

## Appendix A. Summary of Key Federal, State, and Local Regulations Applicable to the Watershed

This appendix reviews the existing and planned environmental regulations relevant to the Agua Hedionda Watershed Plan goals and objectives. The following types of regulations and policies are summarized:

- Water Quality
- Stormwater Management
- Sediment and Erosion Control
- Stream/Riparian Buffer Protection
- Floodplain Management
- Water Conservation
- Habitat Management
- Watershed Permitting

Most of the regulations discussed in this section relate to how watershed functions are currently being protected and how functions will be protected in the future. Information on historical stormwater requirements is also included. The watershed permitting section provides a brief discussion of potential permit requirements for projects proposed by the Agua Hedionda Watershed Plan, which will be important to consider during implementation.

### Water Quality

The USEPA has delegated the authority to develop and administer Clean Water Act programs to the State of California. Because the State's landscape varies dramatically, the responsibility has been divided among nine regional water quality control boards (RWQCBs). The State Water Resources Control Board (SWRCB) is the agency that oversees the nine regional boards. Under the SWRCB, each regional board acts as a semi-autonomous water quality agency. Each regional board is required to develop a Water Quality Control Plan, or Basin Plan, that contains water quality criteria for its region. The SWRCB also develops statewide water quality control plans, including the Ocean Plan and Thermal Plan.

The State of California has enacted statewide water quality regulations that apply to all regional boards. The State Antidegradation Policy is one such regulation relevant to the Agua Hedionda watershed. This policy requires that the condition of high quality waters of the state be maintained to the maximum extent possible. Under this policy, a discharge cannot be allowed that degrades the condition of high quality waters, even when the water's condition is of higher quality than necessary to support its beneficial use. Degradation can only be allowed after analysis has shown that the action would provide a net social, environmental, and economic benefit. This policy satisfies the federal Clean Water Act antidegradation policy requirement (40 Code of Federal Regulations (CFR) 131.12). Agua Hedionda Creek and other waterbodies in the watershed can be defined as high quality waters if they meet the water quality criterion for a particular constituent.

SWRCB maintains a 5-year strategic plan that guides state and regional board water resource protection efforts. As a part of this strategy, each regional board develops a Watershed Management Approach that is part of the Integrated Plan for Implementation of the statewide Watershed Management Initiative (WMI). The RWQCB's chapter includes the prioritization of watersheds for management; through this prioritization, the RWQCB plans to devote management resources to those watersheds that have strong stakeholder support for implementation of watershed management activities (SDRWQCB, 2002).

*Water Quality Control Plan (Basin Plan)*

The Basin Plan designates existing and beneficial uses of regional waters to be protected by the plan's objectives. The RWQCB, whose jurisdiction includes the Agua Hedionda watershed, has developed a Basin Plan which includes existing and beneficial uses for coastal, inland surface, and ground waters. The following tables list all existing and beneficial uses assigned to waterbodies in the San Diego Region. Uses assigned to Agua Hedionda waterbodies are indicated by solid or empty circles within each table; a solid circle indicates an existing use, and an empty circle indicates a potential use. Existing uses are defined as uses that have actually occurred since November 28, 1975 or uses for which the water quality and quantity is suitable to allow the use to be attained (SDRWQCB, 2007a).

Existing and beneficial uses are reported for four inland surface waters within the Agua Hedionda watershed, separated by hydrologic subarea (HSA), as shown in Table A-1. All four waterbodies share the same beneficial uses, which include water supply, recreational, and habitat uses. The lower reaches of Agua Hedionda Creek (HSA 4.31) also have an existing use of Preservation of Biological Habitats of Special Significance (BIOL). Agua Hedionda Lagoon falls under Coastal Waters within the Basin Plan, and Table A-2 lists the existing and beneficial uses for the lagoon, which include most of the coastal water uses within the Region.

The Basin Plan reports that only a small portion of the region supplies appreciable quantities of ground water due to the lack of permeable geologic formations. Development has impacted most of the ground waters in the region, and ground water recharge programs will be needed to maintain adequate ground water table elevations as development progresses. Table A-3 reports the beneficial uses for ground water in the Agua Hedionda watershed. A solid circle indicates an existing use, and an empty circle indicates a potential use. Most ground waters in the Region are designated MUN or AGR. None of the Agua Hedionda groundwaters supply water to a lake or stream (FRSH) or supply water to another hydrologic unit (GWR).

**Table A-1. Agua Hedionda Watershed Existing Beneficial Uses for Inland Surface Waters (taken directly from (SDRWQCB (2007a))**

Beneficial Use	Waterbody			
	Agua Hedionda Creek	Buena Creek	Agua Hedionda Creek	Letterbox Canyon
Hydrologic Unit Basin Number	4.32	4.32	4.31	4.31
Municipal and Domestic Supply (MUN)	●	●	●	●
Agricultural Supply (AGR)	●	●	●	●
Industrial Process Supply (PROC)				
Industrial Service Supply (IND)	●	●	●	●
Ground Water Recharge (GWR)				
Freshwater Replenishment (FRSH)				
Hydropower Generation (POW)				
Contact Water Recreation (REC1)	●	●	●	●
Non-contact Water Recreation (REC2)	●	●	●	●
Warm Freshwater Habitat (WARM)	●	●	●	●
Cold Freshwater Habitat (COLD)				
Wildlife Habitat (WILD)	●	●	●	●
Preservation of Biological Habitats of Special Significance (BIOL)			●	
Rare, Threatened, or Endangered Species (RARE)				
Spawning, Reproduction, and/or Early Development (SPWN)				

