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APPENDIX A

GLOSSARY

Basin Plan - The plan for the protection of water quality prepared by the Regional Water Quality Control Board in response to the Porter-Cologne Water Quality Control Act. The Basin Plan for the San Diego Region is also known as the Water Quality Control Plan for the San Diego Basin (9) and contains Water Quality Standards for the federal Clean Water Act.

Beneficial Uses - The uses of water necessary for the survival or well being of man, plants, and wildlife. These uses of water serve to promote the tangible and intangible economic, social, and environmental goals "Beneficial Uses" of the waters of the State that may be protected against include, but are not limited to, domestic, municipal, agricultural and industrial supply; power generation; recreation; aesthetic enjoyment; navigation; and preservation and enhancement of fish, wildlife, and other aquatic resources or preserves. Existing beneficial uses are uses that were attained in the surface or ground water on or after November 28, 1975; and potential beneficial uses are uses that would probably develop in future years through the implementation of various control measures. "Beneficial Uses" are equivalent to "Designated Uses" under federal law. [California Water Code section 13050(f)].

Best Management Practices (BMPs) - The practice or combination of practices that are determined to be the most effective, practicable means of preventing or reducing the amount of pollution generated by nonpoint sources to a level compatible with water quality goals (including technological, economic, and institutional considerations).

Bioaccumulation - The accumulation of contaminants in the tissues of organisms through any route, including respiration, ingestion, or direct contact with contaminated water, sediment, food, or dredged material.

California Water Code, Division 7 - a.k.a. Porter Cologne Water Quality Control Act.

Capping - The controlled, accurate placement of contaminated material at an open-water site, followed by a covering or cap of clean isolating material.

CEQA - California Environmental Quality Act of 1970.

Clean Water Act - a.k.a. Federal Water Pollution Control Act.

Confined disposal - Placement of dredged material within dikes nearshore or upland confined disposal facilities that enclose the disposal area above any adjacent water surface, isolating the dredged material from adjacent waters during placement. Confined disposal does not refer to subaqueous capping or contained aquatic disposal.

Contaminant - A chemical or biological substance in a form that can be incorporated into, onto, or be ingested by and that harms aquatic organisms, consumers of aquatic organisms, or users of the aquatic environment.

Contaminated sediment or contaminated dredged material - Contaminated sediments or contaminated dredged materials are defined as those that have been demonstrated to cause an unacceptable adverse effect on human health or the environment.

Contamination - means an impairment of the quality of the waters of the state by waste to a degree which creates a hazard to the public health through poisoning or through the spread of disease. "Contamination" includes any equivalent effect resulting from the disposal of waste, whether or not waters of the state are affected.

Dredged material - Material excavated from waters of the United States or ocean waters. The term dredged material refers to material which has been dredged from a water body, while the term sediment refers to material in a water body prior to the dredging process.

Dredged material discharge - The term dredged material discharge means any addition of dredged material into waters of the United States or ocean waters. The term includes open- water discharges; discharges resulting from unconfined disposal operations (such as beach nourishment or other beneficial uses); discharges from confined disposal facilities that enter waters of the United States (such as effluent, surface runoff, or leachate); and overflow from dredge hoppers, scows, or other transport vessels.

Effluent Limitations - Limitations on the volume of each waste discharge, and the quantity and concentrations of pollutants in the discharge. The limitations are designed to ensure that the discharge does not cause water quality objectives to be exceeded in the receiving water and does not adversely affect beneficial uses.

Ephemeral - Water bodies, or segments thereof, that contain water only for a short period following precipitation events.

Hydrologic Area - A major logical subdivision of a hydrologic unit which includes both water-bearing and nonwater-bearing formations. It is best typified by a major tributary of a stream, a major valley, or a plain along a stream containing one or more ground water basins and having closely related geologic, hydrologic, and topographic characteristics. Area boundaries are based primarily on surface drainage boundaries. However, where strong subsurface evidence indicates that a division of ground water exists, the area boundary may be based on subsurface characteristics.

Hydrologic Subarea - A major logical subdivision of a hydrologic area which includes both water-bearing and nonwater-bearing formations.

Hydrologic Unit - A classification embracing one of the following features which are defined by surface drainage divides: (1) in general, the total watershed area, including water-bearing and nonwater-bearing formations, such as the total drainage area of the San Diego River Valley; and (2) in coastal areas, two or more small contiguous watersheds having similar hydrologic characteristics, each watershed being directly tributary to the ocean and all watersheds emanating from one mountain body located immediately adjacent to the ocean.

Implementation Plan - Basin Plan chapter which describes the actions by the Regional Board and others that are necessary to achieve and maintain the designated beneficial uses and water quality objectives of the Region's waters.

Intermittent - Water bodies, or segments thereof, that contain water for extended periods during the year, but not at all times.

Interrupted - Water bodies or streams that contain perennial segments or pools, with intervening intermittent or ephemeral segments.

Leachate - Water or any other liquid that may contain dissolved (leached) soluble materials, such as organic salts and mineral salts, derived from a solid material. For example, rainwater that percolates through a confined disposal facility and picks up dissolved contaminants is considered leachate.

Major federal action - Includes actions with effects that may be major and that are potentially subject to federal control and responsibility. Major refers to the context (meaning that the action must be analyzed in several contexts, such as the effects on the environment, society, regions, interests, and locality) and intensity (meaning the severity of the impact). It can include (a) new and continuing activities, projects, and programs entirely or partly financed, assisted, conducted, regulated, or approved by federal agencies; (b) new or revised agency rules, regulations, plans, policies, or procedures; and (c) legislative proposals. Action does not include funding assistance solely in the form of general revenue-sharing funds where there is no federal agency control over the subsequent use of such funds. Action does not include judicial or administrative civil or criminal enforcement action.

National Pollution Discharge Elimination System (NPDES) - These permits pertain to the discharge of waste to surface waters only. All State and Federal NPDES permits are also WDRs.

Nonpoint Sources - This refers to pollutants from diffuse sources that reach water through means other than a discernable, confined, and discrete conveyance.

Non-storm Water Discharge - Any discharge to a storm water conveyance system that is not composed entirely of storm water.

Nuisance - means anything which meets all of the following requirements: (1) Is injurious to health, or is indecent or offensive to the senses, or an obstruction to the free use of property, so as to interfere with the comfortable enjoyment of life or property; (2) Affects at the same time an entire community or neighborhood, or any considerable number of persons, although the extent of the annoyance or damage inflicted upon individuals may be unequal; and (3) Occurs during or as a result of the treatment or disposal of waste.

Open-water disposal - Placement of dredged material in rivers, lakes, estuaries, or oceans via pipeline or surface release from hopper dredges or barges.

