation.

Arterial Highways are primarily used for through travel usually on a continuous route.

Freeways are divided arterial highways with full control of access and with grade separations at intersections.

Expressways are arterial highways for through traffic which may have partial control of access, but which may or may not be divided or have grade separations at intersections.

Interstates are part of the Interstate System which is a network of national Freeways.

California State Routes are part of the principal arterial system designated by Caltrans and can include Freeways or Expressways.

Major/Principal Arterials are designed to provide access to the freeway system through high mobility and limited access, and typically have four lanes.

Secondary Arterials are designed to interconnect Major/Principal Arterials with moderate mobility and limited access, and generally have two to three lanes with turn lanes to benefit through traffic.

Collectors connect local roads to arterials, with moderate mobility and access.

Local roads and streets permit access to abutting lands and generally have high access and limited mobility.

Major Class II roadways generally provide four to eight lanes of travel and have access to intersecting freeways. Major Class II Roadways have a 104 ft. right-of-way. (City of Los Angeles)

Divided Secondary roadways typically have four travel lanes and a 90 ft. right-of-way. Divided Secondary roadways are divided. (City of Los Angeles)

Secondary roadways typically have four travel lanes and a 90 ft. right-of-way. (City of Los Angeles)

Descriptions

The following roadways could be affected by the proposed project; descriptions of these roadways are taken from the General Plan Transportation Elements for the cities of Carson, Downey, Bellflower, El Segundo, Los Angeles, and Pico Rivera.

Pacific Coast Highway (SR-1) is a Major Class II roadway in the City of Los Angeles (Metro Subarea Map A6). SR-1 is also a north/south Major Arterial in the City of El Segundo, discussed in this section under Sepulveda Boulevard.

El Segundo Boulevard is an east/west Secondary Arterial in the City of El Segundo. Facilities associated with Projects W1 and W3 would be constructed within the El Segundo ROW.

Grand Avenue is an east/west Secondary Arterial in the City of El Segundo. Portions of the recycled water pipelines associated with Projects W1 and W3 would be constructed within the Grand Avenue ROW.

Sepulveda Boulevard (SR-1) is a north/south Major Arterial in the City of El Segundo. Portions of the recycled water pipelines associated with Projects W1 and W3 would cross under the Sepulveda Boulevard ROW south of the intersection with El Segundo Boulevard. Expansion of the ECLWRF also would occur within the existing plant boundaries east of Sepulveda Boulevard. Sepulveda Boulevard is also classified as a Major highway in the City of Carson. The number of lanes varies from two to six.

State Route 103 is a designated Freeway in the City of Los Angeles (Metro Subarea Map A6). SR-103 begins in the Port of Long Beach and travels north into the City of Los Angeles parallel to Henry Ford Avenue (Major Class II roadway). SR-103 is used as a truck route connector between the Port of Los Angeles and the Port of Long Beach.

State Route 47 is a designated Freeway in the City of Los Angeles (Metro Subarea Map A6) from the southern end of Interstate 110 over the Vincent Thomas Bridge, where SR-47 becomes Seaside Avenue (Major Class II roadway).

Interstate 405 is a north/south Freeway that serves as a major access route between Interstate 105, Interstate 110, and Interstate 710, and into and out of the project areas.

Normandie Avenue is classified as a Major Class II roadway in the City of Los Angeles; however, the precise portion of this roadway associated with the recycled water pipeline to be installed for Project W4 is not addressed in the City of Los Angeles General Plan Transportation Element South Bay Subarea Map A6.

California State Route 60 (SR-60) is an east-west Principal Arterial traversing the urbanized and rural areas of Los Angeles, San Bernardino and Riverside Counties. There may be facilities that cross SR-60 to connect the San Jose Creek WRP to the MFSG.

Rosemead Boulevard (SR-19) is a four-lane California State Route that provides the only north/south through-street in Pico Rivera. It provides access to South El Monte/ Rosemead to the north and to Downey to the south. Rosemead Boulevard has an interchange with the Interstate 5. The injection wells and recycled water pipeline associated with Project C4 and C9 would be located within the Rosemead Boulevard ROW.

Lakewood Boulevard is a four lane Major Arterial in the City of Downey (SR-19). Major arterials are designed to provide access to the freeway system. Facilities part of Projects C3, C4 and C6 would be located within the Lakewood Boulevard ROW.

Imperial Highway is a Major Arterial in the City of Downey. Major arterials are designed to provide access to the freeway system. Facilities part of C3, C4, and C6 would be located within the Imperial Highway ROW.

Bellflower Boulevard is a four lane Major Arterial in the City of Downey. Bellflower Boulevard is also classified as a Secondary Arterial in the city of Bellflower. Facilities that are part of Projects C3, C4, and C6 would be located within the Bellflower ROW.

Alondra Boulevard is an east/west four lane Major Arterial in the City of Bellflower. The proposed recycled water pipeline associated with Project C6 would be installed within the Alondra Boulevard ROW. **Interstate 605** is a north/south Major Arterial in the City of Bellflower. Projects C0-B, C1, C2, C3, C4, and C6 would be located in the vicinity of Interstate 605.

Interstate 5 is a north/south Freeway that provides access to project areas the eastern portion of the Central Basin. Interstate 5 intersects with Interstate 605 east of Downey. Projects C3, C4, C6, and C9 would be located in the vicinity of Interstate 5.

Interstate 105 is an east/west Freeway that serves as a major access route between Interstate 405 and Interstate 605. Interstate 105 passes through both the Central Basin and the West Coast Basin. Portions of Projects C3, C4, C6, and C9 would intersect Interstate 105 at Bellflower Boulevard.

California State Route 91 is an east/west Major Arterial in the City of Bellflower. Projects C3, C4, C6, and C9 would be located in the vicinity of SR-91.

Interstate 710 is a north/south Freeway that runs through cities of South Gate, Cudahy, and Bell. Project C5, in the Los Angeles River ROW, would be located in the vicinity of Interstate 710.

Exposition Boulevard is an east/west Divided Secondary roadway in the City of Los Angeles. The proposed Satellite AWTF would be located in the vicinity of Exposition Boulevard west of Interstate 110. The proposed recycled water pipeline associated with Project C5 would be located within the Exposition Boulevard ROW.

Interstate 110 is a north/south Interstate which runs through both the West Coast Basin and Central Basin. It is a designated freeway by the City of Los Angeles Transportation Element (Metro Subarea Map A5). The proposed components of Project C10 would be in the vicinity of Interstate 110 in several locations.

Slauson Avenue is an east/west Major Class II roadway in the City of Los Angeles. Anticipated injection wells and the new recycled water pipeline associated with Project C5 would be located within the Slauson Avenue ROW. Slauson Avenue is classified as an east/west arterial street in the City of Pico Rivera. The traffic carrying capability of this street is limited by the four lane bridges over Rio Hondo and over the San Gabriel River. Under Project C10, a new potable water pipeline is anticipated to be constructed within the Slauson Avenue ROW.

Florence Avenue is an east/west Major Class II roadway in the City of Los Angeles. Anticipated extraction wells and a new potable water pipeline associated with Project C10 would be located within the Florence Avenue ROW.

Jefferson Boulevard is an east/west Major Class II roadway in the City of Los Angeles. Parts of the recycled water pipeline associated with Project C10 would be located within the Jefferson Boulevard ROW.

Figueroa Street is a north/south Major Class II roadway in the City of Los Angeles. The proposed potable water pipeline associated with Project C10 is anticipated to be constructed within the South Figueroa Street ROW.

Compton Avenue is a Secondary roadway in the City of Los Angeles. The recycled water pipeline and injection well components of Project C10 would be constructed within the Compton Avenue ROW.

Existing Traffic Conditions

Traffic Volumes and Levels of Service (LOS)

LOS is a quality measure describing operational conditions within a traffic stream, generally in terms of service measures such as speed and travel time, freedom to maneuver, traffic interruptions, and comfort and convenience. LOS is used to define the quality of traffic flow over a specific street or road segments or through individual intersections. LOS represents the relationship between volumes of present traffic or anticipated traffic and the ability of roadway networks to carry them. The six standard LOS's for road segments are shown in **Table 4.12-2** in

addition to roadway capacities for each level of service. Roadway conditions are analyzed based on Annual Average Daily Trips (AADT), Level of Service (LOS), and Volume to Capacity (V/C) data. The AADT for roadways in the project area are provided in **Table 4.12-3**. The LOS's for arterial roads that could be potentially impacted by the proposed project are listed in **Table 4.12-4**. The LOS for Interstates and California State Routes potentially impacted by the proposed project are listed in **Table 4.12-5**.

TABLE 4.12-2
LEVEL OF SERVICE DEFINITIONS FOR ARTERIAL INTERSECTIONS

LOS Rating	Description	Volume to Capacity Ratio
A	At LOS A, there are no cycles that are fully loaded, and few are even close to loaded. No approach phase is fully utilized by traffic and no vehicle waits longer than one red indication. Typically, the approach appears quite open, turning movements are easily made, and nearly all drivers find freedom of operation.	0.00-0.60
B	LOS B represents stable operation. An occasional approach phase is fully utilized, and a substantial number are approaching full use. Many drivers begin to feel somewhat restricted within platoons of vehicles.	>0.60-0.70
C	In LOS C stable operation continues. Full signal cycle loading is still intermittent, but more frequent. Occasionally drivers may have to wait through more than one red signal indication, and back-ups may develop behind turning vehicles.	>0.70-0.80
D	LOS D encompasses a zone of increasing restriction, approaching instability. Delays to approaching vehicles may be substantial during short peaks within the peak period, but enough cycles with lower demand occur to permit periodic clearance of developing queues, thus preventing excessive back-ups.	>0.80-0.90
E	LOS E represents the most vehicles that any particular intersection approach can accommodate. At capacity (V/C = 1.00) there may be long queues of vehicles waiting upstream of the intersection and delays may be great (up to several signal cycles).	>0.90-1.00
F	LOS F represents jammed conditions. Back-ups from locations downstream or on the cross street may restrict or prevent movement of vehicles out of the approach under consideration; hence, volumes carried are not predictable. V/C values are highly variable because full utilization of the approach may be prevented by outside conditions.	≥ 1.000

SOURCE: Los Angeles County Metropolitan Transportation Authority, *Congestion Management Program for Los Angeles County,* 2010.

TABLE 4.12-3
AVERAGE ANNUAL DAILY TRAFFIC – AREA ROADWAYS

Roadway	Location	Average Daily Trips 2011 (AADT)
Sepulveda Boulevard (SR-1)	City of El Segundo, El Segundo Boulevard	62,000
Interstate 5	City of Downey, Lakewood Boulevard	235,000
Interstate 5	City of Downey, Paramount Boulevard	235,000
State Route 19	City of Downey, Rosecrans Avenue	28,000
State Route 91	City of Bellflower, SR-19	263,000
State Route 91	City of Bellflower, Clark	265,000
State Route 91	City of Bellflower, Bellflower Boulevard	265,000
Interstate 105	City of Downey, Bellflower Boulevard	207,000
Interstate 105	City of Downey, Lakewood Boulevard	207,000
Interstate 110	City of Los Angeles, SR-1	143,000
Interstate 110	City of Carson, Sepulveda Boulevard	176,000
Interstate 110	City of Carson, Carson Street	203,000
Interstate 110	City of Carson, Torrance/Del Amo	216,000
Interstate 110	City of Carson, Interstate 405	261,000
Interstate 110	City of Los Angeles, Florence Avenue	319,000
Interstate 110	City of Los Angeles, Gage Avenue	319,000
Interstate 110	City of Los Angeles, Slauson Avenue	317,000
Interstate 110	City of Los Angeles, 51st Street	313,000
Interstate 110	City of Los Angeles, Martin Luther King Jr. Boulevard	312,000
Interstate 110	City of Los Angeles, Exposition Boulevard	281,000
Interstate 405	City of Carson, Alameda Street	278,000
Interstate 405	City of Carson, Wilmington Avenue	267,000
Interstate 405	City of Carson, Carson Street	252,000
Interstate 605	City of Cerritos, State Route 91	294,000
Interstate 605	City of Norwalk, Interstate 105	296,000
Interstate 605	City of Pico Rivera, Slauson Avenue	245,000
Interstate 605	City of Pico Rivera, Beverly Boulevard	255,000
Interstate 605	City of Pico Rivera, Rose Hills Road	256,000
Interstate 605	City of Industry, Interstate 60	249,000

NOTE: Assuming worst case scenario, AADT values were taken of highest value of “Back” or “Ahead” categories.

SOURCE: Caltrans, 2011.

TABLE 4.12-4
LOCAL ROADWAY SERVICE LEVELS IN THE PROJECT AREA - ARTERIAL

Responsible Agency	Roadway Link	Cross Street	LOS A.M.	LOS P.M.
Bellflower	Lakewood Boulevard	Artesia Boulevard	A	C
Bellflower	Lakewood Boulevard	Rosecrans Avenue	B	C
Carson	Alameda Street	Del Amo	No longer CMP Arterial	
Downey	Lakewood Boulevard	Firestone Boulevard	C	C
Pico Rivera	Rosemead Boulevard	Telegraph Road	D	E
El Segundo	Sepulveda Boulevard	El Segundo Boulevard	C	D
Los Angeles City	Pacific Coast Highway (SR-1)	Alameda Street	A	A
Pico Rivera	Rosemead Boulevard	Washington Boulevard	D	E
Pico Rivera	Rosemead Boulevard	Whittier Boulevard	C	D

SOURCE: Los Angeles County Metropolitan Transportation Authority, *Congestion Management Program for Los Angeles County,* 2010.

TABLE 4.12-5
LOCAL ROADWAY SERVICE LEVELS IN THE PROJECT AREA - FREEWAY

		Northbound/Eastbound		Southbound/Westbound	
Freeway Link	Cross Street	LOS A.M.	LOS P.M.	LOS A.M.	LOS P.M.
Interstate 105	Sepulveda Boulevard (Jct Rte 1)	A	E	E	E
Interstate 105	Bellflower Boulevard	C	F	F	F
Interstate 110	Slauson Avenue	E	E	C	F
Interstate 405	Interstate 110	F	E	E	F
Interstate 605	Route 91, Alondra Boulevard	F	D	D	D
Interstate 605	San Gabriel River Bridge	A	B	C	B
Interstate 710	Pacific Coast Highway (SR-1)	E	D	D	D

SOURCE: Los Angeles County Metropolitan Transportation Authority, *Congestion Management Program for Los Angeles County,* 2010.

Public Transportation

Municipalities within the project areas are served by the Los Angeles County Metropolitan Transportation Authority (Metro) which operates various major roadways, bus systems, Metro Rail, Metro Rapid bus, and Metrolink regional commuter rail services throughout the WRD service area within Los Angeles County. In addition, most municipalities have independent municipal transit providers.

Bicycle and Pedestrian Transportation

Existing bicycle facilities are located in the vicinity of the project areas in southern Los Angeles County. The Federal and State transportation system recognizes the following primary bikeway classifications:

Bicycle Path (Class I). These routes are exclusive to bicycles, and are typically not located within roadways. Bicycle paths may be completely separated from roadways, and are often located near recreational areas like rivers or coastlines.

Bicycle Lane (Class II). These routes are part of the city streets and are designated by markings to be separate from vehicle lanes.

Bicycle Route (Class III). These routes are included within roadway ROWs without special markings on the pavement to designate the bicycle route. Motorists and bicycle riders share the road under this designation.

A review was conducted of applicable General Plans for noted bicycle designations near the project areas and in close proximity to proposed project facilities. The following existing bicycle designations are noted:

- Sepulveda Boulevard in Carson is designated as a Bike Lane (Class II) facility.
- Grand Avenue near the beach in El Segundo is classified as a Bike Path (Class I).
- San Gabriel River Parkway in the City of Pico Rivera is classified as a Bike Lane (Class II) connecting the Whittier Boulevard regional trail to the Pico Rivera Sports Arena.
- The Los Angeles River is classified as a Bike Path (Class I) in the City of South Gate.

Pedestrian facilities include sidewalks, crosswalks, and pedestrian signals. The project areas include existing pedestrian facilities along many roadways.

4.12.2 Regulatory Framework

State

California Department of Transportation (Caltrans)

Caltrans manages interregional transportation, including management and construction of the California highway system. In addition, Caltrans is responsible for permitting and regulation of the use of state roadways. Caltrans has jurisdiction over state highways and sets maximum load limits for trucks and safety requirements for oversized vehicles that operate on highways. Caltrans' construction practices require temporary traffic control planning when normal roadway functions are suspended.

The proposed project area includes numerous interconnected Interstates and California State Routes managed by Caltrans that provide critical access through the southern portion of Los Angeles County (Caltrans, 2005). The following roadways under Caltrans District 7 jurisdiction are in close proximity to proposed project facilities (and are described in detail above): Interstate 5, 105, 110, 405, 605, 710; California State Route 1, 19, 47, 91, 103

The following Caltrans regulations apply to potential transportation and traffic impacts associated with the proposed project.

California Vehicle Code (CVC), division 15, chapters 1 through 5 (Size, Weight, and Load). Includes regulations pertaining to licensing, size, weight, and load of vehicles operated on highways.

California Street and Highway Code Sections 660-711. Caltrans encroachment regulations would apply to construction of the proposed pipelines and injection/extraction wells within and immediately adjacent to roadways, as well as the transportation of construction crews and construction equipment throughout the project area. Caltrans requires that permits be obtained for transportation of oversized loads, certain materials, and construction-related traffic disturbance.

Congestion Management Program (CMP)

The Congestion Management Program (CMP) was enacted by the state legislature in 1989 to improve traffic congestion in California. The CMP is funded by Proposition III, passed in 1990, which increased the state gas tax by nine cents over a five year period. The CMP provides cities and counties with funds for regional road improvements only if the city is in compliance with the CMP. In Los Angeles County, the Congestion Management Agency is the Los Angeles County Metropolitan Transportation Authority (Metro). Southern California Association of Governments (SCAG) adopted a countywide Congestion Management Plan which determined the necessary steps each City within the County must take to properly administer the elements of the CMP. This includes: assisting in monitoring the CMP system; adopting and implementing a trip reduction and travel demand ordinance; analyzing the impacts of local land use decisions on the regional transportation system; and preparing annual deficiency plans for portions of the CMP where levels of service are not maintained (SCAG, 2010). Metro monitors each City's performance annually to ensure they are in compliance with the CMP (Metro, 2013).

Southern California Association of Governments

On April 4, 2012, the Southern California Association of Governments (SCAG) adopted its 2012-2035 Regional Transportation Plan/ Sustainable Communities Strategy (RTP/SCS). The RTP/SCS presents the transportation vision for the SCAG region through the year 2035 and provides a long-term investment framework for addressing the region's transportation and related challenges. The RTP/SCS focuses on maintaining and improving the transportation system through a balanced approach and considers system preservation, operation, and management, improved coordination between land-use decisions and transportation investments, and strategic expansion of the system to accommodate future growth. The 2012-2035 RTP/SCS includes a

commitment to reduce emissions from transportation sources, and considers for the first time an economic assessment of transportation systems.

Local

General Plans

The General Plans and particularly Traffic or Circulation Elements for all jurisdictions in the projects area were reviewed for relevant policies applicable to the proposed project. The following select policies are highlighted.

Bellflower (1995)

Policy 1.1: Improve or maintain the current Level of Service for all arterial signalized intersections and at arterial connectors with freeway interchanges.

Policy 2.1: Modify designated truck routes for the use of commercial and industrial traffic to direct regional truck traffic to regional routes and allow origin/destination trips throughout the City.

Policy 4.5: Minimize pedestrian-bicycle conflict by properly striping roadways when re-striping is required.

Carson (2004)

Policy TI-2.1: Require that new projects not cause the Level of Service for intersections to drop more than one level if it is at Level A, B or C, and not drop at all if it is at D or below, except when necessary to achieve substantial City development goals.

Goal TI-6: Cooperate to the fullest extent possible with Federal, State, County and regional planning agencies responsible for maintaining and implementing circulation standards to ensure orderly and consistent development of the entire South Bay region.

Policy TI-6.3: Ensure that the City remains in compliance with the County, Regional, and State Congestion Management Programs (CMP) through the development of appropriate City programs and traffic impact analyses of new projects impacting the CMP routes.

Cudahy (1992)

Policy 2.2: Discourage large trucks and truck through-traffic on local residential streets.

Policy 2.5: Provide convenient, safe, and efficient pedestrian and vehicular access throughout the City.

Downey (2005)

Program 2.1.1.1: Maintain intersections and street segments at acceptable service levels and not worsen those intersections and street segments currently operating at unacceptable levels.

Policy 2.3.1: Promote the safe and efficient movement of truck traffic through the City.

Program 2.3.1.1: Enforce truck traffic to use designated truck routes in the City.

Program 2.4.1.1: Comply with provisions of the Congestion Management Plan, adopted by Los Angeles County.

Program 2.7.1.1: Promote upgrades and maintenance of utility and communication systems.

El Segundo (1992)

Policy C1-1.7: Provide adequate intersection capacity to the extent feasible on Major, Secondary, and Collector Arterials to maintain LOS D and to prevent diversion of through traffic into local residential streets.

Policy C3-1.1: Require all new development to mitigate project-related impacts on the existing and future circulation system such that all Master Plan roadways and intersections are upgraded and maintained at acceptable levels of service through implementation of all applicable Circulation Element policies. Mitigation measures shall be provided or paid for by the project developer.

Policy C3-1.2: The minimum acceptable level of service (LOS) at an intersection is LOS D. Intersections operating at LOS E or F shall be considered deficient. If traffic caused by a development project is forecast to result in an intersection level of service change from LOS D or better to LOS E or F, then the development impact shall be considered significant. If a development project is forecast to result in the increase of intersection volume/capacity ratio (V/C) of 0.02 or greater at any intersection that is forecast to operate at LOS E or F, the impact shall be considered significant.

Policy C4-1.2: Ensure that the City remains in compliance with the County, Regional, and State Congestion Management Programs (CMP) through the development of appropriate City programs and traffic impact analyses of new projects impacting the CMP routes of Sepulveda Boulevard, the I-105 Freeway, and the I-405 Freeway.

Huntington Park (1991)

Policy 1.7: Regulate the intensity and stages of development so that traffic on any arterial remains in balance with roadway capacity.

Policy 5.2: Maintain existing pedestrian facilities and encourage new development to provide pedestrian walkways to adjacent developments.

Los Angeles, City of (1973-2012)

Policy 5.8: Encourage the development and siting of pipelines only within suitable utility corridors or public rights-of-way in such a manner as to least disrupt sensitive environments, to protect public health, ground water quality, and to improve the safety and reliability of the system.

Pico Rivera (1993)

Policy A.1.5: Design and employ traffic control measures to ensure City streets and roads function at optimal levels.

Policy A.4.3: Encourage the continued development of underground pipe and utility corridors throughout the study areas.

South Gate (2009)

Goal ME 3.1: Minimize the adverse affects of traffic.

Objective ME 3.1: Minimize and/or reduce adverse impacts on city streets from regional through traffic.

Objective ME 3.2: Reduce adverse impacts from truck traffic.

Vernon (2007)

Policy CI-1.13: Cooperate with the Metropolitan Transportation Authority and other local agencies in their efforts to complete a bicycle path along the levee of the Los Angeles River connecting to adjacent jurisdictions.