**Table A-2. Agua Hedionda Watershed Existing Beneficial Uses for Coastal Waters (taken directly from SDRWQCB (2007a))**

Beneficial Uses	Waterbody
	Agua Hedionda Lagoon
Hydrologic Unit Basin Number	4.32
Industrial Service Supply (IND)	●
Navigation (NAV)	
Contact Water Recreation (REC1)	●
Non-contact Water Recreation (REC2)	●
Commercial and Sport Fishing (COMM)	●
Aquaculture (AQUA)	●
Warm Freshwater Habitat (WARM)	
Estuarine Habitat (EST)	●
Marine Habitat (MAR)	●
Wildlife Habitat (WILD)	●
Preservation of Biological Habitats of Special Significance (BIOL)	●
Rare, Threatened, or Endangered Species (RARE)	●
Migration of Aquatic Organisms (MIGR)	●
Spawning, Reproduction, and/or Early Development (SPWN)	●
Shellfish Harvesting (SHELL)	●

**Table A-3. Agua Hedionda Watershed Beneficial Uses for Ground Waters (taken directly from SDRWQCB (2007a))**

Beneficial Uses	Waterbody			
	Los Monos HSA <sup>1</sup>	Los Monos HSA <sup>2</sup>	Los Monos HSA <sup>3</sup>	Buena HSA
Hydrologic Subarea (HSA)				
Hydrologic Unit Basin Number	4.31	4.31	4.31	4.32
Municipal and Domestic Supply (MUN)	●	○	○	●
Agricultural Supply (AGR)	●	○	●	●
Industrial Process Supply (PROC)				
Industrial Service Supply (IND)	●	○	○	●
Ground Water Recharge (GWR)				
Freshwater Replenishment (FRSH)				

<sup>1</sup> These beneficial uses do not apply westerly of the easterly boundary of the right-of-way of Interstate 5 and this area is excepted from the sources of drinking water policy. The beneficial uses for the remainder of the hydrologic area are as shown.

<sup>2</sup> These beneficial uses designations apply to the portion of HSA 4.31 bounded on the west by the easterly boundary of Interstate Highway 5 right-of-way, on the east by the easterly boundary of El Camino Real, and on the north by a line extending along the southerly edge of Agua Hedionda Lagoon to the easterly end of the lagoon, thence in an easterly direction to Evans Point, thence easterly to El Camino Real along the ridge lines separating Letterbox Canyon and the area draining to the Marcario Canyon.

<sup>3</sup> These beneficial uses apply to the portion of HSA 4.31 tributary to Agua Hedionda Creek downstream from the El Camino Real crossing, except lands tributary to Marcario Canyon (located directly southerly of Evans Point, land directly south of Agua Hedionda Lagoon, and areas west of Interstate Highway 5).

Each regional board is responsible for developing the water quality objectives for its region. The term “water quality objectives” is used in California to include all narrative and numerical water quality criteria. Under the State Porter-Cologne Water Quality Act, the regional boards must use their judgment to determine water quality objectives that provide for “reasonable protection of beneficial uses and the prevention of nuisance (CERES, 1996).”

In its Basin Plan, the RWQCB specifies numerical and narrative water quality objectives which are sufficient to protect a water’s beneficial uses. Objectives have been set for the following parameters for Inland Surface Waters, Enclosed Bays and Estuaries, Coastal Lagoons and Ground Waters:

- Agricultural Supply Beneficial Use
- Ammonia, Un-Ionized
- Bacteria - Total and Fecal Coliform
- Bacteria - E. Coli and Enterococci
- Biostimulatory Substances
- Boron
- Chlorides
- Color
- Dissolved Oxygen
- Floating Material
- Fluoride
- Hydrogen Ion Concentration (pH)
- Inorganic Chemicals - Primary Standards
- Iron
- Manganese
- Methylene Blue - Activated Substances (MBAS)
- Nitrate
- Oil and Grease
- Organic Chemicals - Primary Standards
- Percent Sodium and Adjusted Sodium Adsorption Ratio
- Pesticides
- Phenolic Compounds
- Radioactivity
- Secondary Drinking Water Standards
- Sediment
- Suspended and Settleable Solids
- Sulfate
- Tastes and Odors
- Temperature
- Total Dissolved Solids
- Toxicity
- Toxic Pollutants
- Trihalomethanes
- Turbidity

For ocean waters, objectives are specified in the separate Ocean and Thermal Plans; however, the Basin Plan sets ocean water objectives for dissolved oxygen and hydrogen ion concentration (pH). The objectives in the Thermal Plan also apply to bays, estuaries, and other coastal and interstate waterbodies and are discussed below.

Within their Basin Plans, the regional boards must also specify plans and policies for meeting the objectives, which include actions to be taken, a timeline for proposed actions, and a plan for evaluating success with achieving the objectives. The San Diego Basin Plan includes policies for point source control, waste disposal, dredging, nonpoint source control, remediation of hazardous materials, and total maximum daily loads (TMDLs). The Basin Plan also specifies the requirements of regional monitoring programs.

*California Ocean Plan*

The Water Quality Control Plan for the Ocean Waters of California, or the Ocean Plan, designates beneficial and existing uses and prescribes water quality objectives for all ocean waters within California’s jurisdiction. The Ocean Plan includes numeric or non-numeric objectives for bacterial, physical, chemical, biological, and radioactive constituents (SWRCB, 2005).

*California Thermal Plan*

The Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California, known as the Thermal Plan, regulates the discharge of thermal and elevated temperature waste into waterbodies. The Thermal Plan outlines specific regulations by type of waterbody and also includes general regulations to protect beneficial uses from temperature impacts (SWRCB, 2007).

*303(d) List*

Waterbodies are placed on the California 303(d) list if the water quality objectives are not met, indicating that the existing and beneficial uses of these waterbodies are impaired. Table A-4 lists the impairments within the Agua Hedionda watershed from the San Diego Region 2006 303(d) list.

