South Bay Subregional Plan

Draft

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1 Background and Purpose of Subregional Plan

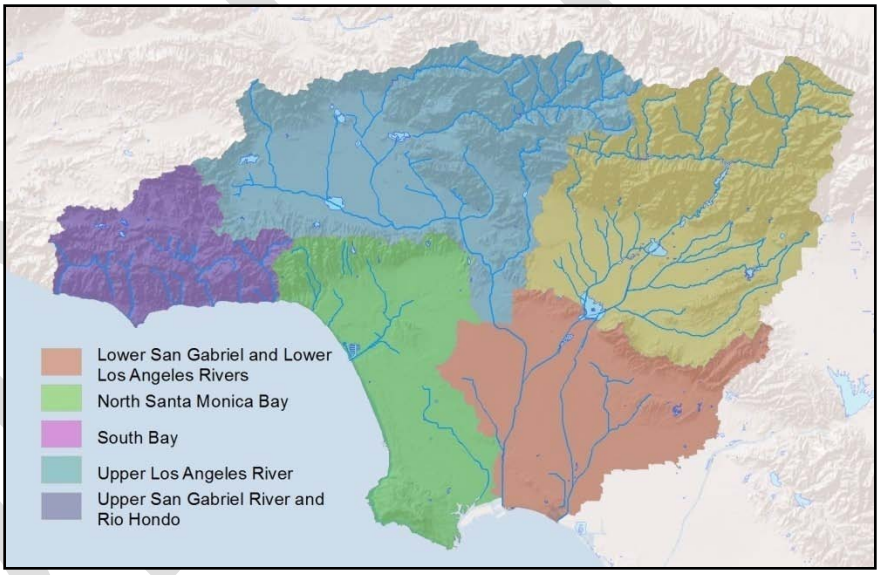
The South Bay Subregional Plan is one of five subregional plans that make up the Greater Los Angeles County Integrated Regional Water Management Plan (GLAC IRWM Plan). This Subregional Plan outlines the South Bay's physical setting, sources of water supply, water quality, environmental resources, planning objectives and targets, and partnership and multi-benefit opportunities. The purpose of the South Bay Subregional Plan is to outline its expected contribution to meeting the GLAC regional planning goals, objective, and targets.

2 South Bay Subregion Description

2.1 Physical Setting

The South Bay Subregion of the Greater Los Angeles County Integrated Regional Water Management Region (GLAC IRWM Region) is located in the southwest area of Los Angeles County and is composed of the southeastern half of the Santa Monica Bay Watershed along with the Dominquez Channel Watershed. The Subregion's watersheds consist of three defining characteristics—its coastline, its population and its industry. More than 30 miles of coastline in the South Bay attracts tens of millions of visitors to Southern California every year, serve as an important recreation area for the area's residents, and in a few remaining pockets such as the Palos Verdes Peninsula, Madrona Marsh, Ballona Wetlands, portions of the Santa Monica Mountains and Baldwin Hills, support a diverse population of birds and other wildlife.

Figure 2-1: GLAC Subregional and Watershed Boundaries

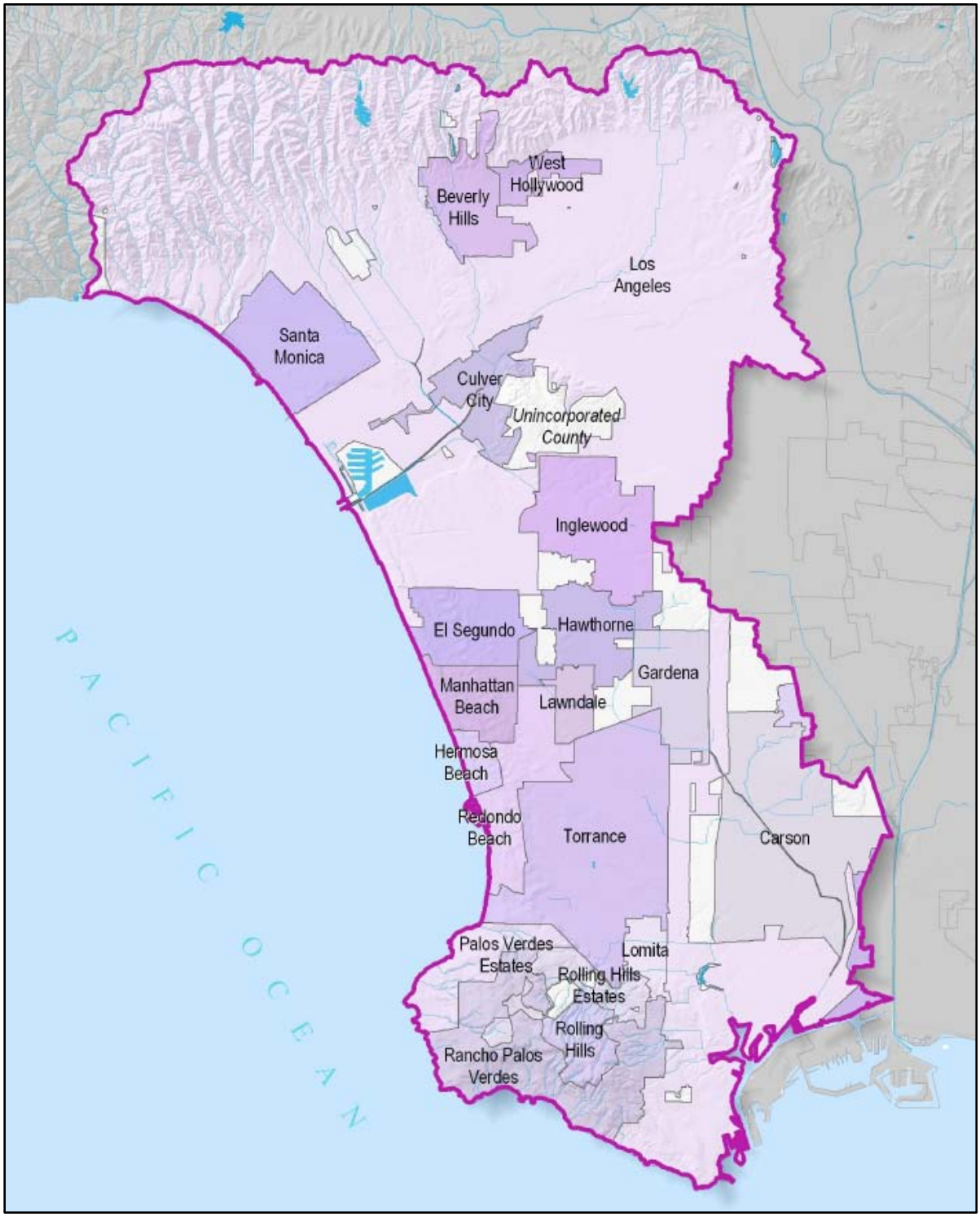


With over 2.6 million residents according to the 2010 census, the South Bay is one of the most dense and economically diverse urban areas of the region, creating both challenges to preserve and enhance local water resources and the natural environment, as well as unique opportunities for collaboration. Population projections from the Southern California Area Governments (SCAG) estimate that the population within the South Bay could increase to over 3 million residents by 2035. The South Bay's industries--oil refining, power generation and transportation via the Port of Los Angeles, Los Angeles International Airport and major freeways—provide similar challenges and opportunities. (U.S. Census Bureau, 2012; SCAG, 2012)

Political Boundaries

The South Bay Subregion is located within the Los Angeles County and includes over 20 cities and unincorporated areas. Figure 2 depicts the county and city boundaries of the South Bay Subregion.

Figure 2-2: Cities in the South Bay Subregion



Climate, Temperature, and Rainfall

The South Bay is within the Mediterranean climate zone, which extends from Central California to San Diego and is characterized by winter precipitation followed by dry summers. The South Bay experiences dry summers with most precipitation falling in a few major storm events between November and March. Long-term annual average rainfall is approximately 12 inches per year, but can vary greatly from year to year and between the coast and the Santa Monica Mountains.

Geography and Geomorphology

The geography of the South Bay can generally be divided into two distinct types: coastal plain and mountain range (the Santa Monica Mountains). Most of the coastal plain is less than 1,000 feet in elevation.

Geology varies from Precambrian metamorphic rocks (1.7 billion years old) to alluvial deposits washed down from mountain canyons. Alluvial deposits of sand, gravel, clay and silt in the coastal plain are thousands of feet thick in some areas, due in part to the erosive nature of the San Gabriel and Santa Monica Mountains. The South Bay is webbed with fault systems including the Newport-Inglewood fault that runs from Newport Beach to Beverly Hills via Long Beach and Signal Hill.

2.2 Watersheds and Water Systems

Watersheds

The South Bay Subregion contains two major watersheds, the southeastern portion of the Santa Monica Bay watershed (which includes the Ballona Creek watershed) and Dominguez Channel watersheds, in addition to many smaller watersheds which drain directly to the Santa Monica Bay. The watersheds are shown on Figure 2-3.

The Southeastern Santa Monica Bay Watershed includes the Santa Monica Mountains to the north, the Palos Verdes Peninsula to the south and reaches almost to downtown Los Angeles to the east. The130 square mile Ballona Creek Watershed , about 9 miles in length, is the largest subwatershed of the Southeast Santa Monica Bay Watershed but many smaller coastal watersheds are part of the larger watershed as well. (RWQCB, 2011)

The Dominguez Channel Watershed is 15 miles long and drains a densely urbanized area of approximately 133 square miles to the inner Los Angeles Harbor. The watershed covers the area just south of the Santa Monica Bay, its northern boundary beginning at Inglewood, extending south to Long Beach Harbor. The watershed generally has a low gradient, and its boundaries are not visually apparent in many locations, defined by the directions that underground storm drains flow. Within the Dominguez Channel Watershed there are five main sub-watersheds including the Upper Channel Watershed, Lower Channel Watershed, Retention Basins Watershed, Machado Lake Watershed and Harbors Watershed. (RWQCB, 2008)

Flood Management

Due to the Subregion's highly urbanized nature, flood management is important to protect human lives and property. The County and the many cities of the area have storm drains which flow within the watersheds. The Los Angeles County Flood Control District manages the regional flood infrastructure, in particular channelized streams (including Ballona Creek and Dominguez Channel), debris basins and flood control dams. Within the South Bay Subregion there are very few debris basins, all of which are located in the Santa Monica Mountains. (LACDPW, 2011)

