SECTION 5 WATER RESOURCES

This section presents the potential adverse impacts of the Water Authority's Proposed Project facilities on water resources in San Diego County. This section begins with a description of the regional setting, followed by a discussion of the Federal, State and local regulations. A programmatic review of potential effects on water resources associated with Proposed Project facilities is provided in Section 5.3. Mitigation measures to avoid, eliminate or reduce effects to a less than significant level are also provided where appropriate. Finally, Section 5.4 identifies effects found not to be significant.

5.1 REGIONAL SETTING

5.1.1 General Characteristics

California is divided into nine hydrologic regions to facilitate management of the State's water quality control program. The area of Proposed Project influence is located in Region 9, the San Diego Hydrologic Region (SDHR), which spans approximately 3,900 square miles within the northwest trending Peninsula Range Physiographic Province (RWQCB 1994). Within Region 9 boundaries, the Proposed Project area of influence on hydrologic resources is regarded as the Water Authority's service area plus the service area of the 23 member agencies, which have an aggregate total of 1,420 square miles (908,974 acres) in the western third of San Diego County; and the affected watersheds that may extend beyond the Water Authority boundary (SDCWA 2000).

5.1.2 Surface Water Supply and Management

Ninety percent of the Water Authority's municipal and industrial (M&I), commercial and agricultural water demand is met through the imported water supplies from the California State Water Project (SWP) and the Colorado River, with the remaining 10 percent provided by runoff to local reservoirs and groundwater resources (RWQCB 1994). The Water Authority receives the imported water supplies from MWD and allocates water supply to the Water Authority's 23 member agencies (RWQCB 1994). MWD also receives water from the Colorado River and the SWP. The impounded surface waters in the area of influence originate as both runoff and imported water supplies. All of the major streams in the area have surface water impoundments that capture and regulate annual flow.

5.1.3 Surface Water Use

Water use in the Water Authority's service area is predominantly for M&I and agricultural consumers (SDCWA 2000). The M&I category accounts for approximately 80 percent of the total water delivered, with the remaining 20 percent used for agriculture. Municipal uses include residential and commercial water consumption. The Water Authority delivered an average 599,000 ac-ft of water annually from FY 1990 to FY 2002, with a peak demand of 695,000 ac-ft in FY 2000 (SDCWA 2000). The projected water demands are to reach 813,000 ac-ft in the year 2020 based on SANDAG's 2020 Cities/County demographic forecast.

Reclaimed water is used for irrigation, agriculture, parks and recreational areas as well as landscaping and some industrial water uses in the area of influence. This non-potable water is provided by several of the Water Authority's member agencies and wastewater treatment plant operators through extensive treatment of municipal wastewater. Using reclaimed water is a critical water use efficiency component, with a predicted reclaimed water use volume of 50,000 ac-ft per year (ac-ft/yr) by 2010 (RWQCB 1994).

Water conservation is expected to reduce M&I demand approximately 12 percent by the year 2020, saving 93,200 ac-ft/yr (SDCWA 2000). This savings would be accomplished through the implementation of existing and proposed best management practices such as requiring the installation of water meters in new residential construction (17,300 ac-ft/yr savings), auditing main lines to detect and repair leaks (19,310 ac-ft/yr savings), and providing incentives for the installation of Ultra Low-Flow Toilets (31,240 ac-ft/yr savings). Additional water savings can potentially be achieved through practices such as providing incentives for efficient landscape irrigation devices, and expanding education and outreach efforts. These projected water savings are based on industry standard methodologies for calculating savings, as defined by the California Urban Water Conservation Council. Agricultural water demand is predicted to remain steady at approximately 91,500 ac-ft/yr by the year 2020. It will decrease somewhat in the future as agricultural acreages in San Diego County shrink due to high land, energy and water prices as well as increasing irrigation efficiency.