**Table A-4. RWQCB 2006 Clean Water Act Section 303(d) List of Water Quality Limited Segments for the Agua Hedionda Watershed (SDRWQCB, 2006)**

Waterbody Type	Name	Pollutant/Stressor
Rivers/Stream	Agua Hedionda Creek	Manganese
		Selenium
		Sulfates
		Total Dissolved Solids
Rivers/Stream	Buena Creek	DDT
		Nitrate and Nitrite
		Phosphate
Estuarine	Agua Hedionda Lagoon	Indicator bacteria
		Sedimentation/Siltation

The RWQCB will be developing TMDLs for these impairments. Dischargers of pollutants to Agua Hedionda Lagoon are currently being required to collect monitoring data needed for the RWQCB’s TMDL assessment for bacteria and sediment. The schedule for TMDL development for other constituents is 2019.

*Integrated Regional Water Management Plan*

Another regional planning effort relating to water quality is the Integrated Regional Water Management Plan (IRWMP). The passing of California’s Proposition 50 provided state funding for watershed management projects identified at the regional level. To use the funding, each Region must complete an IRWMP, which involves the identification of regional priority water management projects. The San Diego IRWMP was developed jointly by the County Water Authority, City of San Diego, and County of San Diego and was adopted by these entities in October and November 2007. The goals of the IRWMP were to:

1. Optimize water supply reliability.
2. Protect and enhance water quality.
3. Provide stewardship of the Region’s natural resources.
4. Coordinate and integrate water resource management.

The effort identified 162 management opportunities region-wide. During the prioritization, the projects were placed in 2 tiers: Tier I contains projects that would meet the Proposition 50 funding requirements, and Tier II contains projects that support the plan’s goals but are not likely to meet the Proposition 50 requirements (SDRWMG, 2007).

### **Urban Runoff and Stormwater Management**

Each regional board operates a stormwater program that issues permits to comply with federal NPDES requirements. Under the Clean Water Act, the federal NPDES stormwater program requires municipal separate storm sewer systems (MS4s) designated by the EPA to meet stormwater runoff control requirements. The SWRCB has issued an MS4 General Permit that applies to all regulated MS4s in the state. To facilitate compliance with the Statewide Small MS4 General Permit, the RWQCB is one of several regional boards who have issued a regional permit. In addition to the municipal stormwater permit, the regional boards also administer a statewide General Construction Permit, which regulates stormwater discharges from construction sites, and a statewide General Industrial Permit, which regulates stormwater discharges for specific industrial practices.

Prior to 1990, California did not require local governments to manage stormwater. To comply with the federal Clean Water Act Section 402(p) rulemaking and the first statewide general municipal stormwater permit, the RWQCB adopted its first regional stormwater permit by Order 90-42 in 1990. The permit required local governments to initiate urban runoff and stormwater management programs, eliminate illicit discharges, and implement BMPs on existing development. The BMPs that were implemented on existing development tended to be source control BMPs, such as street sweeping. Order 90-42 did not require new development to control and treat stormwater (P. Hammer, San Diego RWQCB, personal communication, December 11, 2007). Prior to 2001, sediment and erosion control requirements were in place but were not enforced.

With Order 2001-01, the RWQCB updated the MS4 permit in 2001 to include stormwater control and treatment requirements for new development, hereafter referred to as the 2001 Order (SDRWQCB, 2001). The RWQCB subsequently updated the permit in January 2007 by issuing Final Order No. R9-2007-0001, hereafter referred to as the 2007 Order (SDRWQCB, 2007b). These orders regulate discharges of urban runoff, defined as:

Urban Runoff – all flows in a storm water conveyance system and consists of the following components: (1) storm water (wet weather flows) and (2) non-storm water illicit discharges (dry weather flows) (SDRWQCB (2007b).

The co-permittees were required to comply with most of the order’s provisions by January 23, 2008. However, due to staff reassignments for fire storm recovery efforts, co-permittees were granted an extension of 60 days for several of the plan updates and the Construction Ordinance update. All co-permittees have complied with the 2007 Order using general requirements and are working to develop more specific requirements within a two-year timeframe.

The MS4 co-permittees within Agua Hedionda watershed are San Diego County and the cities of Carlsbad, Vista, Oceanside, and San Marcos. Each co-permittee must prepare a written account of its plan to comply with the overall 2007 Order and incorporate the permit requirements into their jurisdiction’s stormwater requirements. This written account is entitled the Jurisdictional Urban Runoff Management Plan (JURMP). Several other plans are required under the order, including the Standard Urban Stormwater Mitigation Plan (SUSMP), which outlines the structural and nonstructural practices to



be used to meet MS4 permit requirements for new development and significant redevelopment and provides guidelines for the selection, design, implementation, and maintenance of those practices. The co-permittees will have to update JURMPs and SUSMPs developed under the 2001 Order to comply with the 2007 Order. All jurisdictions in the Agua Hedionda watershed were required to update their stormwater plans and requirements by January 23, 2008 although the deadline was extended 60 days beyond this date due to fire storm damage. All co-permittees have complied with the 2007 Order using general requirements and are working to develop more specific requirements within a two-year timeframe. The following sections describe the major requirements of the 2001 Order as well as the additional requirements of the 2007 Order.