Figure 2-3: Watersheds and Surface Waters in the South Bay Subregion

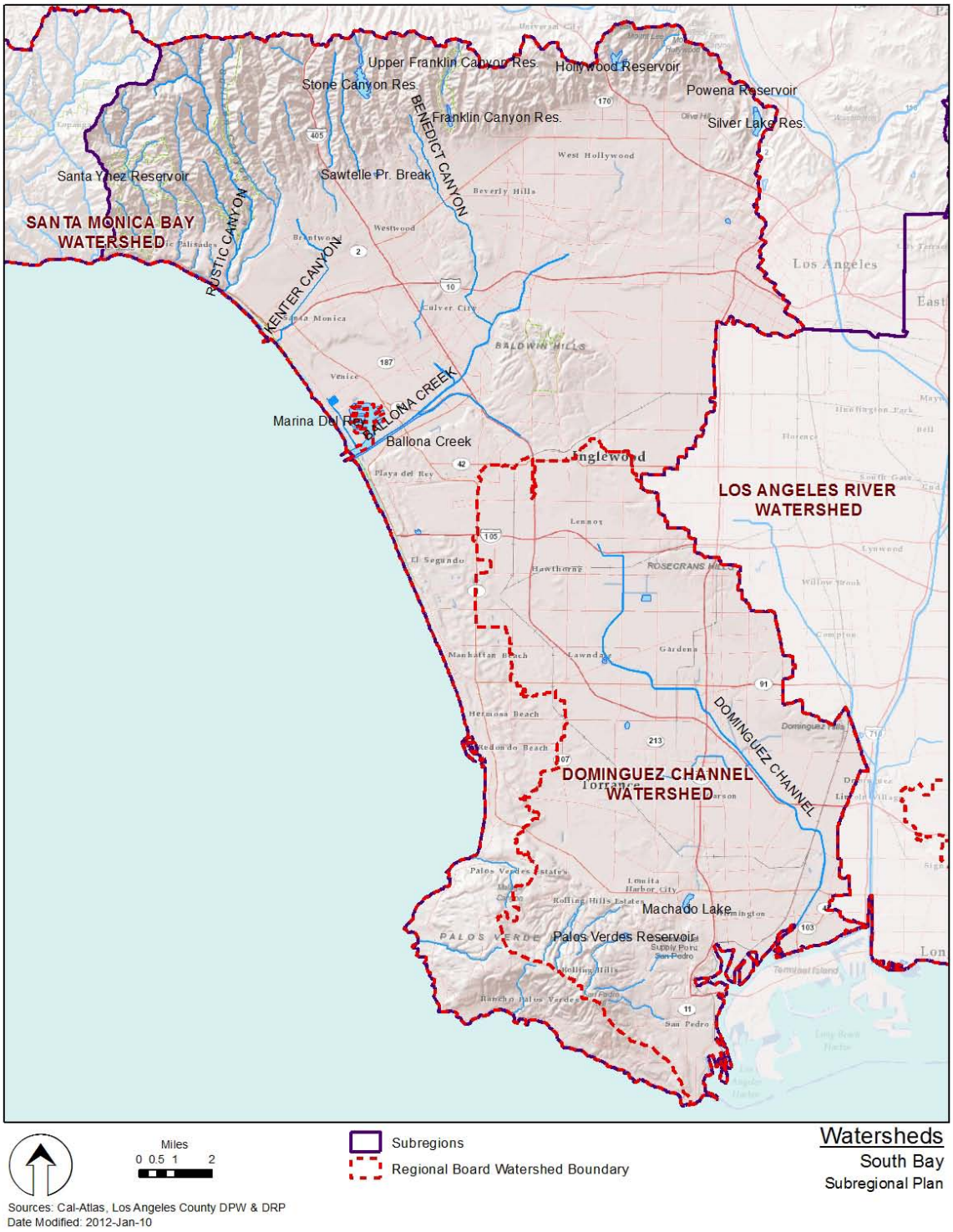


Figure 2-4: Wholesale Water Suppliers

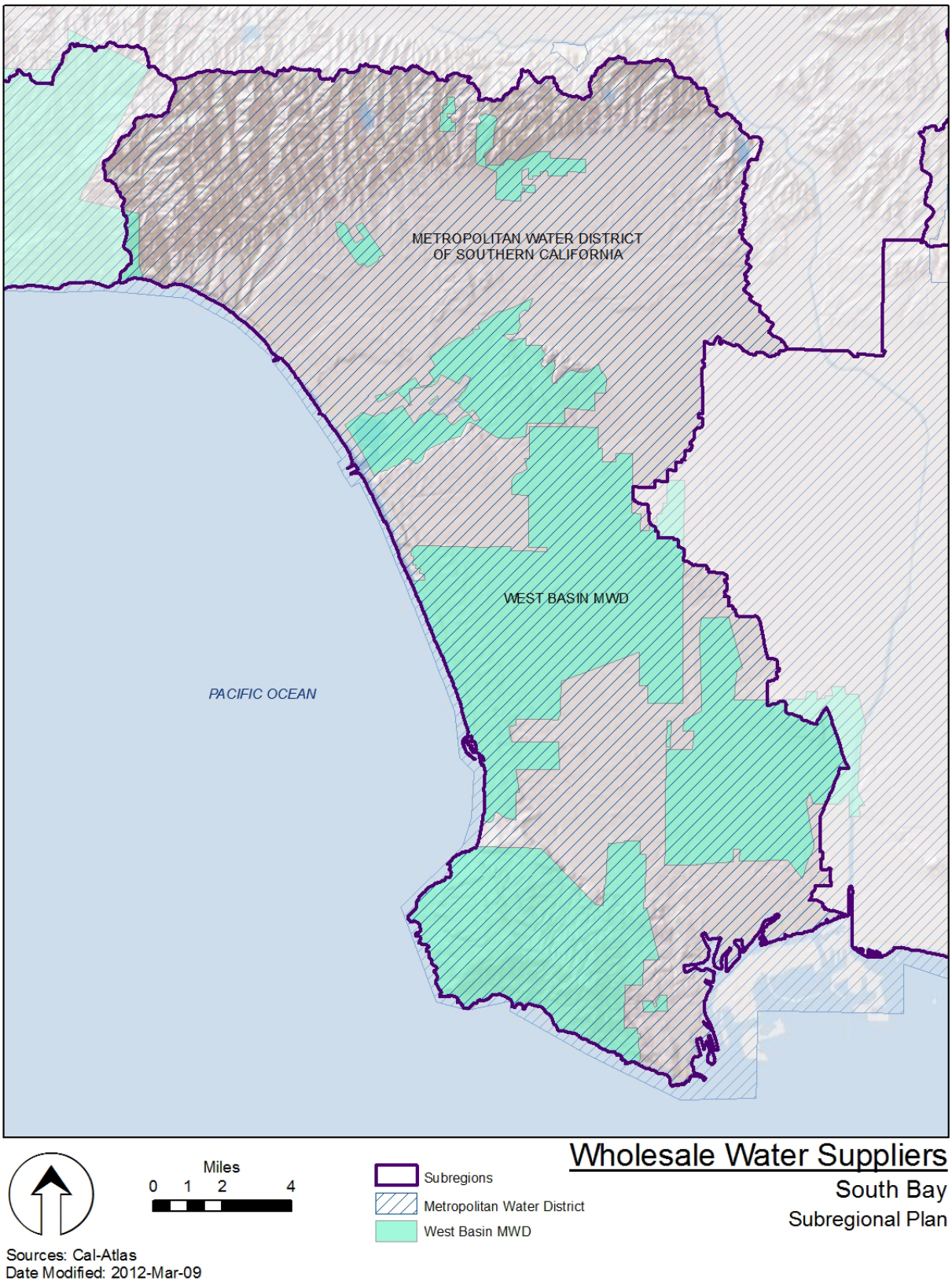
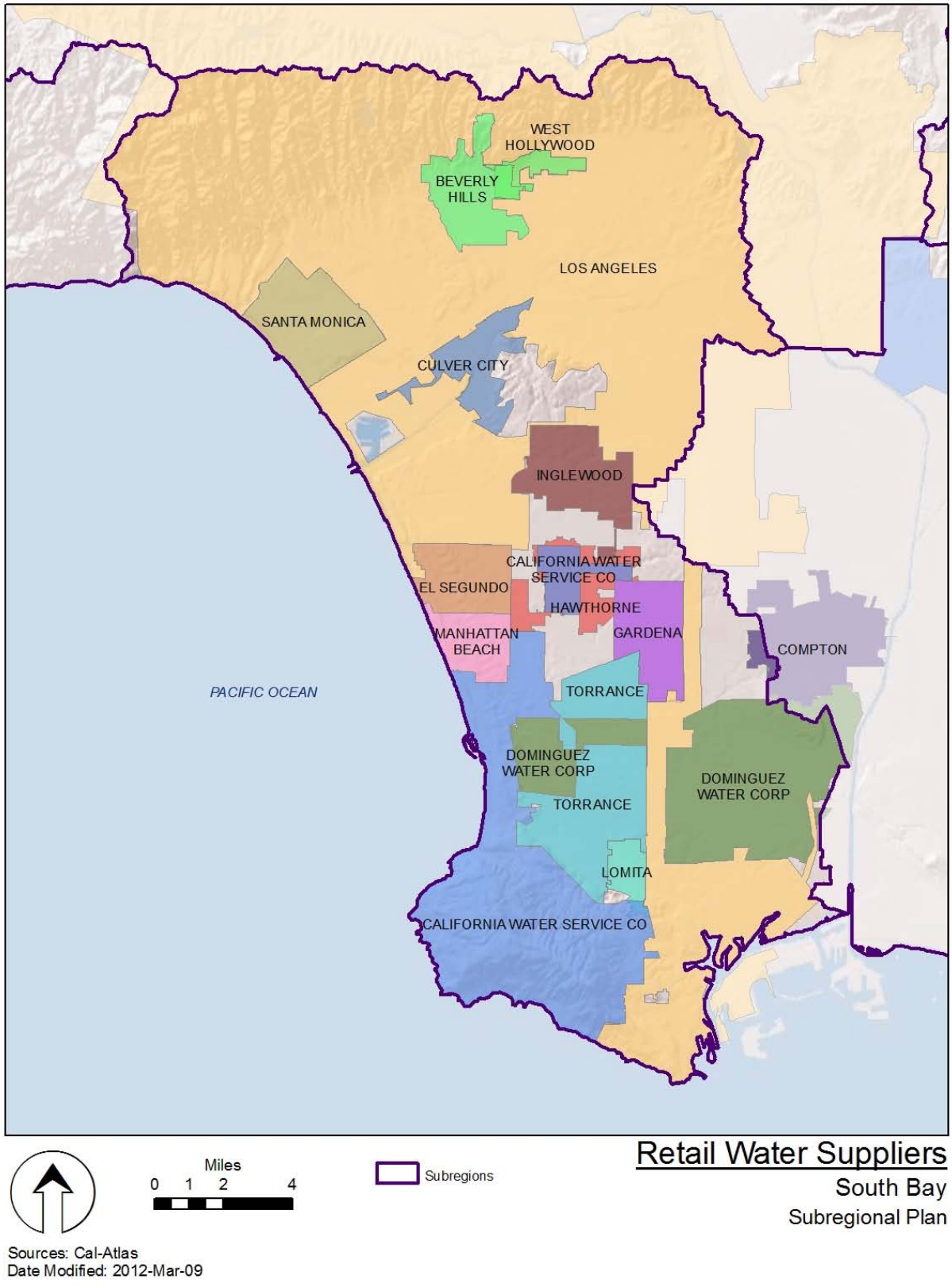


Figure 2-5: Retail Water Suppliers



Water Suppliers and Infrastructure

The water suppliers in the Subregion can be divided into wholesalers and retailers. Wholesalers (Figure 2-4) provide imported water and/or recycled water and to other agencies, while retailers (Figure 2-5) sell water to end users. The major wholesalers in the Subregion include West Basin Municipal Water District (WBMWD) and Metropolitan Water District of Southern California. The major retailers in the Subregion include Los Angeles Department of Water and Power (LADWP) and the cities of Santa Monica, Torrance, and Beverly Hills (shown in Figure 2-5). These suppliers use a combination of imported water, groundwater, and recycled water to serve potable and non-potable demand in their service areas. Each of these major suppliers has written a comprehensive 2010 UWMP to estimate future water supply demands and availability, and which were utilized in the estimation of supplies discussed later in this plan.

Given that this Subregion is highly urbanized, there is extensive water infrastructure in place for the production of water and the delivery of water to both retailers and to end-users. A number of cities have groundwater wells in place for the pumping of the groundwater basins in the area. In addition, the Metropolitan Water District of Southern California (MWDSC) delivers water through imported water feeder pipelines to WBMWD, Torrance, Los Angeles and Beverly Hills.

2.3 Sources of Water Supply

The South Bay has developed a diverse mix of local and imported water supply sources. Local water resources include groundwater, recycled water, water conservation, and water transfers. Water is imported through the California State Water Project (SWP), the Colorado River Aqueduct, and the Los Angeles Aqueducts. Major water supply sources are described below.

Sources of retail supply vary throughout the Subregion, as shown in Table 1. This table was developed based on 2010 Urban Water Management Plans (UWMPs) whose service areas cover a majority of the Subregion. These agencies include:

- West Basin MWD (portion within Subregion)
- City of Torrance
- City of Beverly Hills
- City of Santa Monica
- City of Los Angeles (portion within Subregion)

In addition to retail supply, replenishment supply is needed to both replenish the West Coast groundwater basin and to use with injection wells serving as sea water barriers. Table 2 shows the projected supplies to be used to meet replenishment needs.

Table 1: Projected Retail Supplies (acre-feet per year)

	2010	2015	2020	2025	2030	2035
Groundwater	40,000	64,000	64,000	64,000	64,000	64,000
Imported Water	352,000	393,000	367,000	370,000	368,000	363,000
Recycled Water	21,000	24,000	43,000	43,000	46,000	49,000
Desalinated Ocean Water	2,000	3,000	24,000	24,000	24,000	24,000
Stormwater	0	1,000	2,000	2,000	3,000	4,000
Water Use Efficiency	23,000	21,000	32,000	38,000	45,000	50,000
Total	**438,000**	**505,000**	**528,000**	**538,000**	**547,000**	**549,000**

Table 2: Projected Replenishment Supplies (acre-feet per year)

	2010	2015	2020	2025	2030	2035
Imported Water	15,000	3,000	3,000	3,000	0	0
Recycled Water	8,000	17,000	17,000	17,000	20,000	20,000
Stormwater	0	0	0	0	0	0
Total	**23,000**	**20,000**	**20,000**	**20,000**	**20,000**	**20,000**

Groundwater

Groundwater is the largest source of local supply in the Subregion. The major groundwater basins underlying the South Bay Subregion are the West Coast Basin, Santa Monica Basin and Hollywood Basin (Figure 2-6).

The West Coast Basin is adjudicated; therefore producers within this basin follow management guidelines established by their adjudication. The Santa Monica Basin and Hollywood Basin are both unadjudicated and the primary producers in each basin are Santa Monica and Beverly Hills, respectively.

