

# **Status Report**

# **Areas of Special Biological Significance**

**August 2006**



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**List of Acronyms and Abbreviations**

ASBS	Area of Special Biological Significance
BLM	Bureau of Land Management
BMPs	Best Management Practices
Caltrans	California Department of Transportation
CBI	Clean Beaches Initiative
CCC	California Coastal Commission
CCA	Critical Coastal Area
CDO	Cease and Desist Order
CEQA	California Environmental Quality Act
COP	California Ocean Plan
CTR	California Toxics Rule
Cu	Copper
CWA	Clean Water Act
CWC	California Water Code
DFG	California Department of Fish and Game
DO	Dissolved Oxygen
FWS	United States Fish and Wildlife Service
MARINe	Multi Agency Rocky Intertidal Network
MMA	Marine Managed Area
MMs	Management Measures
MS4	Municipal Separate Storm Sewer Systems
NPDES	National Pollutant Discharge and Elimination System
OPP	Ocean Protection Projects
PRC	Public Resources Code
Regional Water Board	California Regional Water Quality Control Board
SCCWRP	Southern California Coastal Water Research Project
State Water Board	State Water Resources Control Board
SWAMP	Storm Water Ambient Monitoring Program
SWMP	Storm Water Management Plan/Program
SWQPA	State Water Quality Protected Area
USEPA	United States Environmental Protection Agency
WDR	Waste Discharge Requirements

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**EXECUTIVE SUMMARY**

The purpose of this document is to provide the State Water Resources Control Board members and management, and the public, an update on the staff progress and status in addressing discharges into Areas of Special Biological Significance.

In the mid-1970's, thirty-four areas on the coast of California were designated as requiring protection by the State Water Resources Control Board (State Water Board), and were called Areas of Special Biological Significance (ASBS). Despite the designation of these areas for protection, little was known about the presence and types of discharges occurring within ASBS.

The Irvine Coast precedential decision in 2000, and the State Water Board hearings on the 2001 Ocean Plan amendments brought to light the fact that despite the Ocean Plan's prohibition of waste discharge into ASBS, numerous discharges do exist. This finding prompted the Board to fund a statewide survey to assess the extent of these storm water and nonpoint source discharges. In 2003, the Southern California Coastal Water Research Project (SCCWRP 2003) found 1,654 discharges to potentially be in violation.

SCCWRP identified 391 municipal or industrial storm drains that empty directly into ASBS statewide. None of these storm drains were covered under an exception from the Ocean Plan's ASBS discharge prohibition. SCCWRP also identified a total of 1012 "small" storm drains from homes that may not be covered under an NPDES permit. SCCWRP identified a total of 224 other non-point sources draining into (or immediately adjacent to) ASBS statewide. These are associated with a variety of activities, including agriculture, grazing, parking lots and roads, boat yards, boat launches and service facilities, boat moorings, piers, runoff from leach fields, potentially faulty septic systems and other activities. Additionally, 66 seeps were identified that were also potential nonpoint sources of pollutants.

The SCCWRP survey was originally designed to identify storm water and non-point source discharges, which collectively represented about 98% of the discharges identified. However, thirty-one wastewater discharge points were identified by SCCWRP. Some facilities have multiple discharge points, and subsequently staff has identified 14 facilities that discharge wastewater to ASBS. Of these, only four were properly covered by permits and exceptions in 2003.

The University of California San Diego Scripps Institution of Oceanography (SIO) was found to discharge both waste seawater and storm water into the San Diego – Scripps ASBS. It was determined to be in the best public interest, especially with regard to marine environmental conservation and protection, to allow UCSD/SIO to continue to discharge but within the confines of specific limiting conditions. Therefore the State Water Board adopted an exception to the ASBS

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discharge prohibition (Resolution 2004-0052), provided that the Regional Water Board's waste discharge requirements included 19 conditions.

The USC Wrigley Marine Science Center (WMSC) operates a marine laboratory that provides important research and educational services. WMSC discharges both waste seawater and storm water Northwest Santa Catalina Island ASBS. It was in the public interest to allow the Wrigley Marine Science Center to continue the drainage of its seawater and storm drain systems into Big Fisherman Cove under strict mitigating conditions. Therefore the State Water Board, in Resolution 2006-0013, adopted Special Protections for the Northwest Santa Catalina Island ASBS, providing similar mitigating conditions to those for Scripps, and additional site-specific conditions to address the marine operations at WMSC.

Staff's current strategy is to address remaining discharges two ways; individually for marine laboratories, aquarium and military facilities; and collectively for storm water and other non-point discharges. Responsible parties have been identified for each ASBS. Letters were sent notifying each one that their discharges were in violation of the Ocean Plan waste discharge prohibition, and providing detailed instructions on how to come into compliance with the Ocean Plan.

In June 2006 the State Water Board staff released its initial draft Special Protections to address storm water and nonpoint source discharges into ASBS. It is apparent that storm water runoff is a part of the hydrologic cycle but that it contains anthropogenic wastes, and is therefore prohibited under the Ocean Plan. The draft Special Protections are intended to require the removal of waste materials from runoff to the extent that: 1) natural water quality in the ASBS is not altered, and 2) marine life in ASBS is protected. The Special Protections document was intended to provide a framework for discussion at scoping meetings to be held in August 2006. Public scoping meetings were planned for three locations: Santa Rosa on August 1, Los Angeles on August 8, and Monterey on August 15. Comments received at these scoping meetings and in writing will be used to consider modifications to the staff proposal.

Staff is in the process of reviewing the water quality data accumulated from ASBS locations during the last several years. That data has not been fully assessed and therefore is not being comprehensively presented in this document. However, some examples of the available data are being presented. While limited to only certain example locations and times, the data provide an initial indication of the presence of pollutants in an undeveloped stream, an impacted stream, certain storm drains, and other point source discharges.

One potential reference stream that drains to the Laguna Point to Latigo Point ASBS is Arroyo Sequit. This creek drains through Leo Carrillo State Park and Beach at the bottom of an undeveloped watershed located on the western edge of Los Angeles County. The park campground only minimally impacts the portion of this creek upstream of Pacific Coast Highway. Metals analysis for this location

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in March 2004 indicated good quality water for metals relative to the Ocean Plan objectives and the California Toxics Rule.

Non- storm runoff in an urban storm drain at La Jolla (Avenida de la Playa) was also sampled in March 2004. Cadmium and Chromium were above the California Ocean Plan Table B six-month median. Copper exceeded the instantaneous maximum. Lead was higher than the daily maximum. Nickel was above the daily maximum and approaching the instantaneous maximum.

Based on a review of the available data, there were 1,749 recreational beach postings in or immediately adjacent to ASBS during the period 1999 to 2005. Beach postings at ASBS occurred in San Mateo County (787), Los Angeles County (376), Orange County (274), San Diego County (133), Monterey County (99), Ventura County (76), and Sonoma County (4). There were also a total of 150 closures recorded at ASBS beaches statewide during the same period.

For 26 years (1977-2003) the California State Mussel Watch Program (SMWP) collected transplanted and resident mussels and clams from the waters of California's bays, harbors and estuaries. The sampling sites that were monitored as part of this program included some that were either in or very near ASBS. These sites were at Bodega Head, Trinidad Head, Fitzgerald, Point Reyes, Ano Nuevo Island, Monterey Bay, Pacific Grove, Anacapa Island, Catalina Island, La Jolla, Corona Del Mar and Carmel. Results from certain ASBS sites show elevated levels for certain metals and organic pollutants.

Manipulated and natural landslides are common disturbances along the Central Coast. Sediment deposition due to anthropogenic and natural discharges affect marine intertidal and subtidal communities by direct burial, scouring by coarse sediments, and deposition of fine sediments. They also may increase turbidity on marine waters. A cove in the Julia Pfeiffer Burns Underwater Park ASBS/SWQPA has been completely filled with sediment. This resulted from a landslide in 1983 onto Highway 1 and possibly accelerated by associated Caltrans road clearance work.