Person - Also includes any city, county, district, the state or any department or agency thereof. "Person" includes the United States, to the extent authorized by federal law.

pH - Term used to refer to the hydrogen ion concentration of water. The acidity or alkalinity of water is measured by the pH factor.

Point Sources - This refers to pollutants discharged to water through any discernable, confined, and discrete conveyance.

Pollution - means an alteration of the quality of the waters of the state by wastes to a degree which unreasonably affects either of the following: (1) The waters for beneficial uses, or (2) Facilities which serve those beneficial uses. "Pollution" may include "contamination."

Porter-Cologne Water Quality Control Act (Porter-Cologne Act) - This is also known as the California Water Code.

Quality of the Water - or "quality of the waters" refers to chemical, physical, biological, bacteriological, radiological, and other properties and characteristics of water which affect its use.

Reclaimed water - or "recycled water" means water which, as a result of treatment of waste, is suitable for a direct beneficial use or a controlled use that would not otherwise occur and is therefor considered a valuable resource.

Regional Board - a.k.a. California Regional Water Quality Control Board.

Region - a.k.a., San Diego Basin (9).

Sewage, Domestic - Waste and wastewater from humans or household operations that is discharged to or otherwise enters a treatment works. [40 CFR 503.9(g)]

Sewage Sludge - A solid, semi-solid, or liquid residue generated during the treatment of domestic sewage in a treatment works. Sewage sludge includes, but is not limited to, domestic septage; scum or solids removed in primary, secondary, or advanced wastewater treatment processes; and a material derived from sewage sludge. Sewage sludge does not include ash generated during the firing of sewage sludge in a sewage incinerator or grit and screenings generated during preliminary treatment of domestic sewage in a treatment works [40 CFR 503.9(w)].

State Board - a.k.a. State Water Resources Control Board.

Statewide Plan - A water quality control plan adopted by the State Water Resources Control Board in accordance with the provisions of Water Code sections 13240 through 13244, for waters where water quality standards are required by the Federal Water Pollution Control Act. Such plans supersede regional water quality control plans for the same waters to the extent of a conflict [California Water Code section 13170].

Triennial Review - Review of the Basin Plan which is required to be done every three years by the federal Clean Water Act [section 303(c)(1)].

Waste - Includes sewage and any and all other waste substances, liquid, solid, gaseous, or radioactive, associated with human habitation, or of human or animal origin, or from any producing, manufacturing, or processing operation of whatever nature, including waste placed within containers of whatever nature prior to, and for purposes of, disposal.

Waste Discharge Requirements (WDRs) - The name of permits issued by the Regional Board for the discharge of waste to land. The discharge of waste to land may potentially impact ground water quality. These permits require that waste not be discharged in a manner that would cause an exceedance of applicable water quality

objectives or adversely affect beneficial uses designated in the Basin Plan.

Water Quality Criteria - Numerical or narrative limits for constituents or characteristics of water designed to protect specific designated uses of the water. When criteria are met, water quality will generally protect the designated use [40 CFR section 131.3(b)]. This term is also used to describe scientific information on the relationship that the effect of a constituent concentration has on human health, aquatic life, or other uses of water, such as the criteria in the USEPA "Gold Book". California's water quality criteria are called "water quality objectives". See "water quality standard".

Water Quality Control - means the regulation of any activity or factor which may affect the quality of the water of the state and includes the prevention and correction of water pollution and nuisance.

Water Quality Goal - The most stringent, applicable, numerical water quality limit for a constituent or parameter of concern in a specific body of ground or surface water at a specific site that is chosen to protect either (1) existing water quality or (2) beneficial uses of water. In the first case, the water quality goal is set equal to the background level in the body of water. In the second case, the water quality goal is set at the less stringent of either (a) the numerical limit which implements all applicable water quality objectives or (b) the background level.

Water Quality Objectives - Numerical or narrative limits on constituents or characteristics of water designed to protect designated beneficial uses of the water. [California Water Code section 13050(h)]. California's water quality objectives are established by the State and Regional Water Boards in the Water Quality Control Plans. See "water quality standards".

Water Quality Standards - Provisions of State or federal law which consist of a designated use or uses for waters of the United States and water

quality criteria for such waters based upon such uses. Water quality standards are to protect the public health or welfare, enhance the quality of water and serve the purposes of the Act [40 CFR section 131.3(i)]. A water quality standard under the Federal Clean Water Act is equivalent to a beneficial use designation plus a water quality objective. In California, water quality standards are promulgated by the State and Regional Water Boards in Water Quality Control Plans. Water quality standards are enforceable limits for the bodies of surface or ground waters for which they are established.

Water Quality Control Plans - There are two types of water quality control plans - Basin Plans and Statewide Plans. Regional Boards adopt Basin Plans for each region based upon surface water hydrologic basin boundaries. The Regional Basin Plans designates or describes (1) existing and potential beneficial uses of ground and surface water; (2) water quality objectives to protect the beneficial uses; (3) implementation programs to achieve these objectives; and (4) surveillance and monitoring activities to evaluate the effectiveness of the water quality control plan. The Statewide Plans address water quality concerns for surface waters that overlap Regional Board boundaries, are statewide in scope, or are otherwise considered significant and contain the same four elements. Statewide Water Quality Control Plans include the Ocean Plan, the Enclosed Bays and Estuaries Plan, the Inland Surface Waters Plan, and the Thermal Plan. A water quality control plan consists of a designation or establishment for the waters within a specified area of (1) beneficial uses to be protected, (2) water quality objectives, and (3) a program of implementation needed for achieving water quality objectives [California Water Code section 13050(j)].

Waters of the State - Any water, surface or underground, including saline waters within the boundaries of the State [California Water Code section 13050(e)].