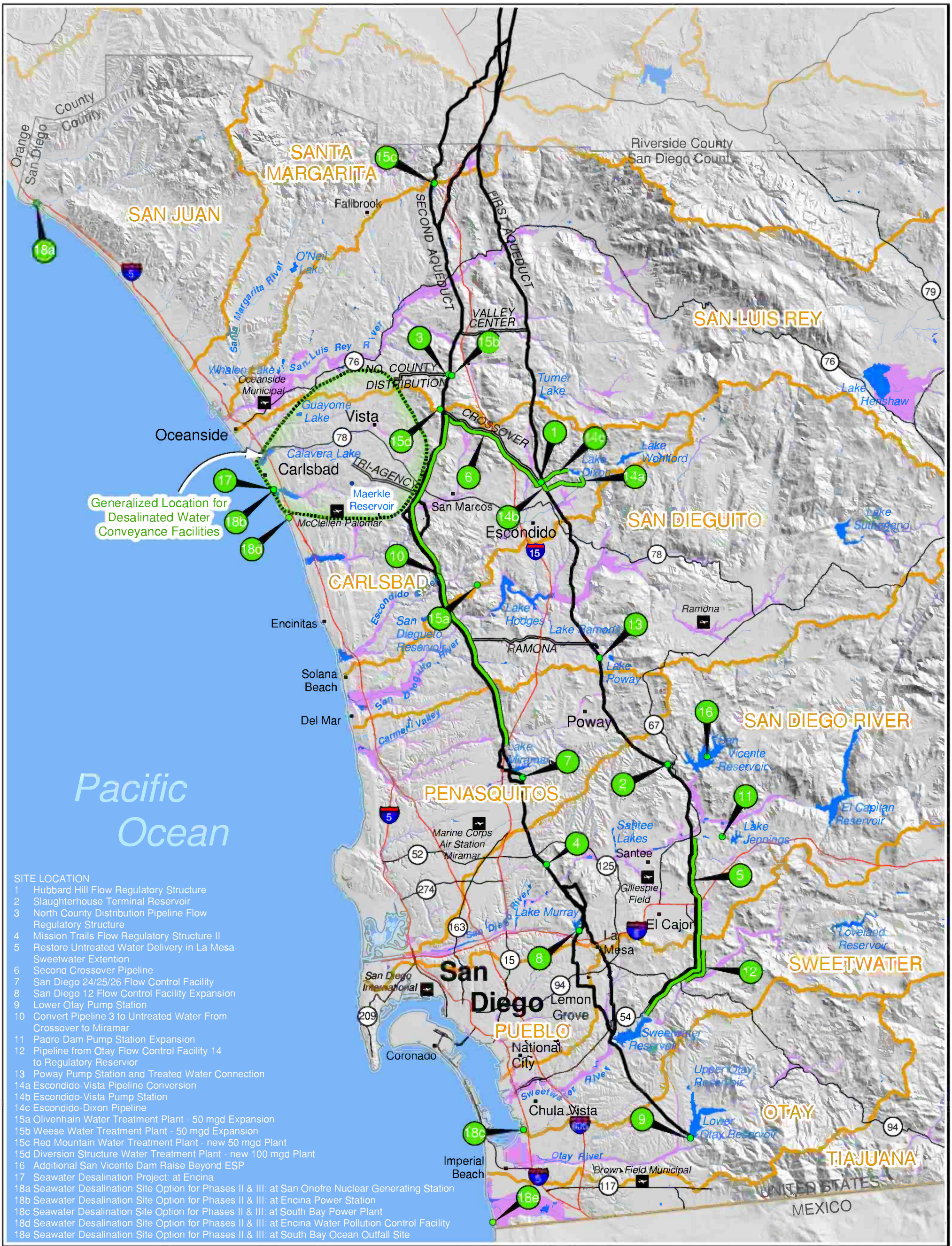
5.1.4 Surface Water Quality

Water quality in the SDHR has been affected by the area's rapid growth and urbanization. Current land use distribution in the SDHR is illustrative of this trend, and includes 7.8 percent residential, 1.2 percent commercial and industrial, 26 percent parks and open space, 4.8 percent military, and 7.7 percent agriculture (SANDAG 1997). Activities associated with these land uses produce pollutants that affect water quality within the area of influence, and indeed coliform bacteria, sediments, trace metals, nutrients, and pesticides are commonly found in some SDHR waters, with some water bodies having experienced marked degradation over the past decade. **Figure 5-1** depicts surface water features and HUs in the Proposed Project area.