### *Priority Developments*

The pollutant discharge requirements outlined in the 2001 and 2007 Orders apply to Priority Developments, whose characteristics are specified in the order and include most new and redevelopment above specific areas or densities. Under the current and future requirements, new development priority developments include, but are not limited to, housing subdivisions of 10 or more dwelling units and commercial and heavy industry developments above one acre. The following developments greater than 5,000 square feet are also considered priority developments: restaurants, retail gasoline outlets, all hillside development, and paved areas that will be used for transportation. Development is considered “hillside” if it is located on erosive soils and on natural soil with slopes equal to or greater than 25 percent. Redevelopment is considered priority development if it creates, adds, or replaces at least 5,000 square feet of impervious surfaces on an already developed site that falls under the same development and location categories as priority new development.

Priority development includes development discharging stormwater to receiving waters of environmentally sensitive areas (ESAs), including water bodies designated as supporting a RARE beneficial use (supporting rare, threatened or endangered species) and CWA 303(d) impaired water bodies. Agua Hedionda Lagoon qualifies as an ESA since it is designated in the Basin Plan as supporting a RARE beneficial use. Priority development impacting an ESA is defined as:

All development located within or directly adjacent to or discharging directly to an ESA (where discharges from the development or redevelopment will enter receiving waters within the ESA), which either creates 2,500 square feet of impervious surface on a proposed project site or increases the area of imperviousness of a proposed project site to 10 percent or more of its naturally occurring condition. “Directly adjacent” means situated within 200 feet of the ESA. “Discharging directly to” means outflow from a drainage conveyance system that is composed entirely of flows from the subject development or redevelopment site, and not commingled with flows from adjacent lands (SDRWQCB, 2007b).

### *Pollutants of Concern and Treatment Control BMP Requirements*

All priority developments must employ treatment control BMPs under the 2001 and 2007 orders. The developer must prepare a stormwater management plan that details how stormwater will be managed on the site. The developer must also specify the pollutants of concern. The SUSMP specifies pollutants of concern for general development categories; additional pollutants may be considered if a development will discharge to a 303(d)-listed waterbody.

Next, treatment control BMPs are selected to treat the pollutants of concern for a particular development. Each co-permittee’s current SUSMP contains a list of treatment BMPs whose pollutant removal efficiencies are rated according to high, medium, and low pollutant removal. The developer must use a single BMP or treatment train that addresses each pollutant of concern with high or medium pollutant removal. Low ratings are only allowed if a feasibility analysis shows that high to medium BMPs are not feasible. Developers must site BMPs as close as possible to the pollutant source unless shared BMPs are used.

As an example of how the regional requirements are applied, Table A-5 shows the BMP selection matrix from the City of Carlsbad’s SUSMP (City of Carlsbad, 2003). Table A-5 designates which BMPs are expected to provide medium or high pollutant removal efficiencies, and developers are expected to use this table as a guide in selecting BMPs to comply with treatment requirements. The City of Carlsbad based its BMP selection matrix on the following references: *Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters* (USEPA, 1993), *National Stormwater Best Management Practices Database Version 1.0* developed by the American Society of Civil Engineers (ASCE) in 2001, and the *2001 Guide for BMP Selection in Urban Developed Areas* released by the ASCE Environmental and Water Resources Institute.

**Table A-5. City of Carlsbad Structural Treatment Control BMP Selection Matrix (taken directly from City of Carlsbad (2003))**

Pollutant of Concern	Treatment Control BMP Categories <sup>1</sup>						
	Biofilters	Detention Basins	Infiltration Basins <sup>2</sup>	Wet Ponds or Wetlands	Drainage Inserts	Filtration	Hydrodynamic Separator Systems <sup>3</sup>
Sediment	M	H	H	H	L	H	M
Nutrients	L	M	M	M	L	M	L
Heavy Metals	M	M	M	H	L	H	L
Organic Compounds	U	U	U	U	L	M	L
Trash & Debris	L	H	U	U	M	H	M
Oxygen Demanding Substances	L	M	M	M	L	M	L
Bacteria	U	U	H	U	L	M	L
Oil & Grease	M	M	U	U	L	H	L
Pesticides	U	U	U	U	L	U	L

<sup>1</sup> L = Low removal efficiency; M = Medium removal efficiency; H = High removal efficiency; U = Unknown removal efficiency.

<sup>2</sup> Including trenches and porous pavement.

<sup>3</sup> Also known as hydrodynamic devices and baffle boxes.

*Hydrology Requirements*

The following regional hydrology requirements for priority developments are currently in place and will continue to be in place with the 2007 Order:

- i. Volume-based treatment control BMPs shall be designed to mitigate (infiltrate, filter, or treat) the volume of runoff produced from a 24-hour 85th percentile storm event, as determined from the County of San Diego’s 85th Percentile Precipitation Isopluvial Map,
- or
- ii. Flow-based treatment control BMPs shall be designed to mitigate (infiltrate, filter, or treat) either:

a) the maximum flow rate of runoff produced from a rainfall intensity of 0.2 inch of rainfall per hour, for each hour of a storm event

or

b) the maximum flow rate of runoff produced by the 85th percentile hourly rainfall intensity (for each hour of a storm event), as determined from the local historical rainfall record, multiplied by a factor of two.

In addition to enforcing the current hydrology requirements, the co-permittees must collaborate on the development of a Hydromodification Plan (HMP) by January 2009. The HMP will specify criteria to reduce downstream erosion and protect stream habitat. As the HMP is being developed, the co-permittees were required to develop interim criteria by January 2008 (deadline was extended to March 2008). The co-permittees have hired consultants to develop both the interim and permanent HMP criteria.

The interim criteria will apply to any development greater than 50 acres that does not drain to a hardened facility (e.g., concrete channel) leading directly to the ocean. The interim criteria are likely to involve a tool that calculates the required size of treatment basin based on a site's land use and impervious surface (D. Hauser, City of Carlsbad, personal communication, October 19, 2007).