ACRONYMS

ACL.....Administrative Civil Liability	°F degrees Fahrenheit
Adj. SAR Adjusted Sodium Adsorption Ratio	FFA Federal Facility Agreement
AF Acre-foot (Acre-feet)	FRSH .. beneficial use of freshwater replenishment
af/y acre-foot (acre-feet) per year	ft foot (feet)
AGR beneficial use of agricultural supply	Gold Book Quality Criteria for Water, 1986
AQUA beneficial use of aquaculture	GWR beneficial use of ground water recharge
ASBS beneficial use of Area of Special Biological Significance	HA Hydrologic Area
BATBest Available Technology	HCO₃ Bicarbonate
BCT Best Control Technology	HEP Health Evaluation Plan
BEP Bays and Estuaries Plan	HSA Hydrologic Subarea
BIOL beneficial use of preservation of biological habitats of special significance	HU Hydrologic Unit
BMP Best Management Practice	IND beneficial use of industrial service supply
BOD Biological Oxygen Demand	ISWP Inland Surface Waters Plan
BPTCP Bay Protection and Toxic Cleanup Program	K Potassium
° C degrees Centigrade	l liter
Ca Calcium	LA Load Allocation
Cal-EPA's California Environmental Protection Agency	m meter(s)
CBOD..Carbonaceous Biochemical Oxygen Demand	MAA Management Agency Agreement
CCR California Code of Regulations	MAR beneficial use of marine habitat
CEQACalifornia Environmental Quality Act of 1970	MBAS Methylene Blue-Activated Substances
CERCLA Comprehensive, Environmental Response, Compensation, and Liability Act, commonly referred to as Superfund	MEP Maximum Extent Practicable
CFR Code of Federal Regulations	mgmilligram(s)
CIWMB California Integrated Waste Management Board	Mg Magnesium
COLD COMM Beneficial use of commercial and sport fishing	mg/l milligram(s) per liter
CTR California Toxics Rule	MGD Million Gallons per Day
CWA federal Clean Water Act	MIGR beneficial use of migration of aquatic organisms
CWC California Water Code	MPRSA Marine Protection, Research and Sanctuaries Act of 1972
CWS Clean Water Strategy	ml milliliter(s)
CZARA Amendments	MLLW.....Beneficial use of freshwater habitat
DDE Dichlorodiphenyldichloroethylene	MQS Margin of Safety
DDT Dichlorodiphenyltrichloroethane	MOU Memorandum of Understanding
DFG Department of Fish and Game	MS4 Municipal Separate Storm Sewer System
DoD Department of Defense	MPs Management Practices
DOHS Department of Health Services	MSD Marine Sanitation Device
DPR Department of Pesticide Regulation	MUN beneficial use of municipal and Coastal Zone Act Restrictions
DTSC Department of Toxic Substance Control	Mussel Watch State Mussel Watch
DWR Department of Water Resources	MWD Metropolitan Water District of Southern California
<i>E. coli</i> <i>Escherichia coli</i>	NASSCO .National Steel and Shipbuilding Company
EIR Environmental Impact Report	Na Sodium
EIS Environmental Impact Statement	NAVbeneficial use of navigation
EST beneficial use of estuarine habitat	ND Negative Declaration
ET Evapotranspiration	NEPA . National Environmental Policy Act of 1969
ETI Evapotranspiration-Infiltration	ng/l nannograms per liter
	No number(s)
	NO₃ nitrate
	NPDES National Pollutant Discharge Elimination System
	NPSMP Nonpoint Source Management Plan
	NTUturbidity unit

APPENDIX B - 1. Summary of the Regional Growth Forecast for Various Land Uses Within the San Diego Association of Governments' Sphere of Influence.

HU 901 - 911	Year 1990	Year 2000	Year 2010	Year 2015
TOTAL ACRES	1,895,749	1,895,749	1,895,749	1,895,749
Developed Acres	395,746	428,622	539,895	660,646
Low Density Single Family	52,556	61,663	127,357	227,763
Single Family	141,512	159,132	194,286	207,021
Multiple Family	24,068	26,288	31,139	33,564
Mobile Homes	5,344	5,127	4,774	4,468
Other Residential	1,095	1,095	1,095	1,095
Industrial	35,043	36,167	38,790	40,034
Retail	24,850	25,733	27,238	28,084
Office	2,642	2,756	3,135	3,327
Schools	10,309	10,624	11,130	11,359
Agriculture	3,544	3,546	3,546	3,546
Parks	83,119	83,119	83,119	83,119
Roads & Freeways	11,665	13,372	14,288	17,267

APPENDIX B - 2. Summary of the Regional Growth Forecast for Various Land Uses Within the Southern California Association of Governments' Sphere of Influence.

HU 901 - 911	Year 1994
TOTAL ACRES	460,572
Developed Acres	121,766
Low Density Single Family	3,793
Single Family	24,395
Multiple Family	6,388
Mobile Homes	1,045
Other Residential	9,484
Industrial	3,087
Retail	20,060
Office	1,262
Schools	1,291
Agriculture	46,887
Parks	2,523
Roads & Freeways	1,551

APPENDIX B - 3. Regional Growth Forecast for Various Land Uses Within SANDAG's Sphere of Influence for the San Juan Hydrologic Unit (Hydrologic Unit Basin 901).*

HU 901	Year 1990	Year 2000	Year 2010	Year 2015
TOTAL ACRES	100,823	100,823	100,823	100,823
Developed Acres	6,137	6,137	6,137	6,137
Low Density Single Family	0	0	0	0
Single Family	152	152	152	152
Multiple Family	100	100	100	100
Mobile Homes	142	142	142	142
Other Residential	27	27	27	27
Industrial	2,816	2,816	2,816	2,816
Retail	0	0	0	0
Office	0	0	0	0
Schools	8	8	8	8
Agriculture	0	0	0	0
Parks	2,487	2,487	2,487	2,487
Roads & Freeways	405	405	405	405

Regional Growth Forecast for Various Land Uses Within SANDAG's Sphere of Influence for the Santa Margarita Hydrologic Unit (Hydrologic Unit Basin 902).*

HU 902	Year 1990	Year 2000	Year 2010	Year 2015
TOTAL ACRES	122,902	122,902	122,902	122,902
Developed Acres	8,600	9,011	11,957	13,362
Low Density Single Family	2,090	2,340	5,137	5,965
Single Family	727	879	1,013	1,548
Multiple Family	459	460	464	470
Mobile Homes	61	61	61	61
Other Residential	11	11	11	11
Industrial	4,573	4,580	4,585	4,588
Retail	330	332	337	340
Office	0	0	0	0
Schools	50	50	50	50
Agriculture	0	0	0	0
Parks	148	148	148	148
Roads & Freeways	151	151	151	182

* This is the Regional Growth Forecast for the area within SANDAG's Sphere of Influence only; that portion covered within SCAG's Sphere of Influence is not shown.

APPENDIX B - 3 (continued). Regional Growth Forecast for the Period 1990 through 2015 for the San Luis Rey Hydrologic Unit (Hydrologic Unit Basin 903).

HU 903	Year 1990	Year 2000	Year 2010	Year 2015
TOTAL ACRES	351,640	351,640	351,640	351,640
Developed Acres	37,262	42,289	60,999	79,877
Low Density Single Family	14,985	16,599	29,134	44,539
Single Family	5,019	8,196	13,963	17,066
Multiple Family	1,722	1,889	2,057	2,077
Mobile Homes	620	392	391	391
Other Residential	86	86	86	86
Industrial	1,531	1,543	1,634	1,653
Retail	1,068	1,144	1,295	1,364
Office	60	66	78	75
Schools	360	369	374	384
Agriculture	161	161	161	161
Parks	11,005	11,005	11,005	11,005
Roads & Freeways	646	786	825	1,052

Regional Growth Forecast for the Period 1990 through 2015 for the Carlsbad Hydrologic Unit (Hydrologic Unit Basin 904).