Surface waters that do not meet applicable water quality standards are identified on the RWQCB's impaired water bodies list, as required by Section 303(d) of the federal CWA. The impaired water bodies list also includes a description of the pollutants causing impairment and a priority ranking of the waters for purposes of development of water quality improvement plans with objectives for Total Maximum Daily Loads (TMDLs).

5.1.5 Groundwater Resources

Western San Diego County is part of the South Coastal Hydrologic Region, as defined by the California Department of Water Resources (DWR) Bulletin 118 (DWR 2003). The South Coastal Hydrologic Region also extends north into Orange, Los Angeles, and Ventura Counties (**Figure 5-1**). It is the most urbanized hydrologic region in California with about 7 percent of the State's area, but more than half of the State's population. The southern third of the South



SITE LOCATION

1 Hubbard Hill Flow Regulatory Structure
2 Slaughterhouse Terminal Reservoir
3 North County Distribution Pipeline Flow Regulatory Structure
4 Mission Trails Flow Regulatory Structure II
5 Restore Untreated Water Delivery in La Mesa-Sweetwater Extention
6 Second Crossover Pipeline
7 San Diego 24/25/26 Flow Control Facility
8 San Diego 12 Flow Control Facility Expansion
9 Lower Otay Pump Station
10 Convert Pipeline 3 to Untreated Water From Crossover to Miramar
11 Padre Dam Pump Station Expansion
12 Pipeline from Otay Flow Control Facility 14 to Regulatory Reservior
13 Poway Pump Station and Treated Water Connection
14a Escondido-Vista Pipeline Conversion
14b Escondido-Vista Pump Station
14c Escondido-Dixon Pipeline
15a Olivenhain Water Treatment Plant - 50 mgd Expansion
15b Weese Water Treatment Plant - 50 mgd Expansion
15c Red Mountain Water Treatment Plant - new 50 mgd Plant
15d Diversion Structure Water Treatment Plant - new 100 mgd Plant
16 Additional San Vicente Dam Raise Beyond ESP
17 Seawater Desalination Project: at Encina
18a Seawater Desalination Site Option for Phases II & III: at San Onofre Nuclear Generating Station
18b Seawater Desalination Site Option for Phases II & III: at Encina Power Station
18c Seawater Desalination Site Option for Phases II & III: at South Bay Power Plant
18d Seawater Desalination Site Option for Phases II & III: at Encina Water Pollution Control Facility
18e Seawater Desalination Site Option for Phases II & III: at South Bay Ocean Outfall Site

Source: Watershed boundary data provided by www.projectcleanwater.org/html/ws_map.html

San Diego County Water Authority

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SAN DIEGO COUNTY WATER AUTHORITY MASTER PLAN PEIR

FIGURE 5-1
SURFACE WATER FEATURES

ANALYSIS AREA: SAN DIEGO COUNTY, CALIFORNIA	
Date: 07/22/03	File: SURFACE_WATER.MXD
Prepared By: JG	

Coastal Hydrologic Region lies within the San Diego subregion. For the purpose of this discussion, the project area is considered to be interchangeable with the San Diego subregion. The DWR recognized 27 groundwater basins in the San Diego subregion. The Las Flores basin in the northwestern part of the County is not listed in Bulletin 118, but is recognized by the RWQCB (RWQCB 1994) and included here. Groundwater basin locations are shown on **Figure 5-2**.

Geology has a profound influence on the occurrence and quality of groundwater in western San Diego County. The South Coastal Hydrologic Region encompasses the Peninsular Ranges of the central County, and the coastal basins to the west. Geology and soils are discussed in Section 12. Drainage in this area is ultimately westward to the Pacific Ocean.