The permanent HMP criteria will apply to all priority developments and will maintain runoff at or near the pre-development peak flow for a continuous range of storm events (e.g., all events within the 2-yr to 10-yr range). The continuous range of storm events would represent the events during which the greatest, cumulative erosion impact is likely to occur. This type of requirement has been used in northern California, and a storm event range of the 2-year to 10-year storms has been applied. Although modeling is required to determine the appropriate range for southern California, a storm event range closer to the 5-year to 15-year storm may be used since rainfall frequency is lower in southern California (D. Hauser, City of Carlsbad, personal communication, October 19, 2007).

#### *Low Impact Development (LID) Requirements*

The 2007 Order requires priority development projects to use Low Impact Development (LID) techniques to minimize impervious surface and promote infiltration. Each priority development must be designed to minimize connected impervious areas and direct runoff from impervious surface to pervious areas. The pervious areas must be designed to treat and infiltrate runoff from impervious areas. For priority developments with low traffic areas and appropriate soils, a portion of the impervious surface must be constructed with permeable pavement. In addition to the use of these LID design techniques, developers are required to implement the following LID BMPs where applicable and feasible:

- Conserve natural areas
- Minimize width of streets, parking areas, and walkways
- Minimize impervious footprint
- Minimize soil compaction
- Minimize disturbance to natural drainages

The deadline for the incorporation of LID requirements into each co-permittee's SUSMP was January 23, 2008 although the deadline was extended 60 days from this date due to firestorm damage. All co-permittees have complied with the 2007 Order using general requirements and are working to develop more specific requirements within a two-year timeframe.

#### *Watershed Urban Runoff Management Plans (WURMP)*

The 2007 Order also requires that the Co-permittees within the Carlsbad watershed collaborate in the development and implementation of a watershed-based program that addresses urban runoff quality. The

rationale for this need is simple; urban runoff does not follow jurisdictional boundaries, and often travels through many jurisdictions while flowing to receiving waters. Therefore, the actions of multiple municipalities within a watershed can have a cumulative impact upon shared receiving waters. The mechanism that the Municipal Permit uses to require watershed collaboration is the development of the Watershed Urban Runoff Management Plan (WURMP). The purpose of the WURMP is to identify and address the highest priority water quality issues/pollutants and their sources in each watershed. In addition, the Municipal Permit requires that the Co-permittees develop activities that address education, public participation, and land use planning on a watershed basis. Agua Hedionda is included in the Carlsbad watershed (more correctly the Carlsbad Hydrologic Unit). The Carlsbad watershed Co-permittees includes the jurisdictions of Carlsbad, Escondido, Encinitas, Oceanside, San Marcos, Solana Beach, Vista and the County of San Diego. The original Carlsbad WURMP was developed in 2003 and is currently under revision, due to the RWQCB in March 2008. The lead co-permittee for the Carlsbad WURMP was Encinitas for the first four years of the program and has recently transferred to the City of Carlsbad.

### **Sediment and Erosion Control**

Sediment and erosion control requirements were first enforced under the 2001 Order and similar requirements will continue to be enforced under the 2007 Order. Although sediment and erosion control requirements were in place with earlier permits, enforcement became stronger after the 2007 Order. Under both orders, co-permittees must develop a construction program as part of their JURMP that reduces pollutant discharges from construction sites to the maximum extent practicable (MEP), prevents water quality objective exceedances from these discharges, and meets additional requirements. The regional requirements are in addition to the requirements under the statewide General Construction Permit, which outlines inspection requirements, specifies contents of Storm Water Pollutant Prevention Plan (SWPPP) to be prepared by the developer, and defines standard practices for stabilization and design of BMPs. The co-permittees must include sediment and erosion control practices in their construction program.

According to the 2001 and 2007 Orders, each co-permittee must evaluate the threat of construction sources to water quality and develop standards to address these sources, including a minimum set of construction BMPs. As part of the required BMPs, the following conditions must be minimized to the MEP: extent of clearing and grading, exposure time of bare soil, and extent of grading during wet periods. Temporary reseeded of disturbed areas must occur as rapidly as possible, and preservation of natural hydrologic areas and riparian buffers must be implemented where feasible. Erosion prevention is required to be used as the most important measure for keeping sediment on site during construction, but it must be used in concert with other methods including sediment controls, slope stabilization, and permanent revegetation (as early as feasible). Slope stabilization is required on all inactive slopes during the rainy season and during rain events in the dry season. Slope stabilization on active slopes is required during all rain events, regardless of the season.

The sediment and erosion control requirements in the 2007 Order are similar to the requirements in the 2001 Order. The major change in 2007 was the addition of a requirement for advanced treatment on some sites. The 2007 Order requires co-permittees to determine whether a site is an exceptional threat to water quality; for these designated sites, a developer is required to use advanced treatment, which involves mechanical or chemical means to flocculate and remove suspended sediment from construction site runoff prior to discharge.

The Carlsbad sediment and erosion control requirements provide an example of how the current Sediment and Erosion Control requirements are implemented by a co-permittee. Under the Carlsbad requirements, self-inspection of a construction site must occur daily during rain events and during earth moving in the wet season. The developer must conduct daily weather forecasting, and self-inspection checklists must be updated regularly. Inactive areas must be protected and stabilized. BMPs must be deployed to protect all

exposed areas within 24 hours of a predicted storm event. The City of Carlsbad must preapprove the developer's "Weather triggered" plan for protecting disturbed areas during weather events (City of Carlsbad, 2003).