State Water Board Resolution 2004-0052, resolved 3.a., states "Natural water quality will be defined, based on a review of the monitoring data, by an advisory committee composed of State and Regional Board staff, a representative from UCSD/SIO, and two scientists selected by Regional Board staff from some academic organizations other than UCSD/SIO. At a minimum the advisory committee must meet annually and to advise the Regional Board whether or not natural water quality is being altered in the ASBS as a result of UCSD/SIO discharges." The committee has been established and will focus on Scripps' and other relevant La Jolla data to answer this main question over the permit cycle. The Committee recognizes the importance of their work in the context of the greater ASBS, Ocean Plan, and storm water issues. Their work shall provide guidance for assessing impacts to water quality in any ASBS in the State. It must be emphasized that the Committee will not make regulatory decisions but will

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instead provide scientific advice to the Water Boards regarding natural water quality on the coast and in the ASBS, and the scientifically valid, observed impacts to water quality and marine aquatic life in ASBS.

Based on the above information it is clear that there are known sources of pollution that drain into or have impacted ASBS. However a more comprehensive monitoring program is necessary to fully determine the status and protection of beneficial uses in ASBS over time. State Water Board Ocean Unit staff presented an initial set of monitoring requirements in the June 2006 draft Special Protections document to address storm water and nonpoint source discharges. Ocean Unit staff intends to continue working with the Natural Water Quality Committee, the Multi Agency Rocky Intertidal Network (MARINE), and Water Board's Surface Water Ambient Monitoring Program (SWAMP) staff to further design and plan an ASBS monitoring program.

Aside from the status of the important regulatory described herein, the State has also been active in providing staff expertise and funding for local entities working to comply with the ASBS discharge prohibition. One example of how the State is providing technical assistance to local parties is through the Critical Coastal Areas program. Three CCAs adjacent to ASBS have been selected as pilot projects where state agency staff will work with local stakeholders to test the benefits of developing watershed-based plans and implementing appropriate management measures (MMs) to protect costal resources.

The Clean Beaches Initiative (CBI) Program is primarily aimed at protecting human health, but controls to reduce pathogen loading may likely also reduce other pollutants that can impact marine life. In Monterey County, two projects located at Pacific Grove ASBS received CBI funding, with a combined total of \$2 million. These include dry weather flow diversions, a tidal circulation feasibility study, and pollutant source abatement. The source abatement and diversion program at Lover's Point in Pacific Grove (ASBS # 19) was initiated after a 70,000-gallon sewage spill into Monterey Bay National Marine Sanctuary on January 12, 2000. In Orange County (Laguna Beach) at the Heisler Park ASBS, the State Water Board has committed \$1.2 million of CBI Prop 40 funds for dry weather flow diversions. At the James V. Fitzgerald ASBS, In San Mateo County, \$20,000 has been committed for the sewer collection system upgrade.

The Integrated Regional Water Management (IRWM) funded by Prop 50 Chapter 8, provides approximately \$148 million during the first funding cycle for IRWM Implementation. Implementation grants fund projects that meet one or more of the program objectives of protection from drought, protecting and improving water quality, and improving local water security by reducing dependence on imported water. Implementation Grant proposals must be based on an IRWM Plan. IRWM Grants are divided into two groups, the Integrated Regional Water Management Planning Grants, and Integrated Coastal Water Management Planning Grants. Funding for the IRWM Program is administered jointly between the State Water Board, and the Department of Water Resources (DWR). For



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fiscal year 2005-06, approximately \$3.1 million in Integrated Coastal Water Management Planning grants were awarded to projects within 14 ASBS throughout the State.

The 2005-06 Consolidated Grants Program includes the Proposition 50 Coastal Non-point Source Pollution Control (CNPS) Program, which targets projects that restore and protect the water quality and environment of coastal waters, estuaries, bays, nearshore waters, and groundwater. At least \$10 million of the \$43.1 million Proposition 50 CNPS Program funds were reserved for ocean protection projects (OPP) that meet the mutual priorities of the State Water Board and Ocean Protection Council (OPC). Those priorities were 1) the development of Rapid Indicators for pathogen indicators at recreational beaches, and 2) addressing discharges into ASBS. State Water Board staff reviewed the proposals for the OPP funding in collaboration with other state agencies, and presented the recommended Ocean Protection Project (OPP) funding list of five successful proposals to the OPC at its June 8, 2006 meeting. The OPC approved those five proposals and recommended the State Water Board adopt that list. The State Water Board adopted the funding list for all five proposals, totaling \$10,021,317, at the June 21, 2006 Board meeting. Three of those successful proposals address ASBS, totaling \$5,521,317. These were: 1) the La Jolla Shores ASBS Dry Weather Flow and Pollution Control Program, addressing the La Jolla and San Diego-Scripps ASBS; 2) the North Coast Stormwater Coalition's NPS Pollution Prevention Program, in part addressing the runoff at Shelter Cove into the King Range ASBS; and 3) Monitoring and Mitigation to Address Fecal Pathogen Pollution along the California Coast, addressing runoff that may be impacting sea otters in several ASBS in the central coast.

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**INTRODUCTION**

**The purpose of this document is to provide the State Water Resources Control Board members and management, and the public, an update on the staff progress and status in addressing discharges into Areas of Special Biological Significance.**

**BACKGROUND**

The California Ocean Plan (Ocean Plan) establishes water quality objectives for California's ocean waters and provides the basis for regulation of wastes discharged into the State's coastal waters. It applies to point and non-point source discharges. The State Water Resources Control Board (State Water Board) adopts the Ocean Plan, and both the State Water Board and the six coastal Regional Water Quality Control Boards (Regional Water Boards) implement the Ocean Plan. In 1972 the Ocean Plan stated: "Waste shall be discharged a sufficient distance from areas designated as being of special biological significance to assure maintenance of natural water quality conditions in these areas" (State Water Board 1972). No Areas of Special Biological Significance (ASBS) had yet been designated in 1972.

The Regional Water Boards recommended certain candidate areas to the State Water Board, and in Resolution No. 74-28, for the first time, the State Water Board designated 31 of those candidate areas as ASBS. Later in 1974, two more ASBS were designated (State Water Board 1974), and another in 1975 (State Water Board 1975). There are currently a total of 34 ASBS. The ASBS were intended to afford special protection to marine life through prohibition of waste discharges within these areas.

**ASBS WASTE DISCHARGE PROHIBITION**

Since 1983, the Ocean Plan has prohibited waste discharges to ASBS (State Water Board 1983). Similar to previous versions of the Ocean Plan, the 2005 Ocean Plan (State Water Board 2005) states: "Waste shall not be discharged to areas designated as being of special biological significance. Discharges shall be located a sufficient distance from such designated areas to assure maintenance of natural water quality conditions in these areas." The concept of "special biological significance" recognizes that certain biological communities, because of their value or fragility, deserve very special protection that consists of preservation and maintenance of natural water quality conditions. This is entirely consistent with the State Water Board's mission to "preserve, enhance and restore the quality of California's water resources, and ensure their proper allocation and efficient use for the benefit of present and future generations."