Groundwater basin recharge can occur via existing and restored natural channel bottoms or percolation of rainwater (natural recharge); however natural recharge is typically insufficient to maintain basin water levels and current pumping levels due to the extent of impervious surfaces and the presence of clay soils in parts of the Subregion. There are currently injection wells in place in the West Coast Basin which inject recycled water and imported water along the coast to form barriers to seawater intrusion in two locations (the Dominguez Gap and West Coast Basin Barriers). Some underflow to the West Coast Basin from the neighboring Central Basin is known to occur.

The recharged water augments and blends with groundwater, which is eventually extracted for potable use. Conjunctive use programs may also be implemented to recharge basins, where imported water is recharged via injection wells. Recharge also can occur “in-lieu” when an agency suspends production from its wells and uses other supplies. The reduction in pumping allows groundwater levels in the basin to recover. The amount of water that can be recharged in the basin may be limited by local runoff, recharge capacity, overlying groundwater demands, and water rights.

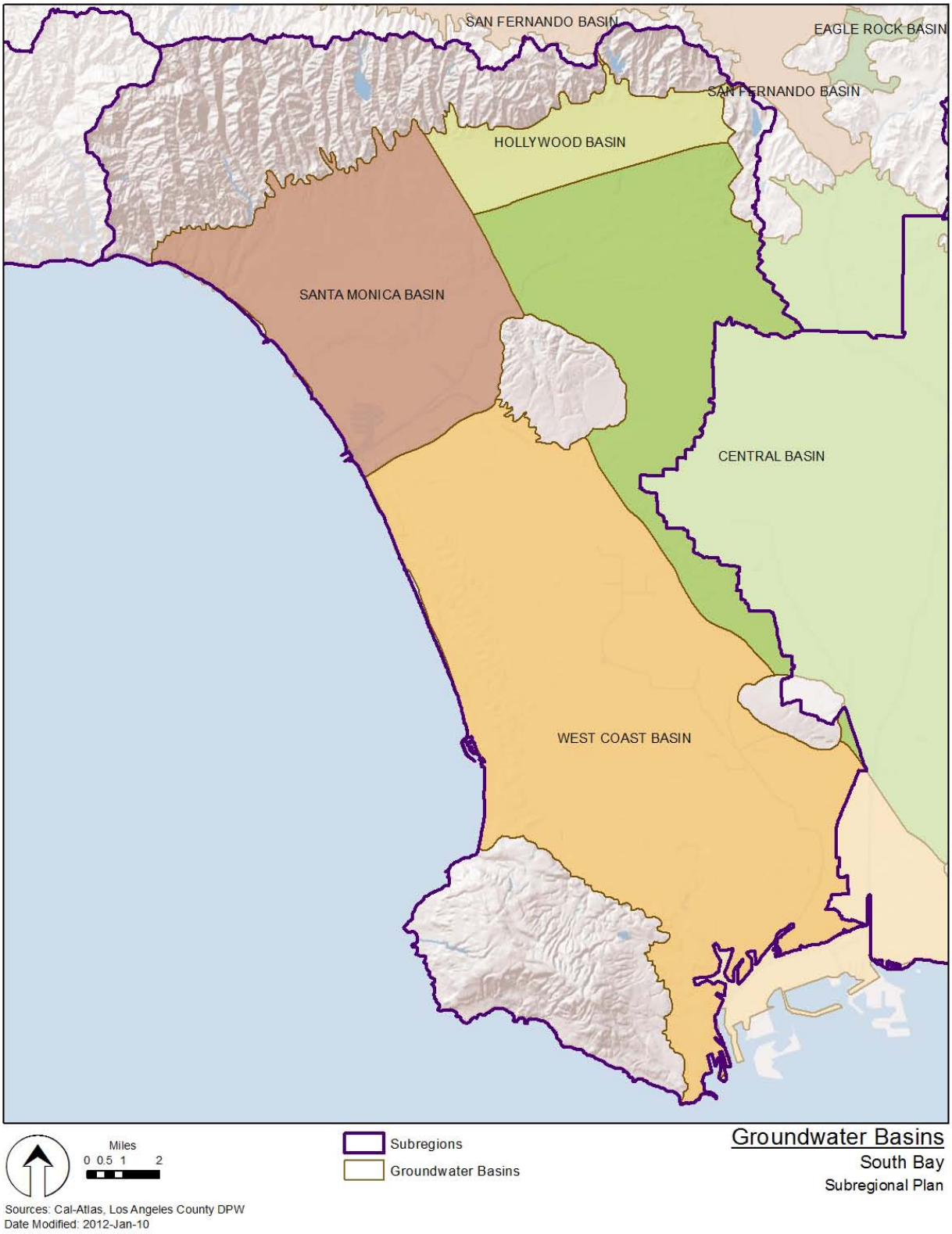
Imported Water

Imported water is the largest source of supply in the Subregion’s. The primary imported water wholesaler to the Subregion is MWDSC. WBMWD, the City of Los Angeles, and Torrance purchase water from MWDSC. WBMWD, in turn, wholesales imported water to retailers in the South Bay Subregion. Imported water comes from the State Water Project, Colorado River Aqueduct, and the Los Angeles aqueducts.

Recycled Water

Current average annual recycled water production in the Subregion is approximately 225 mgd, which represents approximately 25 percent of the current average annual effluent flows. Recycled water is produced at the City of Los Angeles Hyperion Treatment Plant, the County of Los Angeles Terminal Island Treatment Plant, the Edward C. Little WRF and the Joint Water Pollution Control Plant (JWPCP) (shown in Figure 2-7). Of the 225 mgd of recycled water produced, approximately 30,000 acre-feet per year is currently reused for municipal uses (e.g., irrigation), industrial applications, environmental uses, groundwater replenishment, or maintenance of seawater barriers in groundwater basins along the coast. The remainder is currently discharged to creeks and rivers, supporting riparian habitat in some locations, or directly to the ocean. The primary producers of recycled water in the Subregion are the Sanitation

Figure 2-6: Groundwater Basins



Districts of Los Angeles County, the City of Los Angeles, and WBMWD. Existing and future recycled water projects in the Subregion that were identified in the Metropolitan Water District of Southern California's Integrated Water Resources Plan are shown in Table 3 and Table 4, respectively (MWD, 2010).

Table 3: Existing Recycled Water Projects

Sponsoring Agency	Project Name	Ultimate Capacity (acre-feet)
LADWP	Edward C. Little Water Recycling Facility Phase I-IV	1,000
City of Santa Monica	Santa Monica Urban Runoff Recycling Facility (SMURRF)	280
Torrance	Edward C. Little Water Recycling Facility Phase I-IV	7,800
West Basin MWD	Edward C. Little Water Recycling Facility Phase I-IV	61,200

Table 4: Future Recycled Water Projects

Sponsoring Agency	Project Name	Ultimate Capacity (acre-feet)
West Basin MWD	Chevron Nitrification Facility Expansion / ELWRF Phase Va	1,710
LADWP	LAX Cooling Towers	240
West Basin MWD	Carson Regional Water Recycling Facility Phase II Expansion Project	9,300
	Edward C. Little Water Recycling Facility Phase V	6,500
	Joint Water Pollution Control Plant	17,000

Desalinated Ocean Water

Desalinated ocean water can add to the Region's water supply reliability by diversifying its water supply sources. WBMWD operates the Ocean Water Desalination Demonstration Facility and Water Education Center to evaluate and demonstrate ocean protection, energy recovery and cost reduction technologies with the goals of ensuring a full scale ocean-water desalination facility will be done in a cost and energy efficient manner while protecting the ocean.

Rainwater-Stormwater Use

Stormwater use, also known as rainwater harvesting, is a method that can be used by municipalities both to add a source of supply to its water portfolio, and to reduce runoff that can contribute to flooding and water quality issues. Because this watershed has minimal opportunity to capture large quantities of water for infiltration to underlying water supply basins, stormwater capture will largely be used for irrigation purposes rather than directly for drinking water consumption. Stormwater use is currently taking place at a local level where the City of Los Angeles is planning on developing a Stormwater Capture Master Plan, and the City of Santa Monica actively promotes the use of rainwater for various non-potable applications through free workshops in addition to rain barrel and cistern rebates.

2.4 Water Supply and Demand

As water agency boundaries are not aligned with the subregional boundaries, water demand was estimated based on review of 2010 Urban Water Management Plans (UWMPs) for:

- West Basin MWD (portion within Subregion)
- City of Torrance
- City of Beverly Hills
- City of Santa Monica
- City of Los Angeles (portion within Subregion)

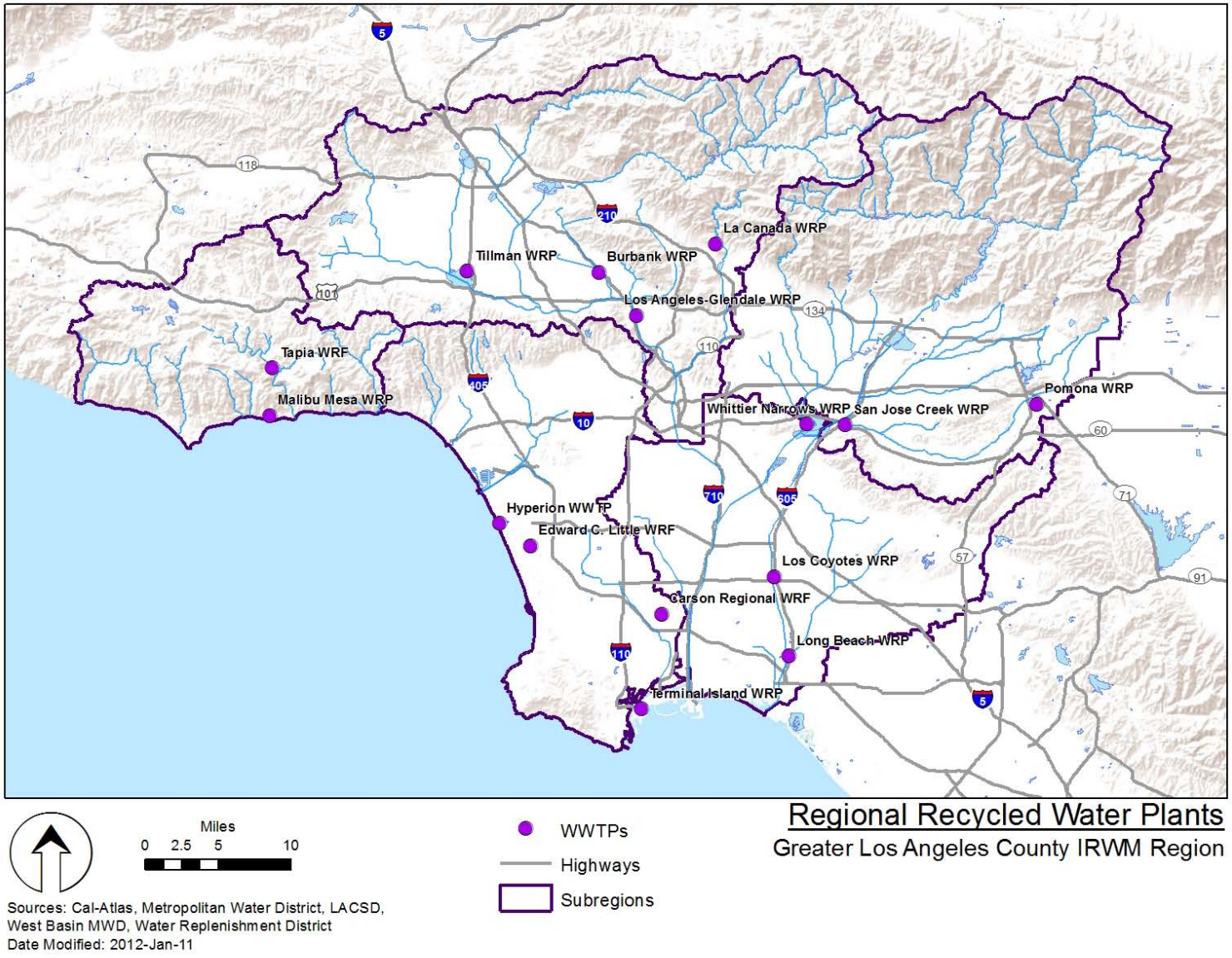
The demand projections in WBMWD's Regional UWMP were included as its service area covers the areas not covered by the individually listed cities. Given that the City of Los Angeles covers multiple subregions, the portion included in the South Bay Subregion was applied to the total demand estimated in the City of Los Angeles's UWMP to approximate the demand of the City of Los Angeles within the South Bay Subregion.

Demand projections for the South Bay Subregion can be seen in Table 5.