### **Riparian Buffer Protection**

Riparian areas are generally defined as land that exists between streams and upland areas, usually within floodplain areas. Developers are sometimes required to preserve riparian areas as water quality protection buffers within a certain distance of streams, either termed "riparian" or "stream" buffers. Some jurisdictions require developers to restore natural vegetation to a riparian buffer area where it has been previously removed. When left undisturbed in natural vegetation or managed with dense vegetation, riparian buffers intercept and slow stormwater runoff before it enters the stream and filter pollutants from stormwater runoff. Riparian vegetation along stream banks also helps protect the stream channel from severe erosion and bank failure. Each jurisdiction in the watershed addresses the use of riparian buffers for stormwater management and flood control, and some require a certain distance from a stream or wetland to be left undisturbed.

The regional stormwater management requirements include riparian buffer requirements that apply to all jurisdictions in the watershed. The 2001 Order requires the implementation of construction site BMPs, which includes riparian buffers. The 2001 language requires the use of BMPs listed or their equivalents, while the language for use of riparian buffers and other construction site BMPs is stronger in the 2007, in which these BMPs are the minimum required to be implemented at construction sites. Neither one of the orders specifies a particular width or area for the riparian buffer. The local ordinances do not appear to provide more specific requirements than the 2001 or 2007 Orders.

Vegetative buffers are among the stormwater BMPs allowed for use in meeting the regional stormwater requirements, and these buffers could include natural vegetation, managed grass, or other managed vegetation. Under Vista and Oceanside's stormwater site design regulations, vegetative buffer areas are not specifically required, but "appropriate use of buffer areas" is required by a developer when selecting site design BMPs. The other jurisdictions allow the use of vegetative buffers as stormwater BMPs, but do not specifically require their use as a stormwater BMP.

Beyond the regional requirements listed above, the City of Carlsbad requires developers to preserve a minimum 50-foot buffer of riparian habitat and 100-ft buffer for wetlands – measured 100 feet from the outside edge of the riparian/wetland vegetation – within the City of Carlsbad's coastal, as designated by the Carlsbad Habitat Management Plan (HMP). A 100-ft buffer is also required for all riparian and wetlands habitat outside of the Coastal Zone, also measured from the outside edge of the riparian/wetlands habitat. The coastal zone boundary roughly corresponds with the El Camino Real corridor within the watershed. The Carlsbad HMP contains additional buffer requirements for specific habitats (City of Carlsbad, 2004).

The City of Vista requires protection of stream banks and channels under Chapter 13 of its municipal code, Storm Water Management and Discharge Control Program. Owners or tenants of property where a stream exists are not allowed to remove bank vegetation except to remove excessive vegetation that retards the flow of water. Any necessary removal of vegetation must be done in a manner that "minimizes the vulnerability of the watercourse to erosion." This chapter also includes a prohibition of development within 50 feet of the centerline of a stream or 20 feet from the top of a bank, whichever distance is greater (City of Vista, 2008). Within this buffer, the city requires a developer to leave existing vegetation undisturbed and to revegetate areas without natural vegetation (John Conley, City of Vista, personal communication to Heather Fisher, June 2008).

The County of San Diego protects riparian and wetland habitat through its Resource Protection Ordinance (RPO). The RPO restricts impacts to natural resources, including wetlands and wetland buffers. Certain

permit types are subject to the requirement to prepare Resource Protection Studies under the RPO. The RPO defines wetlands as having one or more of the following characteristics:

- 1) At least periodically, the land supports a predominance of hydrophytes (plants whose habitat is water or very wet places),
- 2) The substratum is predominantly undrained hydric soil, or
- 3) An ephemeral or perennial stream is present, whose substratum is predominantly non-soil and such lands contribute substantially to the biological functions or values of wetlands in the drainage system.

In addition to restricting impacts to wetlands, the RPO requires that a wetland buffer be provided to further protect the adjacent wetlands. The RPO defines “wetland buffers” as lands that provide a buffer area of an appropriate size to protect the environmental and functional habitat values of the wetland, or which are integrally important in supporting the full range of the wetland and adjacent upland biological community. Required buffer widths range from 50 to 200 feet from the edge of the wetland as appropriate based on the above factors. Where oak woodland occurs adjacent to the wetland, the wetland buffer shall include the entirety of the oak habitat, not to exceed 200 feet in width (T. Synder, County of San Diego, personal communication, August 2008).

The City of Oceanside has drafted riparian buffer protection regulations. The draft regulations would protect designated riparian areas as well as a 50-foot buffer beginning at the edge of these designated areas. An additional 50-foot planning buffer would also be established that allows some recreational uses but restricts building and other development in the buffer (City of Oceanside, 2004).

For all jurisdictions in the watershed, development is restricted within the floodplain according to Floodplain Management requirements, as outlined in the next section. The floodplain requirements do not specify that vegetation must be left undisturbed.

### **Floodplain Management**

All municipalities within the Agua Hedionda watershed have floodplain management regulations that seek to minimize flood hazards as well as flood-related erosion and mudslide hazards. The local floodplain ordinances designate a floodplain administrator who reviews development plans to ensure compliance with flood hazard regulations. All municipalities have adopted FEMA delineated floodways and areas of flood-related erosion and mudslide hazards. San Marcos is the only municipality in the watershed that uses an overlay zone to designate its flood hazard areas. Carlsbad is the only municipality that requires a special use permit for any development within designated flood, flood-related erosion, or mudslide hazard areas. Designated flood related erosion or mudslide areas exist within all of the watershed’s municipalities except for the City of Vista; the floodplain management regulations for the municipalities with these areas have specific regulations for flood-related erosion or mudslide hazards. The municipal floodplain regulations can be found in the following chapters of each jurisdiction’s municipal code: Carlsbad, Chapter 21.110; Vista, Chapter 16.48; Oceanside, Article IX; and San Marcos, Chapter 20.76.