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**PRECEDENTIAL DECISION, CRYSTAL COVE STATE PARK**

The Irvine Coast ASBS is co-located with Crystal Cove State Park. On November 16, 2000, the Santa Ana Regional Water Board issued a cease and desist order (CDO) to the Irvine Company, the California Department of Transportation (Caltrans), and the California Department of Parks and Recreation. The CDO contains findings that the dischargers were violating or threatening to violate the discharge prohibition contained in the California Ocean Plan against discharges into the Irvine Coast ASBS at Crystal Cove. Caltrans petitioned the State Water Board to review the CDO. On April 26, 2001 the State Water Board decided Caltrans was in violation of the Ocean Plan ASBS discharge prohibition in that:

- there are waste discharges from Pacific Coast Highway,
- discharges on the beach above the high tide line do constitute discharges to the ASBS,
- the Ocean Plan does in fact regulate the discharge of wastes through storm water conveyances, and
- coverage under Caltrans' statewide NPDES permit for storm water discharges does not relieve the discharger from complying with the Ocean Plan prohibitions on discharges into the ASBS.

The State Water Board did amend the CDO to allow submission of a discharge elimination plan by May 16, 2002 and to require the cessation of discharges by November 16, 2003.

**MARINE MANAGED AREAS**

During the later half of the 20<sup>th</sup> century various state agencies and the Legislature designated some 18 different major categories of Marine Protected Areas and Marine Managed Areas. Assembly Bill 2800 (Chapter 385, Statutes of 2000), the Marine Managed Areas Improvement Act added sections to the Public Resources Code (PRC) that simplified the nomenclature and created a system of six defined categories of Marine Managed Areas (MMAs).

These six categories are Marine Reserves, Marine Parks, Marine Conservation Areas, Marine Recreation Management Areas, Marine Cultural Preservation Areas, and State Water Quality Protection Areas (SWQPAs). Under state law the Reserves, Parks and Conservation Areas are further categorized as Marine Protected Areas (MPAs).

Certain Sections of the PRC (as modified by AB 2800) are relevant to ASBS. Section 36700 (f) of the PRC defines an SWQPA as "a nonterrestrial marine or estuarine area designated to protect marine species of biological communities from an undesirable alteration in natural water quality, including, but not limited to, areas of special biological significance that have been designated by the

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State Water Resources Control Board through its water quality control planning process.” Section 36710 (f) of the PRC stated: “In a state water quality protection area point source waste and thermal discharges shall be prohibited or limited by special conditions. Non-point source pollution shall be controlled to the extent practicable. No other use is restricted.” The classification of ASBS as SWQPAs went into effect on January 1, 2003 (without State Water Board action) pursuant to Section 36750 of the PRC.

Senate Bill 512 (Chapter 854, Statutes of 2004) later amended the marine managed areas portion of the PRC, effective January 1, 2005, to clarify that ASBS are a subset of SWQPAs and require special protection as determined by the State Water Board pursuant to the Ocean Plan and the California Thermal Plan. Specifically, SB 512 amended the PRC section 36700 (f) definition of state water quality protection area to add the following: “Areas of special biological significance are a subset of state water quality protection areas, and require special protection as determined by the State Water Resources Control Board pursuant to the California Ocean Plan adopted and reviewed pursuant to Article 4 (commencing with Section 13160) of Chapter 3 of Division 7 of the Water Code and pursuant to the Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California (California Thermal Plan) adopted by the state board.”

SB 512 also amended Section 36710(f) of the PRC as follows: "In a state water quality protection area, waste discharges shall be prohibited or limited by the imposition of special conditions in accordance with the Porter-Cologne Water Quality Control Act (Division 7 (commencing with Section 13000) of the Water Code) and implementing regulations, including, but not limited to, the California Ocean Plan adopted and reviewed pursuant to Article 4 (commencing with Section 13160) of Chapter 3 of Division 7 of the Water Code and the Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California (California Thermal Plan) adopted by the state board. No other use is restricted." This language replaced the prior language that required point sources into ASBS to be prohibited or limited by special conditions, but allowed non-point sources to be controlled to the extent practicable. In other words, the absolute discharge prohibition in the Ocean Plan is maintained, unless an exception is granted.

It is important to note that many ASBS/SWQPAs occupy the same geographic areas as other State MMAs, including many MPAs. Furthermore, there are many ASBS that overlap Federal MPAs (e.g., National Marine Sanctuaries).

## **2005 OCEAN PLAN AMENDMENTS**

In Resolution 2005-0035, the Ocean Plan was amended to change the names of specific Areas of Special Biological (ASBS) and incorporate the classification of ASBS as SWQPAs pursuant to the Public Resources Code. In addition, the Ocean Plan was amended to state that exceptions would be reviewed during the

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Triennial Review, and an appendix was added listing exceptions to the Ocean Plan.

**SCCWRP 2003 ASBS DISCHARGE SURVEY**

State Water Board hearings on the 2001 Ocean Plan amendments and the Caltrans petition brought to light the fact that there are storm water and non-point source discharges into ASBS, despite the Ocean Plan prohibition. The State Water Board decided in 2001 to fund a study to assess the extent of storm water and non-point source discharges into ASBS/SWQPAs. The State Water Board contracted with the Southern California Coastal Water Research Project (SCCWRP) to conduct a pilot project survey of the ASBS in southern California. Upon completion of that work, the State Water Board again contracted with SCCWRP to expand the survey to all ASBS/SWQPAs in California. In July of 2003, SCCWRP issued its *Final Report: Discharges into State Water Quality Protection Areas* (SCCWRP 2003). Information gained from the study was intended to be used to guide future action on these discharges.

For the purposes of the survey, all drainages were divided into outlets and discharges. Outlets were defined as naturally occurring water bodies (e.g., perennial or ephemeral streams and naturally occurring gullies) that drain to an ASBS. Discharges were defined as anthropogenic sources that drain to an ASBS. Statewide, there were 1658 direct discharges into ASBS. These discharges were further classified into 31 wastewater discharge points, 391 municipal/industrial storm drains, 1012 small storm drains (e.g., from individual properties), and 224 non-point sources. In addition, 182 seeps were also identified as draining into ASBS. Of these, SCCWRP identified 66 that were potential non-point sources of pollutants. See Appendix A for a summary of the original 2003 SCCWRP discharge survey results.

Based on the relatively low level of funding and the massive undertaking to inventory all discharges in ASBS statewide, staff has always been aware that the inventory of ASBS drainages would need to be refined. For example, in 2004 staff working with the Santa Monica BayKeepers re-surveyed and reviewed photos of drainages in portions of the Laguna Point to Latigo Point ASBS. In the Los Angeles County portion of that ASBS additional drainages were identified, increasing the number of drainages from 444 to 538. Additional drainages have also been identified in the James V. Fitzgerald (1) and San Diego-Scripps ASBS (1). Furthermore, staff is in the process of re-categorizing various drainages. For example weep holes in sea walls were categorized originally as small storm drains. New information from the dischargers, submitted in their application packages, will be valuable in staff's ongoing attempts to refine the inventory and better categorize outfalls.

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**TYPES OF DRAINAGES INTO ASBS**

*Higher Threat Discharges*

Many of the discharges identified by SCCWRP in ASBS are very likely low-volume, low-threat. Some examples include sea wall weep holes, access stairways from individual homes and certain trail bypasses at parks. While it is important to identify these locations, it is not practical or necessary from a water quality protection perspective to spend scarce state resources on such low threat situations.

Medium threat discharges include small storm drains and nonpoint sources from individual properties, that 1) have limited drainage areas, 2) are likely low volume based on their size, and 3) have low potential for discharging quantities of pollutants that could change water quality conditions in the ocean. While medium threat discharges may have low potential for immediately altering ASBS receiving water quality, staff is aware that pollutants may still enter the ocean from these sites if left uncontrolled. This may be particularly important where there are high densities of medium threat dischargers (e.g., in a residential area adjacent to a beach.) Staff believes that a practical approach to address medium threat dischargers (and certain low threat discharges as well) is through the municipalities with an emphasis on source controls.