4.12.3 Impacts and Mitigation Measures

Significance Criteria

For the purposes of this PEIR and consistent with Appendix G of the *CEQA Guidelines*, the proposed project would have a significant impact on transportation and traffic if it would:

- 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;
- Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards and travel demand measures, or other standards established by the county congestion management agency for designated road or highways;
- Result in change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risk;
- Substantially increase hazards due to a design feature;
- Result in inadequate emergency access; or
- Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities.

Impacts Discussion

As described in Chapter 3, the combinations of GBMP management strategies and associated projects to be implemented have not yet been determined. In addition, the precise design, location and configuration of project components have not been finalized and are subject to change. Proposed facilities for each management strategy include aboveground structures, such as treatment plant facilities, pump stations, injection wells and extraction wells, and underground pipelines. For pipelines, pump stations, and wells, impacts to transportation and traffic systems would mostly occur during the construction phase of project implementation. Operation of new,

upgraded, or expanded treatment facilities, particularly the new Satellite AWTF that is part of Project C10 under Concept B, could impact traffic and circulation patterns when complete, depending on level of treatment, systems, number of new employees, and other operational criteria that affect vehicle trips to/from the facilities.

Air Traffic Patterns

Construction and operation of the proposed project would not affect air traffic patterns, levels, or locations. For additional discussion of compatibility with airport land use plans, please refer to Chapter 4.9, Land Use.

Circulation System Performance

Impact 4.12-1: Implementation of the proposed project could increase traffic volume on local roadways and affect circulation. (Less than Significant with Mitigation)

State and local policies and ordinances govern the use of and performance of roadways and traffic circulation in the project areas, including the state CVC, Street and Highway Code, and the city or county level ordinances regarding truck routes and safe, efficient movement of vehicles on local streets.

Concept A

Under Concept A, the majority of potential traffic and transportation effects would be confined to construction of proposed facilities due to increased construction-related traffic and installation of project facilities within roadway ROW. Traffic-generating activities related to the construction of pipelines, pump stations, and injection/extraction wells would consist of the daily arrival and departure of construction workers, trucks hauling equipment and materials to the construction sites, the hauling of excavated soils, and importing of new fill. Construction may require the movement of oversize loads, such as trucks carrying pipes. Construction-generated traffic due to an increase in the number of vehicles on local and regional roadways would be temporary and therefore would not result in any long-term degradation in operating conditions. Impacts from the movement of construction trucks would include short-term and intermittent lessening of roadway capacities due to slower movements and larger turning radii of the trucks compared to passenger vehicles.

The proposed pipeline alignments would fall primarily within roadway ROW in the project areas. Pump stations and injection/extraction wells are anticipated to be constructed along pipeline routes. Construction of these facilities could result in lane or roadway closures. Installation of pipelines would involve a continuous schedule such that construction activities would move along pipeline alignments at a particular rate and not remain in the same location over the lifetime of the project. Construction within ROW could also impact public transit routes or bicycle lanes. Implementation of **Mitigation Measures TR-1** through **TR-6** would result in preparation of a Traffic Control/Traffic Management Plan and other measures to ensure appropriate actions are

taken to reduce congestion, local roadway impacts, and disruption of alternative transportation routes during construction, reducing impacts to a less than significant level.

Treatment plant upgrades would occur entirely within the boundaries of existing facilities or on adjacent lands and thus would not directly impact roadways or require lane closures. Impacts related to construction worker commutes and hauling of materials/soils on local roadways would be similar to those described above, temporarily adding additional vehicles to local and regional roadways. Construction-generated traffic due to an increase in the number of vehicles would be temporary and therefore would not result in any long-term degradation in operating conditions. . Impacts would be less than significant; no mitigation is required.

Operation of proposed pipelines, pump stations and injection/extraction wells would not impact traffic and transportation patterns as facilities, once constructed, would be located underground or outside of active lanes of traffic on roadways. These facilities would not generate a noticeable number of vehicular trips that would affect traffic volume or circulation on local or regional roadways. As unmanned facilities, only periodic vehicle trips related to maintenance would be required. Impacts would be less than significant.

Operation of upgraded or expanded treatment facilities may require additional chemical deliveries and haul trips for disposal of solids generated by additional wastewater treatment systems. The number of trips would vary by facility but would be in the range of 10 to 15 trips per week during operation (or 2 to 3 per day over a 5-day week). Additional employees may also be required to operate expanded treatment facilities, however workers already commute to and from each existing treatment plant, and additional employees may not be required at facilities with small expansions. A few additional workers may be required to operate expanded treatment plants. Overall, the amount of additional trips associated with expansion and upgrade of treatment plants would not increase traffic demand by 2% of capacity in Los Angeles County, which is a Los Angeles County CMP threshold for a significant environmental impact. Proposed project impacts would be considered less than significant.

Concept B

Similar to Concept A, under Concept B the potential impacts to traffic due to implementation of pipelines, pump stations, and wells would primarily occur during construction. **Mitigation Measures TR-1** through **TR-6** would similarly apply to reduce impacts to less than significant levels. Impacts to traffic associated with construction and operation of treatment facilities also would be similar, with the exception of the proposed Satellite AWTF component of Project C10. This new facility would be built within the south Los Angeles community (District 8). Construction-related impacts may temporarily disrupt existing transportation and circulation patterns due to materials hauling and construction worker commutes. Construction work within and/or across high traffic volume regional arterials would affect traffic flow in the vicinity of this project. Implementation of **Mitigation Measure TR-1** would require preparation of a Traffic Control/Traffic Management Plan to ensure appropriate actions are taken to reduce congestion during construction. Impacts would be reduced to a less than significant level.

The Satellite AWTF would be the largest proposed GBMP facility, and as such, its operation would generate more vehicle trips than any of the other treatment plant modifications described above. Operation of the Satellite AWTF could require up to 10 dedicated staff that would commute daily to and from the treatment plant. Delivery of materials and chemicals and hauling away of solids could generate 10 vehicle trips per day to/from the AWTF. A total of 20 daily trips to/from the treatment plant could occur each day. Interstate 110 at Exposition Boulevard in the City of Los Angeles has approximately 281,000 ADT (see Table 4.13-3). The addition of up to 20 daily round trips (or 40 individual trips) to and from the proposed AWTF would not have a substantial impact on local roadways. The amount of additional trips would not increase traffic demand by 2% of capacity in Los Angeles County, which is a Los Angeles County CMP threshold for a significant environmental impact. Proposed project impacts would be considered less than significant.

Mitigation Measures

TR-1: The implementing agency's construction contractor shall prepare and implement a Traffic Control/Traffic Management Plan subject to approval by appropriate local jurisdictions prior to construction. The plan shall include protocols for traffic control, work hours, notifications, emergency responder communication, local access and other provisions as applicable.

TR-2: The implementing agencies shall identify all roadway locations where special construction techniques (e.g., horizontal boring, directional drilling or night construction) could be used to minimize impacts to traffic flow, and implement such techniques when feasible.

TR-3: The implementing agencies shall develop circulation and detour plans to minimize impact to local street circulation, including bikeways. This may include the use of signing and flagging to guide vehicles and cyclists through and/or around the construction zone.

TR-4: The implementing agencies shall encourage construction crews to park at staging areas to limit lane closures in the public right-of-way.

TR-5: Peak travel periods shall be avoided where possible when implementing partial road closures.

TR-6: The implementing agencies shall consult with nearby school districts at least one month prior to construction to coordinate bus stop relocations (if necessary), alternative busing routes, alternative Safe Routes to School programs, and other circulation provisions to reduce potential interruption of student transit services.

Significance Determination: Less than significant with mitigation.

Congestion Management Program

Impact 4.12-2: Implementation of the proposed project could conflict with the Los Angeles County Congestion Management Program. (Less than Significant)

LOS standards for roadways that are part of the Los Angeles County CMP network are intended to regulate long-term traffic increases resulting from the operation of new development, and do not apply to temporary construction projects. Therefore, construction of proposed project facilities that are part of Concepts A or B in both the West Coast Basin and Central Basin would not conflict with the County CMP and would have no impact on LOS standards in the project area. The following discussion focuses on operation of proposed GBMP projects, particularly on operation of treatment facilities. Other facilities would have little to no impact on traffic as the only associated operational vehicle trips would be periodic maintenance trips.

Concept A

The CMP's LOS standard requires that all CMP intersections operate at LOS E or better. Local arterial intersections identified in the CMP in the project areas have LOS A, B, C, D, or E ratings (see Table 4.13-4). Only two intersections are identified in Pico Rivera as operating at LOS E (see Table 4.13-4), which are in the vicinity of Projects C3, C4, and C6. Operational truck trips associated with these facilities could affect LOS levels if project operations increase traffic enough to increase intersection ratings to LOS F. Proposed facilities that are part of Projects C3, C4, and C6 include recycled and potable water pipelines, and injection and extraction wells. Operation of these facilities would require only sporadic maintenance vehicle trips, which would not affect the LOS ratings of the two intersections identified above in Pico Rivera. Operational vehicle trips on local roadways would be consistent with the CMP LOS standards, and impacts would be less than significant under Concept A. No mitigation is required.

Local freeways in the project areas have LOS ratings that range from A to F. Operational truck trips associated with facilities within the West Coast Basin and Central Basin that are part of Concept A could conflict with the CMP if project operations increase traffic demand resulting in an LOS F. All of the freeways in the project areas operate at some point during the day at LOS E or F. Specifically, Interstate 105 at Sepulveda Boulevard, Interstate 105 at Bellflower Boulevard, and Interstate 605 at Route 91 – Alondra Boulevard operate at LOS F or better. The other intersections identified in Table 4.13-5 would not be located near proposed project facilities part of Concept A. None of the intersections mentioned above are in the vicinity of treatment plant expansions with the exception of Interstate 605 at Route 91 – Alondra Boulevard which is adjacent to the LCWRP (Project C3 and C4), and Interstate 105 at Sepulveda Boulevard which is approximately 1.5 miles north of the ECLWRF (Project W1). It is estimated that up to six additional round trips per day may result due to operation of the upgraded treatment plants. This would result in 12 new vehicle trips per day, which would not significantly affect traffic volume, would not affect LOS ratings, and would not cause the above-mentioned freeways would operate at LOS F more often. The proposed treatment facilities would be consistent with the CMP LOS standards. Impacts associated with operation of Concept A would be less than significant. No mitigation is required.

Concept B

Under Concept B, there are no proposed projects located near intersections with LOS levels worse than LOS D on arterial roadways (see Tables 4.13-3). However, there are proximate local freeways with LOS E or F ratings, specifically Interstate 105 at Sepulveda Boulevard, Interstate 405 at Interstate 110, and Interstate 110 at Slauson Avenue. Other intersections identified in Table 4.13-5 would not be located near proposed project facilities part of Concept B. As mentioned above, vehicle trips associated with operation of the upgraded or new treatment facilities are estimated to be up to 12 individual trips per day for ECLWRF and up to 40 individual trips per day for the Satellite AWTF. This number of individual vehicle trips relative to the number of ADTs in the vicinity of the facilities is not expected to affect LOS ratings or cause intersections to operate at LOS E or F more frequently. However, specific traffic impacts will be evaluated further in subsequent CEQA documentation once specific design and operational criteria for treatment facilities are developed. Operation of proposed treatment facilities would be consistent with the CMP. Impacts associated with operation of Concept B would be less than significant. No mitigation is required.

Mitigation Measures

None required.

Significance Determination: Less than significant.

Alternative Transportation

Impact 4.12-3: Construction activities could disrupt access to public transit, bicycle, or pedestrian facilities. (Less than Significant with Mitigation)

Operation of the proposed projects associated with Concepts A and B would have no long-term impact on demand for alternative transportation or on alternative transportation facilities (i.e., for transit and bicyclists). However, construction of the proposed facilities could disrupt Metro bus routes due to construction activities within roadway rights-of-way that may result in partial lane closures or roadway closures and delays. Furthermore, construction of the proposed facilities could result in bike pathway and sidewalk closures in the project areas.

Implementation of **Mitigation Measure TR -7** would require consultation with local jurisdictions to develop plans to minimize any potential impacts to bicycle or pedestrian facilities. Implementation of **Mitigation Measure TR -8** would require consultation with Metro and other local transit agencies to minimize impacts to alternative public transportation facilities and service. With implementation of these measures, impacts associated with Concepts A and B would be less than significant.

Mitigation Measures

TR-7: Implementing agencies shall require the construction contractor to consult with local jurisdictions if bicycle or pedestrian facilities would be directly affected by construction activities. If required, the construction contractor shall develop circulation and detour plans to minimize impacts to bikeways and pedestrian facilities. This may include the use of signing and flagging to guide vehicles, cyclists, and pedestrians through and/or around the construction zone. After construction is complete, implementing agencies shall ensure that bicycle or pedestrian facilities are restored to pre-construction conditions.

TR-8: Implementing agencies shall require the construction contractor to consult and coordinate with Metro and/or other local transit agencies at least one month prior to construction of pipelines within roadways that coincide with bus routes, to determine whether construction of the proposed project would affect bus stop locations or otherwise disrupt public transit routes. A plan shall be developed to relocate bus stops or reroute buses to avoid disruption of transit service.

Significance Determination: Less than significant with mitigation.

Emergency Access

Impact 4.12-4: Construction activities in roadways could obstruct emergency access. (Less than Significant with Mitigation)

Fire protection, emergency medical services, and police services within southern Los Angeles County are provided by the Los Angeles County Fire Department, Los Angeles County Sheriff's Department, the California Highway Patrol, and local city service departments. Depending upon the timing, location, and duration of construction activities, construction of the proposed facilities associated with both Concepts A and B could delay emergency vehicle response times or otherwise disrupt delivery of emergency services. Implementation of **Mitigation Measure TR-1** would require coordination with emergency service providers at least one month prior to construction. Adherence to this mitigation measure would reduce any potential impacts regarding emergency services associated with both Concepts A and B to less than significant levels.

Mitigation Measures

Implement **Mitigation Measure TR-1**.

Significance Determination: Less than significant with mitigation.

Incompatible Roadway Use

Impact 4.12-5: Construction activities in roadways could introduce hazards to passing motorists. (Less than Significant)

Construction of GBMP projects associated with Concepts A and B may involve the hauling of heavy construction equipment and the presence of construction equipment and workers in roadways during pipeline and injection/extraction well construction, which would require surrounding traffic patterns to slow down. The use of oversize vehicles during construction can create a hazard to the public by limiting motorist views on roadways. Oversize loads associated with construction of the proposed project would be in compliance with applicable CVC Sections and California Street and Highway Codes applicable to licensing, size, weight, load, and roadway encroachment of construction vehicles. Furthermore, to reduce hazardous impacts on traffic, the construction contractor would be required to obtain permits from Caltrans and the respective jurisdiction that require specific limitations on all oversize vehicles regarding size and weight. Compliance with these regulatory requirements to reduce hazards caused by potential incompatible roadway uses during construction of Concepts A and B would minimize the potential for hazards to other vehicles to less than significant levels.

Mitigation Measures

None required.

Significance Determination: Less than significant.

TABLE 4.12-6
TRAFFIC AND TRANSPORTATION IMPACT SUMMARY

	Concept A		Concept B	
Impact	**Impact Determination**	**Mitigation Summary**	**Impact Determination**	**Mitigation Summary**
Circulation System Performance: Implementation of the proposed project could increase traffic volume on local roadways and affect circulation	Less than Significant with Mitigation	TR-1 through TR-6	Less than Significant with Mitigation	TR-1 through TR-6
Congestion Management Program: Implementation of the proposed project could conflict with the Los Angeles County Congestion Management Program	Less than Significant	None required	Less than Significant	None required
Alternative Transportation: Construction activities could disrupt access to public transit, bicycle, or pedestrian facilities.	Less than Significant with Mitigation	TR-7 and TR-8	Less than Significant with Mitigation	TR-7 and TR-8
Emergency Access: Construction activities in roadways could obstruct emergency access.	Less than Significant with Mitigation	TR-1	Less than Significant with Mitigation	TR-1
Incompatible Roadway Use: Construction activities in roadways could introduce hazards to passing motorists.	Less than Significant	None required	Less than Significant	None required

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4.13 Utilities and Energy

This section discusses existing utilities and energy in the project area and provides an analysis of potential impacts to utilities and energy that would result from implementation of the GBMP.

4.13.1 Environmental Setting

Water Agencies and Purveyors

Metropolitan Water District of Southern California

Metropolitan Water District of Southern California (Metropolitan or MWD) is a public agency that was organized in 1928 for the purpose of developing, storing, and distributing water to the residents of Southern California. Metropolitan currently receives imported water from the State Water Project and the Colorado River via the Colorado River Aqueduct. Metropolitan is the primary supplier of imported water to approximately 19 million people in a six-county Southern California area that includes portions of Los Angeles, Orange, Riverside, San Bernardino, San Diego, and Ventura Counties. Metropolitan's 5,200-square-mile service area covers the Southern California coastal plain; it extends about 200 miles along the Pacific Ocean from the city of Oxnard on the north end to the international boundary with Mexico to the south, and it reaches as far as 70 miles inland from the coast. Metropolitan is composed of 26 member agencies, including 14 cities, 11 municipal water districts, and one county water authority. Metropolitan's member agencies serve residents in 152 cities and 89 unincorporated communities (Metropolitan, 2013). Metropolitan member agencies within the project area include four cities and two municipal water districts described below.

Central Basin Municipal Water District

Central Basin Municipal Water District (CBMWD) is a public utility that purchases imported water from Metropolitan and wholesales the water to retailers within approximately 227 square miles in southeastern Los Angeles County. Cities served by CBMWD include: Artesia, Bell, Bellflower, Bell Gardens, Cerritos, Commerce, Cudahy, Downey, Hawaiian Gardens, Huntington Park, La Habra Heights, Lakewood, La Mirada, Lynwood, Maywood, Montebello, Norwalk, Paramount, Pico Rivera, Santa Fe Springs, Signal Hill, South Gate, Vernon, Whittier and portions of Carson and Monterey Park (Metropolitan, 2013). Existing customers within CBMWD's service area are comprised of both private and public entities, representing investor-owned utilities, Los Angeles County, municipalities, mutual water companies, oil companies, private entities, school districts, special districts, and the State of California. Within CBMWD there are 128 pumpers with active water rights. In addition to facilitating wholesale water distribution CBMWD provides water for replenishment within the Central Basin hydrologic system, and provides recycled water for municipal, commercial and industrial use within the region. CBMWD's service area uses approximately 315,000 acre-feet of water annually (Central Basin, 2013).

West Basin Municipal Water District

West Basin Municipal Water District (WBMWD) is a public utility that purchases imported water from Metropolitan and wholesales the water to retailers within approximately 185 square miles in southwest Los Angeles County. Cities served include Carson, Culver City, El Segundo, Gardena, Hawthorne, Hermosa Beach, Inglewood, Lawndale, Lomita, Malibu, Manhattan Beach, Palos Verdes Estates, Rancho Palos Verdes, Redondo Beach, Rolling Hills, Rolling Hills Estates, West Hollywood and portions of Torrance (Metropolitan, 2013). Existing pumpers in the WBMWD are comprised of both private and public entities, representing investor-owned utilities and municipalities. There are 56 pumpers with water rights in WBMWD. WBMWD's service area uses approximately 220,000 acre-feet of water annually (West Coast Basin, 2013).

City of Compton

The City of Compton is a municipality that purchases water from Metropolitan and sells the water to customers through the Compton Municipal Water Department and wholesales to other purveyors in the city. There are approximately 14,500 service connections in the system that serves approximately 10.5 square miles (Metropolitan, 2013). The City of Compton purchases approximately 53 percent of its water from Metropolitan while obtaining approximately 47 percent from local sources. Water is primarily distributed to municipal and industrial uses (Metropolitan, 2013).

City of Long Beach

The City of Long Beach is a municipality that purchases water from Metropolitan and sells the water to customers through the Long Beach Water Department. The City of Long Beach purchases approximately 40 percent of its water from Metropolitan, while obtaining approximately 50 percent from local sources and 10 percent from reclaimed water. Water is distributed through 90,000 service connections to a majority of residential and commercial uses (Metropolitan, 2013).

City of Los Angeles

The City of Los Angeles is the largest retail entity in Metropolitan's service area. The municipality is responsible for supplying the City with water and electricity through the Los Angeles Department of Water and Power (LADWP). The City of Los Angeles purchases approximately 52 percent of its water from Metropolitan, 35 percent via the Los Angeles Aqueduct, 12 percent from local groundwater, and 1 percent from recycled water. Water is distributed primarily to municipal and industrial uses (Metropolitan, 2013).

City of Torrance

The City of Torrance is a municipality that purchases water from Metropolitan and wholesales to customers through the Torrance Municipal Water Department (City of Torrance, 2013). The City of Torrance purchases the majority of water from Metropolitan (92 percent) and receives 8 percent from local sources. The City of Torrance services primarily municipal and industrial uses while also providing a minimal amount of water for agricultural uses (Metropolitan, 2013)

Water Replenishment District of Southern California

The Water Replenishment District of Southern California (WRD) manages the groundwater resources of the West Coast Basin (WCB) and Central Basin (CB), which underlie 43 cities in southern Los Angeles County within a 420 square mile service area (Figure 2-1). This area is home to approximately four million people, over 10 percent of California's population. WRD supplies about 250,000 acre-feet per year (AFY) of groundwater to its customers, roughly 40 percent of total water demand in its service area. WRD protects WCB and CB through groundwater replenishment, deterrence of seawater intrusion, and groundwater quality monitoring of contamination through an assessment on water pumped from the WRD service area. WRD ensures that a reliable supply of high-quality groundwater is available through its clean water projects, water supply programs, and effective management principles (GBMP, 2012).

Wastewater

Sanitation Districts of Los Angeles County

The Sanitation Districts of Los Angeles County (LACSD) provides wastewater and solid waste management services within Los Angeles County. The agency consists of 23 independent special districts that serve about 5.4 million people over a service area of approximately 815 square miles (LACSD 2013). The wastewater system provides enough facilities to transport and treat about half the wastewater in Los Angeles County (LACSD 2013).

Joint Outfall System

LACSD operates an interconnected system called the Joint Outfall System (JOS), which treats wastewater via six water reclamation plants (WRP) and one ocean discharge facility in the southwestern portion of Los Angeles County. The JOS collects and treats sewage in Los Angeles County that is not otherwise managed by the City of Los Angeles (GBMP 2012). Of the JOS facilities operated by LACSD within southwestern Los Angeles County, three are located within the proposed project area: Los Coyotes WRP, San Jose Creek WRP and the Long Beach WRP. These facilities capture higher quality water upstream and convert it to recycled water (LACSD 2013).

Joint Water Pollution Control Plant

The Joint Water Pollution Control Plant (JWPCP) is the ocean discharge facility that treats wastewater at a higher industrial contribution and discharges the treated water into the ocean. The JWPCP has a permitted capacity of 400 mgd and currently treats an estimated 300 mgd of influent sewage. Secondary-treated effluent is discharged from the plant through two tunnels for approximately 6 miles to the outfall structure off the Palos Verdes Peninsula, which then extends approximately 2 miles offshore.

San Jose Creek Water Reclamation Plant

San Jose Creek Water Reclamation Plant (SJCWRP) is located just north of WRD's service area in unincorporated Los Angeles County next to the City of Whittier. The facility is operated by LACSD. Although not within WRD's service area, the facility is critical because of its connection to many proposed project components. The SJCWRP provides primary, secondary, and tertiary

treatment for up to 100 mgd. The plant serves a large residential population of approximately one million people. Approximately 35 mgd of the tertiary-treated water was reused at 17 different reuse sites in 2010, including groundwater recharge and irrigation of parks, schools, and greenbelts (LACSD, 2013). The remainder is discharged to the San Gabriel River.