Although there are numerous alluvial groundwater basins in the western part of the County, they are volumetrically small compared with many of the basins in other parts of the State, including eastern San Diego County. Most of the coastal basins have the additional disadvantage of being subject to seawater intrusion under conditions of severe drought or overpumping. Geology, climate, and water quality are less favorable for groundwater resource development than in many other areas of the State. However, groundwater is still an important resource in San Diego County and has the potential to be a significantly greater resource in the future.

5.2 REGULATORY SETTING

Policy, legislation, standards and regulations pertinent to surface and groundwater resource management are summarized in **Table 5-1**, which includes summary indication of relevance to Proposed Project actions. In general, implementation and enforcement responsibility flows down from the Federal and State jurisdiction to the county and municipal levels, with the former typically enabling local government to adapt broad environmental policies to local realities and needs. Regulatory compliance and permitting of project activities will accordingly be realized at the county or municipal levels, and the Federal and State regulatory frameworks will be of indirect relevance.

5.3 IMPACTS AND MITIGATION

The following potential impacts to surface water resources were considered as part of this evaluation.

- Degradation of down-gradient water quality caused by on-site stormwater discharges containing sediments, solvents and other constituents, during construction, expansion or operation of new facilities; a potential impact associated with all facility types;
- Increase or reduction of flow in surface drainages downstream of facility components; a potential impact for the construction phase of pipelines, pump stations, and the San Vicente Dam raise; and
- Degradation of marine water quality as a result of seawater desalination process water discharge.

5.3.1 Standards of Significance

Impacts associated with project activities will be considered significant if the following are likely to occur.

- Violation of any water quality standards or waste discharge requirements;
- Alteration of the existing drainage pattern of facility sites and surrounding area in a manner that would increase flood risk or reduce minimum flows downstream of the site;
- Degrade downstream or marine habitats or other biological resources; or
- Place structures within 100-year flood areas.