Within each ASBS, staff has attempted to identify higher threat discharges that pose potential water quality alteration in the ASBS. Higher threat discharges include (but not necessarily be limited to) municipal, transportation (including stream crossings), construction and industrial storm water, marine operations and piers, agricultural discharges, contaminated surface seeps, sources of human sewage, fish cleaning stations, and marine laboratories and aquaria. Higher threat sources of wastes should be addressed immediately.

Table 1 below lists these higher threat discharges by ASBS number and Regional Water Board jurisdiction, and the responsible parties identified to date. This is a work in progress that staff will update as our assessment continues.

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**Table 1  
Staff Estimate of Higher Threat Waste Discharges Locations**

<b>ASBS No.</b>	<b>ASBS Name</b>	<b>Higher Threat Discharges</b>	<b>Responsible Parties</b>	<b>Region</b>
1.	Jughandle Cove	1 <sup>a</sup>	Calif. Department of Parks and Recreation	1
2.	Del Mar Landing	3 <sup>b</sup>	Sea Ranch Association	1
3.	Gerstle Cove	1	Calif. Department of Parks and Recreation	1
4.	Bodega	1	U.C. Davis Bodega Marine Laboratory	1
5.	Saunders Reef	6	Caltrans	1
6.	Trinidad Head	4	Humboldt State University Telonicher Marine Laboratory; Trinidad Rancheria; City of Trinidad	1
7.	King Range	12 <sup>c</sup>	Humboldt Bay Harbor Recreation & Conservation District; Humboldt County Department of Public Works	1
8.	Redwood National Park	38	Redwood National Park; Calif. Department of Parks and Recreation; Caltrans	1
9.	James V. Fitzgerald	19	Department of the Air Force; San Mateo County; Caltrans	2
10.	Farallon Islands	1 <sup>d</sup>	U.S. Fish and Wildlife Service – Farallon Islands National Wildlife Refuge	2
11.	Duxbury Reef	7	Marin County Department of Public Works; Point Reyes National Seashore	2
12.	Point Reyes Headlands	6	Point Reyes National Seashore	2
13.	Double Point		Point Reyes National Seashore	2
14.	Bird Rock	0	Point Reyes National Seashore	2
15.	Año Nuevo	5	Calif. Department of Parks and Recreation; Caltrans	3
16.	Point Lobos	6 <sup>e</sup>	Calif. Department of Parks and Recreation; Caltrans	3
17.	San Miguel, Santa Rosa, and Santa Cruz Islands	*	National Park Service	3
18.	Julia Pfeiffer Burns	22	Calif. Department of Parks and Recreation; Caltrans	3
19.	Pacific Grove	38	Monterey Bay Aquarium; City of Monterey; City of Pacific Grove Department of Public Works; Stanford University – Hopkins Marine Station	3
20.	Salmon Creek Coast	32	Caltrans	3
21.	San Nicolas Island	11	U.S. Department of the Navy	4

<sup>a</sup> Highway bridge span over Jughandle Creek

<sup>b</sup> Two of these discharges fall just outside of but immediately adjacent to the ASBS boundary

<sup>c</sup> Includes boat launch and shoreline parking/boat lot at Shelter Cove

<sup>d</sup> This former waste stream of raw sewage has been eliminated. USFWS installed an onsite wastewater treatment system.

<sup>e</sup> Includes Whalers Cove launch ramp.

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	and Begg Rock			
22.	Santa Barbara and Anacapa Islands	2 <sup>f</sup>	National Park Service	4
23.	San Clemente Island	14	U.S. Department of the Navy	4
24.	Laguna Point to Latigo Point	88	Los Angeles County Department of Public Works; City of Malibu Department of Public Works; Calif. Department of Parks and Recreation; Caltrans	4
25.	Northwest Santa Catalina Island	38	Santa Catalina Island Company; University of Southern California – Wrigley Marine Science Center	4
26.	Western Santa Catalina Island	3	Santa Catalina Island Company or Catalina Conservancy	4
27.	Farnsworth Bank	0	---	4
28.	Southeast Santa Catalina Island	2 <sup>g</sup>	Connolly-Pacific Company	4
29.	La Jolla	5	City of San Diego	9
30.	Heisler Park	3	City of Laguna Beach	9
31.	San Diego-Scripps	15	U.C. San Diego – Scripps Institute of Oceanography	9
32.	Robert E. Badham	3	City of Newport Beach	8
33.	Irvine Coast	9	The Irvine Company; Pelican Point Community Association; Calif. Department of Parks and Recreation; Caltrans	8, 9
34.	Carmel Bay	54	Carmel by the Sea Department of Public Works; Pebble Beach Company; Calif. Department of Parks and Recreation; Caltrans	3

*Streams and Estuaries*

Upstream discharges into natural streams and estuaries are subject to regulation by Regional Water Boards under the applicable Basin Plan through Waste Discharge Requirements (WDRs), waivers of WDRs, or prohibitions. Impaired natural streams and their estuaries have been or will be addressed through Total Maximum Daily Loads (TMDLs) developed by the Regional Water Boards. In regulating these upstream discharges, the Regional Water Boards must ensure that downstream water quality standards are met. Downstream standards include the 2001 Ocean Plan prohibition on discharges to ASBS, and the requirement that natural water quality be maintained in the ASBS.

<sup>f</sup> Pier facilities on each island.

<sup>g</sup> Shoreline quarry operations.



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*Municipal and Industrial Storm Drains*

SCCWRP identified 391 municipal or industrial storm drains that empty directly into ASBS statewide. None of these storm drains were covered under an exception from the Ocean Plan's ASBS discharge prohibition.

Storm water discharges from Phase I and Phase II Municipal Separate Storm Sewer Systems (MS4s), transportation sources, industrial facilities, and certain construction activities are considered point source discharges of wastes and are therefore issued NPDES permits. Various Phase I MS4 permittees have discharges directly into all mainland ASBS in coastal southern California (Regional Water Boards 4, 8, and 9), and in San Mateo County (Regional Water Board 2) as well. There are Phase II MS4 discharges into certain ASBS in Monterey County (Carmel and Pacific Grove, both in the Central Coast Regional Water Board), Marin County (Bollinas in the San Francisco Regional Water Board), and Humboldt County (Shelter Cove and Trinidad, also in the North Coast Regional Water Board). State Highway 1 and US Highway 101 are operated by Caltrans under a statewide NPDES storm water permit, and are located adjacent to and discharge into many of the ASBS. Statewide general permits also are currently in effect for industrial and construction related storm water discharges. The US Navy discharges under the statewide industrial storm water NPDES permit into ASBS at San Nicolas Island and San Clemente Island in Regional Water Board 4. The Connolly-Pacific Company (Santa Catalina Island in the Los Angeles Region) operates under the statewide industrial storm water NPDES permit.

There are also large private developments that discharge storm water into ASBS in violation of the prohibition. These include Sea Ranch (in Sonoma County, North Coast Regional Water Board), Pebble Beach Company (in Monterey County, Central Coast Regional Water Board), Irvine Company (in Orange County, Santa Ana Regional Water Board), and The Catalina Island Company and Catalina Island Conservancy (Los Angeles County, Los Angeles Regional Water Board).

Staff recommends that a Special Protections be adopted by the State Water Board to collectively address all storm water and nonpoint source waste discharges into ASBS. A first draft staff proposal for these Special Protections was released in June 2006.

*Nonpoint Sources*

SCCWRP identified a total of 224 nonpoint sources draining into (or immediately adjacent to) ASBS statewide. These are associated with a variety of activities, including agriculture, grazing, parking lots and roads, boat yards, boat launches and service facilities, boat moorings, piers, runoff from leach fields, potentially faulty septic systems and other activities. Additionally, 66 seeps were identified that were also potential non-point sources of pollutants.