Los Coyotes Water Reclamation Plant

The Los Coyotes Water Reclamation Plant (LCWRP) is located in the City of Cerritos and is operated by LACSD. LCWRP provides primary, secondary and tertiary treatment for up to 37 mgd of wastewater and serves approximately 370,000 people. Over 5 million gallons per day of the purified water is reused at over 200 reuse sites, while the remaining effluent is discharged to the San Gabriel River. Reuse includes landscape irrigation of schools, golf courses, parks, nurseries, and greenbelts; and industrial use at local companies for carpet dying and concrete mixing (LACSD 2013).

Long Beach Water Reclamation Plant

Long Beach Water Reclamation Plant (LBWRP) is owned and operated by LACSD in the City of Long Beach. The facility is located just inside WRD's southeastern service area border. LBWRP provides primary, secondary, and tertiary treatment for up to 25 mgd which services approximately 250,000 people. Approximately 5 mgd of purified water is reused at over 40 reuse sites in the region (LACSD 2012). Reuse includes landscape irrigation of schools, golf courses, parks, and greenbelts by the City of Long Beach, the re-pressurization of oil-bearing strata off the coast of Long Beach, and the replenishment of the Central Basin groundwater supply from water processed at the Leo J. Vander Lans Advanced Water Treatment Facility operated by the City of Long Beach. The City of Long Beach owns the rights to recycled water produced at LBWRP in exchange for the land on which the facility is located (GBMP 2012).

City of Los Angeles Department of Public Works, Bureau of Sanitation

The City of Los Angeles Department of Public Works Bureau of Sanitation (Sanitation) operates and maintains one of the largest wastewater collection systems in the United States (LADPW 2013). The agency has a 600 mile service area that includes the City of Los Angeles as well as 29 other contracting agencies and cities. Sanitation operates more than 6,700 miles of public sewer lines that convey waste to four treatment and water reclamation plants within Los Angeles County. The treatment plants reclaim approximately 80 million gallons of reclaimed water per day, as well as producing biosolids as a byproduct.

Hyperion Treatment Plant

Hyperion Treatment Plant (HTP) is the largest wastewater treatment plant owned and operated by the City of Los Angeles Bureau of Sanitation and has a permitted average dry weather capacity of 450 mgd. All wastewater is treated to a secondary level, and the majority is discharged through a 5-mile ocean outfall. HTP serves the entire City of Los Angeles and certain contract cities. The facility handles full secondary treatment, biosolids handling, and biogas generation. HTP produces recycled water through full-advanced treatment in four distinct implementation phases (GBMP 2012).

Terminal Island Water Reclamation Plant

Terminal Island Water Reclamation Plant (TIWRP) is owned and operated by the City of Los Angeles Bureau of Sanitation on a 22-acre site on Terminal Island in the port area of San Pedro near the entrance to the Los Angeles Harbor. TIWRP has a permitted treatment capacity of 30 mgd and is currently operating at an average influent flow rate of 15.4 mgd. TIWRP serves Terminal Island, Wilmington, San Pedro, and portion of Harbor City. The treatment plant discharges undisinfected tertiary effluent on a continuous basis through its permitted harbor outfall into the Los Angeles Harbor, which is hydraulically connected by the harbor entrance to the Pacific Ocean. TIWRP also has a 5-mgd capacity advanced water treatment facility (AWTF), which consists of microfiltration (MF), reverse osmosis (RO), and disinfection with sodium hypochlorite (GBMP 2012). Advanced treated disinfected recycled water from TIWRP is sent to the Dominguez Gap Barrier Project (DGBP) as well as to non-potable customers (GBMP 2012).

West Basin Municipal Water District (WBMWD)

In addition to providing potable water to its customers, WBMWD provides recycled water to the region and is recognized for water conservation programs such as desalinization (West Basin, 2013).

Edward C. Little Water Reclamation Facility

The Edward C. Little Water Reclamation Facility (ECLWRF) is owned and operated by WBMWD. The ECLWRF currently serves an estimated 32,000 AFY of recycled water to over 220 customer sites within WBMWD's service area. The ECLWRF treats secondary effluent from HTP to produce four different qualities of recycled water onsite and feeds other downstream treatment plants. The product water is conveyed through a network of nearly 100 miles of distribution pipelines.

Juanita Millender-McDonald Carson Regional Water Reclamation Facility

The Juanita Millender-McDonald Carson Regional Water Reclamation Facility (CRWRF) is owned and operated by WBMWD. The CRWRF treats tertiary-treated water conveyed from ECLWRF with nitrification and advanced treatment for industrial use.

Storm Water

Los Angeles County Department of Public Works, Flood Control District

The Los Angeles Department of Public Works Flood Control District (LACFCD) encompasses more than 3,000 square miles and 85 municipalities (LACFCD 2013). LACFCD operates the vast majority of drainage infrastructure in the proposed project area, which includes the Dominguez Channel Watershed, the Los Angeles River Watershed, and the San Gabriel River Watershed.

Solid Waste Management

Sanitation Districts of Los Angeles County

LACSD provides wastewater and solid waste management services within Los Angeles County. The agency consists of 23 independent special districts that serve about 5.4 million people over a service area of approximately 815 square miles (LACSD 2013). LACSD's solid waste

management services include sanitary landfills, recycle centers, materials recovery/transfer facilities, and energy recovery facilities (LACSD 2013).

Southeast Resource Recovery Facility (SERRF) Refuse-To-Energy Facility

The SERRF is a Refuse-To-Energy facility in Long Beach owned by a joint powers authority (JPA) between LACSD and the City of Long Beach and operated by a private company (LACSD 2013). The Refuse-to-Energy facility uses solid waste as a fuel to produce power. The SERRF disposes of approximately 490,000 tons of waste from the cities of Long Beach (45%), Lakewood (9%), Los Angeles (6%), Torrance (4%), and "Others" (38%) (County of Los Angeles, 2011).

Commerce Refuse-To-Energy Facility

The Refuse-To-Energy facility in the City of Commerce is owned by a JPA between LACSD and the City of Commerce and operated by LACSD (LACSD 2013). The Refuse-to-Energy facility uses solid waste as a fuel to produce power. The Commerce Reuse-To-Energy facility is the first of its kind in California (LACSD 2013). The Commerce facility disposes of approximately 100,000 tons of waste from the cities of Los Angeles (28%), Santa Monica (16%), Commerce (8%), Downey (6%) and "Others" (42%) (County of Los Angeles, 2011).

Puente Hills Landfill

The Puente Hills Landfill is a Class III landfill located in unincorporated Los Angeles County. The facility is one of the largest landfills in the nation. The landfill first established the use of environmental control systems, such as those designed to protect air quality and groundwater that have now been modeled throughout California and the nation (LACSD 2013). The Puente Hills Landfill disposes of approximately 2,638,000 tons of waste from the cities of Los Angeles (8%), Carson (6%), Industry (4%), "Others" (66%) and Unincorporated Los Angeles County (16%) (County of Los Angeles, 2011). The current capacity of the landfill is 26.4 million cubic yards (LACSD, 2012).

Downey Area Recycling and Transfer Facility (DART)

The Downey Area Recycling and Transfer Facility (DART) is a Materials Recovery and Transfer Facility that recovers recyclable material such as paper and plastics.

South Gate Transfer Station

The South Gate Transfer Station is a Materials Recovery and Transfer Facility that transports materials to landfills. The facility reduces transportation waste by consolidating smaller loads into larger ones (LACSD 2013).

Palos Verdes Recycling Center and Closed Landfill

The Palos Verdes Recycling Center is a Class I landfill and Certified California Buy-Back Center. The Palos Verdes Closed Landfill consists of approximately 290 acres within six parcels of land separated into three sections by Hawthorne and Crenshaw Boulevards (LADSD 2013).The Palos Verdes Landfill is currently closed and cannot accept further waste.

Electricity

Electricity is provided to the project area by the LADWP and Southern California Edison (SCE).

4.13.2 Regulatory Framework

Federal

Title 40 of the Code of Federal Regulations Part 503

The federal biosolids regulations are contained in Title 40 of the Code of Federal Regulations Part 503 (40 CFR Part 503) as Standards for the Use or Disposal of Sewage Sludge. Known as the Part 503 Rule, or Part 503, these regulations govern the use and disposal of biosolids. Part 503 established requirements for the final use or disposal of biosolids when biosolids are:

- Applied to land to condition the soil or fertilize crops or other vegetation;
- Placed on a surface disposal site for final disposal; or
- Fired in a biosolids incinerator (USEPA, 1994).

Part 503 permits are issued by the USEPA and are required for all biosolids generators. Part 503 requirements can be incorporated into the National Pollutant Discharge Elimination System (NPDES) permits that also are issued to publicly-owned treatment works.

Resource Conservation and Recovery Act

The Resource Conservation and Recovery Act (RCRA) (40 CFR, Part 258 Subtitle D) establishes minimum location standards for siting municipal solid waste landfills. In addition, because California laws and regulations governing the approval of solid waste landfills meet the requirements of Subtitle D, the U.S. EPA has delegated the enforcement responsibility to the State of California.

State

California Code of Regulations (CCR)

Pursuant to CCR Title 23, Division 3, Article 2 (Waste Classification and Management) and Article 3 (Waste Unit Classification and Siting), Class III (municipal solid waste) landfills are sited in accordance with criteria that are similar to those found in Subtitle D of RCRA. CCR Title 27 includes various regulations pertaining to siting, design, construction and operation of solid waste landfills.

CCR Title 22, Division 4, Sections 60301 through 60355 (Articles 1 through 9), includes descriptions of overall allowable sources of and uses for recycled water, as well as specific use descriptions depending on treatments. Title 22 also includes specific treatment pathways including disinfection procedures, oxidation, soils and bed filter media, and requirements for impoundments. It covers use area requirements, water testing and analysis, and plant design and operational requirements.

California Integrated Waste Management Act of 1989

The California Integrated Waste Management Act of 1989 (Public Resources Code [PRC] Division 30) enacted through AB 939 emphasized conservation of natural resources through reduction, recycling, and reuse of solid waste. AB 939 requires that all cities and counties divert 25 percent of solid waste streams from landfills by 1995 and 50 percent by 2000. In accordance with AB 939, each local agency must submit an annual report to the California Integrated Waste Management Board (CIWMB) summarizing its progress in diverting solid waste disposal.

Protection of Underground Infrastructure

The California Government Code Section 4216-4216.9 "Protection of Underground Infrastructure" requires an excavator to contact a regional notification center (e.g., Underground Services Alert or Dig Alert) at least two days prior to excavation of any subsurface installations. Any utility provider seeking to begin a project that could damage underground infrastructure can call Underground Service Alert, the regional notification center for southern California.

Underground Service Alert will notify the utilities that may have buried lines within 1,000 feet of the project. Representatives of the utilities are then notified and are required to mark the specific location of their facilities within the work area prior to the start of project activities in the area.

California Health and Safety Code

The California Health and Safety Code, Division 104, Part 12, Chapter 5, Article 2, Section 116815, requires all pipes carrying recycled water to be colored purple or wrapped in purple tape. This requirement stems from a concern in cross contamination and potential public health risks. It is also discussed in the California Health Laws Related to Recycled Water.

California Energy Action Plan II

The California Energy Action Plan II is the state's principal energy planning and policy document (California Energy Commission, 2005, 2008). The plan identifies state-wide energy goals, describes a coordinated implementation plan for state energy policies, and identifies specific action areas to ensure that California's energy is adequate, affordable, technologically advanced, and environmentally sound. In accordance with this plan, the first priority actions to address California's increasing energy demands are energy efficiency and demand response (i.e., reduction of customer energy usage during peak periods in order to address system reliability and support the best use of energy infrastructure). Additional priorities include the use of renewable sources of power and distributed generation (i.e., the use of relatively small power plants near or at centers of high demand). To the extent that these actions are unable to satisfy the increasing energy and capacity needs, clean and efficient fossil-fired generation is supported.

In 2002, California established its Renewable Portfolio Standard program,[1] which was expanded in 2011 under Senate Bill 2 to require investor-owned utilities, electric service providers, and community choice aggregators to increase renewable energy in the state's electricity to 33 percent by 2020. Because much of electricity demand growth is expected to be met by increases in natural-gas-fired generation, reducing consumption of electricity and diversifying electricity generation resources are significant elements of plans to reduce natural gas demand.

California Department of Resources Recycling and Recovery (CalRecycle) Formerly California Integrated Waste Management Board (CIWMB)

CalRecycle is the State agency designated to oversee, manage, and track California's 76 million tons of waste generated each year. It is one of the six agencies under the umbrella of the California Environmental Protection Agency. CalRecycle develops laws and regulations to control and manage waste, for which enforcement authority is typically delegated to the local government. CalRecycle works jointly with local government to implement regulations and fund programs.

The Integrated Waste Management Act of 1989 (Public Resources Code [PRC] 40050 et seq. or Assembly Bill [AB] 939, codified in PRC 40000), administered by CalRecycle, requires all local and county governments to adopt a Source Reduction and Recycling Element to identify means of reducing the amount of solid waste sent to landfills. This law set reduction targets at 25 percent by the year 1995 and 50 percent by the year 2000. To assist local jurisdictions in achieving these targets, the California Solid Waste Reuse and Recycling Access Act of 1991 requires all new developments to include adequate, accessible, and convenient areas for collecting and loading recyclable and green waste materials.

Regional Water Quality Control Board (RWQCB)

The primary responsibility for the protection of water quality in California rests with the State Water Resources Control Board (SWRCB) and nine RWQCBs. The SWRCB sets statewide policy for the implementation of state and federal laws and regulations. The RWQCBs adopt and implement Water Quality Control Plans (Basin Plans) which recognize regional differences in natural water quality, actual and potential beneficial uses, and water quality problems associated with human activities. The project site is within the jurisdiction of the Los Angeles Region.

California Department of Toxic Substances Control (DTSC)

The DTSC regulates hazardous waste, cleans up existing contamination, and looks for ways to reduce the hazardous waste produced in California. Over 1,000 scientists, engineers, and specialized support staff make sure that companies and individuals handle, transport, store, treat, dispose of, and clean up hazardous wastes appropriately.

[1] The Renewable Portfolio Standard is a flexible, market-driven policy to ensure that the public benefits of wind, solar, biomass, and geothermal energy continue to be realized as electricity markets become more competitive. The policy ensures that a minimum amount of renewable energy is included in the portfolio of electricity resources serving a state or country. By increasing the required minimum amount over time, the Renewable Portfolio Standard puts the electricity industry on a path toward increasing sustainability.

California Department of Water Resources (DWR)

The California DWR is a department within the California Resources Agency. The DWR is responsible for the State of California's management and regulation of water usage.

Senate Bills 610 (Chapter 643, Statutes of 2001) and 221 (Chapter 642, Statutes of 2001)

Senate Bill 610 and Senate Bill 221 are companion measures that seek to promote more collaborative planning among local water suppliers and cities and counties. They require that water supply assessments occur early in the land use planning process for all large-scale development projects. If groundwater is the proposed supply source, the required assessments must include detailed analyses of historic, current, and projected groundwater pumping and an evaluation of the sufficiency of the groundwater basin to sustain a new project's demands. They also require an identification of existing water entitlements, rights, and contracts and a quantification of the prior year's water deliveries. In addition, the supply and demand analysis must address water supplies during single and multiple dry years presented in five-year increments for a 20-year projection.

Local

County of Los Angeles Construction Green Building Standards Code

The County of Los Angeles Board of Supervisors adopted the Construction and Demolition (C&D) Debris Recycling and Reuse Ordinance on January 4, 2005 which was amended in January 2009. Effective January 2, 2011, the County of Los Angeles adopted the Green Building Standard Code, which increases the percentage at which non-residential construction projects must recycle material from 50 percent to 65 percent. The more stringent provisions of the Green Building Standard Code are currently enforced by Los Angeles County Department of Public Works. The purpose is to increase the diversion of construction and demolition debris from disposal facilities and will assist the County in meeting the State of California's 50 percent waste reduction mandate. Any construction project that requires a demolition or grading permit must submit a Recycling and Reuse Plan.

General Plans

Although local building and zoning ordinances generally are not applicable to most water and wastewater infrastructure projects (per California Government Code Section 53091(d) and 53091(e)), all available General Plans for jurisdictions in the project areas have been reviewed for policies relevant to the proposed project.

Los Angeles, County of (1980)

Water and Wastewater Policy 2: Improve coordination among operating agencies of all water and waste management systems.

Water and Wastewater Policy 6: Increase storage of potable water in underground aquifers through greater use of spreading grounds.

Water and Wastewater Policy 18: Provide protection for ground water recharge areas to ensure water quality and quantity.

Water and Wastewater Policy 19: Avoid or mitigate threats to pollution of the ocean, drainage ways, lakes, and ground water reserves.

Water and Wastewater Policy 23: Facilitate the recycling of wastes such as metal, glass, paper, and textiles.

Water and Wastewater Policy 25: Encourage development and application of water conservation, including recovery and reuse of storm and waste water.

Carson (2004)

Policy SAF-2.1: Continue to maintain and improve levels of storm drainage service.

Goal TI-8: Provide sustainable water and wastewater systems which meet the needs of the community.

Policy TI-8.2: As development intensifies and/ or as land redevelopment occurs in the City, ensure that infrastructure systems are adequate to accommodate any intensification of use, as well as existing uses.

Downey (2005)

Policy 5.6.2. Minimize the potential for flooding due to stormwater generation.

El Segundo 1992)

Policy PS3-1.4: Continue to encourage source reduction, substitution, and recycling.

Objective PS4-1: Monitor industries and activities in and around the City to prevent and reduce the contamination of water and soil.

Policy PS5-1.2: Continue to monitor and improve the effectiveness of existing flood control systems to ensure that there is adequate capacity to protect existing and proposed development from stormwater runoff.

Huntington Park (1992)

Goal 2.0: Provide efficient public services and utilities through interagency coordination and cooperation.

Policy 2.2: Coordinate provision of related services and utilities with other agencies.

Policy 5.1: Work closely with local water districts in determining future area needs.

Goal 6.0: Provide necessary storm drainage control.

Goal 7.0: Provide necessary control of solid waste generation and disposal.

Policy 7.2: Work closely with the County of Los Angeles in developing strategies and programs to reduce the volumes of solid waste generated in the City.

Norwalk (1996) (taken from Central Basin PEIR)

Utility Infrastructure Element Goal 1: To maintain adequate level of service in utility systems to support present and future community needs.

Utility Infrastructure Element Goal 2: To eliminate existing deficiencies and expand the system, where necessary, to serve new development.

Utility Infrastructure Element Goal 5: To maintain a high level of public service at minimum costs.

Pico Rivera (1993)

Objective B.6: Maintain adequate systems for water supply and distribution; wastewater collection and treatment, solid waste collection and disposal; and energy distribution which are capable of meeting the needs of the residents of Pico Rivera.

Policy B.6.2: Discuss with the involved agencies the long-term supply of reclaimed wastewater, including service to potential future uses within the City or its sphere of influence.

Policy B.7.2: Coordinate the long-term provision of utility services, including water, wastewater, electricity, natural gas, solid waste, etc. to assure adequate future levels of services for City residents.

Policy A.7.2: Meet the diversion requirements mandated by the Integrated Waste Management Act of 1989.

South Gate (2009)

Goal PF 4: A reduction in the volume of solid waste generated by the City.

Objective PF 4.1, Policy P.1: The City will meet or exceed the State's goal of diverting 50 percent of all solid waste from landfills by 2010 and adjust the percentage of diversion as mandated by the State.

Objective PF 4.1, Policy P.7: Disposal, salvage and reuse of construction and demolition materials and debris are required for all construction projects in the City.

Goal PF 5: A water system that meets the projected demand for all users and seeks ways to reduce demand.

Objective PF 5.1, Policy P.3: The City will support the efforts of the Central Basin Municipal Water District to expand the use of recycled water in the City.

Objective PF 5.3: Promote coordination between land use planning and water facilities and service.

Goal PF 7: To collect, store and dispose of stormwater in a way that is safe, sanitary, and environmentally acceptable.

Objective PF 7.1, P.3: The City's stormwater infrastructure will comply with the National Pollutant Discharge Elimination System (NPDES) Act and all other legal and environmental requirements.

Objective PF 7.2: Encourage coordination between land use planning, site design and stormwater control.

City of Vernon (2007)

Goal CI-3: Maintain the water supply system to meet both normal demand and emergency needs.

Policy CI-3.3: Implement the programs and policies contain in the City's Urban Water Management Plan, including particularly those related to reliability planning and conservation and reuse.

Goal CI-5: Maintain the storm drainage system to assure the protection of lives and property of in Vernon.

Policy CI-5.2: Evaluate the impact of all new developments and expansion of existing facilities on storm runoff, and require that the cost of upgrading existing drainage facilities to handle the additional runoff is paid for by the development which generates the need to improve a facility.

Policy CI-5.3: Monitor the use and storage of hazardous materials to prevent accidental discharge into the storm drainage system.

Goal R-1: Conserve and protect the region's water and energy resources.

Policy R-1.1: Encourage water conservation and the use of recycled water in new developments and by all industries.

Policy R-1.2: Support the use of energy-saving designs and equipment in all new development and reconstruction projects.

4.13.3 Impacts and Mitigation Measures

Significance Criteria

For the purposes of this EIR and consistency with Appendix G of the *CEQA Guidelines*, applicable local plans, and agency and professional standards, the proposed project would have a significant effect on utilities and energy if it would:

- Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board;
- Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects;

- 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;
- Require new or expanded water supply resources or entitlements;
- Result in a determination by the wastewater treatment provider which serves or may serve the project that it has inadequate capacity to serve the projects projected demand in addition to the provider's existing commitments;
- Be served by a landfill with insufficient permitted capacity to accommodate the project solid waste disposal needs;
- Not comply with federal, state, and local statutes and regulations related to solid waste; or
- Effect local and regional energy supplies such that additional electrical capacity is required.

Impacts Discussion

New or Expanded Water or Wastewater Treatment Facilities

Implementation of GBMP projects would result in construction and operation of new recycled water treatment and conveyance facilities as described in Chapter 3, Project Description. Proposed facilities would include pipelines, pump stations, injection and extraction wells, advanced wastewater treatment facilities, and wastewater treatment plants. The environmental effects associated with the proposed project are documented throughout this EIR.

Construction workers would temporarily require use of portable sanitary units and septic disposal services during construction of the proposed project. In addition, some proposed facilities may have minor requirements for potable water in employee facilities, such as restrooms. Any wastewater treatment needs for employee facilities at new or expanded treatment facilities would be accommodated in-house by the treatment plants. There would be no requirement for expansion of water or wastewater treatment facilities to serve the proposed project. There would be no impact.