5.3.2 Impacts and Mitigation Measures

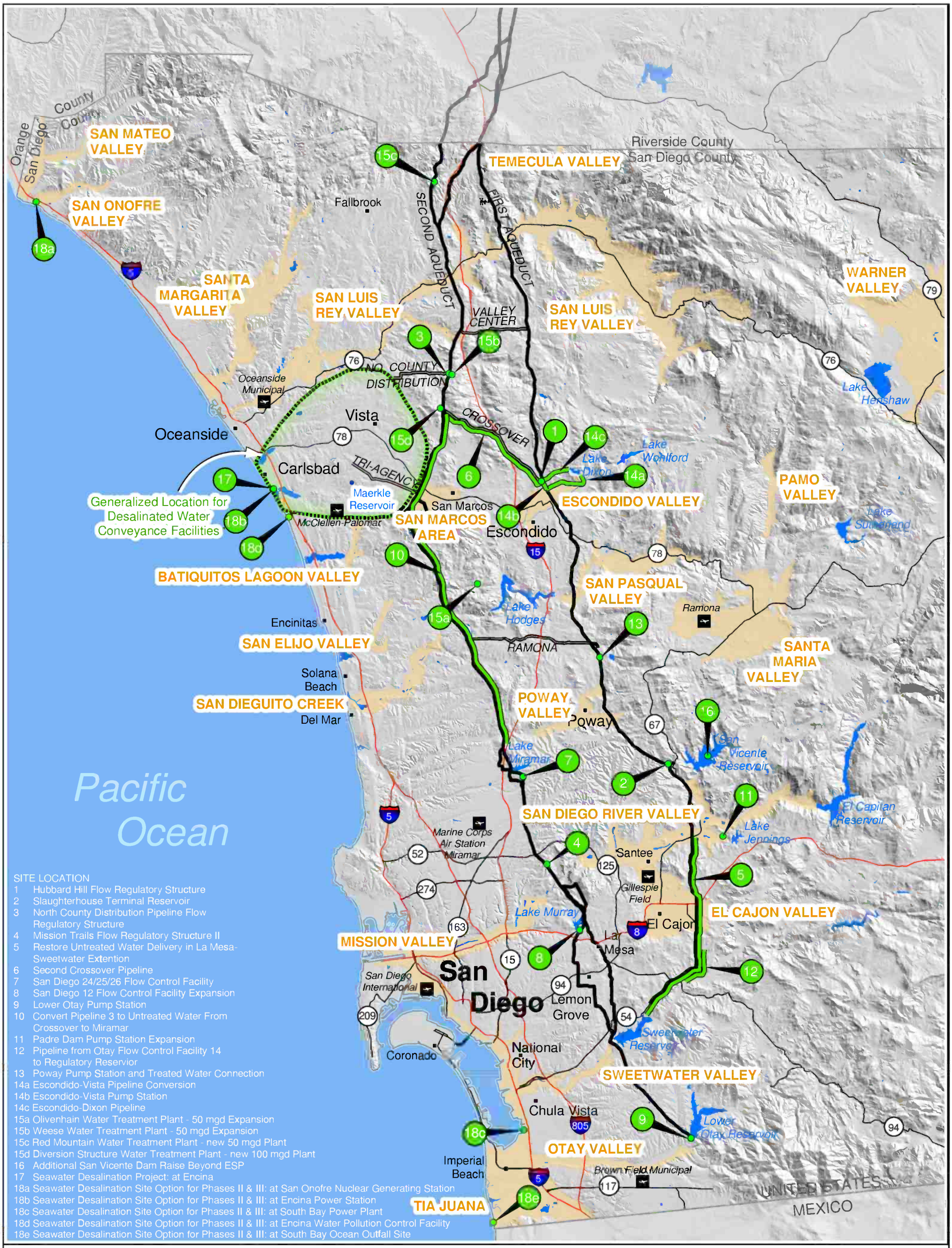
This section identifies the potentially significant adverse program-level impacts and required mitigation measures for the Proposed Project facilities. **Table 5-2** presented at the end of this section identifies the potential program-level impacts of each of the Proposed Project facilities. This program-level analysis is not intended to describe or address the impacts in detail; detailed evaluations of the impacts of specific projects will be conducted as part of a site-specific CEQA review.

Unless otherwise noted, all identified impacts are considered to be potentially significant adverse impacts. Corresponding mitigation measures, unless otherwise noted, are expected to be sufficient to reduce impacts to a less than significant level.

Water Resources Impact 1: *Construction of the Proposed Project facilities could result in degradation of downstream water quality.*

Construction of Proposed Project facilities could result in degradation of downstream water in several ways. Excavation for pump station and treatment plant foundations, pipeline trenches, and pads for FRSs would result in unconsolidated soils and unvegetated surfaces, both subject to erosion and sediment transport into downstream water courses. Bare earth surfaces exposed during construction, and impermeable surfaces that characterize finished facility sites may also accumulate solvents, fuels or other noxious materials that may be transported with stormwater runoff, degrading downstream water quality.

In addition, excavation for project facilities may require removal of groundwater seepage by continuous or intermittent pumping. Discharge of this 'dewatering' effluent into nearby drainages may alter existing water runoff patterns, and may affect existing channel configurations. The quantity of water that may be discharged, and the actual point of discharge into adjacent drainages as a result of dewatering operations would be determined as part of final design for each facility, and resulting data would be used in the development of appropriate mitigation measures.