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Also included here with non-point sources of pollution are urban/residential surface runoff from individual homes, and clusters of homes or structures (and associated landscaped areas) that are not subject to regulation under an MS4 NPDES Permit. Statewide, SCCWRP identified a total of 1012 of these “small” storm drains discharging to an ASBS which may not be covered under an NPDES permit.

As stated previously, staff recommends that Special Protections be adopted by the State Water Board to collectively address all storm water and nonpoint source waste discharges into ASBS. A first draft staff proposal for the Special Protections was released in June 2006.

Septic systems and releases from underground tanks that are completely buried above mean high tide and which do not result in a surface discharge may not be subject to the COP prohibition. However, if such discharges result in wastes entering an ASBS below mean lower low water, then the Regional Water Boards should provide appropriate conditions in WDRs, conduct enforcement, and (if necessary) issue orders requiring remediation in order to ensure that natural water quality and beneficial uses are protected.

*Waste Water Point Sources*

The SCCWRP survey was originally designed to identify storm water and non-point source discharges, which accounted for about 98% of the discharges identified. However, the survey identified several wastewater point source discharges to ASBS that either were not permitted or are permitted without an Ocean Plan exception. Thirty-one wastewater discharge points were identified by SCCWRP. Some facilities have multiple discharge points, and subsequently staff has identified 14 facilities that discharge wastewater to ASBS. Of these, only four were properly covered by permits and exceptions in 2003. These are at San Clemente Island (Los Angeles Regional Water Board), San Nicolas Island (Los Angeles Regional Water Board), Carmel Bay (Central Coast Regional Water Board), and Shelter Cove, King Range ASBS (North Coast Regional Water Board). The discharges at San Clemente Island and San Nicolas Island have been in violation of certain permit conditions or limitations.

Ten facilities have been identified that discharge wastewater to ASBS.

These facilities and their status is given below:

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<b>Facility</b>	<b>ASBS</b>	<b>Region Board</b>	<b>NPDES Permit</b>	<b>Status</b>
Requa Waste Water Plant, National Park Service	8	1	No, but facility has WDR	To be abandoned by 2007
HSU Telonicher Marine Laboratory	6	1	No	Request for Exception
Trinidad Rancheria Public Pier Fish Cleaning Station	6	1	No	Notified to cease but still discharging
Shelter Cove Fish Cleaning Station	7	1	No	Notified of prohibition, no response yet
UC Davis Bodega Marine Lab	4	1	Yes	Request and Application for Exception Submitted
US Fish and Wildlife sewage outfall at SE Farallon Island	10	2	No, but longer applicable	Discharge eliminated 2006
Monterey Bay Aquarium	19	3	No	Request for Exception, some data submitted informally
Hopkins Marine Station laboratory	19	3	No	Request for Exception
USC Wrigley Marine Science Center	25	4	Yes	Exception adopted, permit renewal in progress
UC Scripps Institution of Oceanography	31	9	Yes	Exception adopted, permit renewal in progress

There are six marine laboratories/aquariums. Staff has recommended that marine laboratories and aquariums receive individual exceptions with Special Protections for ASBS. Ancillary storm water discharges for these facilities would also be addressed through that individual exception process. Two such

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exceptions have already been adopted for Scripps Institution of Oceanography and the Wrigley Marine Science Center (as described in the next section). Requests for issuance of individual Special ASBS Protections are in various stages of being requested and processed.

In the North Coast region, the Bodega Marine Laboratory has submitted an extensive application that is being reviewed by staff. Also on the north coast, Humboldt State University has requested an exception for their Telonicher Marine Laboratory, and an application is due by August 31, 2006.

In the Central Coast region, the Hopkins Marine Station and the Monterey Bay Aquarium have requested exceptions and applications are expected by August 31, 2006. These two facilities are adjacent and serviced by the same seawater intake. Staff intends to develop Special Protections for the Pacific Grove through a joint exception for these two facilities.

There are fish cleaning stations at Shelter Cove and at Trinidad Pier. It is staff's recommendation that waste discharges from fish cleaning stations be eliminated. Staff recommends that all fish wastes be retained and hauled off-site for legal disposal or use, and all grey water be disposed to land under a WDR issued by the Regional Board.

SCCWRP identified two federal facilities, the National Park Service at Requa and the US Fish and Wildlife Service at SE Farallon Island, that respectively discharged treated and untreated human waste. The US Fish and Wildlife Service has verbally informed State Water Board staff that it has eliminated the surface discharge of sewage to the ocean at Southeast Farallon Island. Staff is also working with National Park Service and the US EPA to eliminate the Requa outfall.

The SCCWRP survey only included discharges within 100 meters of ASBS boundaries, thus, two NPDES permitted discharges for treated wastewater located in the Highlands area south of Carmel were not included. These were in close proximity to, but outside, the Point Lobos ASBS in Regional Water Board 3. These discharges at times have been in violation of their permits, and may have impacted water quality within the Point Lobos ASBS. As of 2006, both Highlands discharges have been eliminated. All sewage that was previously treated and discharged locally now goes to the Carmel Area Waste Water District treatment plant.

**CURRENT OCEAN PLAN EXCEPTIONS**

*Pre-1991 Exceptions*

As stated previously, four exceptions for waste discharges to ASBS were issued prior to 1991. These were for the US Navy wastewater treatment plant at San

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Clemente Island ASBS (Los Angeles Region), the US Navy desalination plant brine disposal at San Nicolas Island and Begg Rock ASBS (Los Angeles Region), the Carmel Area Waste Water District outfall into Carmel Bay ASBS (Central Coast Region), and the Humboldt County Resort Improvement District No.1 waste water treatment plant at Shelter Cove in the King Range ASBS (North Coast Region). The State Water Board has not consistently reviewed these four older exceptions since being issued. Staff expects to review these exceptions during the next triennial review, per the requirements of the 2005 COP.

*Scripps Institution of Oceanography Exception*

The University of California San Diego Scripps Institution of Oceanography (SIO) discharges into the San Diego – Scripps ASBS. SIO is a major marine scientific institution, providing education to oceanography students, and opportunities and facilities for cutting edge oceanographic research, including research performed by or for government agencies. Much of the research and education performed at SIO utilizes and is dependent on the flow-through seawater system. In addition, SIO's Stephen Birch Aquarium (Birch Aquarium) is an important venue for public education regarding marine biology and conservation. The Birch Aquarium is dependent on SIO's flow-through seawater system. While SIO's seawater system does discharge waste seawater into the ASBS, the quality of that discharge may be controlled through the application of specific controls and management practices. It was in the best public interest, especially with regard to marine environmental conservation and protection, to allow UCSD/SIO to continue to discharge but within the confines of specific limiting conditions.

The State Water Board adopted an exception to the ASBS discharge prohibition (Resolution 2004-0052), provided that the Regional Water Board's waste discharge requirements included 19 conditions. In summary, these 19 conditions required, among other things, that:

- copper and formaldehyde be eliminated from the waste seawater discharge;
- the waste seawater meet Ocean Plan effluent limits;
- the introduction of exotic species be prevented;
- dry weather flows from storm drains be eliminated;
- wet weather flows from storm drains be controlled to protect natural water quality in the ASBS;
- extensive monitoring is performed to assure that beneficial uses are protected; and
- an expert committee will review the results to determine if SIO is not altering natural water quality in the ASBS (see the section of this report on the Natural Water Quality Committee).

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The San Diego Regional Board renewed the NPDES permit in 2005 based on the conditions in State Board resolution 2004-0052.