Wastewater Treatment Requirements and Capacity

Impact 4.13-1: The proposed project includes operation of wastewater facilities that could exceed wastewater treatment requirements of the Los Angeles Regional Water Quality Control Board. (Less than Significant)

Implementation of the GBMP would convey and recharge recycled water produced at existing regional treatment facilities and at one proposed Satellite AWTF. Some of the proposed GBMP projects would utilize effluent already produced at existing treatment facilities, while others require implementation of either expanded/upgraded treatment processes at existing facilities or construction of the new Satellite AWTF (Project C10). In accordance with the Water Recycling Law (California Water Code, Chapter 7 Reclamation), the utilization of recycled water for the

beneficial use of groundwater recharge would be subject to waste discharge requirements (WDRs) (California Water Code Section 13263) and water recycling requirements (WRRs) (Water Code Section 13523) from the LARWQCB, in addition to NPDES permit requirements. WRRs are issued to the recycled water producer to ensure that the recycled water has received effective treatment for disinfection and to the recycled water user to ensure that recycled water is being applied properly. WDRs are issued to the recycled water producer to protect the quality of receiving waters, including groundwater aquifers. In lieu of WRRs, the RWQCB can issue a Master Recycling Permit to the recycled water producer, user, or both. The permit includes WDRs and rules and regulations for recycled water users.

In addition to the treatment facility permits, each GBMP project that involves replenishment with recycled water would be considered a groundwater recharge reuse project (GRRP) pursuant to California Code of Regulations (CCR) Title 22 Water Recycling Criteria (Sections 60301 through 60355, inclusive) adopted by the California Department of Public Health (DPH) (June 18, 2014). A Title 22 Engineering Report would be required for each GRRP project that incorporates and reflects information from the WDRs/WRRs or Master Recycling Permit. The current Title 22 Water Recycling Criteria require the submission of the Engineering Report to the LARWQCB and DPH before recycled water projects are implemented. These reports must also be amended prior to any modification to existing projects. The purpose of an Engineering Report is to describe the manner by which a project will comply with the Water Recycling Criteria. The Water Recycling Criteria prescribe:

- Recycled water quality and wastewater treatment requirements for the various types of allowed uses,
- Use area requirements pertaining to the actual location of use of the recycled water (including dual plumbed facilities), and
- Reliability features required in the treatment facilities to ensure safe performance.

For the proposed GBMP projects, compliance with the requirements and conditions of the Title 22 Engineering Report, WDRs, and WRRs would ensure that the proposed project does not exceed wastewater treatment requirements of the LARWQCB. Impacts are considered less than significant. No mitigation is required.

The proposed project would involve construction of a new water reclamation facility as part of Project C10 that would treat existing raw wastewater from the HTP collection system for injection into the Los Angeles Forebay. The Draft GBMP has been prepared in coordination with other water and wastewater resource management agencies in the WRD service area, including the owners and operators of all treatment facilities to ensure that adequate capacity exists for treating and providing recycled water to the proposed GBMP projects. As the proposed GBMP projects are implemented, the associated wastewater utilities will be responsible agencies and project sponsors. As a result, the availability of wastewater treatment capacity will be integral in the design of future projects. Impacts are considered less than significant. No mitigation is required.

Mitigation Measures

None required.

Significance Determination: Less than significant.

Storm Water Facilities

Impact 4.13-2: The proposed project could result in the construction or expansion of storm water drainage facilities to accommodate storm water runoff. (Less than Significant with Mitigation)

Implementation of the GBMP would require construction and operation of new and expanded aboveground facilities, such as new pump stations, injection and extraction wells, and treatment plants, which would affect site drainage patterns. Proposed pipelines would be underground and, with commitments to restore disturbed areas along pipeline alignments to pre-construction conditions (see **Mitigation Measure AES-3** in Chapter 4.1), would not permanently alter existing site drainage patterns. All other proposed facilities would be aboveground and located primarily in existing developed or urbanized areas. The presence of new facilities at each project site and changes in the extent of permeable or impermeable surfaces would alter the direction and volume of overland flows during both wet and dry periods. During project design, overland flows and drainage at each project site would be assessed and drainage facilities designed such that no net increase in runoff would occur, in accordance with the Los Angeles County MS4 Permit (see Chapter 4.8 Surface Hydrology). As required by **Mitigation Measure HYDRO-1** (see Chapter 4.8), a grading and drainage plan would be developed during project design and implemented to ensure no increase in offsite discharges would occur. This also would ensure no substantial increases in onsite or offsite flooding would occur and that the existing capacity of storm water drainage systems would not be exceeded. No new off-site storm water drainage facilities would be required. Impacts would be less than significant with mitigation.

Mitigation Measures

Implementation of **Mitigation Measures AES-3** and **HYDRO-1.**

Significance Determination: Less than significant with mitigation.

Water Supply Sources or Entitlements

Impact 4.13-3: The proposed project would require additional water resources to achieve replenishment goals of the GBMP. (Less than Significant)

The proposed GBMP identifies opportunities to increase pumping within the West Coast and Central Basins, which would decrease the region's reliance on imported water. Concept A provides for replenishment needed to meet the existing water rights and adjudicated pumping limits within both groundwater basins. Concept B would provide for additional groundwater basin storage and extraction above current adjudicated levels. Current pumping in both basins is

under the existing adjudicated and allowable limits (GBMP, page ES-1). The additional replenishment would require increased utilization of existing spreading grounds, injection wells, and recovery facilities, expanding or upgrading recycled water treatment facilities, and the installation of new water infrastructure including injection and extraction wells, conveyance pipelines, and pump stations. Additional local water resources would be used to increase replenishment and achieve the objectives of Concept A and Concept B. The local resources to be used for replenishment would be storm water and recycled water. In the Central Basin, storm flows from the San Gabriel River, Rio Hondo, and Los Angeles River would be utilized for replenishment. In both the West Coast Basin and Central Basin, recycled water would be replenished as available in the future. The GBMP is based on future planning-level estimates of growth in the service area and accompanying increases in wastewater effluent, the need for treatment, and the resulting recycled water resources. The implementing agency for each GBMP project would be required to secure agreements with recycled water purveyors to purchase or otherwise acquire the recycled water for replenishment.

For groundwater extraction, no new entitlements are required for pumpers to extract groundwater up to their adjudicated limits under Concept A. Under Concept B, new approvals may be necessary in accordance with the pending Judgment Amendments, for pumping above the adjudicated limits of the basins. Concept B would require replenishment in advance of extraction of groundwater, and would limit extraction to the amount of water replenished. The additional approvals required to implement Concept B would be determined in accordance with the outcome of the Judgment Amendments.

Storm flows captured to replenish the groundwater basins would be wet weather flows or available dry weather flows that do not impinge on others' water rights. No other water supply entitlements would be required to implement the proposed GBMP projects. Impacts are considered less than significant under both Concepts A and B. No mitigation is required.

Mitigation Measures

None required.

Significance Determination: Less than significant.

Solid Waste Disposal and Regulations

Impact 4.13-4: Construction activities associated with the proposed project would generate solid waste that could increase the demand for landfill capacity. (Less than Significant with Mitigation)

Construction of facilities associated with the GBMP would generate solid waste, including excavated soils removed during construction of each facility. Excavated soils would be stockpiled and reused onsite to the extent feasible to minimize the need for disposal. Proposed facilities located in unincorporated Los Angeles County would be subject to the County's Construction Green Building Standards Code requiring at least 65 percent diversion on all construction

projects. All proposed facilities would be subject to the California Integrated Waste Management Act requiring 50 percent diversion of all solid waste streams from landfills. A private contractor who would haul the waste to a local landfill for disposal would export non-recyclable construction waste for the project. Implementation of **Mitigation Measures UTIL-1** and **UTIL-2** would reduce the amount of solid waste expected to be generated by the proposed project and minimize the need for solid waste disposal. In addition, the Puente Hills Landfill would have sufficient capacity to receive solid waste generated during construction of the proposed project. The Puente Hills Landfill is located outside the northeastern boundary of WRD's service area near the SJCWRP and accommodates all forms of solid waste. The current capacity of the landfill is 26.4 million cubic yards (LACSD, 2012). With implementation of UTIL-1 and UTIL-2, impacts to landfill capacity would be less than significant.

Operation the proposed new and expanded treatment facilities would generate additional biosolids as a byproduct of the wastewater treatment process. As stipulated by 40 CFR Part 503, biosolids may be disposed in a landfill or land applied for other beneficial end uses. Landfills provide a year-round disposal outlet for the biosolids associated with the proposed project. Landfills serving the proposed project would require a minimum Class III sanitary level to accommodate Class B biosolids. The Puente Hills Landfill is a Class III landfill that would be available to serve the proposed project. Impacts to landfill capacity would be less than significant.

Mitigation Measures

UTIL-1: Project facility design and construction methods that produce less waste or that produce waste that could be recycled or reused more readily, shall be encouraged.

UTIL-2: The contractor shall be required to describe plans for recovering, reusing, and recycling wastes produced through construction, demolition, and excavation activities described in the construction specifications.

Significance Determination: Less than significant with mitigation.

Energy

Impact 4.13-5: Operation of the proposed project would require additional power that could affect local and regional energy supplies. (Less than Significant with Mitigation)

Energy intensity (kWh/MG) is a measure of the amount of energy required to perform water management activities, such as treating and conveying potable water; collecting, treating, and discharging wastewater; or treating and distributing recycled water. Energy intensity is expressed in terms of the energy requirement for managing a unit of one million gallons of water (MG). The proposed project would replace the use of existing and future imported water for groundwater replenishment with recycled water. The potential impact of this action is based on the amount of energy required to convey imported water to the points of recharge versus the amount of energy required to treat and convey recycled water to the points of recharge.

Several organizations, including the California Energy Commission (CEC) and the WateReuse Research Foundation, have calculated energy intensities for water use cycle segments. The CEC has estimated the differential energy intensity for water management activities in northern California and southern California. In southern California, the energy intensity for water supply and conveyance is estimated to be 3,020 kWh/AF (9,272 kWh/MG), which is greater than that for northern California, due to the travel distance and requirements for pumping and lifting water over natural features such as the Tehachapi Mountains as water is conveyed from north to south (CEC, 2006). For purposes of evaluating the effects of the GBMP, we assume the baseline energy intensity for importing water for replenishment is 3,020 kWh/AF.

The Draft GBMP proposes to offset and replace the use of imported water with recycled water. The WateReuse Research Foundation has estimated the energy intensity for various types of recycled water treatment, including MF, RO, and UV/advanced oxidation for use in groundwater recharge. It is estimated that the energy intensity for such advanced membrane treatment is 1,199 kWh/AF (3,680 kWh/MG) (WRF, 2012). The energy intensity for recycled water distribution is estimated to vary between 326 and 977 kWh/AF; however this is based on the distribution of recycled water for end uses other than indirect potable reuse (WRF, 2012). Thus, we assume conservatively that the greater value applies (977 kWh/AF), and the total energy intensity for producing advanced treated recycled water and its distribution is estimated to be 2,176 kWh/AF. As a result, the offset of imported water with recycled water would produce a decrease in the energy demand per million gallons of water, related to the acquisition of the replenishment source for the proposed GBMP projects utilizing recycled water.

In general, the production and use of recycled water is more energy efficient than imported water, although unit electricity consumption rises as the degree of treatment and complexity of the processes increases (CEC, 2006). Both Concepts A and B would decrease reliance on imported water and subsequently reduce the energy requirements otherwise associated with utilizing imported water for replenishment. As a result, impacts to energy supplies would be considered less than significant.

Implementation of the GBMP would require energy to operate the proposed pipelines, injection and extraction wells, and the new and expanded treatment plants. Not all of the components presented in the GBMP will be constructed as part of the proposed project, but are analyzed collectively at the programmatic level. The facilities would be served by SCE or LADWP as the local energy provider. Even though more power would be required as a result of project facility construction and operation, this power would otherwise be used to import water for replenishment in the West Coast and Central groundwater basins. As discussed above, energy associated with management strategies of Concepts A and B would be less than importing the same amount of water via the SWP or the Colorado River. As such, the proposed project would constitute an energy offset. Impacts to regional energy supplies and energy consumption would be less than significant.

While not increasing the net amount of power required to supply water for replenishment, implementation of the GBMP may increase demands on local energy providers. However, it is

not anticipated that additional power generation facilities would be required to serve the proposed facilities, or that the demand would exceed capacity of energy providers. Management strategies would be implemented to lessen the impact on local power supply providers while also supporting policies of the California Energy Action Plan II to reduce the State's overall energy users. The proposed project would need to incorporate energy efficient equipment such as system pumps and lighting to minimize energy impacts. In addition, proposed pumps would be scheduled to operate as much as possible during off-peak energy demand periods. These strategies would also be consistent with state policies for maximizing off-peak power usage for utilities. **Mitigation Measure UTIL-3** would require both energy efficient equipment and off-peak operation of proposed facilities. Such energy efficiency measures would reduce the overall energy generation requirements associated with the proposed project.

With implementation of Mitigation Measure UTIL-3 impacts to local and regional energy supplies would be considered less than significant.

Mitigation Measures

> **UTIL-3**: Implementing agencies shall require the use of energy efficient equipment, including pumps, conveyance features, and lighting in new facilities and treatment plants. The proposed facilities, including pumps, injection and extraction wells, and treatment plants, shall be designed and operated to shift energy demands to off-peak periods wherever possible.

Significance Determination: Less than significant with mitigation.

TABLE 4.13-1
UTILITIES AND ENERGY IMPACT SUMMARY

	Concept A		Concept B	
Impact	**Impact Determination**	**Mitigation Summary**	**Impact Determination**	**Mitigation Summary**
Exceed existing waste water treatment requirements: The proposed project includes operation of wastewater facilities that could exceed wastewater treatment requirements of the Los Angeles Regional Water Quality Control Board	Less than Significant	None required	Less than Significant	None required
Exceed existing stormwater drainage facilities: The proposed project could result in the construction or expansion of storm water drainage facilities to accommodate storm water runoff.	Less than Significant with Mitigation	Implement Mitigation Measures AES-3 and HYDRO-1	Less than Significant With Mitigation	Implement Mitigation Measures AES-3 and HYDRO-1
Sufficient water supplies: The proposed project would require additional water resources to achieve replenishment goals of the GBMP.	Less than Significant	None required	Less than Significant	None required
Landfill capacity: Construction activities associated with the proposed project would generate solid waste that could increase the demand for landfill capacity.	Less than Significant with Mitigation	Implement Mitigation Measures UTIL-1 and UTIL-2	Less than Significant with Mitigation	Implement Mitigation Measures UTIL-1 and UTIL-2
Local and regional energy supplies: Operation of the proposed project would require additional power that could affect local and regional energy supplies.	Less than Significant with Mitigation	Implement Mitigation Measure UTIL-3	Less than Significant with Mitigation	Implement Mitigation Measure UTIL-3

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4.14 Environmental Justice

This section discusses environmental justice issues pertaining to the proposed project. This section evaluates the potential for the proposed project to disproportionately affect minority and low-income populations. Data presented in this section was obtained from two data sets from the U.S. Census Bureau: 2010 census files and 2010-2014 American Community Survey (ACS) five-year estimates.

4.14.1 Setting

Population

The proposed GBMP facilities are located in 17 cities and four unincorporated census-designated places (CDPs) within Los Angeles County. Los Angeles County has a population of 9,818,605. The proposed GBMP facilities would be located in 110 different census tracts within Los Angeles County, one of which spans the jurisdiction of two different cities (tract 5338.06). The total population of individuals within these census tracts is 535,407. **Appendix H** includes tables that list all census tracts affected by proposed GBMP facilities using data from the 2010 Census and 2010-2014 ACS five-year estimates.

Demographics

The demographic characteristics of the census tracts affected by proposed GBMP facilities has been reviewed and summarized (see Appendix H). The demographic data provided by the U.S. Census has been organized into four categories: Black (individuals identifying primarily with a Black ethnicity), Hispanic (individuals identifying primarily with a Hispanic ethnicity), White (individuals identifying primarily with a Non-Hispanic, White ethnicity), and Other (individuals identifying primarily with all other ethnicities not aforementioned, as well as those identifying with more than one ethnicity). According to the U.S. Census, “minorities” are defined as all individuals that are not Non-Hispanic, single race whites.

For purposes of this analysis, an area is considered to have a significantly greater minority population if the affected census tract or group of tracts has a minority population at least 10 percent greater on average than the overall city or CDP. Appendix H includes the demographic data for all cities and census tracts affected by corresponding GBMP projects.

The tracts affected by GBMP projects within the cities of Carson, El Segundo, Industry and Los Angeles have significantly greater minority populations on average than the overall cities themselves. The City of Carson affected tracts have a 15% higher Hispanic population (55%) compared to that of the overall city (40%). The City of El Segundo affected tracts have a 2% lower Hispanic population (16%) compared to that of the overall city (18%) and a 1% higher Black population (69%) compared to the overall city (68%). The City of Industry has a 25% higher Other minority population (33%) than that of the overall city (8%). The City of Los Angeles affected tracts have a 27% higher Hispanic population (76%) compared to the overall city (49%). The remainder of affected census tracts did not have significantly greater average minority population amounts compared to overall city data.

Income

Low income is classified by the California Department of Housing and Community Development (DHCD) using population and income distribution within each county. For the purposes of this project, the affected census tracts must have an average median household income at least $10,000 below that of the overall city or CDP to be considered significantly lower income. Furthermore, as household income classification is dependent on household size, the income amount must be equal to or below the low income threshold designated for the average family size within the city or CDP. **Table 4.14-1** shows the Los Angeles County median household income level classifications for two-, three- and four-person households. Appendix H shows the income data and corresponding projects within all affected cities and census tract sets.

TABLE 4.14-1
LOS ANGELES COUNTY AREA MEDIAN HOUSEHOLD INCOME CLASSIFICATION IN U.S. DOLLARS

	2 persons in household	3 persons in household	4 persons in household
Extremely low income	20,250	22,800	25,300
Very low income	33,750	37,590	42,150
Low Income	54,000	60,750	67,450
Median Income	51,850	58,300	64,800
Moderate Income	62,000	70,000	77,750

SOURCE: Data obtained from California Department of Community Development 2012 State Income Limits

The affected tracts within the city of Los Angeles shows a significantly lower average median household income level compared to respective overall city data. The City of Los Angeles affected tracts' average median household income differs by $18,162 ($31,583) compared to the rest of the city (49,745). With an average household size of three persons in the City of Los Angeles, this income level is considered "very low income" (DHCD, 2012).

The tract sets mentioned above also show a significantly higher percent of population living below poverty level than their respective cities. The national poverty level or threshold is determined every year by the US Census Bureau. The City of Cudahy affected tracts have a percent of population living below the poverty level that is 7% higher (39.7%) than the overall city (32.8%). The City of Los Angeles affected tracts have a percent of population living below poverty level that is 18.7% higher (41.1%) than that of the overall city (22.4%). The remainder of affected census tracts did not have significantly lower median household income levels or significantly higher percent of population living below the poverty level.

Proposed Advanced Water Treatment Facility (AWTF) Demographics and Income

Due to its larger impact area, a separate demographic and income data analysis was done for the tracts affected by the proposed Satellite AWTF that is part of Project C10. The AWTF conceptual location could be somewhere within an area of seven census tracts in the City of Los Angeles. This tract set shows significantly greater minority population and poverty rate and a lower income

level relative to the City of Los Angeles. In this tract set, Hispanic persons make up 66% of the population, which is 17% higher than the overall city Hispanic population. The median household income is $30,753, which is $19,275 less than the overall city average and considered low income. The percent of individuals living below the poverty level is 31%, which is 11% higher than the rest of Los Angeles City.

4.14.2 Regulatory Framework

Federal

NEPA and CEQA-Plus procedures outlined in the State Revolving Fund (SRF) financing guidelines include compliance with Executive Order 12898, which outlines federal actions to address environmental justice in minority populations and low-income populations.

Executive Order 12898 states that agencies shall identify and address disproportionately high and adverse human health or environmental effects on minority and low income populations. A new working group was created to develop strategies for programs and policies regarding minority and low-income populations to: promote enforcement of all health and environmental statutes, improve research and data collection in relation to health and environment, identify different patterns of consumption of natural resources, and ensure greater public participation.

4.14.3 Impacts and Mitigation Measures

Significance Criteria

For the purposes of this PEIR and consistency with NEPA or CEQA-Plus Guidelines, applicable local plans, and agency and professional standards, the proposed GBMP projects would be considered to have a significant effect on environmental justice if it would:

- Affect the health or environment of minority or low income populations disproportionately.

Impacts Discussion

Impact 4.14-1: The proposed new Satellite AWTF could disproportionately affect the health or environment of minority or low income populations. (Less than Significant)

Based on all census data presented above, proposed project facilities in the cities of Carson, Cudahy, Industry, and Los Angeles would be located in areas with significantly larger minority and low income populations on average, relative to the overall characteristics of their respective cities. The proposed GBMP facilities to be built and operated in these areas include pipelines, pump stations, spreading basins, injection wells, extraction wells, and treatment facilities. These facilities are part of Concept B.

The proposed locations of all wells, spreading basins, pump stations and treatment plant expansions have been based on criteria such as elevation and proximity and connectivity to existing facilities. The proposed pipeline routes have been determined based on preliminary screening criteria to minimize the distance between the facilities themselves and locate facilities

within existing utility easements or rights-of-way. These proposed locations allow for the efficient transport of water throughout densely-populated and highly-urbanized areas. Therefore, the locations of the proposed facilities are constrained and cannot be majorly altered without consequently reducing said efficiency.

Construction activity for the facilities would occur onsite and at adjacent staging areas. The specific activities, equipment and materials required for the construction of each type of facility are described in the Project Description (Chapter 3.0). Any construction-related impacts would be short-term and temporary. Therefore, there would be no permanent impacts associated with construction that would disproportionately affect the health or environment of minority and low income populations.

During operation of the proposed facilities, no residential areas would be affected, with the exception of the Project C10 Satellite AWTF. Generally speaking, operation of proposed facilities such as pipelines, pump stations, spreading basins, and wells do not create localized impacts that would negatively affect the surrounding environment or community public health (as evidenced in the analyses provided in other sections of this PEIR). Therefore, the location of such facilities in areas characterized by minority or low income populations also would not adversely affect the environment or public health of such communities.

The location of the proposed Satellite AWTF is conceptual at this stage, and the specific design and components of the plant are not defined. Unlike other proposed Concept B facilities, the Satellite AWTF would be larger in scale and located in a predominantly residential area. As evaluated in this PEIR operation of the treatment facilities including the proposed Satellite AWTF would not result in significant operational environmental impacts. Therefore, it is expected that the proposed Satellite AWTF would not have a significant effect disproportionately within a minority or low income community. Additional analyses would be conducted in accordance with CEQA and NEPA (if applicable) once the exact location and design of the Satellite AWTF is determined. Impacts are considered less than significant.

Significance Determination: Less than significant

TABLE 4.14-2
ENVIRONMENTAL JUSTICE IMPACT SUMMARY

	Concept A		Concept B	
Impact	**Impact Determination**	**Mitigation Summary**	**Impact Determination**	**Mitigation Summary**
Environmental Justice: The proposed new Satellite AWTF could disproportionately affect the health or environment of minority or low income populations.	Less than significant	None required	Less than significant	None required

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CHAPTER 5
Cumulative Impacts

5.1 Introduction

CEQA requires that an EIR assess the cumulative impacts of a project with respect to past, current, and probable future projects within the region. Section 15355 of the *CEQA Guidelines* defines cumulative effects as two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts. The cumulative impact from several projects is the change in environment which results from the incremental impact of the proposed project when added to other closely related and reasonably foreseeable future projects. Pertinent guidance for cumulative impact analysis is given in Section 15130 of the *CEQA Guidelines*:

- An EIR shall discuss cumulative impacts of a project when the project's incremental effect is "cumulatively considerable", (i.e., the incremental effects of an individual project are considerable when viewed in connection with the effects of past projects, the effects of current projects, and the effects of probable future projects, including those outside the control of the lead agency, if necessary).
- An EIR should not discuss impacts that do not result in part from the project evaluated in the EIR.
- A project's contribution is less than cumulatively considerable, and thus not significant, if the project is required to implement or fund its fair share of a mitigation measure or measures designed to alleviate the cumulative impact.
- The discussion of impact severity and likelihood of occurrence need not be as detailed as for effects attributable to the project alone.