Table 5: South Bay Water Demand Projections

2010	2015	2020	2025	2030	2035
429,000 AF	473,000 AF	489,000 AF	493,000 AF	498,000 AF	498,000 AF

Figure 2-7: Water Reclamation Facilities in the GLAC Region



2.5 Water Quality

The GLAC Region has suffered water quality degradation of varying degrees due to sources associated with urbanization, including the use of chemicals, fertilizers, industrial solvents, automobiles and household projects. Both surface water and groundwater quality have been impacted by this degradation which can be classified as either point or nonpoint sources. Regulations are in place to control both types of sources, and are often updated to control constantly changing water quality issues.

The Federal Water Pollution Control Act Amendments of 1972, amended in 1977, are commonly known as the Clean Water Act. The Clean Water Act established the basic structure for regulating discharges of pollutants into the waters of the United Sates and gave the USEPA the authority to implement pollution control programs. In California, per the Porter Cologne Water Quality Control Act of 1969, responsibility for protecting water quality rests with the State Water Resources Control Board (SWRCB) and Regional Water Quality Control Boards (RWQCBs).

The SWRCB sets statewide policies and develops regulations for the implementation of water quality control programs mandated by state and federal statutes and regulations. The RWQCBs develop and implement Basin Plans designed to preserve and enhance water quality. The determination of whether water quality is impaired is based on the designated beneficial uses of individual water bodies, which are established in the Basin Plan. As mandated by Section 303(d) of the Federal Clean Water Act, the SWRCB maintains and updates a list of "impaired" water bodies that exceed state and federal water quality standards. To address these impairments, the RWQCBs identify the maximum amount of pollutants that may be present without impairing the designated beneficial uses, and are known as Total Maximum Daily Loads (TMDLs). In addition to development of the TMDLs the RWQCBs develop and implement the NPDES permits for discharges from wastewater treatment and water reclamation plants of treated wastewater effluent to surface water bodies.

The Subregion has 303(d) listings related both human activities and natural sources. Human activity produces poor water quality due to trash, nutrients from wastewater treatment effluent, metals, and toxic pollutants. These pollutants are carried in stormwater runoff and through point source discharges, impacting streams, canyon ecosystems, and eventually beaches and offshore waters. Natural sources of contaminants primarily include minerals and metals from underlying local geology.

Even though agencies and cities in the Subregion have significantly reduced pollutants that are discharged to water bodies from individual point sources since the Clean Water Act was established, many of the major water bodies are still considered impaired due to trash, bacteria, nutrients, metals, and toxic pollutants. Water quality issues affecting the Subregion's local surface waters and groundwater basins are discussed below.

Surface Water Quality

The watersheds in the South Bay Subregion serve many beneficial uses including: navigation, fishing, habitat, and wetlands. Typically, surface water quality is better in the headwaters and upper portions of watershed, and is degraded by urban and stormwater runoff closer to the Pacific Ocean. As a result, the major watersheds in the Subregion, (Dominguez Channel and Santa Monica Bay watersheds), and receiving waters (Santa Monica Bay) are 303(d) listed for several constituents, as shown in Table 6 and Table 7. (SWRCB, 2010)

1. The locations of permitted dischargers are shown in According to the US EPA's 2010 Integrated Report (Clean Water Act Section 303(d) List / 305(b) Report

Figure 2-8. (RWQCB, 2011b)

Investigations are needed to determine natural background levels for some listings which may not be due to anthropogenic causes. However, the reports written in support of the Subregion's TMDLs include a source assessment for each impairment, and determine the major sources of each, as listed below:

- **Ballona Creek Metals TMDL:** Dry weather: storm drains, groundwater discharge, NPDES discharges; Wet weather: wet weather storm water flows (including MS4 permits issued to the County of Los Angeles and Caltrans, general construction permits, and general industrial storm water permits)
- **Ballona Creek, Ballona Estuary, and Sepulveda Channel Bacteria TMDL:** Dry and wet weather urban runoff discharges from the storm water conveyance system, and through connecting tide gates to the Ballona Estuary from the Del Rey Lagoon and Ballona Wetlands, natural sources from birds, waterfowl and other wildlife
- **Ballona Creek Estuary Toxic Pollutants:** Dry weather: storm drains, groundwater discharge, NPDES discharges; Wet weather: wet weather storm water flows (including MS4 permits, general construction permits, and general industrial storm water permits)
- **Ballona Creek Trash TMDL:** Litter discarded to channels, and litter discarded then carried to storm drains by wind or runoff
- **Ballona Creek Wetlands Sediment and Invasive Exotic Vegetation TMDL:** Wet weather storm water flows (including MS4, general construction permits, and general industrial storm water permits), Ballona Creek watershed sediment loading, Playa Vista Freshwater Marsh, fill deposited in the wetland from construction activities, Southern California Gas Company activities in the area, Fiji Ditch
- **Dominguez Channel and Greater Los Angeles and Long Beach Harbor Waters Toxic Pollutants TMDL:** Stormwater and urban runoff discharges, atmospheric deposition and fluxes from contaminated sediments into overlying water, loadings from contributing watersheds
- **Machado Lake Trash TMDL:** Litter from adjacent land areas, roadways and direct dumping and deposition to Machado Lake
- **Machado Lake Nutrient TMDL:** Dry weather: storm drains, groundwater discharge, NPDES discharges; Wet weather: wet weather storm water flows (including MS4, general construction permits, and general industrial storm water permits), fluxes from contaminated sediments into overlying water
- **Machado Lake Toxics TMDL:** Dry weather: storm drains, groundwater discharge, NPDES discharges; Wet weather: wet weather storm water flows (including MS4, general construction permits, and general industrial storm water permits), fluxes from contaminated sediments into overlying water
- **Santa Monica Bay Beaches Wet Weather Bacteria TMDL – major sources:** Runoff from residential, commercial, industrial, agricultural and undeveloped areas
- **Santa Monica Bay Beaches Dry Weather Bacteria TMDL – major sources:** Sanitary sewer and sewage plant overflows and spills, dry weather urban runoff
- **Santa Monica Bay Nearshore Debris TMDL – major sources:** Litter discarded to channels, creeks, lakes, beaches and the ocean
- **Santa Monica Bay DDTs and PCBs TMDL – major sources:** Sediments, Hyperion, JWPCP, dewatering from the cleanup of contaminated sites, dewatering related to construction projects, runoff

- **Los Angeles Harbor Bacteria TMDL:** Dry and wet weather urban runoff discharges from the storm water conveyance system, marina activities including waste disposal from boats, boat deck and slip washing, swimmer "wash-off", restaurant washouts, and natural sources from birds, waterfowl and other wildlife
- **Marina del Rey Harbor Mothers' Beach and Back Basins Bacteria TMDL:** Dry and wet weather urban runoff discharges from the storm water conveyance system, waste disposal from boats, boat deck and slip washing, swimmer "wash-off", restaurant washouts, and natural sources from birds, waterfowl and other wildlife
- **Marina del Rey Harbor Toxics TMDL:** Urban storm water, marine sediments, deposition of airborne particles

Table 6: 303(d) listed waters with Approved TMDLs

303(d) Listed Waters and Impairments[1]	TMDL
Ballona Creek	
Metals: Copper, Lead, Selenium, Zinc, Toxicity	Ballona Creek Metals TMDL
Pathogens: Coliform Bacteria, Viruses (enteric)	Ballona Creek, Ballona Estuary, and Sepulveda Channel Bacteria TMDL
Trash	Ballona Creek Trash TMDL
Ballona Creek Estuary	
Metals: Cadmium, Copper, Lead, Silver, Zinc	Ballona Creek Estuary Toxic Pollutants
Toxics: PAHs PCBs, Chlordane, DDT, Sediment Toxicity	
Bacteria	Ballona Creek, Ballona Estuary, and Sepulveda Channel Bacteria TMDL
Ballona Creek Wetlands	
Trash	Ballona Creek Trash TMDL
Exotic Vegetation	Ballona Creek Wetlands Sediment and Invasive Exotic Vegetation TMDL
Habitat Alterations	
Hydromodification, Reduced Tidal Flushing	
Sepulveda Channel	
Indicator Bacteria	Ballona Creek, Ballona Estuary, and Sepulveda Channel Bacteria TMDL
Metals: Lead	Ballona Creek Metals TMDL
Trash	Ballona Creek Trash TMDL
Dominguez Channel	
Metals: Copper, Lead, Zinc, Toxicity	Dominguez Channel and Greater Los Angeles and Long Beach Harbor Waters Toxic Pollutants TMDL
Pesticides: Diazinon	
Dominguez Channel Estuary	
Pesticides: DDT, Chlordane, Dieldrin	Dominguez Channel and Greater Los Angeles and Long Beach Harbor Waters Toxic Pollutants TMDL
Other Organics: Benzopyrene, Beno[a]anthracene, Chrysene, PCBs, Phenanthrene, Pyrene	
Metals: Lead, Zinc	
Sediment Toxicity	
Machado Lake	
Pesticides: Chlordane, DDT, Dieldrin, PCBs, ChemA	Machado Lake Toxics TMDL
Nutrients: Algae, Ammonia, Eutrophic, Odor	Machado Lake Nutrient TMDL
Trash	Machado Lake Trash TMDL
Torrance Carson Channel	
Metals: Copper, Lead	Dominguez Channel and Greater Los Angeles and Long Beach Harbor Waters Toxic Pollutants TMDL

Coliform Bacteria	
Wilmington Drain	
Metals: Copper, Lead	Machado Lake Toxics TMDL
Los Angeles Harbor	
Pathogens: Indicator Bacteria, Beach Closures	Los Angeles Harbor Bacteria TMDL
Toxics: DDT, Dieldrin, Toxaphene, Chlordane	Dominguez Channel and Greater Los Angeles and Long Beach Harbor Waters Toxic Pollutants TMDL
Metals: Cadmium, Chromium, Copper, Lead, Mercury, Zinc	
Sediment Toxicity	
Other Organics: 2-Methylnapthalene, Benzopyrene, Benzoanthracene, Chrysene, Dibenzanthracene, PCBs, Phenanthrene, Pyrene	
Marina Del Rey Harbor	
Toxics	Marina del Rey Harbor Toxics TMDL
Marina Del Rey Mothers' Beach and Back Basins	
Bacteria	Marina del Rey Harbor Mothers' Beach and Back Basins Bacteria TMDL
San Pedro Bay	
Pesticides: DDT, Chlordane	Dominguez Channel and Greater Los Angeles and Long Beach Harbor Waters Toxic Pollutants TMDL
PCBs	
Sediment Toxicity	
DDT	
Santa Monica Bay	
Debris	Santa Monica Bay Nearshore Debris TMDL (draft)
Bacteria	Santa Monica Bay Beaches Wet Weather Bacteria TMDL Santa Monica Bay Beaches Dry Weather Bacteria TMDL
DDTs, PCBs, Sediment Toxicity, Fish Consumption	Santa Monica Bay DDTs and PCBs TMDL
Santa Monica Bay beaches	
Bacteria	Santa Monica Bay Beaches Wet Weather Bacteria TMDL Santa Monica Bay Beaches Dry Weather Bacteria TMDL