*USC Wrigley Marine Science Institute Exception*

The USC Wrigley Marine Science Center (WMSC) operates a marine laboratory that provides important research and educational services. The Wrigley Marine Science Center sea water system discharges 180,000 gallons per day into Big Fisherman Cove. During rain events storm water is also discharged to the Cove. Originally at least part of the runoff and waste seawater were co-mingled, however, since becoming aware of the ASBS discharge issues, USC segregated its waste streams. Most of the runoff from the laboratory area proper is now treated and infiltrated in vegetated swales. The remaining storm water flows drain from the canyon area upstream of the laboratory and dormitory buildings. Direct discharges from a dive locker area have been eliminated. The laboratory has a sewage treatment plant that discharges treated, chlorinated wastewater to land; the wash down water from the dive locker area was diverted to that treatment plant.

If an exception were not granted, the Wrigley Marine Science Center would have been forced to shut down its seawater system. Being on a remote island location, there are no reasonable alternative disposal options. Diverting flows would involve their discharge into another, more pristine portion of a Marine Life Refuge. In short, it was in the public interest to allow the Wrigley Marine Science Center to continue the drainage of its seawater and storm drain systems into Big Fisherman Cove under strict mitigating conditions.

The State Board, in Resolution 2006-0013, adopted Special Protections for the Northwest Santa Catalina Island ASBS. Resolution 2006-0013 included 20 special conditions designed: to protect beneficial uses in the ASBS, and to specify minimum monitoring requirements necessary to determine if beneficial uses are being protected. These twenty special conditions were very similar to SIO's, but included additional requirements for a waterfront management plan and also included a specific reference site rather than a committee to determine natural water quality.

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**LETTERS TO DISCHARGERS AND RESPONSES**

Since completion of the SCCWRP Report, State Water Board staff has been working on addressing the prohibited waste discharges with a strategy of addressing marine laboratories, aquariums and military facilities individually, and storm water and other non-point sources collectively.

In October 2004, the State Water Board sent letters notifying other higher threat ASBS dischargers that they must cease discharging or apply for an Ocean Plan exception. These letters not only brought attention to identifying the discharges, but also served to outline steps needed to comply with the Ocean Plan. Dischargers, who wish to comply, were then provided with the steps necessary to move forward with the exception process. These steps included detailed baseline monitoring data. State Water Board staff has received responses from most of these dischargers indicating their interest in complying. Another round of letters was sent in August 2005, to the respondents, describing the data that must be submitted to proceed with the exception process. These letters outlined the steps for compliance with the Ocean Plan, which included baseline water quality monitoring and marine life data. The deadline for that data to be submitted was May 31, 2006.

For these storm water and other non-point sources, twenty-five letters were sent to the responsible parties identified within each ASBS. Twenty-one who responded with the intention to apply for an Ocean Plan exception, seventeen of those submitted exception application packages.

Table 2 provides a summary of responsible parties identified who received the first letters notifying them of the discharge prohibition, their response, and those parties who submitted exception applications by the May 31, 2006 deadline. Staff is still in the process of reviewing the May 31, 2006 submittals and did not include that information, including water quality monitoring data, in this report.

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**Table 2  
Higher Threat ASBS Dischargers, Ocean Plan Exception Application Packages Submitted**

<b>ASBS No.</b>	<b>ASBS Name</b>	<b>Responsible Party</b>	<b>Notification Letter from State Water Board</b>	<b>Request for Exception</b>	<b>Application package submitted</b>	<b>Request for Extension to May 31, 2006 Deadline</b>
2	Del Mar Landing	Sea Ranch Association	X	X	X	
6	Trinidad Head	Trinidad Rancheria	X	X	X	X
6	Trinidad Head	Trinidad, City of	X	X	X	X
7	King Range	Humboldt Bay Harbor - Recreation and Conservation District	X			
7	King Range	Humboldt County - Department of Public Works	X	X		X
8	Redwoods National Park	Redwood National Park	X	X	X	
9	James V. Fitzgerald	Department of the Air Force	X	X	X	
9	James V. Fitzgerald	San Mateo, County of	X	X		
11	Duxbury Reef	Marin County - Department of Public Works	X	X	X	
11 and 12	Duxbury Reef and Point Reyes Headlands	Point Reyes National Seashore	X	X	X	
19	Pacific Grove	Monterey, City of	X			
19	Pacific Grove	Pacific Grove, City of - Public Works Department	X	X	X	
24	Laguna Point to Latigo Point	Los Angeles County - Department of Public Works	X	X	X	
24	Laguna Point to Latigo Point	Malibu, City of	X	X		X
25 and 28	Northwest Santa Catalina Island and Southeast Santa Catalina	Santa Catalina Island Company	X	X	X	



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<b>ASBS No.</b>	<b>ASBS Name</b>	<b>Responsible Party</b>	<b>Notification Letter from State Water Board</b>	<b>Request for Exception</b>	<b>Application package submitted</b>	<b>Request for Extension to May 31, 2006 Deadline</b>
28	Southeast Santa Catalina Island	Connolly-Pacific Company	X	X	X	
29	La Jolla	San Diego, City of	X	X	X	
30	Heisler Park	Laguna Beach, City of	X	X	X	
32	Robert E. Badham	Newport Beach, City of	X	X	X	
33	Irvine Coast	Irvine Company	X			
33	Irvine Coast	Pelican Point Community Association	X	X	X	
34	Carmel Bay	Carmel by the Sea - Public Works	X			
34	Carmel Bay	Pebble Beach Company	X	X		
	multiple	Department of Parks and Recreation	X	X	X	
	multiple	Department of Transportation	X	X	X	
<b>Total</b>			<b>25</b>	<b>21</b>	<b>17</b>	<b>4</b>

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**STATE WATER BOARD PUBLIC WORKSHOPS**

In 2005, the State Water Board held public workshops to present the requirements for compliance with the Ocean Plan for ASBS. A total of three workshops were held throughout the State. The first was held on January 13, 2005 in La Jolla. The format of this workshop was informational and was composed of presentations to acquaint the attendees with the overall aspects of the COP ASBS waste discharge prohibitions and procedures for compliance. An interactive question and answer session was held in the afternoon.

The next two workshops were held on August 31, 2005 in Monterey, and on October 24, 2005 in San Pedro. These workshops provided information to stakeholders regarding exceptions to the State Water Board for discharges into ASBS, and potential funding sources for planning and implementation of measures to control waste discharges into ASBS. However, the format was modified to concentrate on stakeholder input. These workshops were initiated with a staff report and followed by many presentations made by stakeholders. Staff considered the valuable stakeholder input at these events in the preparation of the draft.

In June 2006 the State Water Board staff released its initial draft Special Protections to address storm water and nonpoint source discharges into ASBS. It is apparent that storm water runoff is a part of the hydrologic cycle, but it also contains anthropogenic wastes, and is therefore prohibited under the Ocean Plan. The draft Special Protections are intended to require the removal of waste materials from runoff to the extent that: 1) natural water quality in the ASBS is not altered, and 2) marine life in ASBS is protected. The Special Protections document was intended to provide a framework for discussion at scoping meetings to be held in August 2006. After release of the document, meetings were held separately with Caltrans, environmental groups, and storm water agency representatives to obtain initial feedback. Afterward, public scoping meetings were planned for three locations: Santa Rosa on August 1, Los Angeles on August 8, and Monterey on August 15. Comments received at these scoping meetings and in writing will be used to consider modifications to the staff proposal.

**EFFORTS TO CHARACTERIZE WATER QUALITY**

*Water Quality*

State Water Board staff is in the process of reviewing the water quality data accumulated from ASBS locations during the last several years. That data has not been fully assessed and therefore is not being comprehensively presented in this document. However, some examples of the available data are being presented. While limited to only example locations, the following data are presented to give an initial indication of the constituent characteristics in an undeveloped stream, an impacted stream, certain storm drains, and other point source discharges.