HU 904	Year 1990	Year 2000	Year 2010	Year 2015
TOTAL ACRES	132,554	132,554	132,554	132,554
Developed Acres	56,749	64,927	79,666	92,898
Low Density Single Family	6,834	8,348	12,617	19,299
Single Family	27,365	32,713	40,582	46,007
Multiple Family	5,385	5,863	7,097	7,181
Mobile Homes	1,715	1,715	1,448	1,389
Other Residential	103	103	103	103
Industrial	4,133	4,330	5,059	5,483
Retail	4,274	4,496	4,944	5,183
Office	376	420	556	612
Schools	1,517	1,568	1,759	1,841
Agriculture	274	274	274	274
Parks	3,387	3,387	3,387	3,387
Roads & Freeways	1,386	1,710	1,840	2,140

APPENDIX B - 3 (continued). Regional Growth Forecast for the Period 1990 through 2015 for the San Dieguito Hydrologic Unit (Hydrologic Unit Basin 905).

HU 905	Year 1990	Year 2000	Year 2010	Year 2015
TOTAL ACRES	217,586	217,586	217,586	217,586
Developed Acres	38,210	42,855	62,662	83,105
Low Density Single Family	9,559	12,482	24,900	42,295
Single Family	14,271	15,802	22,695	24,991
Multiple Family	1,146	1,220	1,379	1,492
Mobile Homes	140	140	140	140
Other Residential	8	8	8	8
Industrial	904	941	1,066	1,098
Retail	2,385	2,413	2,468	2,493
Office	142	147	218	269
Schools	442	466	481	488
Agriculture	770	772	772	772
Parks	8,011	8,011	8,011	8,011
Roads & Freeways	432	453	526	1,049

Regional Growth Forecast for the Period 1990 through 2015 for the Penasquitos Hydrologic Unit (Hydrologic Unit Basin 906).

HU 906	Year 1990	Year 2000	Year 2010	Year 2015
TOTAL ACRES	92,823	92,823	92,823	92,823
Developed Acres	47,609	50,663	56,484	61,032
Low Density Single Family	988	1,071	2,110	4,910
Single Family	20,740	22,441	25,240	25,484
Multiple Family	4,081	4,532	5,313	5,786
Mobile Homes	322	333	273	210
Other Residential	67	67	67	67
Industrial	4,736	4,954	5,701	6,051
Retail	3,641	3,882	4,107	4,243
Office	714	726	766	783
Schools	2,628	2,715	2,835	2,888
Agriculture	745	745	745	745
Parks	7,353	7,353	7,353	7,353
Roads & Freeways	1,595	1,844	1,974	2,515

APPENDIX B - 3 (continued). Regional Growth Forecast for the Period 1990 through 2015 for the San Diego Hydrologic Unit (Hydrologic Unit Basin 907).

HU 907	Year 1990	Year 2000	Year 2010	Year 2015
TOTAL ACRES	289,243	289,243	289,243	289,243
Developed Acres	82,095	84,372	99,269	118,659
Low Density Single Family	8,802	9,399	18,364	36,328
Single Family	27,121	26,068	33,000	33,468
Multiple Family	4,187	4,342	4,688	4,959
Mobile Homes	1,178	1,178	1,178	1,170
Other Residential	96	96	96	96
Industrial	5,524	5,524	5,823	6,001
Retail	5,079	5,168	5,347	5,408
Office	713	749	831	877
Schools	2,098	2,124	2,157	2,188
Agriculture	216	216	216	216
Parks	24,521	24,521	24,521	24,521
Roads & Freeways	2,590	2,936	3,049	3,427

Regional Growth Forecast for the Period 1990 through 2015 for the Pueblo San Diego Hydrologic Unit (Hydrologic Unit Basin 908).

HU 908	Year 1990	Year 2000	Year 2010	Year 2015
TOTAL ACRES	44,368	44,368	44,368	44,368
Developed Acres	33,226	33,402	34,177	34,374
Low Density Single Family	0	0	0	0
Single Family	15,950	15,902	15,780	15,548
Multiple Family	3,817	3,967	4,797	5,233
Mobile Homes	151	151	133	102
Other Residential	162	162	162	162
Industrial	4,340	4,373	4,394	4,399
Retail	4,235	4,251	4,289	4,296
Office	415	416	419	421
Schools	1,178	1,179	1,194	1,196
Agriculture	0	0	0	0
Parks	1,641	1,641	1,641	1,641
Roads & Freeways	1,337	1,361	1,368	1,376

APPENDIX B - 3 (continued). Regional Growth Forecast for the Period 1990 through 2015 for the Sweetwater Hydrologic Unit (Hydrologic Unit Basin 909).

HU 909	Year 1990	Year 2000	Year 2010	Year 2015
TOTAL ACRES	147,593	147,593	147,593	147,593
Developed Acres	56,400	59,870	73,470	90,120
Low Density Single Family	5,686	6,262	16,882	32,718
Single Family	22,859	25,084	27,149	27,329
Multiple Family	2,004	2,273	2,686	2,962
Mobile Homes	443	443	436	436
Other Residential	90	90	90	90
Industrial	1,229	1,302	1,364	1,380
Retail	2,380	2,500	2,644	2,712
Office	141	152	174	182
Schools	1,262	1,278	1,356	1,388
Agriculture	164	164	164	164
Parks	19,036	19,036	19,036	19,036
Roads & Freeways	1,104	1,285	1,490	1,723

Regional Growth Forecast for the Period 1990 through 2015 for the Otay Hydrologic Unit (Hydrologic Unit Basin 910).

HU 910	Year 1990	Year 2000	Year 2010	Year 2015
TOTAL ACRES	100,465	100,465	100,465	100,465
Developed Acres	15,762	19,416	30,411	45,290
Low Density Single Family	2,198	2,818	8,514	21,814
Single Family	4,729	6,785	11,040	11,628
Multiple Family	799	1,152	1,849	2,418
Mobile Homes	466	466	466	377
Other Residential	338	338	338	338
Industrial	3,664	3,737	3,897	3,964
Retail	1,044	1,106	1,239	1,354
Office	17	17	32	40
Schools	429	498	523	537
Agriculture	1,155	1,155	1,155	1,155
Parks	665	665	665	665
Roads & Freeways	257	679	692	998

APPENDIX B - 3 (continued). Regional Growth Forecast for the Period 1990 through 2015 for the Tijuana Hydrologic Unit (Hydrologic Unit Basin 911).