1. According to the US EPA's 2010 Integrated Report (Clean Water Act Section 303(d) List / 305(b) Report

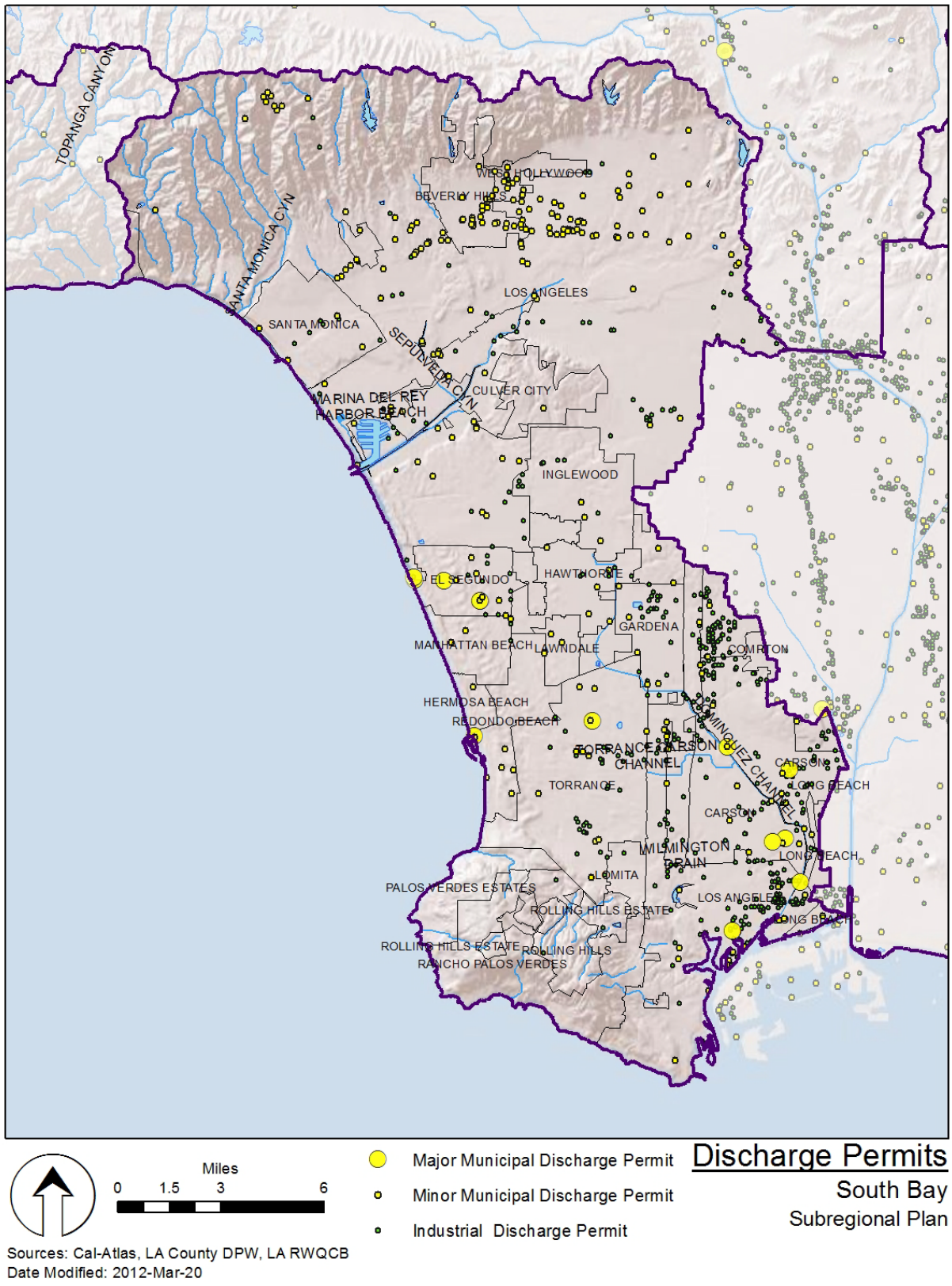
Table 7: 303(d) Listed Waters without Approved TMDLs

303(d) Listed Waters and Impairments[1]
Ballona Creek
Inorganics: Cyanide
Shellfish Harvesting Advisory
Ballona Creek Wetlands
Shellfish Harvesting Advisory
Santa Monica Canyon
Bacteria
Metals: Copper, Lead, Selenium
Nutrients: Ammonia
Dominguez Channel
Nutrients: Ammonia

Indicator Bacteria
Dominguez Channel Estuary
Nutrients: Ammonia
Coliform Bacteria
Benthic Community Effects
Torrance Carson Channel
Coliform Bacteria
Wilmington Drain
Coliform Bacteria
Los Angeles Harbor
Benthic Community Effects

2. According to the US EPA's 2010 Integrated Report (Clean Water Act Section 303(d) List / 305(b) Report

Figure 2-8: Permitted Discharges as of 2011



Groundwater Quality

Groundwater quality varies throughout the Subregion, based on naturally occurring conditions, historical land use patterns, and groundwater extraction patterns. Poor groundwater quality can be attributed to several factors including over-drafting of groundwater basins (sometimes resulting in seawater intrusion), industrial discharges, agricultural chemical usage, legacy contaminants in urban runoff, and naturally occurring constituents. The cost of treating these contaminants is often significant, and for some improperly disposed chemicals, effective treatment has not yet been identified. The Water Replenishment District of Southern California (WRD), which is tasked with groundwater management for the Central Basin and West Coast basins, has implemented programs to assess treatment options and treat the contaminated groundwater in the West Coast Basin.

High levels of TDS in the Torrance/Hawthorne area of the West Coast Basin, and the Hollywood Basin can be attributed to both sea-water intrusion and naturally occurring soil and geologic conditions in the region often result in elevated levels of dissolved solids. Increases in groundwater TDS concentrations are a function of the recharge of storm and urban runoff, imported water, and incidental recharge. Seawater intrusion is attributed to the extraction of groundwater above natural replenishment levels. To reduce this, Los Angeles County operates and maintains two seawater intrusion barrier systems along the coast that utilize treated wastewater and imported water to reduce the seawater intrusion in coastal aquifers. Additionally, the City of Beverly Hills, WBMWD, and WRD operate desalting facilities to reduce these high TDS levels (as discussed previously in the Water Supply section). (West Basin MWD, 2011; MWD, 2007)

Organic constituents of concern (TCE, PCE, and perchlorate) have been detected in the Santa Monica Basin, and are attributed to the past disposal of industrial solvents. This has required the City of Santa Monica to install air strippers to treat water pumped from certain wells. Additionally, a methyl tertiary butyl ethylene (MTBE) plume caused by leaking underground fuel storage tanks required the shutdown of a majority of the City of Santa Monica's wells in 1996. These wells have since been reactivated with the construction of a treatment facility to remove MTBE and organic contaminants. (MWD, 2007)

Coastal Ocean Water Quality

There are several indicators of coastal water quality. One of the most publicized is the annual report by Heal the Bay. The annual report evaluates California beaches from Memorial Day to Labor Day giving them a grade of A to F based on tests for bacterial pollution, which indicate how likely the water is to make swimmers sick. Statewide, 92% of California beaches earned A or B grades over the summer, the same as the previous year, according to the 2011 report. However, several South Bay beaches did not receive a passing grade. Cabrillo Beach in San Pedro earned an F for the eighth consecutive summer despite millions of dollars spent on municipal projects to improve water quality. Collaboration with SMBRC, EPA, LARWQCB, and other stakeholders is ongoing to implement and enforce water quality requirements including Santa Monica Bay Marine debris TMDL, and the City of Los Angeles Hyperion Wastewater Treatment Plan NPDES permit.

2.6 Environmental Resources

The environmental resources of the South Bay Subregion include wetlands, riparian habitat, streams, wide beaches, rocky intertidal habitats, sandy dunes, beach bluffs, and parklands. Over time this network of natural resources has been striped with miles of concrete channels, culverts and underground pipes.

2.6.1 Wetlands

The South Bay Subregion was once an area replete with coastal wetlands stretching from the Santa Monica Canyon watershed, south to the Dominguez Channel watershed. Of the remaining wetlands, the most expansive area that remains is the Ballona Wetlands with lagoons near the mouth of Ballona Creek

located in Playa del Rey in the City of Los Angeles. Another remaining historic wetland area in the Subregion includes the Madrona Marsh in Torrance. Existing wetlands are shown in Figure 2-9.

Several organizations and governmental agencies have been active in the restoration of wetlands in the South Bay Subregion. Those organizations include the Wetlands Recovery Project (WRP), the Santa Monica Bay Restoration Commission (SMBRC), the California State Coastal Conservancy, the Coastal Commission, the California Department of Fish and Game (DFG), Friends of Ballona Wetlands, Manhattan Beach, Culver City, Inglewood, Los Angeles, and Santa Monica.

Ballona Wetlands

The Ballona Wetlands stretch from Playa del Rey to Venice and once occupied a 2,000-acre expanse of critical coastal habitat. Over time, the wetland has suffered from the loss of the historic connection with freshwater sources and the ocean thereby resulting in the loss of many ecological functions and many native species. In addition, it became the dumping site for dredging during the construction of Marina del Rey just to the north and the construction of the Ballona Creek Flood Control Channel.

In 2004, the State of California took title to a 600-acre parcel that encompasses a large portion of the historic Ballona Wetlands. The property was designated as a state ecological reserve - Ballona Wetlands Ecological Reserve (BWER) – and is the largest coastal wetland in the Santa Monica Bay. The property is owned by two state agencies, the DFG and the State Lands Commission.

The Ballona Wetlands Project, spearheaded by the SMBRC under the auspices of the SCC, endeavors to develop a plan of action to return the daily ebb and flow of tidal waters, maintain freshwater circulation and support a more natural and healthy ecosystem. Creating these suitable habitats and natural conditions will allow wetland vegetation to flourish and attract the insects, reptiles, amphibians, fishes, birds and mammals that call wetlands home. (Bay Restoration Foundation, 2011)

Madrona Marsh

The Madrona Marsh Preserve, located in Torrance, the last vernal marsh remaining in the South Bay Subregion and one of few wetlands located within its urban landscape. Formed eons ago when the mountains of the Palos Verdes Peninsula rose to the south, Madrona Marsh is a shallow depression fed by wet season storms, as the name "vernal" indicates. After the rainy season, evaporation, percolation and transpiration reduce the water depth by about one-quarter of an inch (6 mm) per day. By the end of August, the wetland is dry and remains so until the following rainy season. Situated on land that was set aside for oil production in 1924, Madrona Marsh was never developed—unlike the surrounding city—and remains a valuable natural habitat for birds, reptiles, insects and even small mammals. (Friends of Madrona Marsh, 2012)

Machado Lake

Machado Lake, located in Ken Malloy Harbor Regional Park along the Wilmington Drain, is a perennial freshwater lake and marsh that provides wetland habitat to a number of species. Due to contamination by surrounding urban land uses, this area is undergoing ecosystem rehabilitation by the City of Los Angeles and Los Angeles County. (SDLAC, 2010)

2.6.2 Riparian Habitat

Riparian habitat is typically a linear corridor of variable width that occurs along perennial, intermittent, and ephemeral streams and rivers. In undisturbed areas, two distinguishing features of riparian ecosystems are the hydrologic interaction that occurs between the stream channel and adjacent areas through periodic exchange of surface water and groundwater, and the distinctive geomorphic features and vegetation communities that develop in response to this hydrologic interaction.

Due to the extensive urbanization on the coastal plain and inland valleys, current riparian habitat within the Subregion bears little resemblance to the pre-development conditions. Faber et al. (1989) estimated that 90- to 95-percent of the riparian habitat has been lost. Most native riparian habitat in the Subregion is located in the Santa Monica Mountains; in the restored riparian corridor below the Westchester Bluffs.

Ballona Creek

Ballona Creek is an approximately nine mile long flood control channel surrounded by urban development and traversed by roads, freeways, and infrastructure. The creek has the potential of providing a habitat corridor from Baldwin Hills to the Ballona Wetlands, but currently does not contain significant riparian habitat. However a 50 acre riparian corridor and freshwater marsh for stormwater management purposes were completed in the early 2000's and contains many willows, cattails and tullie habitat areas.

The Ballona Creek Greenway Plan is the result of collaboration between the Ballona Creek Watershed Task Force and the SMBRC. It is a plan that will explore issues related not only to short-term recreational improvements but also to longer-term restoration design possibilities. The Task Force is comprised of state and local agencies, environmental organizations, private businesses, and resident stakeholders. Concurrently, SMBRC - with the aid of partner agencies such as the State Coastal Conservancy, Baldwin Hills Conservancy (BHC), Mountains Recreation Conservation Authority (MRCA), and City and County of Los Angeles – have embarked on the Lower Ballona Ecosystem Restoration Feasibility Study (LBERF) with the U.S. Army Corps of Engineers.

Stone Creek

UCLA and the University Lab School (ULS) campuses are conducting restoration efforts at Stone Creek which runs through the UCLA campus. Since 2007, the SMBRC has been working with support of the State Coastal Conservancy and the RWQCB to restore the stream with monthly volunteer weeding and planting events.