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It is important to identify and monitor reference streams and adjacent ocean areas in order to assist staff in characterizing natural water quality. One potential reference stream that drains to the Laguna Point to Latigo Point ASBS is Arroyo Sequit. This creek drains through Leo Carrillo State Park and Beach at the bottom of an undeveloped watershed located on the western edge of Los Angeles County. Upstream of Pacific Coast Highway this stream is only minimally impacted by the park campground. The following table is based on a single sample from March 2004, but indicates high quality water relative to the Ocean Plan objectives and the California Toxics Rule.

**Table 3 - Arroyo Sequit Water Quality Data**

Constituent	Result (µg/l)	Constituent	Result (µg/l)	Constituent	Result (µg/l)
Sb	0.17	Pb	<0.1	Co	0.12
As	1.39	Hg	<0.05	Fe	313
Be	ND (<0.1)	Ni	1.86	Mn	2.6
Cd	ND (<0.1)	Se	3.26	Mo	5
Cr	1.11	Ag	ND (<0.1)	Sr	337
Cu	1.46	Tl	ND (<0.1)	Tn	ND (<0.1)
Pb	ND (<0.1)	Zn	2.15	Ti	2.97
Hg	ND (<0.05)	Al	51.9	V	15.40
Ni	1.86	Ba	14.10		

For comparison, Sunshine Valley Creek is an impacted stream that drains a rural residential watershed in San Mateo County, which includes Highway One, and some businesses and agricultural land use. The data on the following table was from a single sample collected in April 2004 at the point of drainage into the James Fitzgerald Reserve.

**Table 4 – Sunshine Valley Creek Data**

Constituent	Result
OP Pesticides	ND (limits vary 5-10 ng/ l)
COP PAH	133 ng/l
Se	2.7 µg/l
Ni	6.89 µg/l
Hg	0.005 µg/l
Pb	2.3 µg/l
Cd	0.15 µg/l
Cr	4.47 µg/l
Cu	4.58 µg/l

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Results of all constituents couldn't be compared since a different suite of constituents were analyzed for these reference and impacted sites. However, for those constituents analyzed for both sites, the reference sites results are lower than the impacted site, e.g., lead and cadmium are non-detect in the reference stream and a concentrations of 2.3 and 0.15 µg/l were reported respectively for the impacted stream. Also, chromium, and copper are present in the impacted stream at concentrations 4 times higher than the reference stream. It should also be noted that PAH, while not measured at Arroyo Sequit, exceeded the Ocean Plan Table B objective (of 0.0088 µg/l, 30-day Average) at Sunshine Valley Creek.

One important note is that the geology of different parts of our coast varies considerably, which can influence concentrations of certain constituents in reference and impacted streams. Therefore to be more meaningful reference creek must be selected for each region, if possible.

As an example of storm drain dry weather flows in an urban setting, metals results for a single grab sample collected by staff in March 2004 at the Avenida de la Playa storm drain into the La Jolla ASBS is presented below.

**Table 5 – Avenida de la Playa storm drain & Ocean Plan Metals in µg/L**

metal	Ave De La Playa	COP median	COP 30 day av.	COP daily max	COP inst. max
Antimony	6.38		1,200		
Arsenic	4.24	8		32	80
Beryllium	0.01		0.033		
Cadmium	2.01	1		4	10
Chromium*	3.42	2	190,000	8	20
Copper	81.2	3		12	30
Lead	14.4	2		8	20
Mercury	0.16	0.04		0.16	0.4
Nickel	49.8	5		20	50
Silver	0.15	0.7		2.8	7
Thallium	ND		2		
Zinc	11.3	20		80	200

\*Chromium, results were for total Cr. The Ocean Plan six-month median, daily max, and instantaneous max are for hexavalent Cr (marine aquatic life objectives), and the 30-day average is for trivalent Cr (human health objectives). The Ocean Plan allows the objectives to be met using total Cr.

Cadmium and Chromium were above the six-month median. Copper exceeded the instantaneous maximum. Lead was higher than the daily maximum. The mercury concentration equaled the daily maximum, but mercury sampling is sometimes problematic and subject to contamination. Nickel was above the daily maximum and approaching the instantaneous maximum.

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An example of direct municipal storm water (wet weather) discharges is the runoff in the vicinity of the Pacific Grove ASBS, which was sampled by the Monterey Bay National Marine Sanctuary Volunteer Program during their first flush monitoring effort. During the first flush event monitoring in 2004, the wet weather runoff from Monterey and Lovers Point exceeded the Central Coast Ambient Monitoring Program (CCAMP) action level of 2.25 mg/l for nitrate established by Central Coast Regional Water Board. The concentration of nitrate in the samples was 3 mg/l. Nine sampling sites in Monterey and Pacific Grove exceeded the CCAMP action level of 400 MPN/100 ml for *E. coli*. The California Ocean Plan 30-day Geometric Mean for fecal coliform is 200 per 100 ml for recreational water. Most of the samples exceeded the Central Coast Basin Plan Objective and the Ocean Plan instantaneous maximum of 200 µg/l for zinc and 30 µg/l of copper. The concentration of zinc in samples ranged from 120 to 678 µg/l and copper concentrations ranged from 15 to 270 µg/l.

Monitoring data collected by the US Navy in 2001-2002 at San Nicolas Island for outfalls 12, 18, 19, 20 and 23 were reviewed in regard to direct industrial storm water discharges. At outfalls 12, 18, and 23 respectively, suspended solids were reported at concentrations of 220, 130 and 140 ppm, and these values all exceeded the Ocean Plan Table A maximum effluent limit of concentration 60 ppm. At outfall 18, zinc was reported at a concentration of 0.18 ppm, which is higher than the Ocean Plan Table B instantaneous maximum of 0.2 mg/l. At outfalls 18 and 19, copper was reported at a concentration of 0.19 ppm and 0.12 ppm respectively, both of which are higher than the Ocean Plan Table B instantaneous maximum of 0.03 mg/l.

Staff is aware that all marine laboratory and aquarium discharges are unique because of their locations and facilities. A generalization may be made that all marine laboratories and aquariums have both waste seawater and storm water runoff, but even the relative contributions of these are different at different facilities. Special ASBS Protections have been adopted for two marine laboratories, the University of Southern California's Wrigley Marine Science Center (WMSC) and Scripps Institution of Oceanography (SIO). State Water Board and Regional Water Board staff is currently developing Special ASBS Protections through individual exceptions for the remaining marine laboratories/aquariums.

The University of Southern California's Wrigley Marine Science Center (WMSC) serves as an example of effluent and receiving water quality at a marine laboratory. WMSC has flowing laboratory and small aquarium facilities, and also has storm water runoff. The following information was taken from the pre-exception monitoring described in the CEQA Initial Study in support of the Feb. 2006 adoption of special protections for the Northwest Santa Catalina Island ASBS in an individual exception for that facility.

Chronic toxicity test results on waste seawater and corresponding receiving water samples for the topsmelt, *Atherinops affinis*, from February and October 2004, resulted in a No Observed Effects Concentration of 100% (i.e., "zero toxicity"). Samples were also collected during dry weather (October 2004) and wet weather (November 2004) to analyze the waste seawater effluent for COP Table B metals (for marine aquatic life).

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The waste seawater sample results were within California Ocean Plan water quality objectives for metals.

The following table provides pre-exception analytical results for Table B metals (marine aquatic life) for storm water effluent, receiving water (Big Fisherman Cove) and reference (intake) samples collected in November 2004.