N W E S

3 0 3 6 Miles

Legend

- Site Locations
- Airport
- County Boundary
- Interstate
- State Route
- System Pipeline
- Aqueduct
- Lake/Reservoir
- Groundwater Basin

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FIGURE 5-2
GROUNDWATER BASINS

ANALYSIS AREA: SAN DIEGO COUNTY, CALIFORNIA

Date: 07/22/03	File: GW_BASINS.MXD
Prepared By: JG	

Table 5-1
Summary of Federal, State and Local Water Resources Regulations

Level	Title	Objective	Relevance to Proposed Project Actions
Federal	Safe Drinking Water Act (40 U.S.C. 100 *et seq.*) National Drinking Water Standards	Ensure public drinking water quality	Relevant/Indirect: Governs quality of water produced by the Water Authority, but has no implications for project-related environmental impact
Federal	Antidegradation Policy (40 CFR 131.12)	Surface water quality protection	Relevant/Indirect: Overarching policy that enables water quality legislation
Federal	CWA (33 U.S.C. 1251 *et seq.*)	Enabling of pollution control programs	Relevant/Indirect: Enables specific pollutant discharge control programs contained in subsequent sections
	• CWA Section 208 Water Quality Control Plans	Development of basin-specific water quality control plans based on land use	Relevant/Direct: Construction activities must incorporate best management practices per the San Diego Basin Water Quality Control Plan
	• CWA Section 303(d) Impaired Water Bodies	Improve waterbodies not in compliance with quality standards and develop TMDL criteria	Relevant/Direct: Most project facilities are in the vicinity of Impaired Waterbodies having TMDLs
	• CWA Section 304(a)(1) National Water Quality Criteria	Require U.S. EPA to develop water quality criteria	Relevant/Indirect: Guides development of water quality standards
	• CWA Section 401 Water Quality Certification	Monitor and assure compliance of discharges of dredge-fill material	Not Relevant: No dredge-fill activities envisioned under the Proposed Project
	• CWA Section 402-(p)(3)(B)(iii) NPDES	Reduction of pollutant discharges into waters of the United States	Relevant/Indirect: NPDES is covered under a county-wide permit applicable to 20 municipalities and unincorporated areas
	• CWA Section 404	Discharge of dredge or fill materials, wetland protection	Relevant/Direct: Water resource projects require Section 404 permitting
Federal	Executive Order 11988	Control of floodplain development	Undetermined
State	Porter-Cologne Water Quality Control Act	Enable water quality protection and management at the state level	Relevant/Indirect: The San Diego RWQCB's authority is derived from Porter-Cologne
State	California Toxics Rule (CTR)	Establish ambient standards for 'priority' toxic pollutants	Relevant/Direct: CTR must be considered in stormwater discharges from facilities
State	California Fish and Game Code (Sec.1601)	Protect river and stream habitat	Undetermined

Table 5-1 (continued)
Summary of Federal, State and Local Water Resources Regulations

Level	Title	Objective	Relevance to Proposed Project Actions
State	California Coastal Zone Management Act (CCZMA)	Coastal protection, assure public access to coastal areas	Relevant/Direct: The seawater desalination facility must demonstrate compliance with Local Coastal Program developed under the CCZMA
State	California Ocean Plan	Protection of oceanic water quality	Relevant/Direct: The seawater desalination facility discharge must comply with effluent limitations
State	California Water Code, Sections 6000-6501	Dam Safety	Relevant/Direct: Plans for dam raise at San Vicente must be approved by DWR
County	County Code Sec. 67.801 *et seq* County of San Diego Watershed Protection, Stormwater Management and Discharge Control Ordinance	Control of stormwater discharge quality in unincorporated areas	Relevant/Direct: Component discharge control ordinances and stormwater standards manual applicable to project activities
County	San Diego RWQCB, • NPDES Permit No. CAS108758 • Order 2001-01	Control of municipal stormwater discharge in 20 incorporated cities by requiring each to prepare Jurisdictional Urban Runoff Management Plans (JURMP)	Relevant/Direct: Project activities occur within jurisdictions of many of the 20 permit holders
Municipal	JURMP plans for Carlsbad, Chula Vista, El Cajon, Escondido, La Mesa, Lemon Grove, Poway, City of San Diego, San Marcos	Municipal stormwater quality control	Relevant/Direct: Project activities will occur within jurisdictions of many of the 20 permit holders

Pipeline segments may also traverse or parallel drainage channels, which may result in temporary drainage alteration as a result of grading and excavation, possibly affecting the direction or velocity of surface flows.