HU 911	Year 1990	Year 2000	Year 2010	Year 2015
TOTAL ACRES	295,751	295,751	295,751	295,751
Developed Acres	13,695	15,731	24,661	35,792
Low Density Single Family	1,411	2,344	9,700	19,895
Single Family	2,578	3,109	3,672	3,801
Multiple Family	398	489	710	885
Mobile Homes	108	108	108	51
Other Residential	107	107	107	107
Industrial	1,593	2,016	2,450	2,602
Retail	414	440	569	671
Office	62	63	63	64
Schools	339	370	393	393
Agriculture	57	57	57	57
Parks	4,866	4,866	4,866	4,866
Roads & Freeways	1,763	1,763	1,967	2,399

APPENDIX C

WATER QUALITY CRITERIA

The literature contains many different water quality criteria designed to protect specific beneficial uses of water. A summary of the specific numerical water quality criteria considered by the Regional Board for designation as water quality objectives is described in Table C-1, Water Quality Criteria - Inorganic Constituents; and Table C-2, Water Quality Criteria - Organic Constituents. The water quality criteria summarized in Tables C-1 and C-2 provided the basis for the Regional Board's designation of many of the specific numerical water quality objectives described earlier in this Chapter.

The water quality criteria presented in Tables C-1 and C-2 are not enforceable water quality objectives. The purpose of presenting the information summarized in these tables is to allow interested persons to compare available water quality criteria to the specific water quality objectives designated by the Regional Board described in Chapter 3.

A summary of the available types of numerical water quality criteria considered by the Regional Board for designation as numerical water quality objectives are summarized below.

- ***Maximum Contaminant Levels (MCLs):***

MCLs are part of the drinking water standards adopted both by the California Department of Health Services (DHS), Office of Drinking Water in Title 22 of the California Code of Regulations (CCR), Division 4, Chapter 15, "*Domestic Water Quality and Monitoring*" and by the USEPA under the Safe Drinking Water Act. The State MCL drinking water standards must be at least as stringent as those adopted by USEPA. Primary MCLs are derived from the one in a million incremental cancer risk estimate for carcinogens and from threshold toxicity levels for non-carcinogens. Secondary MCLs are derived from human welfare considerations (e.g., taste or odor).

- ***Maximum Contaminant Level Goals (MCL Goals):***

MCL Goals are promulgated by USEPA under the National Primary Drinking Water Regulations as the first step in establishing MCLs. MCL Goals are set at levels which represent no adverse health risks.

- ***State "Action" Levels:***

Action levels are published by the DHS's Office of Drinking Water and are based mainly on health effects. The 10⁻⁶ incremental cancer risk estimates are used for carcinogens and threshold toxicity limits are used for other constituents.

- ***Proposition 65 Regulatory Limits:***

Proposition 65 limits are established under the California Safe Drinking Water and Toxic Enforcement Act of 1986 for known human carcinogens and reproductive toxins. For carcinogens the No-Significant-Risk-Levels are set at the one-in-100,000 incremental cancer risk level. 1/1000 of the No-Observable-Effect Level (NOEL) is used for reproductive toxicants.

- ***National Ambient Water Quality Criteria:***

These criteria are published by USEPA under the federal Clean Water Act to protect human health and welfare and freshwater and marine aquatic life. These criteria are found in: *Quality Criteria for Water, 1986* - the "*Gold Book*"; the Ambient Water Quality Criteria volumes (1980, 1984, 1986, 1987, and 1989); *Quality Criteria for Water (1976)* - the "*Red Book*"; and *Water Quality Criteria, 1972* - the "*Blue Book*".

- ***Health Advisories and Water Quality Advisories:***

These advisories are published by USEPA's Office of Water. Short-term (10 days or less), long-term (7 years or less), and lifetime exposure health advisories for non-carcinogens and suspected human health carcinogens are included where sufficient data exist.

- ***Suggested No-Adverse-Response Levels (SNARLS):***

These human health-related criteria are published by the National Academy of Sciences in the Drinking Water and Health Volumes. Incremental cancer risk estimates are presented separately for carcinogens.

- ***Water Quality for Agriculture:***

Water Quality for Agriculture was published by the Food and Agriculture Organization of the United Nations in 1985, which contains criteria protective of agricultural uses of water.

- ***Water Quality Criteria:***

Water Quality Criteria was written by McKee and Wolf and published by the State Water Resources Control Board in 1963 and 1978. It contains criteria for human health and welfare, aquatic life, agricultural use, industrial use, and various other beneficial uses.

APPENDIX D

CONDITION(S) FOR CONDITIONAL WAIVER OF WASTE DISCHARGE REQUIREMENTS OF ITEMS IN TABLE 4-4

CONDITIONS FOR ITEM 20. SHORT-TERM USE OF RECLAIMED WATER:

1. Short-term water reclamation projects are projects that last one year or less. Short-term projects can include temporary use of reclaimed water for dust control, soil compaction, green belt irrigation, or any other temporary reuse project authorized by the Executive Officer, for which no permanent physical reclaimed water facilities or structures are installed; and
2. The reclaimed water producer must submit a written request for a waiver to the Regional Board. This request must include written notification from the local health department or the State Department of Health Services that the proposed project complies with all local and State health requirements for reclaimed water use and Title 22, Division 4, Chapter 3, Reclamation Criteria, Articles 1 - 10. This written notification shall also specify any monitoring required to demonstrate compliance with Title 22, Division 4, Chapter 3, Articles 2, 3, 4, 5, and 5.1. A new written request for a waiver must be submitted to the Regional Board if the temporary project exceeds one year. New written requests must be received 60 days prior to expiration of the one year project. If no new request is received the short-term project must cease immediately.

CONDITIONS FOR ITEM 23. TEMPORARY DISCHARGE OF SPECIFIED CONTAMINATED SOILS:

a. General Conditions for All Temporary Waste Piles

- (1) **Required Notification of the Regional Board:** The discharger shall send the Regional Board a signed/completed certification report (Temporary Waste Pile Waiver Certification Form, section A, revised 7/3/02), **within 30 days** of the initial discharge of any waste piles established under this waiver. The discharger shall send the Regional Board a signed/completed certification report (Temporary Waste Pile Waiver Certification Form, section B, revised 7/3/02) **within 10 working days** of completing removal of all waste and restoring the site to its original condition.
- (2) This waiver specifically does not apply to hazardous waste, as defined in section 66261.3, Division 4.5, Title 22 of the California Code of Regulations, or as amended.
- (3) **Prohibitions:** The discharge of waste shall not:
 - a. Cause the occurrence of coliform or pathogenic organisms in waters pumped from the basin;
 - b. Cause the occurrence of objectionable tastes and odors in water pumped from basin;
 - c. Cause waters pumped from the basin to foam;
 - d. Cause the presence of toxic materials in waters pumped from the basin;
 - e. Cause the pH of waters pumped from the basin to fall below 6.0 or rise above 9.0;
 - f. Cause pollution, contamination or nuisance or adversely affect beneficial uses of ground or surface waters of the hydrologic subareas established in the Basin Plan.