The analysis of cumulative effects in this Program EIR focuses on the effects of concurrent construction and operation of the proposed GBMP projects with other spatially and temporally proximate projects as described below. As such, this cumulative analysis includes a list of related projects that have the potential to contribute to cumulative impacts in the project area (*CEQA Guidelines* Section 15130(b)(1)(A)). The list of related projects is dictated by the nature of the environmental resources being examined, as well as the location and type of project considered for inclusion in the list.

5.2 Geographic and Temporal Scope

Cumulative impacts are assessed for related projects within a similar geographic area. The geographic scope of the area used for this cumulative analysis generally is defined as the jurisdictions within which the proposed GBMP projects are located. This geographic area may vary further, depending on the issue area discussed and the geographic extent of the potential impact. For example, the geographic area associated with construction noise impacts is typically limited to areas directly adjacent to construction sites, whereas, the geographic area that is affected by construction-related air emissions may include the larger air basin. Construction impacts associated with increased noise, dust, erosion and access limitations tend to be localized but could be exacerbated if development of related projects occurs within the same or adjacent locations as the proposed project. **Table 5-1** summarizes the geographic scope of the analyses for cumulative impacts for each environmental resource area discussed in Chapter 4 of this Program EIR.

TABLE 5-1
GEOGRAPHIC SCOPE OF CUMULATIVE IMPACT ANALYSES

Environmental Issue	Geographic Scope of Cumulative Impact Analyses
Aesthetics	Immediate vicinity of view corridors or viewsheds.
Air Quality and Greenhouse Gas Emissions	Los Angeles Region or the airshed for reactive air pollutants and surrounding vicinity for non-reactive or less reactive pollutants.
Biological Resources	Varies depending on species or habitat. Geographic scope can be the entire area that the species or habitat is known to occur or limited to the immediate area of occurrence.
Cultural Resources	Varies depending on type of resource with potential to be impacted. Usually limited to the immediate area of the resources.
Geology, Soils and Seismicity	Limited to the immediate area of the geologic constraint with the exception of some geologic impacts that may be regional, such as earthquake risk.
Hazards and Hazardous Materials	Limited to project area, surrounding communities, and affected roadways from haul routes.
Hydrology and Water Quality – Surface Water and Groundwater	Drainage area, watershed, water body, or groundwater basin, depending on where the potential impact is located and its tributary area.
Land Use	Limited to adjacent communities and applicable land use planning areas.
Noise and Vibration	Limited to project area and immediate surroundings, and affected roadways.
Traffic and Transportation	Limited to project area, surrounding communities, and affected roadways.
Utilities and Energy	Extent of area served by public services and utilities affected.

Geographically, the proposed project is located in the Los Angeles Basin in southern Los Angeles County. For the purposes of this analysis, we considered projects under the jurisdiction of

municipalities within the project area (See Figure 3-1), considering the environmental resources when evaluating potential cumulative impacts due to construction and operation of the proposed GBMP projects. Due to the scope of this programmatic level analysis, we focused on projects with a regional scale that could cumulatively contribute to the impacts of the proposed GBMP projects, or projects of any size that may be directly affected by construction of the proposed GBMP projects (i.e. occurring nearby proposed treatment plants, or in the vicinity of other project areas). These related projects are listed in **Table 5-2** and which include water resource, capital improvement, and development projects in Los Angeles County. Available information from municipalities and utilities at the time of analysis is included in the table below. Over the 20-year implementation period, additional projects similar in nature to those listed in Table 5-2 may also be developed.

TABLE 5-2
RELATED PROJECTS

Project Name	Project Type / Location	Project Sponsor	Project Status
Water Supply Projects			
North Torrance Groundwater Well Development Program	Development of a well field in North Torrance and possible water storage sites	City of Torrance Municipal Water Department	Construction in 2015
City of Vernon Well Replacement	Construction of a new well to replace a well abandoned in 2008.	City of Vernon	Construction through 2015
Groundwater/ Recharge Projects			
Whittier Narrows Conservation Pool	Increases capacity at the Whittier Narrows Dam by increasing elevation behind the dam from 201.6 feet to 205 feet	WRD	Construction
San Gabriel River Rubber Dams	Implementation of two additional rubber dams to allow for capture and recharge of 3,600 AFY	WRD	Construction
Central Basin Storage Program	Groundwater conjunctive use storage program	MWD	Pre-planning
West Basin Storage Program	Groundwater conjunctive use storage program	MWD	Pre-planning
La Mirada, Santa Fe, and Norwalk Lateral	New connection with potential use of 1,555 AFY	Central Basin MWD, Suburban Water Systems	Pre-planning
Ocean Water Desalination Full-Scale Facility	Facility capable of providing up to 20,000 AFY	Central Basin MWD	Construction anticipated in 2017
Goldsworthy Desalter Project	Treatment facilities, a new well, and disposal system capable of providing up to 2,500 AFY.	City of Torrance Municipal Water Department	Pre-planning
Alamitos Barrier Improvement Project	Installation of 17 injection wells and 4 monitoring wells to augment capacity along the north-south reach	OCWD	Pre-planning
Downey Regional Water Reclamation and Groundwater Augmentation Project	Construction of an advanced recycled water treatment facility to treat tertiary treated recycled water from CSDLAC, and inject it into the Central Basin via ASR wells to increase supply.	City of Downey	Pre-planning

TABLE 5-2
RELATED PROJECTS

Project Name	Project Type / Location	Project Sponsor	Project Status
Treatment Plant Projects			
Title 22 Distribution System	New pump/disinfection stations and associated pipelines throughout West Basin's service area	West Basin MWD	Planning
ECLWRF Phase V Expansion	Increase treatment capacity and barrier water production	West Basin MWD	Construction
Edward C. Little Water Reclamation Facility	Increase Title 22 Treatment and construct associated pump stations, sludge transfer systems, microfiltration processes	West Basin MWD	Planning
Carson Regional Water Recycling Expansion Project	New pipelines (for LADWP Harbor), nitrified treatment of Title 22 water, new pump stations, adequate power supply, and associated facilities	West Basin MWD	Planning
New Treatment Plant System	The new TPS would be adjacent to the JWPCP, and associated pump stations and pipelines	West Basin MWD	Planning
Hyperion Secondary Effluent Pump Station Expansion	Pump station expansion to provide capacity for up to 70 mgd for ECLWRF	West Basin MWD	Planning
Harbor-South Bay Recycled Water Expansion Project	Expand current water distribution system	West Basin MWD/ USACE	Planning
Recycled Water System Expansion Program	Increase citywide recycled water consumption to approximately 9,000 acre-feet annually, eventually meeting 15 percent of the city's total water demand	City of Long Beach Water Department	Planning
Terminal Island Water Reclamation Plant (TIWRP) AWPF Ultimate Expansion	Expansion of advanced wastewater purification to 14.7 mgd and disinfection conversion to advanced oxidation process.	City of Los Angeles DPW	Design
TIWRP Headworks Improvements	Mechanized screenings collection and dewatering, hopper gate replacement and grit chamber improvements	City of Los Angeles DPW	Design
Alamitos Pumping Plant Force Main No. 2	Construction of 10-inch diameter force main along 2,200 feet to support the Alamitos Pumping Plant Force Main	Sanitation Districts of Los Angeles County	Design
HTP Solids Handling and truck Loading Facility	New solids handling facility	City of Los Angeles BOS	Construction anticipated 2017
Pipeline Projects (Linear)			
Phase II of the Southeast Water Reliability Project	15 miles of recycled water transmission pipeline extending from the City of Pico Rivera to the City of Vernon	Central Basin MWD	Construction
74th Street Sewer Cleaning	This project will rehabilitate approximately 13,600 linear feet of 54-inch RCP. 74th Street from Vermont Avenue to Halldale Avenue to 62nd Street to Van Ness Avenue and Slauson Avenue	City of Los Angeles BOS	Construction 2015-2017

TABLE 5-2
RELATED PROJECTS

Project Name	Project Type / Location	Project Sponsor	Project Status
Slauson Compton Sewer Rehab	This project will rehabilitate approximately 4 miles of deteriorated sewers. Slauson Avenue between Compton Avenue and Van Ness Avenue.	City of Los Angeles BOS	Design
Sewer Pipe Rehabilitation	Remove and replace or rehabilitate approximately 19 miles of sewer pipes between the following locations: • 36th Place & Vermont • Vermont & 76th Street • 76th St and Grand Ave • Hoover and Vernon • Adams Blvd and Hill St • Compton and Vernon	City of Los Angeles BOS	Construction
Transportation Projects			
Bellflower Boulevard Modifications	Street improvements: widening to extend turn lane onto 91 Freeway. Bellflower Blvd. at 91 Freeway.	City of Bellflower	Conceptual
Residential Street Pavement Rehabilitation Project	Citywide street Improvements.	City of Downey	Construction 2013 to 2016
Lakewood Blvd Improvements	Street Improvements. Gallatin Road to Telegraph Road; Florence Avenue to Gallatin Road.	City of Downey	Construction 2015-2016
Old River School Road Pavement Rehabilitation Project	Street Improvements. Imperial Highway to Arnett St.	City of Downey	Construction 2013-2014
Interstate 5 Freeway Widening Project	Traffic Project. Interstate 5 from SR 91 to Interstate 605	City of Norwalk	Construction
Atlantic Bridge Rehabilitation	Traffic Project. Atlantic Blvd at LA River.	City of Vernon	Construction
26th Bridge Rehabilitation	Traffic Project. 26th Street at LA River.	City of Vernon	Construction anticipated in 2016
Gerald Desmond Bridge Replacement Project	New bridge, related roadway connections, interchange ramp improvements, demo of existing bridge.	Port of Long Beach	Design
Exposition Park Traffic Circulation Improvements	Traffic improvement project. Martin Luther King, Jr. Boulevard at Vermont Avenue; Figueroa Street at Martin Luther King, Jr. Boulevard.	City of LA	Construction anticipated in 2015
Interstate 5 Improvement Projects in Southern Los Angeles	Create HOV lanes, mixed flow lanes, interchange modifications, pedestrian overcrossings, and frontage road modification.	Caltrans	Construction 2012 to 2016
I-10/I-605 Direct Connector	Construction of a direct connector fly-over to ease traffic congestion from southbound I-605 and eastbound I-10.	Caltrans	Construction completed by 2015
I-105 Modification and upgrade of pumping/filtration system	I-105 westbound between Paramount Blvd and Garfield Ave.	Caltrans	Planning
I-105 and I-110	Pavement and culvert repair at the I-105 and I-110 Interchange	Caltrans	Planning

TABLE 5-2
RELATED PROJECTS

Project Name	Project Type / Location	Project Sponsor	Project Status
SR 47 Schuyler Heim Bridge Replacement	Replacement of bridge with a fixed-span bridge structure, providing a permanent navigable channel and no traffic delays due to bridge lifting.	Caltrans	Construction from 2011 to 2017
Long Beach Freeway (I 710) Pavement Rehabilitation Project	Installing precast concrete panels and concrete slabs in various traffic lanes and locations, upgrading median barrier, and constructing maintenance pullouts along route.	Caltrans	Construction from 2012 to 2016
Flood Control/Drainage Projects			
Inner Cabrillo Beach Bacterial Water Improvement Project	Replacement of sewer lines, bird exclusion structures, sand, and storm water diversion	Port of Los Angeles	Construction
Wilmington Drain Multiuse Project	Storm water screening and treatment, enhanced public access, bank stabilization, and native vegetation restoration	City of Los Angeles BOS	Planning
Machado Lake Ecosystem Rehabilitation Project	Removal of sediment, dam improvements, and detention basins	City of Los Angeles DPW	Construction 2014
Wastewater – Collection System Program	Sewer and manhole rehabilitation activities throughout the City.	City of Los Angeles DPW	Construction anticipated 2015-2017
Airport Projects			
Northside LAX Plan Update	2,320,000 square feet of new development. Potential projects to support employment, retail, restaurant, office, hotel, research and development, education, civic, airport support, recreation, and buffer uses	Los Angeles International Airport (LAX)	Environmental review
Central Utility Plant (CUP) Replacement Project	Replacement of existing CUP and cogeneration facilities, including reclaimed water pipeline and treatment systems	LAX	Construction anticipated 2014
New Tom Bradley International Terminal Project	Provides greater capacity to the existing facility's west side with addition of new gates, and a Great Hall for passenger amenities.	LAX	Construction 2010-2015

SOURCES: City of Los Angeles Department of Public Works, Uniform Project Reporting System (UPRS) Project Reports, 2015; City of Compton, *Urban Water Management Plan*, 2005; City of Los Angeles, *Water Integrated Resources Plan 5-Year Review FINAL Document,* 2012; City of Vernon, *Urban Water Management Plan,* 2011; Caltrans, 2015; Los Angeles World Airports 2015; Cities of Bell, Carson, Cudahy, Downey, El Segundo, Industry, Long Beach, Norwalk, Pico Rivera, South Gate, Vernon, 2015

In addition to the geographic scope, cumulative impacts also take into consideration the timing of related projects relative to the proposed GBMP projects. Implementation of proposed GBMP projects is expected to occur in phases between 2015 and 2035. Schedule is particularly relevant to the consideration of cumulative construction-related impacts, since construction impacts tend to be relatively short-term. However for future projects, construction schedules are often broadly estimated and can be subject to change. Although timing of future projects is likely to fluctuate

due to schedule changes or other unknown factors, this analysis assumes these projects would be implemented concurrently with construction of proposed GBMP projects between 2015 and 2035.

5.3 Related Projects

Cumulative effects could result when considering the effects of the proposed GBMP projects in combination with the effects of other related projects in the area. For this analysis, other past, present, and reasonably-foreseeable future related projects have been identified. Table 5-2 lists the major capital improvement projects and water resources management projects (including groundwater recharge and recycled water projects) in the project vicinity. In addition, the analysis of cumulative impacts assumes that throughout the southern portion of Los Angeles County, planned future development projects will be on-going simultaneously with the proposed GBMP projects, including residential development, small-scale capital improvement projects, and projects that have not yet been identified.

5.4 Assessment of Cumulative Effects

5.4.1 Aesthetics

The proposed GBMP projects and related cumulative project would occur primarily in areas that have already been impacted by urban development. Construction activities associated with these projects could result in temporary changes to light, glare, and the visual character of the project sites and possibly the surrounding areas, primarily due to the presence of construction equipment and materials that may be visible from public vantage points. Any visual effects would be temporary and short-term, i.e. limited to the construction period. Implementation of Mitigation Measure AES-4 would reduce impacts related to nighttime construction lighting to less than significant levels. In addition, many of the proposed GBMP projects would occur at existing facilities, so any new structures or equipment would be aesthetically consistent with the visual character of the existing facilities and surrounding areas with implementation of Mitigation Measures AES-1 through AES-3. In addition, Mitigation Measure AES-5 would ensure permanent exterior lighting associated with new facilities would not affect neighboring land uses or nighttime skies.

For related projects, any potentially significant impacts associated with light, glare, and aesthetics would be identified during CEQA and other assessments, as appropriate, and could be similarly mitigated. As such, impacts related to aesthetics would be minimized to less than significant levels through mitigation and would not combine to create cumulatively significant impacts. Therefore, the proposed GBMP projects, when considered together with other related projects in the CBWCB, would not have an incremental effect to aesthetics that would be cumulatively considerable.

5.4.2 Air Quality and Greenhouse Gases

Please refer to Chapters 4.2 Air Quality for a discussion of cumulative effects to air quality. The analysis of GHGs is inherently cumulative. Please refer to Chapter 4.6, Greenhouse Gases.

5.4.3 Biological Resources

The proposed GBMP projects would occur in highly urbanized and developed areas that are unlikely to include substantial habitats for biological resources. Mitigation Measures BIO-1 through BIO-16 would reduce potential impacts of the Draft GBMP to biological resources to a less than significant level. For future related projects, any potentially significant impacts to special species, riparian habitats, protected wetlands, migratory wildlife, and other local biological resources would be evaluated through project-level CEQA and other assessments, as appropriate, and could be similarly mitigated. In addition, all projects in the CBWCB, including the proposed GBMP projects, would be required to comply with applicable State, Federal, and Local regulations concerning biological resources. As such, impacts related to plant and animal species would be minimized to less than significant levels through required regulatory compliance and mitigation and would not combine to create cumulatively significant impacts. Therefore, the proposed GBMP projects, when considered together with future related projects in the CBWCB, would not have an incremental impact to biological resources that would be cumulatively considerable.

5.4.4 Cultural Resources

As discussed in Chapter 4.4, potential impacts to cultural resources due to the Draft GBMP would be less than significant with the implementation of the identified Mitigation Measures CUL-1 through CUL-3. As with the proposed GBMP projects, other future related projects in the CBWCB would be required to comply with applicable Federal, State, and Local regulations concerning cultural resources, and any potential effects could be similarly mitigated. Therefore, the proposed GBMP projects, together with future related projects in the CBWCB, would not have an incremental impact on cultural resources that would be cumulatively considerable.

5.4.5 Geology, Soils and Seismicity

Potential impacts to proposed GBMP facilities due to geology, soils, and seismic conditions and would be less than significant with the implementation of the identified Mitigation Measures GEO-1 and GEO-2, which require geotechnical investigations and monitoring of groundwater levels in areas where liquefiable soils are present. For future related projects, any similar potentially significant impacts due to local geology, soils, and seismic conditions would be identified during appropriate CEQA assessments and could be similarly mitigated. These projects, as well as the proposed GBMP projects, would be required to comply with all applicable Local and State standards. As such, impacts related to geology and soils would be minimized to less than significant levels through required regulatory compliance and mitigation, and would not combine to create cumulatively considerable impacts. Therefore, the proposed GBMP projects, when considered together with other related projects in the CBWCB, would not have an incremental impact to geology, soils and seismicity that is cumulatively considerable.

5.4.6 Hazards and Hazardous Materials

Implementation of the Draft GBMP has the potential to increase the use, storage, transport, and/or risk of accidental release of hazardous materials during construction and operations. Mitigation

Measures HAZ-1 and HAZ-2 would reduce risk of upset of hazardous materials and associated human health risks associated with the Draft GBMP to a less than significant level. For future related projects, any potentially significant impacts associated with the routine transport, use, or disposal of hazardous materials would be assessed during CEQA and other assessments, as appropriate, and could be similarly mitigated. Both the proposed GBMP projects and future related projects would be required to comply with Federal, State and Local rules and regulations related to hazardous materials. As such, impacts related to risk of upset and human health would be minimized to less than significant levels through required regulatory compliance and mitigation and would not combine to create cumulatively significant impacts. Therefore, the proposed GBMP projects, when considered together with future related projects in the CBWCB, would not have an incremental impact due to hazards and hazardous materials that would be cumulatively considerable.

5.4.7 Surface Hydrology and Water Quality

Concurrent construction of the proposed GBMP projects and the identified related projects could result in temporary impacts to surface hydrology and water quality. Runoff from construction sites that is not properly controlled could result in increased erosion and subsequent sedimentation, with impacts to local drainages. In addition, surface water quality could be affected by construction activities that result in the release of fuels or other hazardous materials to stream channels or storm drains, or discharge from excavation dewatering activities. Once constructed, runoff from new project sites also could increase due to changes in impervious surface area and collectively combine to have cumulative impacts to local storm drain capacity.

As described in Chapter 4.8, implementing agencies would be required to adhere to BMPs as specified in both the SWPPP and Los Angeles County MS4 Permit to control erosion, sedimentation, hazardous materials release, and offsite runoff from project sites into surface waters. All other related projects in the County similarly would be subject to the same federal, state and local regulations regarding drainage plans and flooding potential as the proposed project. In addition, implementation of Mitigation Measure HYDRO-1 would ensure that implementing agencies complete a grading and drainage plan for proposed GBMP projects, as applicable, to avoid any increase in offsite discharges, erosion, sedimentation, or pollutants. As a result, potential impacts associated with proposed GBMP projects would be minimized, controlled and contained, and would not have an incremental effect on hydrology and surface water quality that would be considered cumulatively considerable

5.4.8 Groundwater

Implementation of the GBMP by WRD is essentially designed to mitigate cumulative impacts to groundwater quality and quantity caused by local demands. WRD's service area encompasses a large area subject to cumulative water demand pressures. In addition to the projects identified by WRD in the GBMP, other projects initiated by local agencies could be introduced that would alter groundwater quality or levels. Storm water retention projects initiated by the Los Angeles County Flood Control District may increase groundwater recharge throughout the WRD service area, resulting in elevated water levels and potential entrainment of contaminants. In addition, increased use of recycled water or localized land use changes in the future could change water

demand patterns throughout the WRD service area, resulting in changing or unpredicted groundwater levels. These local actions would contribute to the cumulative impact identified in this PEIR.

The GBMP assumes that water purveyors will increase pumping to their adjudicated water rights or APA in the future. The GBMP scenarios are designed to increase recharge to match this increased pumping (Concept A Scenarios). The GBMP also considers pumping beyond the adjudicated water rights and APA under Concept B. These Concept B projects also match increased recharge with increased pumping. Under these Concept A and B scenarios, basin-wide groundwater levels are stable because increased pumping matches increased recharge.

The GBMP is designed to consider future scenarios where the CB and WCB are used for additional storage to provide a larger contribution to the regional water supply portfolio than is currently feasible. This intrinsically cumulative result is facilitated by the GBMP. Cumulative factors initiated by other entities including increased storm water recharge would be monitored and accommodated through the GBMP. In this sense, the GBMP provides a plan to manage the cumulative use of local resources for the benefit of the regional community.

Implementation of Mitigation Measures GW-Q1 through GW-Q7 and GW-L1 and GW-L2 would ensure the Draft GBMP does not have a significant impact to groundwater quality of groundwater levels. The modeling and analysis of groundwater quality and groundwater levels for the GBMP is inherently cumulative. There are no potentially significant adverse effects associated with the Draft GBMP that would combine with other future related projects to create significant adverse cumulative effects. The potential impacts associated with the proposed GBMP projects would not have an incremental effect on groundwater that would be considered cumulatively considerable.

5.4.9 Land Use

Cumulative land use impacts could occur if related projects in the vicinity of the proposed GBMP projects resulted in land use impacts, especially if the projects were implemented in combination. However, each individual GBMP project and future related projects would be required to either generally conform to the land use designations and zoning for their respective project sites or be subject to findings and conditions based on maintaining general conformance with the land use plans applicable to the area. Implementation of Mitigation Measures LU-1 and LU-2 would require siting studies for proposed GBMP projects to take land use compatibility into account and require compliance with terms and conditions of any necessary land use permits. As such, the proposed GBMP projects are not anticipated to substantially conflict with the intent of the General Plans of Los Angeles County or the applicable cities, or with other land use regulations required to be consistent with these General Plans. Conformance with these land use plans and regulations would ensure that any proposed project would not result in incompatible land uses. Therefore, the proposed GBMP projects, when considered together with other related projects, would not have an incremental impact to land use that would be cumulatively considerable.