All of these discharges would cause significant but mitigable impacts on downstream water quality and aquatic biological resources.

Water Resources Mitigation Measure 1:

The Water Authority will comply, where applicable, with all current State, regional, and city water quality provisions:

a) The Water Authority shall ensure that all ground disturbing activities are conducted consistent with the Water Authority's General Conditions and Standard Specifications, including but not limited to Sections 02270 (Temporary Erosion Control), 02140 (Dewatering), 02200 (Earthwork), 02310 (Tunneling) and 02940 (Revegetation);

b) File with the RWQCB a *Notice of Intent* to comply with the Statewide General Permit for Construction Activities;

c) Prepare and implement a project-specific Stormwater Pollution Prevention Plan (including an erosion control plan) if grading or extensive excavation is involved;

d) Implement a monitoring, inspection, and documentation program to assure the effectiveness of control measures, including post-construction measures;

e) Obtain or comply with existing General Stormwater Discharge Permit(s) for industrial activities, where applicable;

f) Comply with the NPDES Phase II Non-Point Discharge Program; and

g) Implement Geology and Soils Mitigation Measure 4.

Application of these mitigation measures will reduce the impacts to surface waters below the level of significance.

Water Resources Impact 2: *Discharge of effluent during operation of seawater desalination facilities may degrade near shore water quality.*

The constituents of water discharged from seawater desalination plants depend in part on: the desalination technology used; the quality of the intake water; the quality of water produced; and the pretreatment, cleaning, and RO membrane storage methods used.

Some RO plants use a coagulant as part of the pretreatment process to cause particles in intake water to form larger masses that can be more easily removed with filters before the water passes through to the RO membranes. The pretreatment filters are backwashed with filtered seawater every few days, producing a sludge that contains filter coagulant chemicals. Options for disposal of coagulants, particles and sludge removed from the filters include discharge with the brine, transport to a landfill, or a combination thereof. A seawater desalination plant would have to include a process for removal of the particles if they are to be discharged with the sludge.

The desalination of seawater through RO produces a stream of reject brine having twice the salinity of intake water. If the intake water is of oceanic salinity, as is the case for the proposed Encina facility, the reject brine would have a salinity concentration twice that of surrounding waters, which is a level that exceeds regulatory limits, and which may be potentially harmful to marine life. Though most marine organisms can tolerate salinities 20 to 30 percent higher than oceanic, reproduction and growth may be negatively affected. Most organisms will not survive salinities that are twice the seawater concentration (Pomoroy 2000).

Furthermore, routine maintenance of RO membranes entails semi-annual cleaning using weak acid and alkaline solutions, and detergent compounds such as dodecylbenzene. If released directly into the ocean, effluent discharge concentrations of these compounds would exceed regulatory limits and could degrade nearshore marine water quality and biological resources.

Water Resources Mitigation Measure 2:

The primary mitigation for potential impacts caused by brine discharge is the mixing of this effluent stream with another existing ocean discharge. The mixing volume would typically be larger than the brine effluent volume from the seawater desalination plant, such that the aggregate salinity of the combined effluent streams would not degrade ocean water beyond regulated limits, and would not harm marine biota. Salinity concentrations would return to near-ambient within a short distance of the point-of-discharge due to further dilution and mixing with surrounding ocean water.

Discharging membrane cleaning waters and pre-treatment filter waste to the municipal sewage collection system or building on-site handling facilities will mitigate the potential impact caused by filter maintenance and the pre-treatment process.

If the seawater desalination facilities in the Proposed Project are operated as described above, there will be no impacts of significance to surface water or marine waters.

5.4 EFFECTS FOUND NOT TO BE SIGNIFICANT

Potential increases or decreases to the recharge of the aquifers at and downstream of project components could result from construction or operation of the Proposed Project facilities.

Construction and operation of Proposed Project facilities is not expected to cause any impact of significance to groundwater resources. Temporary groundwater withdrawals caused by the need to dewater treatment plant and pipeline excavations would be localized, small scale and of short duration. This impact is found not to be significant.