- g. Cause a violation of any discharge prohibitions in the Basin Plan for the San Diego Region.
- (4) **Site Conditions:** All parcels of land/property containing a temporary discharge of solid wastes, temporary waste piles as identified in the specific conditions of this waiver, shall meet the following minimum general site conditions:
- a. Runon / Runoff Protection: Surface drainage shall be diverted from the temporary waste piles. For all waste piles, the dischargers shall implement effective Best Management Practices (BMPs) to prevent surface water runon and runoff from contacting wastes and to prevent erosion and transport of wastes by surface runoff.
 - b. Groundwater Protection: All waste piles shall be placed at least five feet above the highest anticipated level of groundwater.
 - c. Surface Water Protection: All waste piles established under this waiver shall be located not less than 100 feet from any surface water identified in the Basin Plan.
 - d. Flood Plain Protection: All waste piles shall be protected against 100-year peak stream flows as defined by the County flood control agency.
- (5) **Inspection and Maintenance:** Wastes discharged to waste piles established under this waiver, together with any containment materials used at the temporary waste pile, and any underlying geologic materials contaminated by the discharge, shall be removed within the maximum time period allowed under the applicable Special Conditions. Subsequently the site shall be restored to its original state within 30 days following the removal of all treatment facilities, related equipment, etc. and shall be disposed of or stored in accordance with applicable regulations.
- (6) **Clean Closure Required:** Wastes discharged to waste piles established under this waiver, together with any containment materials used at the temporary waste pile, and any underlying geologic materials contaminated by the discharge, shall be removed within the maximum time period allowed under the applicable special conditions. Subsequently, the discharger shall remove all wastes, treatment facilities, related equipment, and dispose of those items in accordance with applicable regulations. The site shall be restored to its original state within maximum time period allowed under the applicable special conditions.
- (7) **Management of Return or Poned Water:** If return water or poned water contained within the treatment or storage area of the temporary waste pile will be disposed of at a location other than to a sanitary sewer system, then the discharger shall submit written notification to the Executive Officer prior to initiating the discharge and either: 1) obtain waste discharge requirements; 2) obtain a waiver of waste discharge requirements or 3) obtain a written determination from the Regional Board Executive Officer that the disposal of the return water or poned water is not subject to regulation by the Regional Board.
- (8) **Property Owner Acknowledgment:** By written correspondence to the Regional Board Executive Officer, the property owner shall approve the placement of the waste (temporary waste piles) at the site.
- (9) **Public Notification Requirement:** The discharger shall post at least one clearly visible, sign (in English) listing the following minimum information: a.) project name, b.) name and address of discharger, c.) brief project description, and d.) 24-hour contact information – name, address, facsimile, and telephone number for the project. The discharger shall post additional signs as necessary (in languages other than English) to more effectively communicate the minimum contact information (listed above) to the local community. The sign(s) shall be maintained as required to keep them legible and remain in place while temporary waste piles remain on site.

- (10) **All sampling and analytical procedures**, including documentation of waste characterization, shall be in accordance with the indicated methods described in Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, U.S. Environmental Protection Agency (Revision 2, Third Edition as updated by Updates I, II, IIA, IIB, III and IIIA, dated December 1996). Reported concentrations levels shall be mean average, with an 80% upper confidence interval, and the total range within each constituent.
- (11) **Obligation to Comply:** This waiver from waste discharge requirements (WDRs) does not relieve dischargers of the obligation to comply with any other applicable local, state and federal requirements.
- (12) **Relation of this Conditional Waiver to Other Authority of the RWQCB:** This action waiving the issuance of WDRs is conditional, may be terminated for any type of discharge at any time, does not permit an illegal discharge, and does not preclude the Regional Board from administering enforcement remedies pursuant to section 13304 of the California Water Code. Where the staff of this Regional Board considers the adoption of WDRs for a specific discharge of a type identified herein to be in the public interest, staff will draft tentative waste discharge requirements for consideration by the Regional Board.

b. Special Conditions Applicable to Waste Piles for Treatment or Storage of Soils Contaminated with Petroleum Hydrocarbons

- (1) Temporary waste piles established under this waiver shall be limited to a maximum time period of four months or 90 days.
- (2) All solid wastes discharged into temporary waste piles established under the waiver shall be derived from only one source (e.g., unauthorized release site).
- (3) **Cover:** All waste piles shall be overlain by plastic sheeting (not less than 10 mils thick) to adequately prevent rainwater infiltration, control fugitive dust, and other nuisances.
- (4) **Liner:** All waste piles shall be underlain by either plastic sheeting (not less than 10 mils thick) or a liner of low permeability approved by the Regional Board Executive Officer.
- (5) In addition to the general and specific conditions stated herein, waste piles shall conform to applicable provisions in the state's Local Oversight Program (LOP) for Orange, Riverside, or San Diego Counties.
- (6) **Site Closure:** Any waste pile established under these Special Conditions for Petroleum Contaminated Soils, together with any containment materials used for the temporary waste pile and underlying geologic materials contaminated by the discharge, shall be removed and the site shall be restored to its original state within **30 days**.

c. Special Conditions Applicable to Waste Piles for Treatment or Storage of Dredge Spoils Contaminated with Heavy Metals

- (1) All temporary waste piles established under this waiver shall be limited to a maximum time period of nine months or 210 days.
- (2) **Cover:** All waste piles shall be overlain by either a plastic sheeting to adequately prevent rainwater infiltration, control fugitive dust, and other nuisances. Alternative control methods shall be subject to approval by the Regional Board Executive Officer.
- (3) **Liner:** All waste piles shall be underlain by plastic sheeting (not less than 20 mils thick) or a liner of lower permeability approved by the Regional Board Executive Officer. The liner and containment

facility shall be designed to contain all solid wastes and fluids, and shall be subject to approval by the Regional Board Executive Officer.

- (4) **Containment Structures:** Materials used in containment structures shall have the appropriate chemical and physical properties to ensure that such structures do not fail to contain waste because of: the stress of installation, pressure gradients, physical contact with the waste or leachate, or chemical reactions with soil and rock.
- (5) **Site Closure:** Any waste pile established under these Special Conditions for Dredge Spoils, together with any containment materials used for the temporary waste pile and underlying geologic materials contaminated by the discharge, shall be removed and the site shall be restored to its original state within **60 days**.