5.4.10 Noise

Construction of the proposed GBMP projects would require the use of heavy construction equipment for activities such as site preparation, grading and excavation, trenching, installation of piping and equipment, well drilling, paving, and erection of structural elements and mechanical systems. The construction noise impacts associated with each individual GBMP project would be short-term in nature and limited to the period of time when construction activity is taking place for that particular project. Construction activity noise levels at and near construction sites would fluctuate depending on the particular type, number, and duration of usage of various pieces of construction equipment. During each stage of development for each individual GBMP project, there would be a different mix of equipment operating and noise levels would vary based on the amount and type of equipment in operation and the location of the activity. The significance of construction noise impacts would also be determined by the distance between noise sources and off-site sensitive receptors

Thus, the construction of proposed GBMP project could temporarily expose existing neighboring land uses and sensitive receptors to increased noise levels while construction activities are ongoing, which could result potentially significant project impacts. Implementation of Mitigation Measure NOISE-1 would ensure the implementing agencies utilize noise reduction techniques during construction activities that are performed in accordance with applicable noise regulations. Mitigation Measure NOISE-2 would require the implementing agencies of the GBMP projects that require 24-hour well drilling to obtain a noise waiver (if applicable) from the jurisdiction where the project is located. Mitigation Measure NOISE-3 would require injection and extraction wells to be located as far away from sensitive receptors as possible and temporary noise barriers to be erected if new wells are to be drilled in the immediate vicinity of sensitive receptors. Despite the implementation of mitigation measures, construction-related increases in ambient noise levels at sensitive receptors could be potentially significant depending on site-specific factors, including project location, distance from nearby noise-sensitive receptors, and the presence of any existing structures that may act as noise barriers to off-site receptors,

Proposed GBMP projects would be constructed throughout 17 municipalities in southern Los Angeles County and are generally spread over a large geographic area within WRD's service area. Pipeline projects part of the Draft GBMP would be constructed in short increments along a designated segment of roadway and could occur over a span of up to five years. Treatment plants, injection wells, and other project elements would be constructed intermittently in the future based on consideration of the feasibility of implementing each GBMP project. The simultaneous construction of non-GBMP projects could occur within the immediate vicinity of the proposed facilities. In addition, noise levels at and near construction areas within the project area would fluctuate depending on the particular type, number, and duration of usage of various pieces of construction equipment. Construction of the proposed project, in combination with other related projects, could result in a cumulatively considerable impact to sensitive receptors. **Mitigation Measure CUM-1** would require implementing agencies to coordinate construction of the proposed project with other agencies to ensure impacts due to construction noise are not cumulatively considerable.

Operation of new facilities associated with proposed GBMP projects would not result in significant noise impacts, as all project facilities would be designed to be in compliance with noise thresholds at the property boundary in accordance with local City and County noise ordinances. Implementation of Mitigation Measures NOISE-4 would ensure that such noise thresholds are achieved once project facilities are built and operational. Other non-GBMP projects would similarly be subject to the same ordinance requirements and would be designed accordingly. As such, operation of proposed GBMP projects would not contribute to a cumulatively significant incremental increase in ambient noise conditions.

Mitigation Measures

CUM-1: Implementing agencies shall coordinate project construction activities with other municipalities (e.g., City of Los Angeles, County of Los Angeles, and the 17 municipalities through which GBMP projects traverse) and agencies (e.g., Caltrans, Central Basin MWD, West Basin MWD) in the project area in Los Angeles County. Phasing of project construction shall be coordinated to minimize cumulative impacts to noise, traffic, and roadway circulation.

5.4.11 Transportation and Traffic

Construction of the proposed project, along with identified related projects, could affect traffic and circulation in the region. The effects of construction activities on traffic are due to an increase in the number of vehicles on local roadways (due to material delivery and worker commutes) and physical constraints on roadways if lane or street closures are required. Some of the related projects could be constructed simultaneously in proximity to or overlapping geographically with the proposed project. As mentioned above with noise impacts, construction of some capital improvement projects, such as roadway projects and storm drain projects, could occur simultaneously and within the same streets as the proposed project, particularly proposed pipelines since many of the pipeline alignments have yet to be finalized. This could result in a cumulative impact to traffic, particularly since the proposed pipelines would involve construction activities within roadways and right-of-ways. In addition, new employees may also be required to operate expanded treatment facilities, which would require transportation to and from these sites each day.

As described in Chapter 4.13, implementing agencies would implement Mitigation Measures TR-1 through TR-6, which requires preparation and implementation of a Traffic Control/Traffic Management Plan to ensure appropriate actions are taken to reduce traffic congestion during construction. Implementation of Mitigation Measure TR -7 would require consultation with local jurisdictions to develop plans to minimize any potential impacts to bicycle or pedestrian facilities. Implementation of Mitigation Measure TR -8 would require consultation with Metro and other local transit agencies to minimize impacts to alternative public transportation facilities and service. **Mitigation Measure CUM-1** would require implementing agencies to coordinate construction of proposed GBMP projects with other agencies besides Metro to ensure the combined effects of related projects in close proximity do not result in cumulatively considerable impacts to traffic and circulation.

Mitigation Measures

Implement **Mitigation Measure CUM-1**.

5.4.12 Utilities and Energy

The proposed project would replace the use of existing and future imported water for groundwater replenishment with recycled water and storm water. As discussed in Chapter 4.14, the amount of energy required to produce AWT recycled water for groundwater replenishment activities is generally less compared to the energy required to import the same amount of water to southern California. Therefore, energy usage associated with acquiring source water for replenishment for GBMP Concepts A and B would be less than the current management strategy to import the same amount of water via the SWP or the Colorado River.

However, some proposed GBMP projects may increase energy demands on local power suppliers for operation of new treatment facilities, wellheads and pumps. Mitigation Measure UTIL-3 would require both energy efficient equipment and off-peak operation of proposed facilities. Such energy efficiency measures would reduce the overall energy requirements associated with the proposed project, and would therefore ensure cumulative impacts to energy resources are reduced to less than significant levels.

References – Cumulative Impacts

Port of Los Angeles, Proposition O Concept Report, Inner Cabrillo Beach Bacterial Water Quality Improvement Project Implementation Plan, July 20, 2006.

City of Compton, *2005 Urban Water Management Plan,* April 2006.

City of Los Angeles, Water Integrated Resources Plan 5-Year Review FINAL Document, 2012.

City of Vernon, Community Services & Water Department, Five-Year Capital Improvement Plan 2010-2015, October 2010.

Central Basin Municipal Water District, *2010 Urban Water Management Plan,* 2011.

West Basin Municipal Water District, *2010 Urban Water Management Plan,* May 2011.

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CHAPTER 6
Growth Inducement

6.1 Introduction

The *CEQA Guidelines* (Section 15126.2(d)) require that an EIR discuss the potential growth-inducing impacts of a proposed project. The *CEQA Guidelines* provide the following guidance for such discussion:

> "Discuss the ways in which the proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Included in this are projects which would remove obstacles to population growth (a major expansion of a wastewater treatment plant might, for example, allow for more construction in service areas). Increases in the population may tax existing community service facilities, requiring construction of new facilities that could cause significant environmental effects. Also discuss the characteristic of some projects which may encourage and facilitate other activities that could significantly affect the environment, either individually or cumulatively. It must not be assumed that growth in any area is necessarily beneficial, detrimental, or of little significance to the environment."

A project can have direct and/or indirect growth inducement potential. An example of direct growth inducement is construction of new housing. An example of indirect growth inducement is a project that establishes substantial new permanent employment opportunities that in turn stimulate the need for additional housing and services to support the new employment demand. Similarly, a project could indirectly induce growth if it removes an obstacle to growth, such as removing a constraint on a required public service.

Water supply availability is one of the chief public services needed to support growth and community development. Implementation of the Draft GBMP would increase reliability of local groundwater supplies to meet current and future demands that would otherwise be met through imported water. While adequate water supply plays a role in supporting additional growth, it is not the single determinant of such growth. Other factors, including General Plan policies, land use plans, and zoning, the availability of wastewater treatment capacity and solid waste disposal capacity, public schools, transportation services, and other important public infrastructure, also influence business and residential population growth. Economic factors, in particular, greatly affect development rates and locations.

6.2 Methodology

This Section evaluates how the GBMP could affect population growth in the WRD service area. Population and water demand projections are compiled for the WRD service area and compared with existing water demands. The growth anticipated in the region has been identified in local General Plans prepared by local land use agencies and municipalities. WRD has no control over land use decisions or population growth. As a resource manager, WRD's mission is to ensure that water resources are sufficient to meet adjudicated water rights. This section evaluates WRD's relationship to local population trends and water supply availability.

Growth inducement itself is not necessarily an adverse impact. It is the potential consequences of growth, the secondary effects of growth, which may result in environmental impacts. Potential secondary effects of growth could include increased demand on other public services; increased traffic and noise; degradation of air quality; loss of plant and animal habitats; and the conversion of agriculture and open space to developed uses. Growth inducement may result in adverse impacts if the growth is not consistent with the land use plans and growth management plans and policies for the area, as "disorderly" growth could indirectly result in additional adverse environmental impacts. Thus, it is important to assess the degree to which the growth accommodated by a project would or would not be consistent with applicable land use plans.

The following analysis provides an assessment of the growth inducement potential of the GBMP, to ascertain whether it would remove an obstacle to additional growth and development. The analysis includes an assessment of existing and projected population levels and existing and projected water supply and demand.

6.3 Population Projections

The 43 local jurisdictions that govern land use and development in the WRD service area are listed below in **Table 6-1.** Each jurisdiction's adopted General Plan guides the type and location of land uses and the intensity of development in response to projected population growth and associated housing needs. Each jurisdiction has assessed the growth-related impacts associated with planned land use and build-out scenarios allowed under their General Plans.

The WRD service area is located within the planning area of the Southern California Association of Governments (SCAG). SCAG consists of local governments from Los Angeles, Ventura, Orange, San Bernardino, Riverside, and Imperial Counties. One of SCAG's primary functions is to forecast population, housing, and employment growth for each region, subregion, and city. SCAG has prepared the Regional Comprehensive Plan (RCP) which combines regional planning efforts into a single focused document (SCAG, 2008). The RCP addresses growth management as well as several core elements including housing, transportation, air quality, and water. The principal objectives of the RCP are to coordinate regional and local decisions with respect to future growth and development and to minimize future environmental impacts. SCAG has also prepared the Regional Transportation Plan (RTP) which acts as a long-term planning and management plan for the regional transportation system, providing mitigation measures to off-set

the impacts of growth projected in the RCP. The latest SCAG Growth Forecast was completed in 2012 as part of the 2012 RTP Update.

Table 6-1 shows the estimated population projections provided by SCAG for the jurisdictions within WRD's service area. With the exception of the City of Los Angeles and unincorporated Los Angeles County, the projections are taken from SCAG's 2012 RTP Update. Given that only portions of the City and County of Los Angeles are within WRD's service area, the relevant census tracts have been identified and the growth projections within these tracts are provided in Table 6-1. The census tract projections are taken from SCAG's 2008 RCP, the latest available. Overall, population growth in the WRD service area, collectively is projected to be modest, with a compound annual growth rate that is less than one percent per year (0.38%) over the planning horizon of 27 years (2008 to 2035) and overall growth of 10 percent by 2035 relative to 2008 population levels.

TABLE 6-1a
SCAG POPULATION PROJECTIONS FOR WRD SERVICE AREA

City	2008	2020	2035
Artesia	16,500	16,700	17,000
Bell	35,500	35,900	36,400
Bellflower	76,600	76,600	81,300
Bell Gardens	41,900	43,000	44,500
Carson	91,700	97,500	10,600
Cerritos	49,000	49,400	49,800
Commerce	12,800	12,900	13,000
Compton	95,900	96,900	97,600
Cudahy	23,600	25,200	27,200
Downey	111,800	116,200	122,700
El Segundo	16,700	16,900	17,000
Gardena	58,800	59,700	66,200
Hawaiian Gardens	14,300	14,800	15,600
Hawthorne	84,300	89,600	96,300
Hermosa Beach	19,400	19,600	19,700
Huntington Park	58,100	62,000	67,700
Industry	200	200	200
Inglewood	109,700	111,900	113,500
La Habra	5,300	5,700	6,500
La Mirada	48,500	50,300	52,800
Lakewood	80,000	80,500	80,600
Lawndale	32,700	34,600	37,400
Lomita	20,300	21,000	21,900
Long Beach	462,200	491,000	534,100
Los Angeles [a]	122,583 [b]	126,918	133,159
Lynwood	69,300	72,300	74,300

TABLE 6-1a
SCAG POPULATION PROJECTIONS FOR WRD SERVICE AREA

City	2008	2020	2035
Manhattan Beach	35,100	35,500	36,000
Maywood	27,400	27,600	28,000
Montebello	62,500	66,400	66,400
Norwalk	105,500	109,100	114,200
Palos Verdes Estates	13,400	13,500	13,500
Paramount	54,100	57,100	62,600
Pico Rivera	62,900	65,900	70,100
Rancho Palos Verdes	41,600	41,700	41,700
Redondo Beach	66,500	69,700	73,000
Rolling Hills	1,900	1,900	1,900
Rolling Hills Estates	8,100	8,100	8,200
Signal Hill	11,000	11,800	12,900
South Gate	94,400	101,200	110,000
Torrance	145,000	150,800	158,500
Vernon	100	100	100
Whittier	85,300	87,600	90,500
Unincorporated County of Los Angeles [a]	74,867 [b]	79,355	85,610
Total	**2,647,350**	**2,754,673**	**2,905,669**

[a] SCAG 2008 RTP, by census tracts within WRD service area.

[b] Data for year 2010 instead of 2008.

SOURCE: SCAG 2008 RTP, SCAG 2012 RTP.

TABLE 6-1b
POPULATION PROJECTIONS FOR WRD SERVICE AREA BASED ON 2010 UWMPS

District	2010	2020	2035
CBMWD	1,654,866	1,720,700	1,809,737
WBMWD	853,377	892,116	942,893
City of Long Beach	462,257	480,126	508,233
City of Torrance	103,111	108,384	116,804
City of Compton	81,963	87,456	93,336[a]
TOTAL	**3,155,574**	**3,288,782**	**3,377,667**

[a] Compton population projections through 2030.

SOURCES: CBMWD 2010 UWMP; WBMWD 2010 UWMP (MAY 2011); City of Torrance 2010 UWMP (July 2011); City of Long Beach 2010 UWMP (September 2011); City of Compton 2010 UWMP (January 2011).

6.4 Water Supply and Demand Projections

Urban Water Management Plans (UWMP) are prepared by California's urban water suppliers to support long-term resource planning and ensure adequate water supplies are available to meet existing and future water demands. Every urban water supplier that either provides over 3,000 acre-feet of water annually or serves more than 3,000 connections is required to assess the reliability of its water sources over a 20-year planning horizon considering normal, dry, and multiple dry years. This assessment is to be included in its UWMP, which are to be prepared every five years and submitted to the Department of Water Resources (DWR) for consistency review under the Urban Water Management Planning Act. The five major water suppliers within the boundaries of WRD that prepare UWMPs are: Central Basin Municipal Water District (CBMWD), West Basin Municipal Water District (WBMWD), City of Long Beach, City of Compton, and City of Torrance. A relatively small portion of the Los Angeles Department of Water and Power (LADWP) service area also is included within WRD's boundaries as are small areas served by California Water Service Company (CWS). For simplicity, LADWP and CWS have not been included in the following analysis of water supply and demand. The projected water supplies and water demand for each of the other five agencies are provided below in **Tables 6-2** through **6-6**.

TABLE 6-2
CBMWD CURRENT AND PROJECTED WATER DEMAND AND SUPPLY (AFY)

Sources	2010 (Actual)	2020	2035
Retail Municipal And Industrial Demand [1]			
Groundwater[2]	174,318	184,100	184,600
Imported Water	43,147	52,685	58,340
Recycled Water[3]	6,632	11,000	16,000
Replenishment Use			
Imported Water	20,295	21,000	21,000
Total Demand	**244,393**	**268,785**	**279,940**
Supply Sources			
Groundwater	174,318	194,400	194,400
Imported Water	63,443	72,360	72,360
Recycled Water	6,632	23,000	23,000
Total Supply	**244,393**	**289,760**	**289,760**

1 2010 Demands are based on actual deliveries from 2009-2010
2 Includes groundwater production from the Central Groundwater Basin and Main San Gabriel Basin
3 Include Recycled Water sales from Central Basin's RW program and the City of Cerrito's RW System

SOURCE: Central Basin 2010 UWMP

TABLE 6-3
WBMWD CURRENT AND PROJECTED WATER DEMAND AND SUPPLY (AFY)

Sources	2010	2020	2035
Total Demand			
Baseline Demand	170,527	198,218	197,275
Planned Conservation	14,000	21,039	23,632
Total Retail Demand	**156,527**	**177,179**	**173,643**
Recycled Water Demand	14,182	33,882	37,382
Total Potable Demand	**142,345**	**143,297**	**136,261**
Supply Sources			
Groundwater [a]	36,360	45,000	45,000
Imported Water [b]	104,985	76,797	69,761
Recycled Water [c]	14,182	33,882	37,382
Desalination [d]	500	21,500	21,500
Total Sources	**156,027**	**177,179**	**173,643**
Conservation [e]	14,000	21,039	23,632
Total Supply	**170,027**	**198,218**	**197,275**

a Groundwater Production within West Basin service area only
b Imported retail use only, does not include replenishment deliveries (Barrier)
c Recycled water does not include replenishment deliveries (Barrier) and deliveries outside the service area
d Desalination includes both brackish and ocean water
e Conservation consists of Active and Passive savings according to West Basin's projected estimates

SOURCE: WBMWD 2010 UWMP (May 2011)

TABLE 6-4
LONG BEACH CURRENT AND PROJECTED WATER DEMAND AND SUPPLY (AFY)

Sources	2010 (Actual)	2020	2035
Total Demand			
Municipal	54,322	55,244	54,652
Recycled Water	6,556	11,300	14,000
System Losses	2,570	2,302	2,277
Total Demand	**63,448**	**68,846**	**70,929**
Supply Sources			
Groundwater	34,655	33,500	35,000
Imported Water	22,237	24,046	11,929
Recycled Water	6,556	11,300	14,000
Desalinated Water	0	0	10,000
Total Supply	**63,448**	**68,846**	**70,929**

SOURCE: City of Long Beach 2010 UWMP (September 2011)

TABLE 6-5
TORRANCE CURRENT AND PROJECTED WATER DEMAND AND SUPPLY (AFY)

Sources	2010[4]	2020	2035
Total demand			
Potable Water[1]	18,758	20,882	22,504
Recycled Water	6,445	6,650	7,250
Total Demand	**25,203**	**27,532**	**29,754**
Supply Sources			
Groundwater[2]	2,287	8,040	8,040
Imported Water	16,471	20,967	20,967
Recycled Water	6,433	6,650	7,150
Total Supply	**25,191**	**35,657**	**36,157**

1 Potable Water includes both groundwater and imported water.
2 Groundwater includes water from Goldsworthy Desalter.

SOURCE: City of Torrance 2010 UWMP (July 2011)

TABLE 6-6
COMPTON CURRENT AND PROJECTED WATER DEMAND AND SUPPLY (AFY)

Sources	2010[4]	2020	2030
Total Demand (Deliveries or use)			
Municipal, Industrial, Commercial	7,111	7,803	8,327
Recycled Water	0	0	0
System Losses	1,818	1,995	2,128
Total Water Use	**8,929**	**9,798**	**10,455**
Supply Sources			
Groundwater[1]	6326	5780	5780
Imported Water[2]	2603	4018	4675
Recycled Water	0	0	0
Total Supply	**8,929**	**9,798**	**10,455**

1 The City of Compton has adjudicated pumping rights of 5,780 AFY from the Central Basin. In 2010, Compton leased pumping rights from the City of Norwalk for up to 1,200 AFY.
2 Although Compton's reliance on imported water has been decreasing, historically, as it becomes more reliable on its groundwater supply, it is unlikely that pumping rights will be able to support future demand. Thus, imported water sources will increase.

SOURCE: City of Compton UWMP 2010 (January 2011)

6.5 Growth Inducement Potential

The GBMP identifies two concept strategies (Concept A and B) for water supply reliability in the WRD service area. Concept A provides for replenishment needed to meet the existing water rights and adjudicated pumping limits within both groundwater basins. Concept B would provide for additional groundwater basin storage and extraction above current adjudicated levels. The GBMP uses a stepwise approach to developing additional water supplies to meet these two concepts through enhanced replenishment and extraction utilization of the Central and West Coast Basins. The GBMP develops and evaluates projects that could be implemented to satisfy these goals, firstly of Concept A and subsequently of Concept B. The purpose of both Concepts A and B is to increase the amount of local water supplies available to meet projected overlying user demands. Concept A would increase local supplies to meet current groundwater rights and Concept B would increase local supplies to take advantage of additional storage in the groundwater basins. Neither Concept A or B would increase demands or remove water supply as an obstacle to growth. Rather, the GBMP would increase local water sources and storage capacity that would reduce demands for imported water.

Implementation of the GBMP would not have direct growth inducement effects, as it does not propose development of new housing that would attract additional population. Further implementation of the GBMP would not result in substantial permanent or even short-term construction employment that could indirectly induce population growth by establishing new employment opportunities. It is assumed that construction-related activities would be supported by a pool of employees local to southern California, and new housing for construction employees would not be required. Similarly, operation of proposed facilities may require new or additional staff; however such staff would also be selected largely from the existing regional population and otherwise would not be large enough in numbers to contribute to population growth.

The purpose of the GBMP is to replace imported water supplies with local supplies to meet existing and future demands. All the water purveyors in the WRD service area have projected water demands that would be met with a combination of imported and local water supplies. Much of the WRD service area is urbanized and largely built out, with population expected to grow less than one percent per year over the next 25 years. Relative to 2010 population levels, total population in 2035 is projected to increase by approximately 10 percent. Commensurately, water demand in the service area is projected to increase by about 13 percent, from 498,500 AFY in 2010 to 564,721 AFY in 2035 (see **Table 6-7**). In order to keep up with demand, water supplies are expected to increase overall by 82,956 AFY by 2035 (see **Table 6-8**). Concept A of the Draft GBMP would not be considered growth inducing, as existing water rights in the form of adjudicated pumping rights would not change. Projects proposed under Concept A would allow WRD to fulfill its obligation to support existing pumping rights with adequate replenishment. Projects under Concept A would allow for up to 40,000 AFY of replenishment combined in both the West Coast and Central basins. Thus, Concept A would support the additional groundwater pumping already planned by overlying districts by 2035. Together, CBMWD, WBMWD, Long Beach, and Torrance plan to pump approximately an additional 34,820 AFY from the two basins, according to their 2010 UWMPs (see Table 6-8).