Dominguez Channel

The Dominguez Channel extends from the Los Angeles International Airport to the Los Angeles Harbor and drains large if not all portions of the cities of Inglewood, Hawthorne, El Segundo, Gardena, Lawndale, Redondo Beach, Torrance, Carson and Los Angeles. Dominquez Channel is in the Dominguez Watershed which is comprised of approximately 110 square miles of land in the southern portion of Los Angeles County. The remaining land areas within the watershed drain to several debris basins and lakes or directly to the Los Angeles and Long Beach Harbors. Because of the largely industrial land base in this watershed, very little native riparian vegetation remains. (RWQCB, 2008)

Madrona Marsh

The Madrona Marsh Preserve, located in Torrance, is the last vernal marsh remaining in the South Bay Subregion. Ongoing efforts are restoring native plants including wildflowers and butterfly species. The area has long been popular with bird watchers and the Audubon Society has used Madrona Marsh for their annual bird census since 1967. El Camino College uses it as an outdoor biology and botany lab. Torrance operates the Madrona Marsh Nature Center in cooperation with the Friends of the Madrona Marsh. (Friends of Madrona Marsh, 2012)

Bixby Marshland

The Bixby Marshland is a remnant of a formerly extensive, natural-freshwater wetland known as Bixby Slough. Over the years, most of Bixby Slough was destroyed due to development. The Bixby Marshland, a 17-acre marsh, located to the northwest of the Sanitation Districts of Los Angeles County Joint Water Pollution Control Plant (JWPCP) near the intersection of Figueroa Street and Sepulveda Boulevard in the

City of Carson, has recently been restored by the Sanitation Districts of Los Angeles County. (SDLAC, 2012)

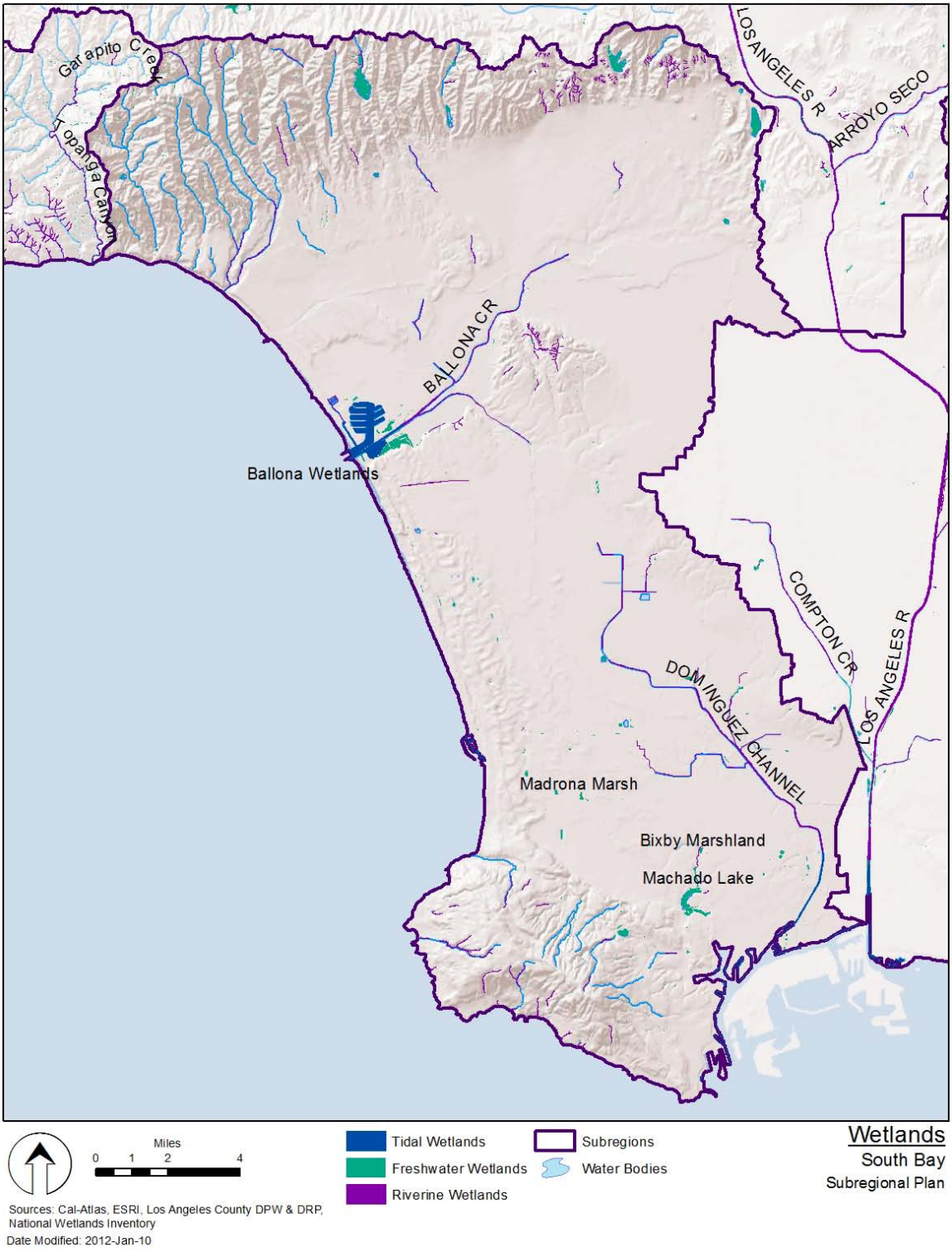
Beach Bluff Restoration

Beach bluff restoration is underway at several locations within the Subregion. The Los Angeles Conservation Corps is working with at-risk youth to restore three acres of bluff habitat adjacent to a Youth Center at Dockweiler Beach. The site is a priority restoration site due to its proximity to other native plant habitat supporting the federally endangered El Segundo blue butterfly within the dunes just west of Los Angeles International Airport. The Palos Verdes Peninsula Land Conservancy (PVPLC) is working to implement two natural habitat restoration projects on the Peninsula. The first project, which was completed this year, restored habitat at Point Vicente Bluffs, also a part of the Portuguese Bend Nature Preserve. The second project seeks to restore three acres of native riparian and upland coastal sage scrub habitat in McCarrell's Canyon. The canyon is part of the 1,200 acre Portuguese Bend Nature Preserve. Also, the Friends of Ballona Wetlands have restored the dunes habitat adjacent to the Ballona Wetlands in Playa del Rey. (Palos Verdes Peninsula Land Conservancy, 2012)

2.6.3 Upland Habitat

Upland habitat exists further inland serves linkage between wetland habitats. Within the Subregion, these habitats include the Los Angeles Coastal Plain and the Santa Monica Mountains to the north. A majority of the coastal plain has been urbanized, which inhibits linkage between wetlands. The small portion of the Santa Monica Mountains in the northern portion of the Subregion are by contrast mostly open space mostly free of development, but impacted by invasive species and water quality issues. (RWQCB, 2011)

Figure 2-9: Wetlands in the South Bay Subregion



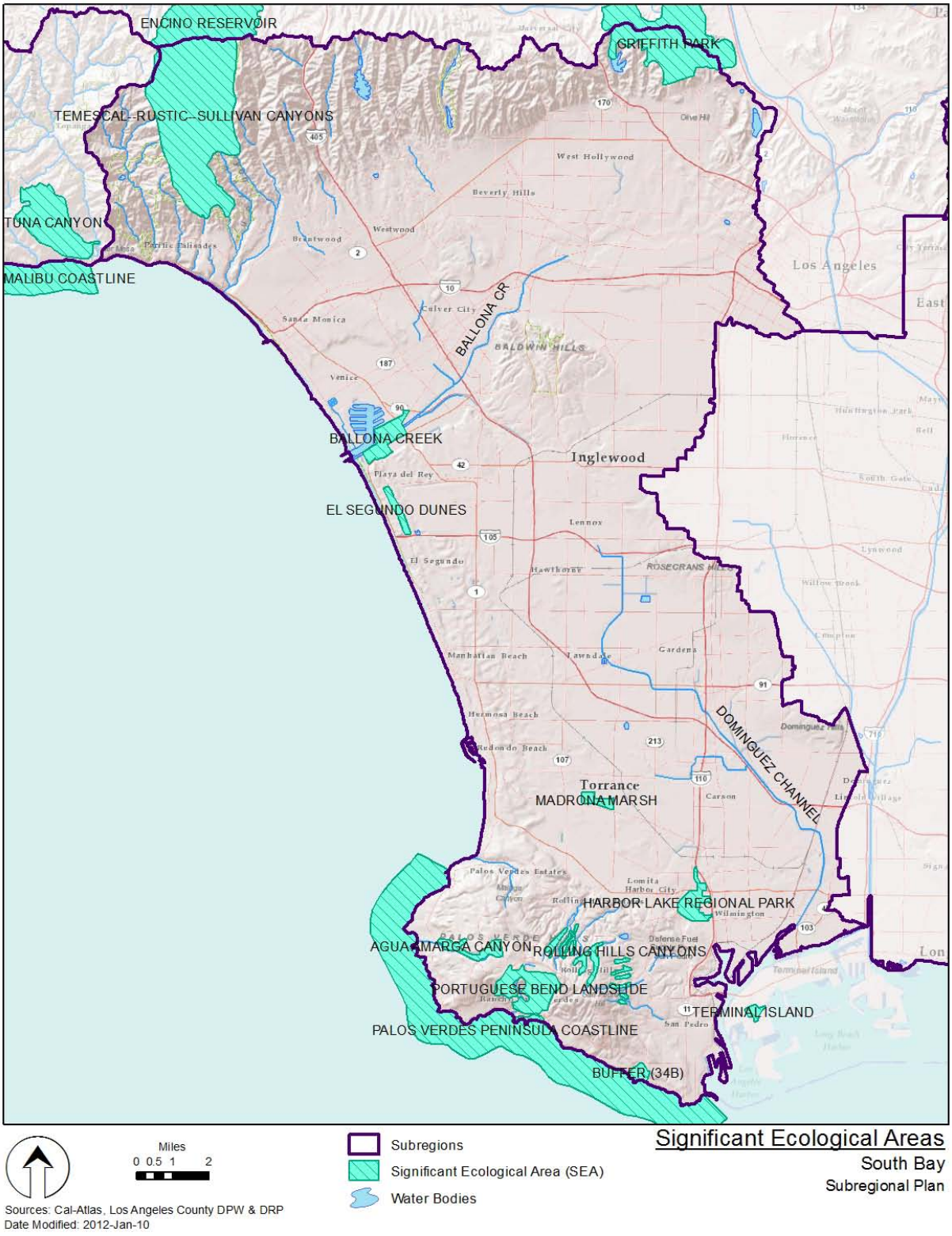
2.6.4 Significant Ecological Areas and Environmentally Sensitive Habitat Areas

Significant Ecological Areas (SEAs) are ecologically important areas that are designated by the County of Los Angeles as having valuable plant or animal communities. Similar to the SEAs are Environmentally Sensitive Habitat Areas (ESHAs), which are designated by the Coastal Commission via local coastal programs. SEAs are offered certain protections within the unincorporated portions of Los Angeles County.

Development proposals located within a SEA and outside incorporated City boundaries are reviewed by the Significant Ecological Area Technical Advisory Committee (SEATAC) which recommends changes to the project and mitigation measures to protect the habitat. The County of Los Angeles is in the process of updating the SEA designations and policies. (LACDRP, 2011) SEAs in the Subregion include:

- Agua Amarga Canyon located on the Palos Verdes Peninsula with headwaters in the City of Rolling Hills Estates and passing through Rancho Palos Verdes and Palos Verdes Estates (not Redondo Beach)
- Ballona Creek in Venice
- El Segundo Dunes in Venice
- Harbor Regional Park which contains Machado Lake is located in the City of Los Angeles in San Pedro
- Madrona Marsh in Torrance
- Palos Verdes Peninsula Coastline
- Redondo Beach and San Pedro
- Portuguese Bend Preserve located in Rancho Palos Verdes
- Rolling Hills Canyons in Rolling Hills, Rolling Hills Estates, and Rancho Palos Verdes