Changes in the water quality at the San Vicente Reservoir could occur as a result of drawdown during the dam raise period of construction.

The potential effects of drawdown in the San Vicente Reservoir were examined in the EIR for the ESP (SDCWA 1995). As reported in the 1995 study, effects on San Vicente water quality

and recreational fisheries will not be impacted as a result of reservoir drawdown as proposed under the ESP. Incremental effects on these same resources from the dam raise proposed under the Proposed Project are not expected to increase the significance of impacts evaluated under the ESP EIR.

Construction of Proposed Project facilities in floodplains may impede or redirect flood flows, and may decrease the safety of structures and people.

As illustrated in **Figure 5-1**, there would be no construction of Proposed Project facilities within 100-year floodplain zones. This impact is accordingly not significant.

Table 5-2
Potential Program-Level Water Resources Impacts of Proposed Project Facilities

#	Project	Impact	
		1[a]	2[b]
Expand Internal System Capacity			
	Flow Regulatory Storage		
1	Hubbard Hill FRS	X	
2	Slaughterhouse Terminal Reservoir	X	
3	North County Distribution Pipeline FRS	X	
4	Mission Trails FRS II	X	
	➢ Mission Trails Tunnel Pipeline and Vent Demolition	X	
	Projects to Increase Regional Untreated Water Conveyance Capacity		
5	Restore Untreated Water Delivery in La Mesa-Sweetwater Extension		
6	Second Crossover Pipeline	X	
7	San Diego 24/25/26 FCF	X	
8	San Diego 12 FCF Expansion		
9	Lower Otay Pump Station	X	
10	Convert Pipeline 3 to Untreated Water from Crossover to Miramar		
Additional Water Treatment Capacity			
	Projects to Supplement Treated-Water Aqueducts		
11	Padre Dam Pump Station Expansion	X	
12	Pipeline from Otay FCF 14 to Regulatory Reservoir	X	
13	Poway Pump Station and Treated Water Connection	X	
14	Escondido-Vista WTP Connection		
	a) Escondido-Vista Pipeline Conversion		
	b) Escondido-Vista Pump Station	X	
	c) Escondido-Dixon Pipeline	X	
	Projects to Expand Regional Water Treatment Capacity		
Options for Expanding Regional Treatment Capacity			
15a	Olivenhain WTP – 50 mgd Expansion	X	
15b	Weese WTP – 50 mgd Expansion	X	
15c	Red Mountain WTP – new 50 mgd plant	X	
15d	Diversion Structure WTP – new 100 mgd plant	X	
Additional Seasonal/Carryover Storage			
16	Additional San Vicente Dam Raise Beyond ESP	X	
New Conveyance and Supply			
17	Phase I – Seawater Desalination: Project at Encina (50 mgd)		
	➢ Desalination Plant	X	X
	➢ Desalinated Water Conveyance Facilities	X	
18	Expand Existing or Site New Seawater Desalination Plant*		
	Phase II – Seawater Desalination: Expand Capacity up to 100 mgd		
	Phase III – Seawater Desalination: Expand Capacity up to 150 mgd		
Seawater Desalination Site Options for Phases II and III:			
	a) San Onofre – at San Onofre Nuclear Generating Station	X	X
	b) Carlsbad – at Encina Power Station	X	X
	c) South Bay – at South Bay Power Plant	X	X
	d) Encina Water Pollution Control Facility	X	X
	e) South Bay Ocean Outfall Site	X	X

Table 5-2 (continued)
Potential Program-Level Water Resources
Impacts of Proposed Project Facilities

*	The ultimate level of seawater desalination development in the region would depend largely upon actual regional population growth, economics, availability of other high quality water sources, as well as an evaluation of the performance of the Encina seawater desalination facility, should it be approved and constructed.
a	Construction of the Proposed Project facilities could result in degradation of downstream water quality.
b	Discharge of effluent during operation of seawater desalination facilities may degrade near shore water quality.