TABLE 6-7
TOTAL SUPPLY AND DEMAND FOR WRD SERVICE AREA, 2010 V. 2035

District	2010	2035
CBMWD	244,393	279,940
WBMWD	156,527	173,643
Long Beach	63,448	70,929
Torrance	25,203	29,754
Compton	8,929	10,455
Demand	**498,500**	**564,721**
CBMWD	244,393	289,760
WBMWD	156,027	173,643
Long Beach	63,448	70,929
Torrance	25,191	36,157
Compton	8,929	10,455
Supply	**497,988**	**580,944**

TABLE 6-8
NET CHANGE IN SUPPLY BY SOURCE, 2010 V. 2035

	CBMWD	WBMWD	LB	Torrance	Compton	TOTAL
Groundwater	20,082	8,640	345	5,753	-546	34,274
Imported Water	8,917	-35,224	-10,308	4,496	2072	-30,047
Recycled Water	16,368	23,200	7,444	717	0	47,729
Desalination	0	21,000	10,000	0	0	31,000
Total	**45,367**	**17,616**	**7,481**	**10,966**	**1,526**	**82,956**
Total Non-Imported	**36,450**	**52,840**	**17,789**	**6,470**	**-546**	**113,003**

Under Concept B, additional recharge and extraction in excess of the current adjudicated rights and pumping limits would be allowed, to take advantage of the storage space available in the underlying groundwater basin. It is estimated that up to 103,250 AFY could be replenished to support such basin operations in the Central Basin and up to 30,000 AFY in the West Coast Basin. The overlying water agencies expect that by 2035 approximately 79,000 AFY of additional demand would be fulfilled with additional recycled water and desalinated water (see Table 6-8).

The GBMP projects proposed under Concepts A and B result in replenishment of groundwater and development of groundwater supply at a level that would support planned future growth through 2035. The GBMP proposes phasing of project implementation in a step-wise fashion, which would allow for the development of water supplies in a manner that would keep up with planned future demand. The GBMP does not propose implementation of future water projects that would result in a water supply that would exceed projected future demand. The local water supply would replace the need to import water to meet the already planned water demands. The limited

growth anticipated in the region and the regional policies in place to reduce imported water as much as possible suggest that the additional water supplies do not directly or indirectly induce growth or remove any obstacle to growth since the imported water option is available, albeit likely at higher prices, if local supplies are insufficient.

As discussed above, SCAG as well as CBMWD, WBMWD, Long Beach, Torrance, and Compton all anticipate increased population projections, as documented in their 2010 UWMPs. WRD manages the groundwater resources within its service area, it does not have land use authority and is not a direct water supplier. Thus, WRD does not affect the location of future development and does not have a role in developing the infrastructure to deliver water directly to new customers. Local agencies determine where and when water delivery infrastructure would be installed in response to planned and approved growth. Local municipalities identify local geographic growth trends and policies and evaluate the secondary effects of growth within their jurisdictions through their General Plan development and evaluation of their General Plans in accordance with CEQA. Therefore, any indirect secondary effects of growth resulting from planned growth would be addressed in the environmental impact reports prepared for each jurisdiction's General Plan and mitigated accordingly where necessary. The GBMP would not induce growth either directly or indirectly and no additional mitigation measures are required.

References – Growth Inducement

Central Basin Municipal Water District, March 2011. *2010 Urban Water Management Plan.*

City of Compton, January 2011. 2010 Urban Water Management Plan.

City of Long Beach, June 2011. 2010 Urban Water Management Plan.

City of Torrance, July 2011. 2010 Urban Water Management Plan.

SCAG. Integrated Growth Forecast. RTP Growth Forecast for 2012. Accessed at http://www.scag.ca.gov/forecast/index.htm in January 2012.

SCAG. *Final 2008 Regional Comprehensive Plan: Helping Communities Achieve a Sustainable Future.* 2008.

SCAG. *2008 Regional Transportation Plan: Making the Connections.* Adopted May 2008.

West Basin Municipal Water District, May 2011.*2010 Urban Water Management Plan.*

CHAPTER 7
Alternatives Analysis

7.1 Overview of Alternatives Analysis

In accordance with *CEQA Guidelines* (Section 15126.6), an EIR must describe and compare a range of reasonable alternatives to a project, or alternative locations for a project, that could feasibly attain most of the basic project objectives but avoid or substantially lessen any significant environmental impacts associated with the project. An EIR must consider a reasonable range of feasible alternatives to facilitate informed decision making and public participation. An EIR need not consider every conceivable alternative to a project and is not required to consider alternatives which are infeasible. The lead agency shall select a range of project alternatives and disclose its reasoning for selecting those alternatives. The selection of such alternatives is governed only by the rule of reason, as described further below.

7.1.1 Selection of a Range of Reasonable Alternatives

Because an EIR must identify ways to mitigate or avoid significant environmental effects of a project, the analysis of alternatives shall focus on alternatives that are capable of avoiding or substantially lessening one or more significant environmental effects (*CEQA Guidelines*, Section 15126.6(b)). The EIR must explain the rationale for selecting the alternatives to be discussed and identify alternatives that were considered but rejected during the scoping process (*CEQA Guidelines*, Section 15126.6(c)). The lead agency is required to explain the reasons for rejecting alternatives. The factors that may be used to eliminate alternatives from detailed consideration in an EIR include, but are not limited to, the following: (1) failure to meet most of the basic project objectives, (2) inability to avoid significant environmental impacts, and (3) infeasibility. When considering the feasibility of an alternative, the following factors may be considered: site suitability, economic viability, availability of infrastructure, general plan consistency, other plans or regulatory limitations, jurisdictional boundaries, and the ability to reasonably acquire, control, or otherwise have access to the alternative site (*CEQA Guidelines*, Section 15126.6(f)(1)).

7.1.2 Evaluation of Alternatives

An EIR shall include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the proposed project (*CEQA Guidelines*, Section 15126.6(d)). The environmental impacts associated with the alternatives are evaluated relative to the impacts associated with the proposed project. A matrix can be used to summarize and compare the major characteristics and significant environmental effects of each alternative. If an alternative would cause additional significant effects, in addition to those caused by the proposed

project, they are required to be discussed but in less detail than the significant effects of the proposed project.

Section 15126.6(e)(1) of the *CEQA Guidelines* requires that a no project alternative be addressed in this analysis. The purpose of evaluating a no-project alternative is to allow decision-makers to compare the potential consequences of the project with the consequences that would occur without implementation of the project. An EIR must also identify the environmentally superior alternative. A no-project alternative may be environmentally-superior to the project based on the minimization or avoidance of physical environmental impacts. However, a no-project alternative must also achieve the project objectives in order to be selected as the environmentally-superior alternative. Section 15126.6(e)(2) of the *CEQA Guidelines* requires that if the environmentally superior alternative is the no-project alternative, an EIR shall identify an environmentally superior alternative among the other alternatives.

7.2 Proposed Project Summary

7.2.1 GBMP Objectives

As stated earlier in Chapter 3, the objectives established for the GBMP are to:

- Provide adequate replenishment water supplies to meet the future needs of groundwater pumpers
- Improve the reliability of the replenishment supplies by reducing and eventually eliminating the current use of imported water for basin replenishment
- Improve groundwater quality
- Enhance the ability of both basins to sustainably store and deliver water supplies

The GBMP provides an overall plan for future management of the West Coast and Central groundwater basins to meet existing replenishment requirements and evaluates the potential to increase the use of local groundwater supplies to meet overlying demands beyond current capabilities. The projects and management strategies in the GBMP are organized around two target levels of future groundwater replenishment and extraction: first, meet the adjudicated water rights and pumping limits (Concept A), and second, provide for additional groundwater basin storage and extraction above current adjudicated levels (Concept B).

7.2.2 Potentially Significant Impacts of the Proposed GBMP

Chapters 4, 5, and 6 provide analyses of potentially significant impacts that could result from implementation of the GBMP, both Concept A and Concept B. As summarized below in **Table 7-1,** the potentially significant and unavoidable impacts associated with the GBMP are to air quality as a result of construction equipment emissions and noise impacts associated with construction of proposed GBMP projects. The final locations of many GBMP project components have not been determined and as such, could be in close proximity to sensitive receptors and land uses. Noise associated with construction activities could temporarily exceed local standards and thresholds at a level that cannot be mitigated. As noted in Chapter 4.2, Air Quality, and Chapter 4.11, Noise,

subsequent project-level CEQA analyses will revisit construction air emissions and noise impacts with site-specific assessments.

TABLE 7-1
SUMMARY OF PROJECT IMPACT ANALYSIS

Issue Area	Significance Determination
Aesthetics	LSM
Air Quality	SU
Biological Resources	LSM
Cultural Resources	LSM
Geology, Soils, and Seismicity	LSM
Greenhouse Gas Emissions	LTS
Hazards and Hazardous Materials	LSM
Surface Hydrology and Water Quality	LSM
Groundwater	LSM
Land Use and Planning	LSM
Noise	SU
Traffic and Transportation	LSM
Utilities, Public Services, and Energy	LSM
Environmental Justice	LTS
Cumulative Impacts	LSM
Growth Inducement (Indirect)	LTS

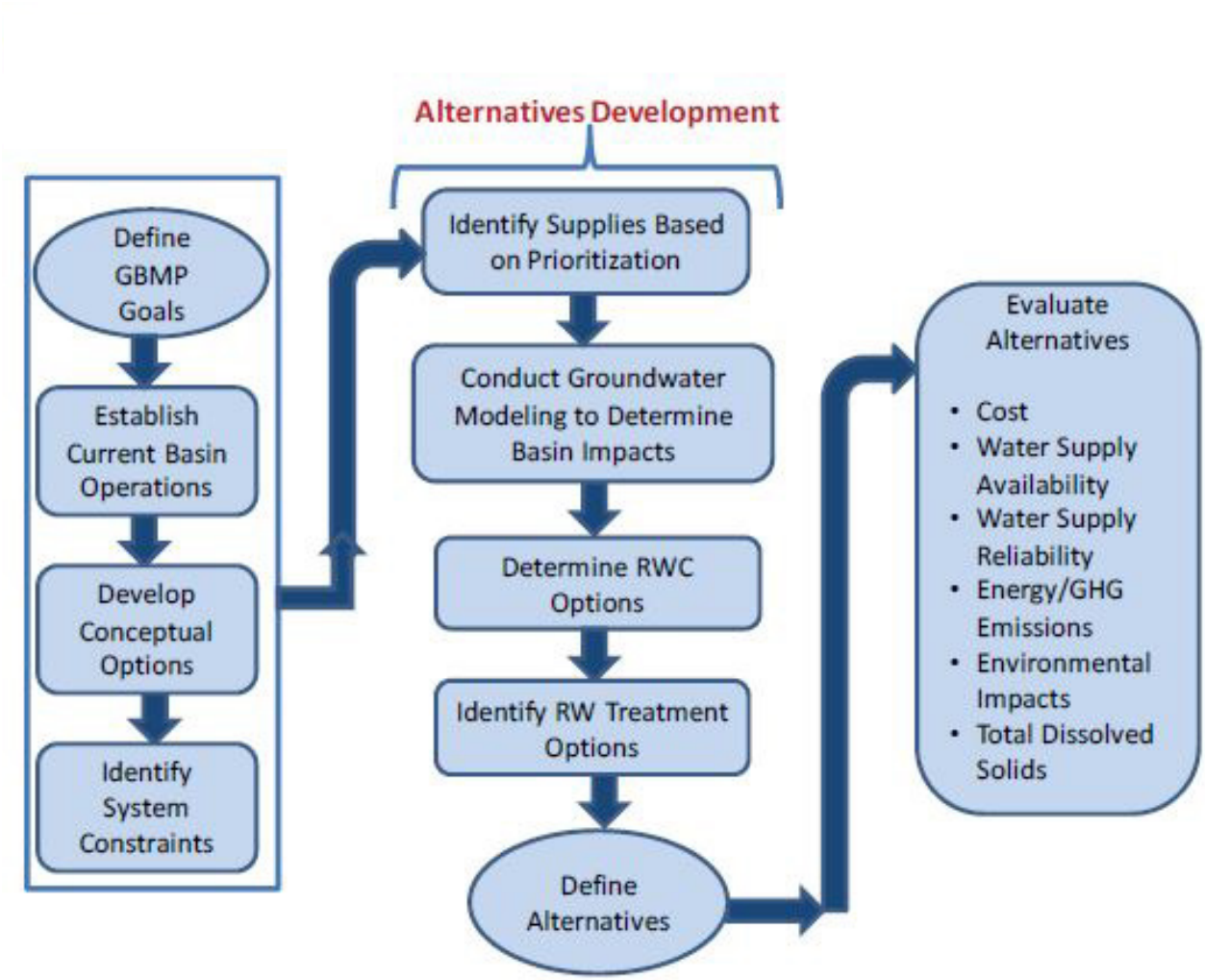
LTS = Less than Significant
LSM = Less than Significant with Mitigation
PS = Potentially Significant
SU = Significant and Unavoidable

SOURCE: ESA 2014.

7.3 Development of GBMP Alternatives

7.3.1 Overview of Alternatives Screening Process

In the development of the Draft GBMP, WRD employed an alternatives screening process, as demonstrated in **Figure 7-1**, to determine which projects or combination of projects would be most effective in meeting the replenishment and extraction goals in both the West Coast and Central basins for both Concepts A and B. The process began with the definition of GBMP goals and the establishment of current basin operations. System constraints were identified, and scenarios to achieve the GBMP goals in each basin were developed given the acknowledged constraints. WRD then identified specific sources of replenishment water for replacement of imported water, focusing on recycled water and storm water. Sources were identified based on availability with respect to flow, quality, and cost, and high priority options included recycled water sources nearest to the MFSG due to the low cost of conveyance and treatment (CH2M, 2012).



SOURCE: CH2M HILL, 2012

Figure 7-1
GBMP Planning Process

Next, groundwater modeling of the West Coast and Central basins was conducted using WRD/USGS MODFLOW, simulating groundwater conditions through 2050. Several scenarios were developed for each basin, comprised of management strategies and projects to achieve replenishment and pumping goals. The scenarios for the West Coast and Central basins were combined and modeled together for both Concept A and Concept B, to produce simulations that assess groundwater level fluctuations, identify trends in groundwater storage, and identify groundwater flow between the two basins and subareas within basins over the 40-year period (CH2M HILL, 2012). Recycled water contribution (RWC) options were analyzed based on existing regulations for treatment and method of recharge. A RWC of 100 percent was assumed for all potential injection projects considered in the GBMP based on current and expected regulations (CH2M HILL, 2012). In terms of recycled water treatment options, WRD considered a range of options including tertiary, full advanced treatment, a blend of the two, and other advanced treatment processes (CH2M HILL, 2012). The GBMP identifies that treatment options would need to be evaluated on a project-specific basis due to the various factors involved. WRD then used the modeling results to formulate alternatives to meet the extraction and replenishment goals of each basin. Alternatives were evaluated with respect to water supply availability, water supply reliability, basin utilization, energy emissions, and broad environmental impacts.

West Coast Basin Concept A

The scenarios considered for the West Coast Basin each included three fundamental components: water supply sources for injection, injection locations and aquifer targets, and corresponding pumping-extraction quality and aquifer targets. Currently, the barrier systems inject water into more than one aquifer. Generally speaking, the aquifers in the West Coast Basin are vertically stratified in the vicinity of the injection barriers as follows, from top to bottom: Gage, Lynwood, Silverado, and Lower San Pedro (see Figure 4.9-2). The saline plume most highly affects the Silverado aquifer; however, currently all aquifers are targeted by the injection systems. Extraction at the current desalter wells is predominantly from the Silverado aquifer, with limited extraction from the Lower San Pedro aquifer.

The following were the overall goals for developing the West Coast Basin scenarios (CH2M HILL, 2012):

- Provide replenishment necessary to support pumping at water rights of 64,468 AFY
- Increase replenishment at existing barriers using recycled water to allow for pumping to water rights
- Shift oil refineries to recycled water and then shift groundwater pumping to municipal purveyors
- Adjust pumping patterns to maximize containment and removal of saline plumes
- Assess the potential to stop injection into the Lower San Pedro aquifer
- Assess potential to extract instead of inject into the Lower San Pedro aquifer
- Continue to protect the Lower San Pedro aquifer for overall preservation of the groundwater basin
- Increase injection to allow for extraction above water rights.

Under Concept A, four scenarios (WCB-A1, -A2, -A3, and -A4) were formulated that constrained extraction patterns to the West Coast Basin adjudicated water rights. [Note that WRD acknowledges that assumptions regarding extraction may change based on actual decisions made by pumpers independently.] Scenario WCB-A1 assumed increased extraction by the water rights holders as well as increased injection at existing barriers. There were three distinct pumping patterns presented; WCB-A1a, -A1b, and -A1c. Scenario WCB-A1a assumed additional extraction by large water rights holders, as well as extraction of adjudicated rights by the City of Los Angeles. Scenario WCB-A1b assumed the same extraction practices by large water rights holders, with the addition of the City of Los Angeles pumping in excess of its adjudicated rights. The third pumping pattern scenario, WCB-A1c, consisted of pumping being redistributed with the goal to contain and remove the saline plume in the Silverado aquifer.

Scenarios A2, A3, and A4 differ from WCB-A1 with respect to the operation of the Lower San Pedro aquifer. These three scenarios were designed to evaluate the possibility of reducing or eliminating replenishment to the Lower San Pedro aquifer and, in some cases, extracting from this aquifer instead. Scenario WCB-A2 reduced or eliminated injection and extraction from the Lower San Pedro aquifer, while protecting from seawater intrusion by balancing pumping in the Silverado aquifer (CH2M HILL, 2012). Extraction patterns were essentially the same as WCB-A1a, save from shifting part of pumping from the Lower San Pedro aquifer to the Silverado aquifer. Scenario WCB-A3 limited injection to the Lower San Pedro aquifer based on the availability of discounted, surplus imported water, assumed to be available 2 out of 10 years (CH2M HILL, 2012). This scenario was explored to develop a cost/benefit analysis of injecting and storing surplus water in the Lower San Pedro aquifer for subsequent extraction. The extraction pattern was identical to Scenario WCB- A2. Finally, Scenario WCB-A4 eliminated injection into the Lower San Pedro aquifer, which allowed seawater intrusion to occur. Then brackish groundwater was extracted from this aquifer and treated at the wellhead once pumped. The extraction patterns were the same as Scenario WCB-A1a, with the exception of the added extraction from the Lower San Pedro aquifer as a means to manage seawater intrusion.

West Basin Municipal Water District's groundwater flow and solute transport model was used to evaluate these Concept A scenarios for the West Coast Basin. Based on the model results, only Scenario A1 was found to be viable (CH2M HILL, 2012). Scenarios WCB-A2, -A3, and -A4 were eliminated primarily due to the inability to protect the water quality of the Lower San Pedro aquifer, and the groundwater basin overall, which is one of the stated GBMP goals for the West Coast Basin. Scenarios WCB-A2 and WCB-A3 resulted in a significant increase in seawater intrusion in the Lower San Pedro aquifer and even the Silverado aquifer. Thus both were deemed too risky for further consideration. Scenario WCB-A4 resulted in seawater intrusion around the brackish-water extraction wells in the Lower San Pedro aquifer and movement of brackish water into the Silverado aquifer. If extraction was stopped for any reason, the intruded seawater would be trapped inland, degrading overall basin water quality. Thus Scenario A4 was also eliminated from further consideration (CH2M HILL, 2012).

West Coast Basin Concept B

Under Concept B, only one scenario was formulated for consideration in the West Coast Basin. Scenario WCB- B1 increased extraction by water rights holders to 30,000 AFY beyond the

adjudicated limit by assuming additional pumping by California Water Services Company (CWSC), the City of Torrance, and the City of Los Angeles, from wells at or near their existing wells to offset imported water demands (CH2M HILL, 2012). Other purveyors maintained the same pumping levels as assumed in scenario WCB-A1a and extraction included use of the new Silverado Desalters to mitigate the saline plume. Replenishment to account for the additional 30,000 AFY of extracted water came from injection of 15,000 AFY into 14 new wells in the southeastern area of the basin, and increased injection of 15,000 AFY at the existing barriers.

Central Basin Concept A

The scenarios considered for the Central Basin each included three fundamental components: water supply sources for injection and spreading, injection and spreading replenishment locations, and pumping locations. The following were the overall goals for developing the Central Basin scenarios (CH2M HILL, 2012):

- Replenish the Central Basin within the current APA (Concept A scenarios) and above the APA (Concept B scenarios)
- Further develop sources of local water, principally storm water and recycled water
- Maximize use of supplies and spreading grounds in the Montebello Forebay
- Provide for increased pumping to offset imported water demands consistent with increased replenishment
- Maintain an overall water balance in the basin
- Use groundwater basin storage space as required to meet objectives

Under Concept A, five scenarios were identified, differing with respect to specific source water used for replenishment, and whether the recycled water was applied using surface spreading alone or in combination with injection (CH2M HILL, 2012). Scenario CB-A1 increases extraction for water rights holders up to the allowed pumping allocation (APA) by replenishing the basin by spreading an additional 31,000 AFY of recycled water from the San Jose Creek WRP into the MFSG. Scenario CB-A2 is essentially the same as CB-A1 but modified in that recycled water would be pulled from both the San Jose Creek WRP and the Los Coyotes WRP. Scenario CB-A3 uses injection of recycled water from the Los Coyotes WRP in addition to spreading recycled water from the San Jose Creek WRP at the MFSG. Scenario CB-A4 modifies CB-A1 by increasing the amount of storm water to be captured from the Los Angeles River instead of the San Gabriel River, and recharged into the MFSG. None of these scenarios for Central Basin Concept A were eliminated from consideration and are part of the GBMP.

Central Basin Concept B

Under Concept B, two scenarios were identified that allow extraction to increase beyond the APA. Scenario CB-B1 increases extraction above the APA from the Montebello Forebay, with replenishment water coming from storm water capture from both the San Gabriel River and Los Angeles River. Scenario CB-B2 is essentially the same as CB-B1 with the addition of injection and extraction in the Los Angeles Forebay. Replenishment water in this scenario would come

from a Satellite AWTF that would skim wastewater from a major sewer trunk line. Both scenarios CB-B1 and CB-B2 are part of the GBMP.

7.3.2 GBMP Alternatives

The above-mentioned scenarios, with the exception of WCB-A2, WCB-A3, and WCB-A4, were carried into the modeling phase of the GBMP development. The scenarios were modeled using the USGS MODFLOW program to simulate groundwater levels and cumulative groundwater storage in the basins in response to differing water replenishment and pumping conditions of each scenario. Seven different combinations of the scenarios were modeled to assess various impacts to basin operating conditions.

The outcome of the modeling was a list of projects that could be implemented in various combinations to satisfy replenishment and extraction goals. These projects combined make up the GBMP and are described in Chapter 3 and analyzed at a programmatic level in Chapters 4, 5, and 6 of this PEIR. Given the comprehensive nature of the alternatives screening process, no additional alternatives to the GBMP have been considered.

7.4 No-Project Alternative

The *CEQA Guidelines* require an analysis of the specific alternative of "no project" (*CEQA Guidelines*, Section 15126.6). Specifically, the *CEQA Guidelines* state that "[t]he purpose of describing and analyzing a no project alternative is to allow decision makers to compare the impacts of approving the proposed project with the impacts of not approving the proposed project." The no-project alternative is not necessarily the same as the baseline used to determine the environmental impacts of the proposed project. The analysis of the no project alternative includes the existing baseline environmental conditions as well as "what would be reasonably expected to occur in the foreseeable future if the project were not approved, based on current plans and consistent with available infrastructure and community services" (*CEQA Guidelines*, Section 15126.6 (e)(2)). The analysis of impacts related to the no project alternative includes projecting what would reasonably be expected to occur "in the foreseeable future if the project were not approved."