Under the municipal floodplain ordinances, the floodplain administrator reviews all development permits and verifies that a development will not increase flood hazards in any portion of the municipality and that the site itself is reasonably safe from flooding. The floodplain ordinances contain standards for construction in special flood hazard areas. New residential structures must be built at or above the base flood elevation, with additional requirements varying by residential zone. The administrator also reviews mud hazards in a proposed development and specifies requirements for mitigating the hazards in the design of the development. All municipalities that have mudslide hazard areas include specific mudslide hazard regulations in their floodplain ordinances; mudslide hazard areas exist in all jurisdictions except the City of Vista.

A “Floodway,” or “Regulatory Floodway” is defined as “the channel of a river or other watercourse and the adjacent land area that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than one (1) foot.” Within an adopted regulatory floodway, all encroachments are prohibited, including fill, new construction, substantial improvements, and other development. These encroachments are prohibited in all areas of the floodway unless a registered civil engineer certifies and demonstrates that the proposed encroachment shall not result in an increase in flood levels during the base flood discharge.

All municipalities that have flood-related erosion-prone areas include regulations for flood-related erosion-prone areas in their floodplain ordinances; flood-related erosion-prone areas exist in all jurisdictions except the City of Vista. Permits are required for construction in all designated flood-related erosion-prone areas and measures must be taken to either relocate a proposed improvement or sufficiently protect against an erosion hazard. Within Zone E on the Flood Insurance Rate Map, all new development must be setback from the ocean, lake, bay, riverfront or other natural body of water. The setback must consist of a natural vegetative buffer or contour strip. The buffer may be used for agricultural, forestry, outdoor recreation, and other appropriate open space uses. The extent of the setback is determined by an evaluation of the flood-related erosion hazard and erosion rate, the anticipated "useful life" of the proposed structure, and the geologic, hydrologic, topographic and climatic characteristics of the site.

San Diego County’s floodplain regulations are similar to those enforced by the municipalities in the watershed. The County’s floodway and floodway fringe regulations require development to be set back from the floodway boundary a distance of 15 percent of the floodway width (but not to exceed 100 feet). This set back requirement may be increased if the development is within a designated erosion hazard area. The San Diego floodway regulations can be found under Section 86.604 of the County’s Resource Protection Ordinance. The County recently completed a Floodplain Management Plan in August 2007 (County of San Diego, 2007) which evaluates the County’s current flood control policies and recommends data collection needs and measures for flood mitigation and prevention. Watershed-specific recommendations focused on the County’s major watersheds. The County’s major watersheds were selected to include watersheds located completely within incorporated communities or within undeveloped unmapped areas of eastern San Diego County; the Agua Hedionda watershed, as well as the entire Carlsbad Hydrologic Unit, do not meet these criteria and was not included in the County’s major watersheds

### **Habitat/Endangered Species/Vegetation**

In 1992, the California Natural Communities Conservation Planning (NCCP) Act created a voluntary program in which landowners, local governments, and other stakeholders can work with the state government to prioritize land important for species conservation and identify land where development can occur without severely impacting important habitat. The federal government has a similar program, under the Endangered Species Act, which requires the preparation of Habitat Conservation Plans (HCPs). Through these federal and state programs, local governments can produce plans for conserving endangered and threatened species habitat and, in the process, obtain federal and state permits for development. This planning process seeks to reduce the need for single-species mitigation while balancing future development needs with the protection of multiple endangered and threatened species.

In response to the NCCP Act, the San Diego region has developed several multijurisdictional habitat planning efforts. The Agua Hedionda watershed falls under the jurisdiction of two of these efforts: the Multiple Habitat Conservation Program and the North County Multiple Species Conservation Subarea Plan.

#### *Multiple Habitat Conservation Program*

San Diego Association of Governments (SANDAG), the county’s regional planning agency, administers the Multiple Habitat Conservation Program (MHCP). The goal of the MHCP is to “maintain biodiversity

and ecosystem health in the region while maintaining quality of life and economic growth opportunities.” The program also seeks to create, manage, and monitor an ecosystem reserve in northwestern San Diego County. The MHCP presides over the seven cities within the MHCP subregion, which include the four municipalities in the Agua Hedionda watershed: Carlsbad, Vista, Oceanside, and San Marcos. These cities are required to develop individual, citywide subarea plans, termed Habitat Management Plans (HMPs), detailing specific habitat protection policies that comply with the MHCP plan.

SANDAG has developed and adopted the MHCP plan, which outlines requirements for each citywide subarea plan. The MHCP plan is based on a biological analysis and a determination of which sensitive species will be covered under the plan’s policies. The plan outlines policies that cover habitat for sensitive species and also specifies policies for individual species. Compliance with the MHCP plan and citywide subarea plans is designed to meet habitat mitigation requirements under the Federal Endangered Species Act as well as the NCCP Act (SANDAG, 2003).

The City of Carlsbad has developed its Habitat Management Plan for Natural Communities to serve as its HCP under federal regulations as well as its HMP under the MHCP requirements (City of Carlsbad, 2004). The other cities in the watershed are currently developing their HMPs.

#### *North County Multiple Species Conservation Subarea Plan*

To meet the requirements of the NCCP ACT, San Diego County passed the Biological Mitigation Ordinance (BMO), established the Multiple Species Conservation Program (MSCP), and developed a countywide Multiple Species Conservation Plan (MSCP Plan). The BMO outlines the goals and objectives of the MSCP and specifies criteria for public and private development projects. It also states the limits to allowed habitat impact and required mitigation measures for such impacts. The BMO development design criteria require the preservation of corridors or significant resources by avoiding development in these areas and clustering development. Reduction in road standards may also be considered as a means to avoid impacts. No land is condemned under this program, but development must conform to the standards in the BMO (MSCP, 2007).