CONDITIONS FOR ITEM 24. COMPOSTING AND PROCESSING, MULCHING, OR GRINDING FACILITIES

A. APPLICABILITY

1. *Types of Facilities*

- a. *Facilities composting Green Waste, Agricultural Waste, Food Processing Waste or Paper Waste*
- b. *Facilities processing, mulching or grinding Green Waste, or Agricultural Waste*

2. *Size of Facilities*

- a. *Composting and Processing, Mulching, or Grinding Operations Less than Five Hundred (500) Cubic Yards*

The submittal of a report of waste discharge and the issuance of waste discharge requirements are waived for discharges from the following:

- (1) Green waste, food processing waste, agricultural waste, or paper waste composting operations that do not exceed five hundred (500) cubic yards at any given time;
- (2) Green waste or agricultural waste processing, mulching or grinding operations that do not exceed a total volume of five hundred (500) cubic yards at any given time.

- b. *Composting and Processing, Mulching, or Grinding Operations Greater than Five Hundred (500) Cubic Yards*

For dischargers who comply with the following Reporting, Site, Operational, and General Conditions, the issuance of waste discharge requirements are waived for discharges resulting from the following:

- (1) The storage and treatment by composting of greater than five hundred (500) cubic yards at any given time of green waste, food processing waste, agricultural waste, or paper waste, and any additives as approved by the RWQCB; or
- (2) The storage and treatment by processing, mulching, or grinding of greater than five hundred (500) cubic yards of green waste, or agricultural waste.

B. REPORTING CONDITIONS

1. *Report of Waste Discharge*

The discharger shall file a report of waste discharge that includes a technical report containing a requirement-by-requirement analysis based on acceptable engineering standards and best management practices, of how the process and physical designs of the facility will ensure compliance with the conditions listed herein. The discharger shall submit a fee pursuant to CCR Title 23, section 2200 for a Threat to Water Quality and Complexity Rating 3-C, Chapter 15.

2. *General Industrial Storm Water Permit*

The discharger shall file either a Notice of Intent to comply with the requirements set forth in State Water Resources Control Board (SWRCB) NPDES General Permit No. CAS000001 for the discharge

of storm water or submit documentation that the NPDES storm water permit requirements are not applicable to the discharger's facility.

3. *Changes in Operation*

The discharger shall notify the RWQCB of:

- a. any significant change in the nature and quantity of waste composted or processed, area of operation, or season of operation; or
- b. termination of operation.

C. SITE CONDITIONS

1. *Control and Management*

All areas upon which green waste, food processing waste, agricultural waste, or paper waste and any feedstock additives are discharged for composting or processing, mulching, grinding, storing and treating shall be designed, constructed and maintained to prevent the degradation of waters of the state. Such facility operations shall be equivalent to the water quality protection achieved through the implementation of the following measures:

a. *Precipitation*

All precipitation and surface drainage from outside the compost, process, treatment or storage areas including that collected from roofed areas, and runoff from tributary areas resulting from a 25-year, 24-hour storm shall be diverted away from the such areas.

b. *Runoff*

The discharger shall develop and implement a plan to reduce or eliminate the discharge of pollutants into surface waters including storm water. The plan shall describe measures taken to prevent contaminated process water and reduce or eliminate contaminated storm water from being discharged from the site.

c. *Water Quality Protection*

All compost, process and storage areas shall be sited where soil characteristics, distance from waste to ground water, and other factors will ensure no impairment of beneficial uses of surface waters or ground waters beneath or adjacent to the facility.

d. *Stream Flow*

The facilities shall be protected from inundation or washout by overflow from any stream channel during a 25-year peak stream flow.

e. *Surface Maintenance*

If the equipment operating near or on compost, process, storage, or treatment areas produces subsidence, cracking, or otherwise compromises any surface, the discharger shall repair any damaged areas immediately.

D. OPERATIONAL CONDITIONS

1. *Additives*

Dischargers who use additives as defined in this document shall report to the RWQCB's Executive Officer for his approval the type, and quantity of the additive. The use of additives shall comply with the CONDITIONS listed in this document.

2. *Discharge Specifications*

The discharge of green waste, food processing waste, agricultural waste, or paper waste for storage and treatment by composting or processing, grinding, or mulching shall not cause or threaten to cause a condition of contamination, pollution or nuisance.

3. Maintenance

Containment structures such as embankments, liners or surface impoundments shall be maintained in order to ensure proper performance whenever wastes are discharged.

4. Wet Weather Preparations

Prior to the rainy season, the discharger shall conduct a survey of the operation to ensure that the site has been graded and prepared to prevent erosion and to prevent ponding of waste water at any location not designed and operated to retain water.

5. Inspections

The discharger shall inspect compost, process, storage and treatment areas for emergence of leachate, ponding, or surface failures such as cracking or subsidence; such inspections shall be frequent enough to ensure compliance with the Conditions of this waiver. If visible leachate, ponding, cracking, or subsidence of surfaces is observed, the discharger shall immediately take necessary measures to maintain the performance standards described in SITE CONDITIONS C.

E. GENERAL CONDITIONS

1. Prohibitions

The inclusion of the following wastes for treatment by composting or processing under the conditions of this waiver are prohibited:

- a. municipal solid waste;
- b. sludges (including sewage sludge, water treatment sludge, and industrial sludge);
- c. septage;
- d. liquid wastes, unless specifically approved by the Regional Board;
- e. animal waste, except manure when used as an additive;
- f. oil and grease; and
- g. hazardous, designated, and any other wastes determined by the Regional Board to pose a potential threat to water quality.

2. Entry and Inspection

The discharger shall allow the RWQCB, or an authorized representative upon the presentation of credentials and other documents as may be required by law, to:

- a. Enter upon the discharger's premises where a conditionally waived facility or activity is located or conducted, or where records must be kept under the conditions of this waiver;
- b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this waiver;
- c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this waiver; and
- d. Sample or monitor at reasonable times, for the purposes of assuring compliance with this waiver or as otherwise authorized by the California Water Code, any substances or parameters at any location.

DEFINITION OF TERMS IN CONDITIONS FOR ITEM 24

GREEN WASTE: Material that consists of or contains waste from plants, including leaves, clippings, cuttings, trimmings of grass, weeds, shrubbery, bushes, or trees, residential or community garden wastes, and untreated wood wastes.

FOOD PROCESSING WASTE: Material that consists of or contains only pre-processed and post-processed waste derived from plants, or foods processed or produced at restaurants, hospitals and food distributors.