One of WRD's primary responsibilities is to replenish the West Coast Basin and Central Basin sufficiently so that pumpers can extract groundwater up to their water rights in the West Coast Basin and up to the APA in the Central Basin. Water rights in the West Coast Basin are 64,468 AFY, and the APA in the Central Basin is 217,367 AFY. WRD anticipates that in the future, pumping will increase up to the adjudicated water rights as purveyors look to meet their water demands in the most reliable and economic manner with or without the proposed project. Even if the GBMP is not approved, WRD will continue to purchase water for replenishment and move forward with management actions and projects to fulfill its obligations and allow pumpers access to their adjudicated water rights. As a result, Scenarios WCB-A1a and CB-A1 mentioned above are considered the No Project Alternative for purposes of this analysis and is described in the GBMP as Baseline Operating Conditions.

The No Project Alternative would include increasing replenishment at the injection barriers in the WCB by approximately 18,00 AFY to support pumping at water rights, up to 64,468 AFY. The existing barrier systems have sufficient capacity to accommodate this level of replenishment. In addition to increasing replenishment, the No Project Alternative also assumes that the WCBBP and DGB are both approved for a 100-percent RWC and imported water is completely replaced with recycled water as the source for replenishment at both barriers. The recycled water would be produced at the E.C. Little WRF for the WCBBP and the Terminal Island WRP for the DGBP. Upgrades would be required at both plants to produce and inject an additional 15,500 AFY at the WCBBP and 2,500 AFY at the DGBP.

The No Project Alternative also would include increasing replenishment at the MFSG by approximately 12,000 AFY to support pumping at the APA, up to 217,367 AFY. This would be achieved with either storm water captured from the Rio Hondo or San Gabriel River or recycled water from the San Jose Creek WRP and/or Los Coyotes WRP. The San Jose Creek WRP has sufficient capacity to produce the additional recycled water with a few upgrades to the collection system. The No Project Alternative would include implementation of the GRIP project, which would replace up to 21,000 AFY of imported water with recycled water as a replenishment source for the MFSG.

The pumping patterns associated with the No Project Alternative would be determined by the pumpers themselves. For purposes of analysis, WRD has assumed that, in both the West Coast Basin and the Central Basin, pumpers will do any or all of the following: increase capacity of existing wells; bring on standby wells; activate wells that have been inactivated; replace existing wells with new wells; drill new wells generally in the area of existing wells; and/or collaborate with adjacent pumpers to use common wells to jointly meet demands. This pattern of pumping would not result in a significant shift in the general geographic distribution of pumping in the basin. WRD acknowledges that this distribution of pumping is not certain and other pumping patterns are possible as actual pumping plans are determined.

The No Project Alternative could partially support replenishment and extraction above adjudicated rights in the Central Basin (per Concept B), depending on the decisions made by pumpers each year to either extract their full water rights/APA or choose to carryover and convert rights into storage. The No Project Alternative would limit the ability for pumpers to take advantage of available storage given the limited development of replenishment supplies and lack of new replenishment infrastructure relative to the GBMP.

7.4.1 Ability to Meet Project Objectives

The No Project Alternative would meet some but not all project objectives. The No Project Alternative would partially meet the future needs of groundwater pumpers by providing adequate replenishment in support of adjudicated water rights and the APA. The No Project Alternative does not include projects that would allow for the capture of additional storm water, or the production of additional recycled water, or the construction of additional replenishment infrastructure to support replenishment above adjudicated rights. Additional recycled water would be available from existing treatment plants, but the capacity would not allow for WRD to both completely offset imported water as a replenishment source and increase net replenishment

volume at the levels required to satisfy the goals of Concept B. Therefore, under the No Project Alternative, the reliability of replenishment supplies would increase as recycled water replaces imported water; however, reliability would be less than that provided by implementation of the GBMP. Similarly, the No Project Alternative would enhance the ability to store and deliver water in the Central Basin but at a level less than that provided by implementation of the GBMP.

The No Project Alternative would allow WRD to meet the objective of improving water quality by using recycled water for replenishment, which has lower TDS and other constituents than existing groundwater, and maintaining seawater intrusion barriers. However, the No Project Alternative would not include construction of new desalter wells to accelerate the remediation of the saline plume in the WCB.

7.5 Summary of Environmental Impacts of Alternatives

A summary of the alternatives analysis is provided in Table 7-2, which provides a comparison of the No Project Alternative to the proposed GBMP with respect to project objectives and project impacts.

7.5.1 Construction and Operation Impacts

Relative to the GBMP, the No Project Alternative includes fewer projects that would be constructed regardless of the outcome of the GBMP. As a result, there would be less construction activity when compared to the proposed GBMP projects. The No Project Alternative includes some treatment plant upgrades (E.C. Little WRF, Terminal Island WRP in the West Coast Basin; San Jose Creek WRP, Los Coyotes WRP in the Central Basin), GRIP, and some new pipelines. The No Project Alternative excludes any new injection wells and desalter wells; thus, there would be fewer associated appurtenances such as conveyance pipelines and pump stations, relative to the GBMP. The No Project Alternative also does not include the new Satellite AWTF.

Fewer projects and new facilities result in fewer construction-related impacts to practically all resources. Impacts associated with siting of new permanent project components also may be avoided with the No Project Alternative. The relative difference in environmental impacts associated with the No Project Alternative when compared to the proposed GBMP is provided below.

Aesthetics

Impacts to Aesthetics, including scenic vistas, visual character, lighting, and glare, associated with the No Project Alternative would be primarily related to construction activities and the siting of new permanent aboveground facilities. Impacts would be mitigated by restoring site conditions, designing above ground facilities in a manner that is consistent with surroundings, including landscaping and vegetation, and shielding any temporary or permanent lighting to avoid new sources from light and glare. Impacts under the No Project Alternative would be similar to the proposed project, however in fewer locations due to the installation of fewer new facilities.

Air Quality

The No Project Alternative includes some treatment plant upgrades (E.C. Little WRF, Terminal Island WRP in the West Coast Basin; San Jose Creek WRP, Los Coyotes WRP in the Central Basin), GRIP, and some new pipelines. Even though the No Project Alternative does not include the construction of the same amount of projects describe under the GBMP, construction activities associated with facilities under the No Project Alternative would have the potential to exceed the SCAQMD thresholds. Even with fewer projects being constructed under the No Project Alternative, it is anticipated the project's contribution to maximum daily NO_x emissions would exceed the SCAQMD's regional significance threshold due to overlapping construction activities and associated equipment and truck exhaust emissions. As a result, impacts under the No Project Alternative would be the similar to the GBMP; however, less construction would occur due to the installation of fewer new facilities.

The operational characteristic of the facilities under the No Project Alternative would be similar to the proposed project. However, the No Project Alternative would not include the operational emission associated with the AWTF. As a result, the No Project Alternative would have fewer operational emissions as compared to the proposed project.

Biological Resources

Impacts to Biological Resources associated with the No Project Alternative would be similar to the GBMP impacts. Biological impacts are primarily related to location of construction activities and siting of permanent above facilities, relative to habitat locations for special-status plant and animal species, sensitive natural communities, jurisdictional features such as wetlands, and SEAs. Although the WRD service area is largely urbanized, there are still biological resources in the vicinity of projects in proximity to coastal, mountain, and other open space areas that may be adversely affected. Impacts associated with the No Project Alternatives would be mitigated in a similar way as the GBMP projects by locating and avoiding special status species during construction or restoration where avoidance is not feasible. As a result, impacts under the No Project Alternative would be similar to the proposed project, however likely to occur in fewer locations due to the installation of fewer new facilities.

Cultural Resources

Impacts to Cultural Resources associated with the No Project Alternative would be similarly to the GBMP impacts. Cultural resource impact would primarily occur during construction and are related to the location of facilities relative to proximate locations of archaeological, paleontological, and Native American and tribal resources. The WRD service area is considered highly sensitive for such resources due to the history of its occupation and previous human settlements. Impacts associated with the No Project Alternatives would be mitigated in a similar way as the GBMP projects by performing preconstruction surveys and investigations, avoidance of known resources if feasible, construction monitoring for inadvertent discoveries, and treatment plans for recovery and curation of artifacts in situations where avoidance is not possible. As a result, impacts under the No Project Alternative would be similar to the proposed project, however likely to occur in fewer locations due to the installation of fewer new facilities.

Geology, Soils, and Seismicity

During implementation of the projects associated with the No Project Alternative, impacts related to Geology, Soils, and Seismicity would occur primarily due to the location of new and upgraded facilities in areas that are seismically active, or characterized by soils with properties conducive to liquefaction or expansion, or characterized by geologic units prone to instability such as subsidence, sink holes, or corrosive soils. Such physical characteristics could jeopardize the stability of new and/or upgraded facilities and result in structural damage that in turn affects operations of systems such as wastewater treatment, recycled water conveyance, groundwater replenishment/extraction, and potable water conveyance. Impacts would be mitigated through compliance with the California Building Code and site-specific design criteria developed during geotechnical investigations that identify geologic hazards for each project location. Impacts under the No Project Alternative would be similar to the proposed project, however likely to occur in fewer locations due to the installation of fewer new facilities.

Greenhouse Gas Emissions

The No Project Alternative would generate GHG emissions from a variety of sources. First, GHG emissions would be generated during construction of the No Project Alternative projects in the project area. Once fully operational, the projects' operations would generate direct GHG emissions from mobile sources (i.e., worker commute trips, periodic facility inspection and maintenance visits, and routine chemical deliveries). Indirect source emissions associated with the projects would be generated from electrical consumption to power the proposed pump stations, pipelines, and water treatment facilities upgrades. The primary source of GHG emissions that would attributed to the No Project Alternative projects would be energy use when compared to other GHG emissions sources (i.e., area, mobile, waste, etc.). Since the No Project Alternative would have fewer projects and does not include the construction and operation of a new AWTF, which would increase energy consumption, it is anticipated that the annual GHG emissions would be less than the GBMP. Therefore, the No Project Alternative would have fewer GHG emissions than the proposed project

Hazards and Hazardous Materials

During implementation of the projects associated with the No Project Alternative, impacts related to Hazards and Hazardous Materials could occur during construction activities when hazardous materials are used, transported, or disposed, or in the event that contaminated soil or groundwater is encountered during ground disturbing activities. Hazardous substances could be accidentally spilled or released into the environment, which could also affect public health and safety, particularly in places where projects would be within a quarter-mile of a school. Impacts associated with the No Project Alternative would be mitigated in a similar way as the GBMP projects through implementation of requirements of all federal, state, and local regulations governing the use, transport, and disposal of hazardous materials. In addition, impacts would be mitigated through development of plans prior to construction, including a Contingency Plans for Contaminated Soils and Groundwater and a Hazardous Materials Management, Spill Prevention, and Control Plan. The policies and procedures established in such plans would be implemented during construction of all projects. Impacts under the No Project Alternative would be similar to

the proposed project, however likely to occur in fewer locations due to the installation of fewer new facilities.

During the operation of the No Project Alternative, impacts related to Hazards and Hazardous Materials could occur at the new or expanded facilities, such as the upgrade to treatment plants and wellhead treatment facilities, which may use regulated and hazardous materials as part of the treatment systems. The majority of new treatment systems would be expansions or upgrades of existing systems where such hazardous substances are already in use and already have required safety plans and procedures in place. Such plans would be required to be updated to include any new processes and hazardous substances. Nonetheless, the operation of the facilities under the No Project Alternative would result in fewer impacts related to hazardous materials this alternative does not include the construction of Satellite AWTF.

Surface Hydrology and Water Quality

Impacts to Surface Hydrology and Water Quality associated with the No Project Alternative would primarily occur during construction of new and/or upgrading facilities, when soils, construction-related chemicals, or other pollutants could run off project sites and contaminate surface waters or groundwater. By implementing the conditions of required permits, such as the Construction General Permit, Los Angeles County MS4 Permit, and LARWQCB Groundwater Dewatering General Permit, water quality would be protected through the development, implementation, and monitoring of BMPs, along with beneficial uses of any receiving waters. In addition, construction of new and/or upgrading facilities would have the potential to change permeable surfaces to impermeable surfaces, altering site drainage and potentially increasing runoff. To ensure no net increase in runoff would occur, and the existing capacity of the storm drain system would not be affected, impacts would be mitigated through preparation of a Grading and Drainage Plan for each project as applicable. This Plan would recommend BMPs to control and contain runoff and require incorporation of such recommendations into individual project designs. Construction impacts under the No Project Alternative would be similar to the proposed project, however likely to occur in fewer locations due to the installation of fewer new facilities.

Groundwater

The No Project Alternative would have similar impacts to groundwater levels as the proposed project. For both the proposed project and the No Project Alternative, WRD would provide adequate groundwater replenishment in support of adjudicated water rights and the APA, which would maintain water levels similar to existing conditions as replenishment would match pumping. This fulfills WRD mission to maintain sustainable groundwater levels in both basins. Under the No Project Alternative, WRD may be able to increase replenishment to support Concept B goals, but to a lesser extent when compared to the proposed. As such, the No Project Alternative would use less available storage, and the potential for water levels to increase and affect surface and subsurface infrastructure would be slightly less. However, the proposed project would have less than significant impacts to groundwater mounding, and thus the No Project Alternative would not avoid or minimize a significant effect.

The No Project Alternative would have similar impacts to groundwater quality as the proposed project. The No Project Alternative would offset imported water with AWT recycled water for recharge in both basins and thus lower the salt concentration of recharge water relative to existing conditions. This would serve to lower TDS concentrations in groundwater; although the No Project Alternative does not include the desalters for remediation of the saline plume. Thus, groundwater quality would improve less rapidly under the No Project Alternative.

Land Use and Planning

During implementation of the projects associated with the No Project Alternative, impacts related to Land Use and Planning could occur due to siting of new facilities. The final locations for project components under the No Project Alternative have not been finalized and, as such, could be located within an airport influence area or adjacent to a neighboring land use that may be incompatible or conflict with local zoning ordinances. Impacts would be mitigated by consulting with the Los Angeles County ALUC where applicable, where projects are located within an AIA. In addition, impacts related to land use compatibility would be mitigated in a similar way as the GBMP projects by conducting siting studies to identify the most suitable project locations and obtaining encroachment permits, easements, and CUPs or variances as required. Impacts under the No Project Alternative would be similar to the proposed project, however likely to occur in fewer locations due to the installation of fewer new facilities.

Noise and Vibration

During implementation of the projects associated with the No Project Alternative, impacts related to Noise and Vibration would occur during construction activities. Similar to the GBMP projects, the final locations for project components have not been finalized and, as such, could be located in close proximity to sensitive receptors, such that ambient noise and vibration levels are increased above applicable standards. Impacts may or may not be mitigated using sound dampening devices, acoustical shielding for equipment, mufflers, and otherwise locating noise equipment as far from sensitive receptors as possible. Impacts under the No Project Alternative would be similar to the proposed project, however likely to occur in fewer locations due to the installation of fewer new facilities.

During implementation of the projects associated with the No Project Alternative, impacts related to Noise and Vibration would occur during operation of aboveground facilities, due to mechanical equipment and motors at the upgraded treatment facilities, pump stations, and injection or production wells. All aboveground facilities would be required to meet operational noise levels at the property boundary in accordance with standards in local noise ordinances. Designing permanent facilities to meet the requirements of such ordinances would mitigate potential impacts related to permanent increases in operational noise. Under the No Project Alternative, upgrades or expansions at existing treatment plants would occur. Some plants, such as E.C. Little WRF and Terminal Island WRP, have no neighboring residential land uses. All existing plants must currently meet the requirements of noise ordinances and would continue to do so. Under the No Project Alternative, the new Satellite AWTF would not be constructed and would not introduce a new source of noise to the local area. As a result potential impacts related to operational noise would be lessened under the No Project Alternative.

Traffic and Transportation

Impacts to Traffic and Transportation associated with the No Project Alternative would occur during construction of projects, due to the addition of vehicles that transport equipment, materials, and workers to and from the project sites to local roadways. Construction of certain facilities, such as pipelines, also could directly affect roadways where such facilities are installed within roadway ROWs and require temporary lane closures or disrupt access to alternative transportation such as bus stops, bike paths/lanes, pedestrian facilities, and school bus routes. Similar to the GBMP projects, impacts would be mitigated through development and implementation of a Traffic Control/Traffic Management Plan and through consultation with local agencies such as school districts, transit agencies, and emergency service providers to develop plans to relocate alternative transportation access points or routes and maintain emergency access. Impacts under the No Project Alternative would be similar to the proposed project, however likely to occur in fewer locations due to the installation of fewer new facilities.

The operation truck trips associated with the No Project Alternative would be limited to maintenance and emergency situations. The No Project Alternative does not include any facility that would require a substantial amount of new employees that would impact local traffic circulation. However, as part of the proposed GBMP, the new Satellite AWTF, along with other proposed treatment facilities, would result in the generation of new operational truck trips potentially related to chemical deliveries, disposal of solids, and commuter trips for new employees. However, the net increase in vehicle trips is unknown since the location for the proposed Satellite AWTF is not finalized and thus the baseline vehicle trips associated with land use and development at the existing site cannot be determined. Operational impacts associated with the No Project Alternative would result in fewer trucks trips since this alternative does not include the new Satellite AWTF.

Utilities and Public Services and Energy

Impacts to Utilities and Public Services associated with the No Project Alternative would occur as a result of potential increases in storm water runoff from projects sites due to the addition of impermeable surfaces and increases in the generation of solid waste due to construction and operation of new wastewater treatment facilities. Implementation of required permits such as the Los Angeles County MS4 Permit would ensure runoff from project sites would not increase and the capacity of the regional storm water system would not be affected. In addition, local landfills such as Puente Hills Landfill, have sufficient capacity to receive construction and operational solid wastes and serve the project over its lifetime. Under the No Project Alternative, impacts to Utilities and Public Services would be similar but would occur in fewer locations due to the installation of fewer new facilities.

Impacts to Energy associated with the No Project Alternative would be measured by the differential energy intensity of importing water for replenishment relative to producing recycled water for replenishment. In general, the production and use of recycled water is more energy efficient than imported water, although unit electricity consumption rises as the degree of treatment and complexity of the processes increases (CEC 2006). Implementation of the No Project Alternative would result in increasing the use of recycled water as an offset to existing

and future use of imported water for replenishment. The benefits to energy, in the form of reduced energy demand, would be similar to the GBMP although not as large given the amount of recycled water replenished would be less than the under the GBMP. In addition, the No Project Alternative would not include the operation of the AWTF. As a result, the No Project Alternative would have a lower energy demand as compared to the proposed project

Environmental Justice

Impacts of implementing the No Project Alternative related to Environmental Justice would be associated with siting of new facilities in areas with significantly larger minority and low income populations on average, relative to the overall characteristics of their respective cities.. The operation of the facilities would not adversely affect the environment or public health of such communities and thus would not have a disproportionate effect on such a community. The No Project Alternative would not include the Satellite AWTF, although it would include other facilities located within areas with minority and low income populations similar to the GBMP projects. As a result, the No Project Alternative would result in similar but fewer impacts relative to the GBMP since it would not include the construction of a new AWTF and would result in the installation of fewer new facilities.

Growth

Similar to the proposed project, the No Project Alternative would result in replenishment of groundwater and development of groundwater supply at a level that would support planned future growth through 2035. The GBMP proposes phasing of project implementation in a step-wise fashion, which would allow for the development of water supplies in a manner that would keep up with planned future demand. The GBMP does not propose implementation of future water projects that would result in a water supply that would exceed projected future demand. The local water supply would replace the need to import water to meet the already planned water demands. The limited growth anticipated in the region and the regional policies in place to reduce imported water as much as possible suggest that the additional water supplies do not directly or indirectly induce growth or remove any obstacle to growth since the imported water option is available, albeit likely at higher prices, if local supplies are insufficient. The No Project Alternative would similarly support replenishment of groundwater with recycled water instead of imported water to allow for development of reliable water supplies to support planned future growth. Similar to the GBMP, the No Project Alternative would not induce growth either directly or indirectly.

7.5.2 Environmentally Superior Alternative

As required by CEQA, this alternatives analysis evaluates the effects of the No Project Alternative to the proposed project. As provided in Section 15126.6(d) of the *CEQA Guidelines*, the significant effects of the alternatives are identified in less detail than the proposed project. **Table 7-2** compares the ability for the No Project Alternative and GBMP, to meet the project objectives. **Table 7-3** compares the environmental impacts of the No Project Alternative and No GBMP.

The No Project Alternative would result in similar environmental impacts to the proposed GBMP; however, given that fewer new facilities would be built, such impacts would occur in

fewer locations throughout the service area. The No Project Alternative would not necessarily avoid or lessen potentially significant impacts to air quality and noise associated with construction-related activities. Similar types of construction activities may still occur under the No Project Alternative. In addition, under the No Project Alternative the new Satellite AWTF would not be built, and impacts associated with this project would not be realized, such as operational impacts related to air quality, hazardous materials, noise and vibration, and traffic.

In accordance with CEQA, an environmentally-superior alternative shall be identified. The No Project Alternative would meet most of the project objectives and would result in slightly fewer impacts as compared to the proposed project. However, the No Project Alternative would limit the ability for pumpers to take advantage of available storage given the limited development of replenishment supplies and lack of new replenishment infrastructure relative to the GBMP and would not include construction of new desalter wells to accelerate the remediation of the saline plume in the WCB. Nevertheless, the No Project Alternative would be considered the environmentally-superior alternative to the proposed project because it would result in fewer construction and operational-related environmental impacts since there would fewer facilities built.

As mentioned in Section 7.1.2 above, Section 15126.6(e)(2) of the *CEQA Guidelines* requires that if the environmentally-superior alternative is the no-project alternative, an EIR shall identify an environmentally-superior alternative among the other alternatives. Thus, WRD has determined that the proposed GBMP is the environmentally-superior and preferred alternative.

TABLE 7-2
ABILITY OF PROJECT ALTERNATIVES TO MEET PROJECT OBJECTIVES

Project Objectives	Proposed GBMP	No Project Alternative
Provide adequate replenishment water supplies to meet the future needs of groundwater pumpers	Yes	No
Improve the reliability of the replenishment supplies by reducing and eventually eliminating the current use of imported water for basin replenishment	Yes	Yes for Concept A
Improve groundwater quality	Yes	Yes
Enhance the ability of both basins to sustainably store and deliver water supplies	Yes	Yes

TABLE 7-3
SUMMARY OF ALTERNATIVES ANALYSIS
RELATIVE IMPACTS AS COMPARED TO THE PROPOSED PROJECT

Environmental Impacts	Proposed GBMP	No Project Alternative
Aesthetics	LSM	O
Air Quality	SU	—
Biological Resources	LSM	O
Cultural Resources	LSM	O
Geology, Soils, and Seismicity	LSM	O
Greenhouse Gas Emissions	LTS	—
Hazards and Hazardous Materials	LSM	—
Surface Hydrology and Water Quality	LSM	O
Groundwater	LSM	O
Land Use and Planning	LSM	O
Noise	SU	—
Traffic and Transportation	LSM	O
Utilities, Public Services, and Energy	LSM	—
Environmental Justice	LTS	O
Growth Inducement (Indirect)	LTS	O

LSM = less than significant with mitigation
PS = potentially significant
SU = significant and unavoidable
+ = more severe/more intense
- = less severe/less intense
O = no change

SOURCE: ESA 2015.

References – Alternatives Analysis

CH2M HILL, 2012. *Draft Groundwater Basins Master Plan*. Prepared for the Water Replenishment District of Southern California, in association with RMC, July 2012.

CHAPTER 8
Report Preparation

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