The countywide MSCP Plan provides guidance on the preparation of subarea plans for each jurisdiction within the MSCP Planning Area. Each subarea plan identifies critical habitat for endangered and threatened species within the San Diego region and provides guidance on land acquisition. The subarea plans identify land that will provide critical habitat for endangered and threaten species, and federal, state, and local agencies use the plan to guide land acquisition decisions. The Agua Hedionda watershed intersects with the North County Subarea, where a draft MSCP plan is projected to be released for public review by June 2008. This subarea plan will apply to the unincorporated portion of the watershed (MSCP, 2007).

#### **Water Conservation**

Water is provided throughout the watershed by four water agencies:

- Vista Irrigation District
- Carlsbad Municipal Water District
- City of Oceanside
- Vallecitos Water District

The Vista Irrigation District supplies water to the City of Vista and the unincorporated areas of the watershed. The Carlsbad Municipal Water District supplies water to the City of Carlsbad within the watershed boundaries. City of Oceanside Water District supplies Oceanside’s water, and Vallecitos Water District supplies water to San Marcos.



These agencies purchase their water from the Region’s water wholesale agency, the San Diego County Water Authority. Nearly 90 percent of the regions water is imported from three sources: the Metropolitan Water District of Southern California (MWD), conserved agricultural water from the Imperial Irrigation District (IID), and conserved water from projects that are lining the All-American and Coachella Canals. MWD is the largest supplier and derives its water supply from two sources: the Colorado River and the State Water Project (SDIRWMP, 2007).

The regions’ water supplies are currently being strained by an eight-year drought in the Colorado River Basin, low snowpack in the Sierras, a 2007 court order to reduce water pumping to southern California to protect the endangered smelt in the San Joaquin-Sacramento River Delta, and agricultural water supply cutbacks. MWD cut supplies to agricultural users participating in their Interruptible Agricultural Water Program by 30 percent beginning in January of 2008. (The IAWP program enables agricultural users to purchase water at reduced rates in exchange for taking a water supply cut before business and residential users during times of shortage.) The Water Authority and its member agencies are implementing plans and programs to diversify water supplies and increase long-term water supply reliability. Programs include water transfer with the Imperial Irrigation District and supplies from canal lining projects, water conservation, and developing new local water supplies such as groundwater, recycled water and seawater desalination (CWA 2008).

In 2005, regional water demand consisted of 58 percent residential, 29 percent commercial and industrial, and 13 percent agriculture. This is projected to be 62 percent residential, 32 percent commercial and industrial, and 6 percent agriculture by 2030. Outdoor water use for single family home accounts for as much as 60 percent of the urban residential water used in the region (CWA, 2007). The focus of water conservation efforts in the region has moved from indoor uses to outdoor uses. Reduction in outdoor water use can also lead to reduced urban runoff which transports pollutants to waterways.

CWA projections show that implementing existing and proposed urban water demand (conservation) BMPs would produce water savings of approximately 108,400 acre-feet/year by the year 2030 within the CWA’s service area (compared to 53,400 acre-feet/year in 2005). These future water conservation savings will be realized through residential programs (incentives for water saving household appliances, efficiency standards for water-saving devices installed in new residential construction, landscape savings through water budgets, large landscape audits) and incentives for irrigation hardware replacements (weather-based irrigation controllers, efficiency irrigation devices, and artificial turf), and commercial/industrial efficiency incentive programs. Nearly half of the savings will come from landscape/irrigation controls and compliance with efficiency standards.

In the spring of 2008, CWA drafted a model ordinance for drought response conservation program and asked its member agencies to adopt the ordinance. The model ordinance outlines voluntary and mandatory restrictions including commercial and residential landscape irrigation, washing of vehicles, required repairs of leaks and breaks in irrigation systems, and filling of ornamental pools and fountains. The model ordinance sets up four levels of increasingly higher demand reduction targets and associated water use restrictions that can be implemented by local agencies. The higher stages of the ordinance include mandatory restrictions with accompanying penalties for noncompliance.

The State of California is planning to enact this model water conservation ordinance in 2009. Jurisdictions will be given a year to adopt the new ordinance or incorporate it into their regulations. If jurisdictions do not adopt these regulations by the deadline, the State ordinance will become the over-

On June 4, 2008, California Governor Arnold Schwarzenegger signed Executive Order S-06-08 which proclaimed a statewide drought. The Order takes immediate action to address a dire situation where numerous California communities are being forced to mandate water conservation or rationing. The lack of water has created other problems, such as extreme fire danger due to dry conditions, economic harm to urban and rural communities, loss of crops and the potential to degrade water quality in some regions.

riding law. The model ordinance is likely to have more stringent standards for irrigation than current water conservation efforts in the watershed (Carlos Michelin, San Diego County Water Authority Water Resources, personal communication to Meleah Ashford, January 2008).

### **Watershed Project Permitting**

Projects proposed in the Agua Hedionda Watershed Plan, depending on the nature of the proposed activities, may require the following permits (Brown and Caldwell, 2007):

- Coastal Development Permit for construction within the Coastal Zone
- Section 404 Permit from the U.S. Army Corps of Engineers construction impacting to jurisdictional waters of the U.S.
- 401 Water Quality Certification from the RWQCB for conditions placed in the Section 404 Permit to protect water quality
- Streambed Alteration Agreement from California Department of Fish and Game due to impacts to jurisdictional wetlands and streambeds
- Local Development Permits (i.e., grading, building or other construction related permits)

Proposed watershed management projects may also require an evaluation under the California Environmental Quality Act (CEQA), which requires state and local agencies to evaluate the environmental impacts of their actions. If a project involves the use of federal funds, an evaluation under the National Environmental Policy Act (NEPA) may also be required.