AGRICULTURAL WASTE: Material that consists of the plant waste coming directly from an agricultural commodity, and is the product of farms and ranches and by-products processed from these products, as defined in Division 21, Part 2, Chapter 1 section 58619 of the Food and Agriculture Code. Agricultural waste includes agricultural, floricultural, silvicultural, vermicultural or viticultural products.

PAPER WASTE: Material that consists of nonhazardous paper and paper by-products.

ADDITIVE: Material that consists of waste or products which are approved by the RWQCB's Executive Officer for mixture with feedstock or treated waste to adjust the moisture level, the carbon to nitrogen ratio, or the porosity of the wastes to create a condition favorable to the processing, or to improve the end-product. Additives may include manures, fertilizers, and chemical amendments.

DISCHARGER: Any person who discharges waste which could affect the quality of waters of the state, and includes any person who owns a waste management unit or who is responsible for the operation of a waste management unit pursuant to Title 23, California Code of Regulations, section 2601.

CONDITIONS FOR ITEM 26. PERMANENT RECLAIMED WATER PROJECTS:

1. The discharger shall submit a report of waste discharge pursuant to section 13260 or 13522.5 of the California Water Code. This report shall contain sufficient technical information from which the Regional Board can determine if the proposed discharge complies with all applicable reclamation regulations; and
2. The proposed discharge of reclaimed water must be in compliance with the California Code of Regulations, Title 22, Division 4, Chapter 3, Articles 1 - 10; and
3. The proposed discharge of reclaimed water must be in compliance with the *Water Quality Control Plan, San Diego Basin (9)*; and
4. The report of waste discharge must contain a letter from the local health department of the State Department of Health Services stating that the proposed project complies with all State and local Health requirements for the use of reclaimed water. This letter shall also specify any monitoring required to demonstrate compliance with Title 22, Division 4, Chapter 3, Reclamation Criteria, Articles 2, 3, 4, 5 and 5.1; and
5. Temporary waiver's of waste discharge requirements remain in effect for a project until the Regional Board is able to adopt permanent requirements. The Regional Board will adopt requirements, as appropriate, at the earliest possible opportunity, and in accordance with Regional Board priorities.

APPENDIX E

METHOD FOR RECALCULATION OF THE TOTAL MAXIMUM DAILY LOAD FOR DISSOLVED COPPER IN THE SHELTER ISLAND YACHT BASIN, SAN DIEGO BAY

This appendix describes the method for recalculating the Shelter Island Yacht Basin TMDL for dissolved copper if the water quality objectives for dissolved copper are modified in the future.

Numeric Target

The numeric targets are set equal to the new water quality objectives.

Margin of Safety

The explicit margin of safety (MOS) equals ten percent of the loading capacity. The equation to calculate the loading capacity is given below.

Total Maximum Daily Load

The TMDL or loading capacity is recalculated using equations 1 through 4 below.

The loading capacity is recalculated according to equation 1 below:

$$(1) \quad R_s = C_2 \left(\frac{KA_c}{\Delta x} + k_L V_2 \right) - A_c C_1 \left(\frac{eA_s}{A_c} + \frac{K}{\Delta x} \right)$$

where C_1 = average background concentration of copper measured in the area of San Diego Bay adjacent to SIYB, expressed as total copper, (0.05 µg/L)

C_2 = average target concentration for copper in the SIYB (expressed as total copper) when the maximum concentration of copper in SIYB is equal to or less than the numeric target (mass/volume)

K = dispersion coefficient calculated from salinity measurements and mixing length approximation (15.3 m²/sec)

A_c = cross-sectional area of entrance to SIYB (1,000 m²)

A_s = surface area of SIYB (740,000 m²)

Δx = average mixing length between SIYB and adjacent area; estimated distance between the endpoints for S_1 and S_2 (2,000 m)

V_2 = volume of SIYB (31,000,000 m³)

e = evaporation rate (0.43 cm/day)

k_L = rate of total copper loss to sediment (7%/day)

R_s = loading capacity, expressed as total copper (mass/time); R_s is calculated iteratively to find the maximum possible value that does not cause C_2 to exceed the numeric target.

The dispersion coefficient K is calculated using equation 2 below:

$$(2) \quad K \cong \frac{eA_s S_1 \Delta x}{A_c (S_2 - S_1)}$$

where S_1 , S_2 = salinity data obtained in SIYB and San Diego Bay adjoining SIYB (33.62 practical salinity units (psu) and 33.46 psu, respectively).

The average target concentration, C_2 , must be lower than the numeric target concentration to ensure that the loading capacity will not cause an exceedance of the numeric target anywhere in SIYB. C_2 is calculated by multiplying the numeric target for chronic exposure by the ratio of the average measured concentration of copper in SIYB to the maximum measured concentration as expressed in equation 3 below:

$$(3) \quad C_2 = \text{numeric target} \left[\frac{\text{average measured concentration}}{\text{maximum measured concentration}} \right]$$

Or,

$$C_2 = \text{numeric target} * [5.45 \mu\text{g/L} / 8 \mu\text{g/L}]$$

To convert C_2 from dissolved copper concentration to total copper concentration, the number calculated from equation 3 is multiplied by the ratio of dissolved copper to total copper in seawater. If site-specific data are not available, the ratio of 0.83 can be used. This is the USEPA's conversion factor for saltwater acute criteria.¹

Finally, the TMDL is calculated according to equation 4 below:

$$(4) \quad \text{TMDL} = R_s - \text{MOS}$$

Allocations

Equation 5 is used to determine the new allocation for passive leaching. In equation 5, the only variable is the allocation for passive leaching (A_p), while the other source allocations are constants. The allocation for hull cleaning remains the same, since it was based on the assumption that all of the divers will use Management Practices (MPs) to clean boat hulls that have copper bottom paints. Allocations for the other sources, namely urban runoff, background and sediment will not be recalculated because these sources of copper are insignificant.

$$(5) \quad \text{TMDL} = \text{Wasteload Allocation} + \text{Load Allocations} + \text{MOS}$$

$$\text{TMDL} = A_u + A_p + A_h + A_s + A_b + A_a + \text{MOS}$$

where:

A_u = allocation for urban runoff = 30 kg/year

A_p = allocation for passive leaching

A_h = allocation for hull cleaning = 72 kg/year

A_s = allocation for sediment = load from sediment = 0 kg/year

A_b = allocation for background = load from background = 30 kg/year

A_a = allocation for direct atmospheric deposition = load from direct atmospheric deposition
= 3 kg/year.

¹ USEPA. 2000. Water Quality Standards; Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California; Rule. 40 CFR Part 131. May 18, 2000.