Figure 2-10: Significant Ecological Areas in the South Bay Subregion



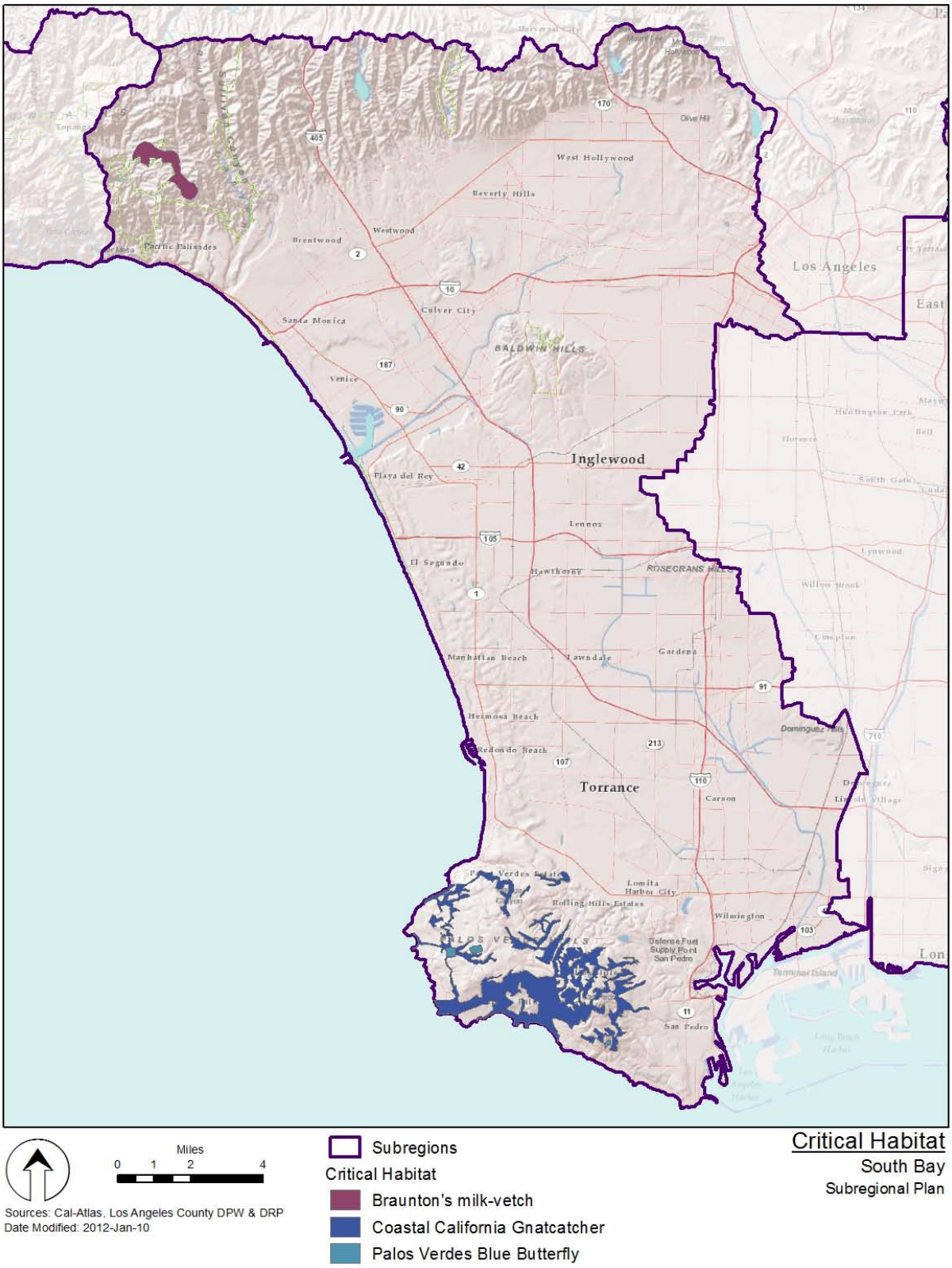
2.6.5 Critical Habitat Areas

Critical habitat areas have been established by the endangered species act (ESA) to prevent the destruction or adverse modification of designated critical habitat of endangered and threatened plants and animals. The United States Fish and Wildlife Service (USFWS) through the Endangered Species Act (ESA) defines critical habitat as "a specific geographic area(s) that contains features essential for the conservation of a threatened or endangered species and that may require special management and protection.

Critical habitat may include an area that is not currently occupied by the species but that will be needed for its recovery." A critical habitat designation typically has no impact on property or developments that do not involve a Federal agency, such as a private landowner developing a property that involves no Federal funding or permit. However, when such funding or permit is needed, the impacts to critical habitat are considered during the consultation with the USFWS.

Within the Subregion, there are 5,640 acres of designated critical habitat defined for the Coast California gnatcatcher, Brauton's milk-vetch, and Palos Verdes blue butterfly, as shown in Figure 2-11.

Figure 2-11: Critical Habitat Areas



2.6.6 Area of Special Biological Significance

In the mid-1970s, to protect sensitive coastal habitats, the SWRCB designated 34 areas on the coast of California as Areas of Special Biological Significance (ASBS), including the area between Mugu Lagoon in Ventura County and Latigo Point in Los Angeles County.

2.6.7 Marine Habitat

The marine environment of Santa Monica Bay includes a variety of habitats which provide food and shelter for thousands of species of marine life. The Marine Program of the SMBRC seeks to conserve and rehabilitate natural resources in the marine environment and improve the beneficial uses of the Bay. To do this, the Marine Program assesses the status of marine habitats in the Bay, restores degraded habitats, monitors the recovery of restored habitats, and participates in the development of policies that protect marine resources.

2.6.8 Ecological Processes

The Santa Monica Mountains in the northern portion of the Subregion comprise a large and complex Mediterranean ecosystem of coastal sage scrub, chaparral, oak woodlands, and associated riparian areas. Connecting habitats within this ecosystem has been a top conservation priority. Integrity and connectivity is evidenced, albeit limited, by the presence of the mountain lion, cougar, bobcat, gray fox, badger, mule deer and Steelhead trout.

Fire

Fire is an integral and necessary part of the natural environment and plays a role in shaping the landscape, yet the management of most open space areas historically relied on fire suppression which has resulted in open spaces with varying fuel loads. Catastrophic wildfire events can denude hillsides which create opportunities for invasive plants and increase the potential for subsequent rains to result in debris flows that erode the landscape and can clog stream channels, damage structures, and injure inhabitants in the canyons and lower foothill areas. In recent years, more enlightened open space management practices have attempted to incorporate fire as a natural force for renewal while minimizing risks to lives and property.

Invasive Species

Invasive species in the Region have also substantially affected specific habitats and areas. Along with the rest of California, most of the Subregion's native grasslands were long ago displaced by introduced species. The receptive climate has resulted in the widespread importation of plants from around the globe for landscaping. Some plant introductions have resulted in adverse impacts. In many undeveloped areas, non-native plants such as arundo (Arundo donax), tree of heaven (Alianthus altissima) tree tobacco (Nicotiana glauca), castor bean (Ricinus communis), salt cedar (Tamarix ramosissima) and cape ivy (Senecio mikanioides) are out-competing native. The removal of this particular species, which requires focused and repeated efforts, can provide substantial dividends in water savings and restored species diversity.

Slope Stability

The area in the northern portion of the Subregion is prone to slope stability problems such as landslides, mudslides, slumping and rockfalls. Shallow slope failure such as mudslides and slumping occur where graded cut and fill slopes have been inadequately constructed. Rockfalls are generally associated with seismic ground-shaking or rains washing out the ground containing large rocks and boulders.

2.7 Open Space and Recreation

Open space and recreation area is limited in the Subregion due to it being highly developed. Parks, recreation and other open space in the Subregion can be seen in Figure 2-12. Acreage of recreation and open space lands within the Subregion is shown in Table 8. In total, of the Subregion's 24,300 acres, approximately 210,000 acres (or 12%) are considered open space or recreation land areas. A majority of the areas are National Forest Land within the San Gabriel Mountains.

Table 8: Existing Recreation and Open Space Land Area

Land Type	Acres
Developed Urban Park and Recreation Area	3,900 acres
Open Space Lands (including wetlands and National Forest)	20,100 acres
Greenways	70 acres
Other/Miscellaneous	240 acres
Total Area in Subregion	**24,310 acres**

2.8 Land Use

Land use within the South Bay Subregion reflects the historic pattern of urbanization as most of the coastal plain is occupied with residential, industrial, commercial, and institutional uses while most of the Santa Monica Mountains are principally open space. The overall land use breakdown for the South Bay Subregion is as follows: 20 percent commercial and industrial, 46 percent residential, 4 percent open space and recreation, 6 percent transportation, and 23 percent other open space. A breakdown of land use in the South Bay Subregion is depicted in Figure 2-13. This Subregion is considered to be nearly at build-out, meaning there is little to no additional open space available for development.

Table 9: Land Use in the South Bay Subregion

Land Use Type	Acres	Percentage
Vacant	48,173	2%
Residential	114,045	47%
Commercial	28,562	12%
Industrial	21,702	9%
Transportation, Utilities	15,073	6%
Open Space / Recreation	8,677	4%
Agriculture	1,090	<1%
Mixed Urban	3,271	1%
Water	4,073	2%
No Data	748	<1%
Total	**245,416**	**100%**

Figure 2-12: Parks and Open Space in the South Bay Subregion

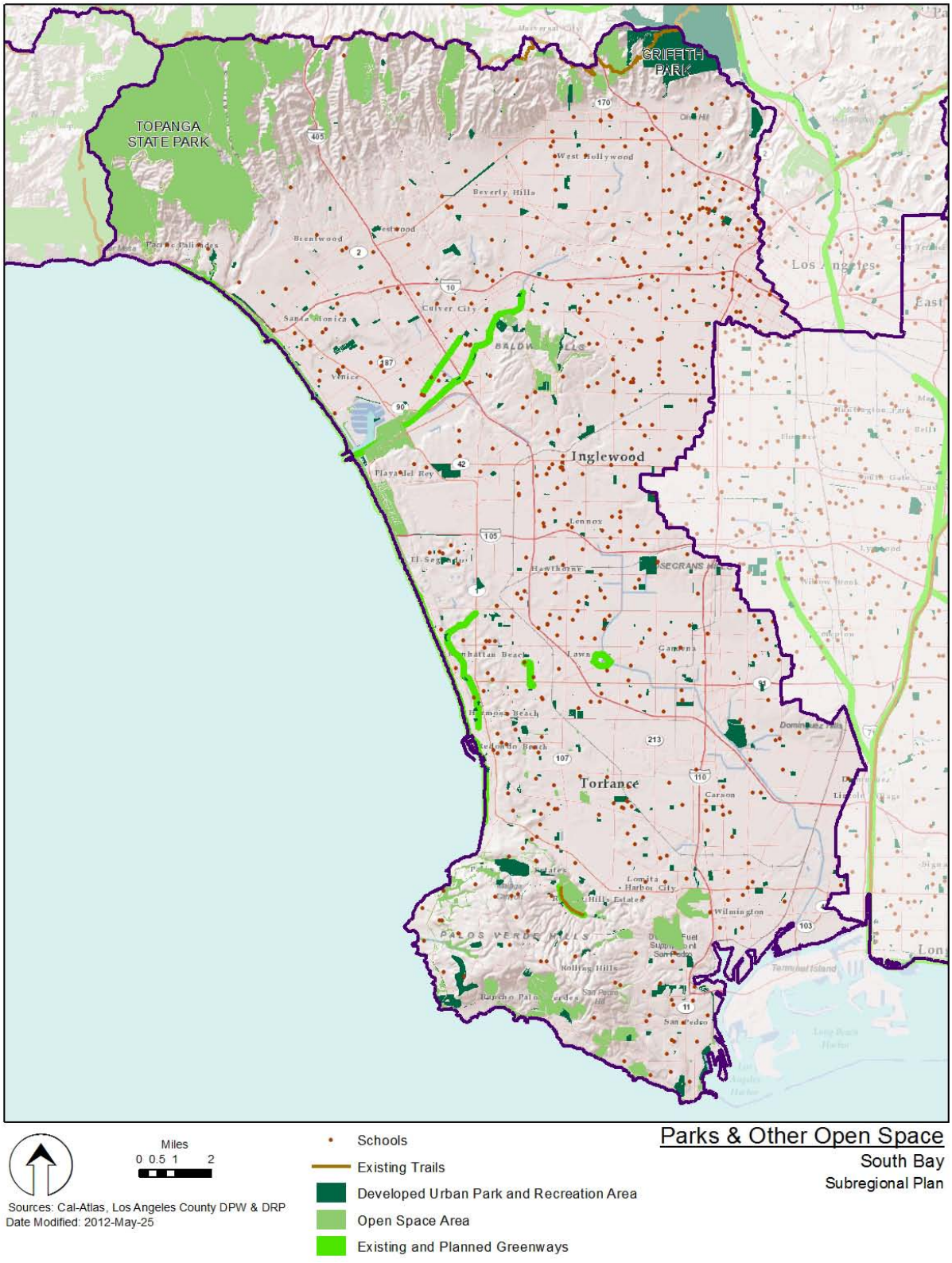
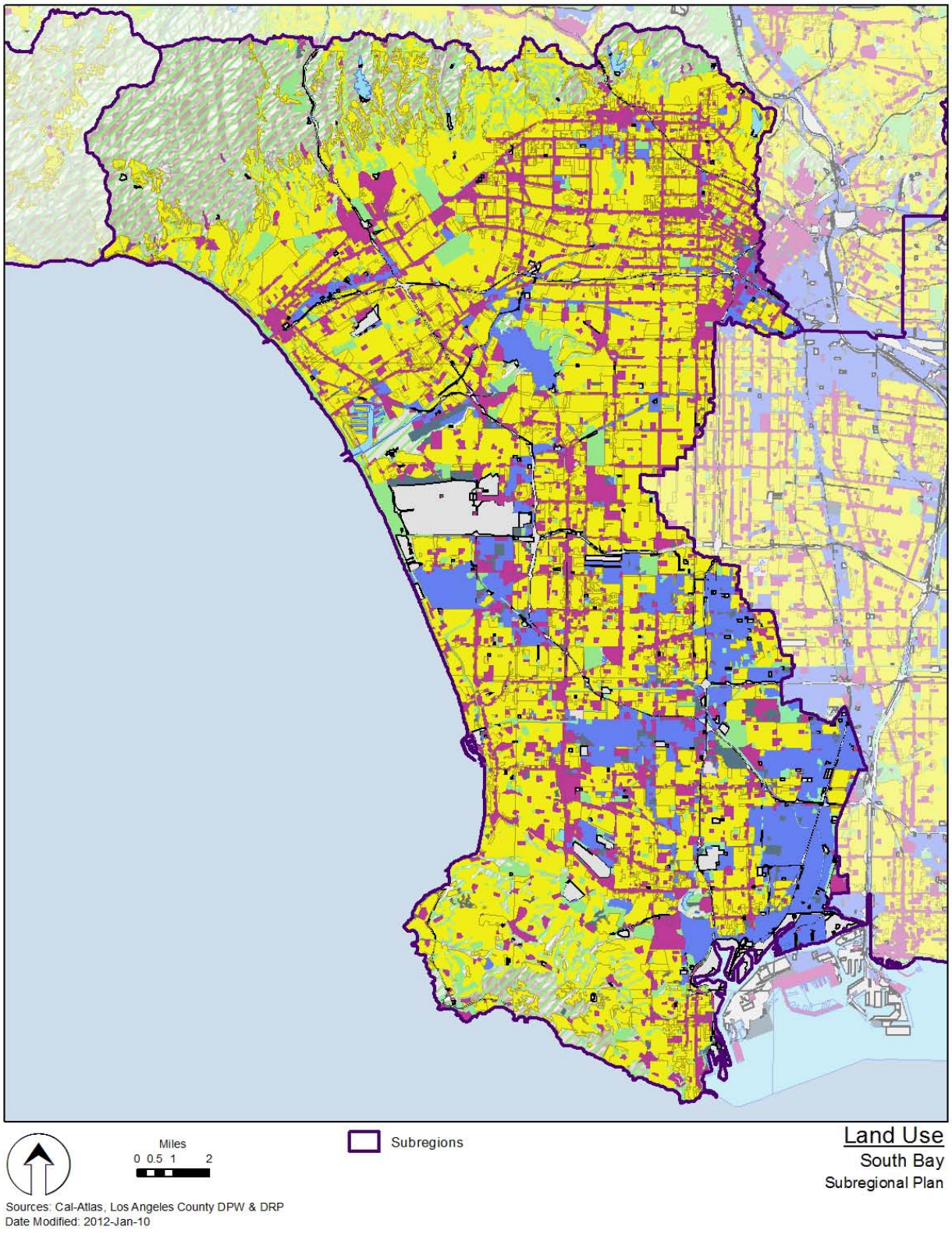


Figure 2-13: Land Use in the South Bay Subregion



3 South Bay Objectives and Targets

This section identifies the objectives for the South Bay Subregion and establishes quantified planning targets to the 2035 planning horizon that can be used to gauge success in meeting the objectives.

3.1 Objective and Target Development

The Greater Los Angeles County Regional IRWM Plan has developed regional goals, objectives, and targets. To assist the region in meeting these, the South Bay Subregion has developed its own objectives and targets. These objectives and targets are intended to help guide improvements to water supply, water quality, habitat, open space, and flood management to meet the region's objectives and targets through subregional planning.

Five objectives have been articulated, based on recent water supply, resource management, and watershed plans. These plans include various UWMPs, recycled water master plans, and the Metropolitan Water District (MWD) IRP. A workgroup composed of Stakeholders from within the Subregion were involved in establishing the Plan's objectives and targets. To establish quantifiable benchmarks for implementation of the plan, planning targets were defined based on much discussion within the regional workgroup.

Although the IRWMP is intended to address the region's and the South Bay Subregion's water resource management needs, this document also identifies several open space and habitat targets, as the implementation of water supply and water quality projects have the potential to contribute towards there other regional needs. In addition, habitat, open space and recreation projects have the potential to generate water supply and water quality benefits.

The five objectives and planning targets for the South Bay Subregion are identified below (and summarized in Table 10) and are presented under the Plan element to which they most closely correspond.

Table 10: South Bay Subregion Objectives and Planning Targets

Objectives		Subregional Planning Targets
Improve Water Supply		
Optimize local water resources to reduce the Subregion's reliance on imported water.	Water Use Efficiency	Conserve 38,000 AFY of water by 2035 through water use efficiency and conservation measures.
	Ground Water	Create additional ability to pump 35,000 AFY using a combination of treatment, recharge, and storage access. Create ability to pump 5,000 AFY of groundwater previously inaccessible due to water quality issues.
	Recycled Water	Increase indirect potable reuse of recycled water by 13,000 AFY. Increase non-potable reuse of recycled water by 26,000
	Ocean Desalination	Increase ocean desalination by 21,000 AFY.
	Stormwater	Increase capture and use of stormwater runoff by 6,000 AFY that is currently lost to the ocean.
Improve Water Quality		
Comply with water quality regulations (including TMDLs) by improving the quality of urban runoff, and stormwater	Runoff (Wet Weather Flows)	Develop[1] 12,600 AF of new stormwater capture capacity (or equivalent) spatially dispersed to reduce region-wide pollutant loads, emphasizing higher priority areas[2].
	Dry Weather Flows	Eliminate non-natural dry weather flows originating from irrigation excess and other dry weather urban runoff processes[3].
Enhance Habitat		
Protect, restore, and enhance natural processes and habitats.	Wetland/Marsh	Preserve or protect 220 acres of wetland habitat Create, develop, or enhance 570 acres of wetland habitat. Restore or create 830 acres of wetland habitat
	Upland Habitat	Preserve, create or enhance 4,000 acres of upland habitat

[1] Stormwater capture capacity assumes (1) providing storage volume equivalent to runoff from the 0.75", 24-hour design storm event, (2) designing BMPs to retain the captured volume to the maximum extent practicable via infiltration, evapotranspiration, or harvest and use, and (3) designing BMPs to provide effective treatment to address pollutants of concern for the remaining portion of the captured volume that is not retained. Projects deviating from these specifications may be demonstrated to be equivalent based on comparison of average annual volume captured and/or average annual pollutant load reduction for pollutants of concern. Pollutants of concern are defined as those pollutants expected to be generated from the land uses within the subwatershed and for which the downstream water bodies are impaired (TMDL, 303(d) listed).

[2] High priority areas will be determined based on project-specific characteristics such as project area land use, precipitation, imperviousness and downstream impairments.

[3] Targeted dry weather flows are exclusive of permitted wastewater treatment plant discharges, permitted dewatering discharges, and other similar permitted activities.

Enhance Open Space and Recreation		
Increase watershed friendly recreational space for all communities	Open Space	Preserve, protect, and enhance 13,000 acres of open space
	Recreation Space	Create, develop, or enhance 7,000 acres of recreational park lands
Improve Flood Management		
Implement integrated flood management systems to decrease flood risks and increase flood protection.	Sediment Management and Integrated Flood Planning	Reduce flood risk in 9,000 acres of flood prone areas by either increasing protection or decreasing needs using integrated flood management approaches.

3.2 Water Supply

Optimizing local water supply resources is vital for the South Bay Subregion to reduce its reliance on imported water and improve reliability of local water supplies should imported water supplies be reduced or interrupted due to environmental and/or political reasons. The Subregion plans on achieving this objective by conserving water through water use efficiency measures, creating an additional ability to pump groundwater, increasing the use of indirect potable reuse and non-potable reuse of recycled water, increasing ocean desalination, and increasing the infiltration, capture, and use of stormwater. The water supply planning targets were established using 2010 UWMPs from the primary cities and water agencies within the Subregion. In total, water supply targets will yield at additional 126,000 AFY of local supply. The assumptions and calculations used to determine the planning targets are attached as Appendix B.

3.3 Water Quality

Improving the quality of urban and stormwater runoff will reduce or eliminate impairment of rivers, beaches, and other water bodies within and downstream of the Subregion. Improving the quality of urban and stormwater runoff would also make these local water supplies available for groundwater recharge. Additionally, the Subregion will continue to improve groundwater and protect drinking water quality to ensure a reliable water supply.

The Subregion plans on achieving these objectives by increasing the capacity to capture and treat runoff and prevent certain dry weather flows (see table above). The water quality target was determined by setting a goal of capturing ¾" of storms over the Subregion. The Subregion's target is to develop 12,600 AF of new stormwater capture capacity (or equivalent). An emphasis will be given to the higher priority areas which will be determined by project-specific characteristics provided by the project proponent, including land use in the proposed project area, runoff and downstream impairments. The assumptions and calculations used to determine prioritization are attached as Appendix C.

3.4 Habitat Enhancement

Protecting, restoring, and enhancing the Lower San Gabriel and Los Angeles River Subregion's native habitats is vital to preserving areas that will contribute to the natural recharge of precipitation and improve downstream water quality. Additionally, the protection, restoration, and enhancement of upland habitat, wetland/marsh habitat, riparian habitat and buffer areas will help restore natural ecosystem processes and preserve long-term species diversity.

The Subregion plans on achieving these objectives by protecting or preserving 220 acres of tidal wetland, freshwater wetland and riparian wetland. The Subregion also intends to enhance 570 acres of these wetlands, and restore or create 830 acres of wetlands. The wetland (including riparian) planning targets

were determined using inventories of currently existing wetlands (National Wetlands Inventory) as well as historical wetlands extent (Rairdan, 1998).

Upland habitat provides buffers and linkages between ecosystems. Given this, the Subregion's target for upland habitat is 4,000 acres.

The assumptions and calculations used to determine these habitat targets are attached as Appendix D.

3.5 Open Space and Recreation

Open space and recreation areas provide space for native vegetation to create habitat and passive recreational opportunities for the community. In addition, open space and recreation areas may preserve or expand the area available to improve surface water quality to the extent that these open spaces filter, retain, or detain stormwater runoff, and provide opportunities to reuse treated runoff for irrigation.

The Subregion plans on achieving these objectives by creating/developing/enhancing 7,000 acres of recreation space, and 13,000 acres of open space. The assumptions and calculation used to determine these are attached as Appendix D.

3.6 Flood

Improved integrated flood management systems can help reduce the risk of flooding, protect lives and property. The Subregion plans on meeting this objective by reducing 9,000 acres of local unmet drainage needs. The local unmet drainage target was determined by looking at Special Flood Hazard Areas (SFHAs), also known as flood plains, as defined by FEMA, compared to land uses and the presence of structures. Detailed assumptions and calculations used to determine these are attached as Appendix E.

4 Partnership and Multi-benefit Opportunities

<Note to stakeholders: This section will be developed once projects have been approved by subregions and analyzed for potential partnership and multi-benefit opportunities>

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Appendix A - Regional Imported Water Information

State Water Project

The SWP is a system of reservoirs, pumps and aqueducts that carries water from Lake Oroville and other facilities north of Sacramento to the Sacramento-San Joaquin Delta and then transports that water to central and southern California. Environmental concerns in the Sacramento-San Joaquin Delta have limited the volume of water that can be pumped from the SWP. The potential impact of further declines in ecological indicators in the Bay-Delta system on SWP water deliveries is unclear. Uncertainty about the long-term stability of the levee system surrounding the Delta system raises concerns about the ability to transfer water via the Bay-Delta to the SWP.

The MWD contract with the Department of Water Resources (DWR), operator of the SWP, is for 1,911,500 acre-feet/year. However, MWD projects a minimum dry year supply from the SWP of 370,000 acre-feet/year, and average annual deliveries of 1.4 million acre-feet/ year. These amounts do not include water which may become available from transfer and storage programs, or Delta improvements.

MWD began receiving water from the SWP in 1972. The infrastructure built for the project has become an important water management tool for moving not only annual deliveries from the SWP but also transfer water from other entities. MWD, among others, has agreements in place to store water at a number of groundwater basins along the aqueduct, primarily in Kern County. When needed, the project facilities can be used to move stored water to southern California.

Colorado River Aqueduct

California water agencies are entitled to 4.4 million acre-feet/year of Colorado River water. Of this amount, the first three priorities totaling 3.85 million acre-feet/year are assigned in aggregate to the agricultural agencies along the river. MWD's fourth priority entitlement is 550,000 acre-feet per year. Until a few years ago MWD routinely had access to 1.2 million acre-feet/year because Arizona and Nevada had not been using their full entitlement and the Colorado River flow was often adequate enough to yield surplus water to MWD. According to its 2010 Regional UWMP, MWD intends to obtain a full 1.2 million acre-feet/year when possible water management programs with agricultural and other holders. MWD delivers the available water via the 242-mile Colorado River Aqueduct, completed in 1941, which has a capacity of 1.2 million acre-feet per year.

The Quantification Settlement Agreement (QSA), executed in 2003, affirms the state's right to 4.4 million acre-feet per year, though water allotments to California from the Colorado River could be reduced during future droughts along the Colorado River watershed as other states increase their diversions in accord with their authorized entitlements. California's Colorado River Water Use Plan and the QSA provide numeric baseline to measure conservation and transfer water programs thus enable the shifting to conserve water (such as the lining of existing earthen canals) and to shift some water from agricultural use to urban use. Since the signing of the QSA, water conservation measures have been implemented including the agriculture-to-urban transfer of conserved water from Imperial Valley to San Diego, agricultural land fallowing with Palo Verde, and the lining of the All-American Canal.

Appendix B - Water Supply Targets TM

Appendix C - Water Quality Targets TM

Appendix D - Open Space for Habitat and Recreation Plan

Appendix E - Flood Targets TM