**Table 6 - WMSC, Storm Water Effluents, Reference and Receiving Waters.**

Analyte µg/L	COP 6 month median	COP inst. max	Intake sea- water	Big Fisher -man Cove	Runoff from Lab	Main Storm Drain	Dive Locker Runoff	Detection limit
Arsenic	8	80	0.998	0.949	4.53	1.31	15.1	0.015
Cadmium	1	10	0.039	0.038	0.23	0.216	0.382	0.01
Copper	3	30	0.267	1.13	34.6	11.3	64.9	0.01
Lead	2	20	0.05	0.044	3.34	4.24	14.9	0.01
Nickel	5	50	0.019	0.275	11.4	11.8	41.8	0.01
Selenium	15	150	ND	ND	0.073	ND	ND	0.015
Silver	0.7	7	ND	ND	ND	0.287	0.18	0.01
Zinc	20	200	1.32	2.5	46.8	166.0	387.0	0.01

Non-detected constituents are listed as ND.

The lab storm water drainage exceeds California Ocean Plan six-month median water quality objectives for copper, lead, nickel, and zinc, and exceeds the instantaneous maximum water quality objective for copper as well. In the loading dock area of the main lab building (which is on the west side), there is a vent for the seawater drainage system from the lab building. At the time of the sampling in November 2004 this vent also collected runoff from parts of the loading dock, and the two waste streams co-mingled during storm events. WMSC has now segregated the two streams. The main storm drain exceeds the California Ocean Plan six month median water quality objectives for copper, lead, nickel, and zinc. The drainage area for this discharge includes a combination of natural watershed, abandoned silver mines from the nineteenth century, a storage area where old lab and marine equipment and construction wastes have been stored, and a long stretch of 60" pipe (possibly in poor repair) that carries runoff below the laboratory and other facilities. Results for the dive locker storm runoff exceed California Ocean Plan six month median water quality

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objectives for arsenic, copper, lead, nickel and zinc, and exceed the instantaneous maximum water quality objective for copper and zinc as well.

The results of the intake seawater (reference) and the receiving water in Big Fisherman Cove were below Ocean Plan Table C background concentrations for arsenic, copper, silver, and zinc. However, the receiving water was noticeably elevated above the reference sample for copper, nickel, and zinc. In December 2004, additional testing to screen for PAHs was performed at the same three runoff sampling locations. Water samples were collected from the main storm water drainage, the lab storm water drainage and the dive locker storm water drainage sites. PAHs were not detected in any of these this samples at that time.

As another example of marine laboratory/aquarium discharges, SIO has been operating and monitoring under the strict conditions in their exception and NPDES permit since 2005. Wet and dry weather monitoring results for 2005, including both waste seawater and runoff, are being reviewed. While staff is working with the Natural Water Quality Committee on these results, an initial assessment indicates that copper PAHs, oil and grease, suspended solids, settleable solids, turbidity, residual chlorine, TCDD (dioxin), indicator bacteria, and toxicity are among the constituents of concern.

Chlorine was high in some samples but there may be issues with regard to interferences or the analytical methods used. Dioxin appears at higher than COP objective levels, however a question has been raised regarding its potentially ubiquitous nature. Some samples for both wet and dry weather were also toxic (i.e., critical life stage toxicity) to giant kelp, *Macrocystis pyrifera*.

For one example of water quality information derived from a wastewater treatment plant discharge into an ASBS, please see Appendix E, which is a State Water Board staff summary of the findings of a report entitled *Evaluation of the Effects of Carmel Area Wastewater District Discharge on Carmel Bay*, prepared by EOA, Inc. for the Carmel Area Wastewater District (CAWD), October 15, 2003. Based on the limitations of the data presented in EOA's report, it appeared that there were no major measurable impacts to natural water quality in the Carmel Bay State Water Quality Protection Area (SWQPA) that can be absolutely attributed to the CAWD discharge. There were, however, some instances when pollutants were discharged, exceedances occurred, and alterations of natural water quality were noted within the Carmel Bay SWQPA.

*Beach Postings*

Based on a review of the available data, there were 1,749 recreational beach postings in or immediately adjacent to ASBS during the period 1999 to 2005. Beach postings at ASBS occurred in San Mateo County (787), Los Angeles County (376), Orange County (274), San Diego County (133), Monterey County (99), Ventura County (76), and Sonoma County (4). There were also a total of 150 closures recorded at ASBS beaches statewide during the same period. Appendix C provides summaries on closures for specific beach locations.

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*Sewage Spills*

Page 11, Section III D of the State Water Board's Water Quality Enforcement Policy states that "(a) sewage or treated wastewater spills that cause a public health threat and/or are greater than 5000 gallons" and "(d) un-permitted discharges of pollutants in Areas of Special Biological Significance" are important factors for determining priority violations. Staff is aware that sewage spills have occurred into or adjacent to ASBS. Notably, cities adjacent to or near ASBS, such as Avalon on Santa Catalina Island, Laguna Beach, Pacific Grove, and San Diego (La Jolla) had relatively high occurrences of spills during the late 1990's and the early 2000's. Funding was secured from the US EPA and the State Water Board to correct many of the problems, including aging or inadequate infrastructure, to address sewage spills and dry weather runoff.

Still, sewage spills have continued at some locations. For example, there has been significant contamination from sewage spills during storm events at the James V. Fitzgerald ASBS. Two sewage spills occurred on December 24 and 29, 2003 into the James Fitzgerald Marine Reserve ASBS (approximately 10,000 and 80,000 gallons, respectively). Apparently these spills occurred from or near the Montara pump station. Heavy storms and rainfall in 2004 again resulted in 3 sewage spills in the month of December. The largest, a 105,400 gallon wastewater overflow, closed beaches from the northern border to the southern border at Pillar Point, for several weeks.

The Montara Water and Sanitary District (MWSD), located on the northern border of the James V. Fitzgerald ASBS, is a special district that provides sewer and water services to the unincorporated areas of Montara and Moss Beach in San Mateo County. There are approximately 1,640 service connections serving a population of 5,412 (DHS January 2003). In order to perform regional functions for the conveyance, treatment, and disposal of wastewater, the City of Half Moon Bay, Granada Sanitary District, and Montara Sanitary District, in a Joint Exercise of Powers Agreement, formed Sewer Authority Mid-Coastside (SAM). The SAM treatment plant, located in Half Moon Bay, provides secondary treatment for domestic and industrial wastewater. The plant currently discharges an annual average flow of 2.2 million gallons per day directly into the Monterey Bay National Marine Sanctuary, about 1900 feet offshore (NPDES No CA0038598). In addition to the treatment plant, SAM owns and operates a system of three pump stations, which convey wastewater from Montara Sanitary District and Granada Sanitary District to the treatment plant. These pump stations overflow during major storm events, spilling waste directly into the ASBS (CDHS 2003).

*State Mussel Watch Program Results for ASBS*

For 26 years (1977-2003) the California State Mussel Watch Program (SMWP) collected transplanted and resident mussels and clams from the waters of California's bays, harbors and estuaries. Samples collected in the SMWP were analyzed for trace elements and organic chemicals with a uniform statewide approach for evaluation of the occurrence of toxic substances in marine waters. Data from the sampling stations that



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are in the ASBS were compared to the elevated data levels (EDL). The EDL is calculated by ranking all of the results for a species and a given chemical using a set of data. A cumulative distribution is constructed and percentiles are calculated. The 85<sup>th</sup> percentile (EDL 85) may be used as an indication that a chemical is elevated and the 95<sup>th</sup> percentile (EDL 95) may be used as an indication that the data is highly elevated. EDLs are not directly related to potentially adverse human or animal health effects, nor are they related to water quality standards. These EDLs are instead used only to compare findings in particular area with larger database on findings from all over the state.

The sampling sites that were monitored as part of this program included some that were either in or very near ASBS. These sites were at Bodega Head, Trinidad Head, Fitzgerald, Point Reyes, Ano Nuevo Island, Monterey Bay, Pacific Grove, Anacapa Island, Catalina Island, La Jolla, Corona Del Mar and Carmel.

The wet weight results for resident California Mussels (*Mytilus californianus*) for these sites were compared to statewide EDL 85 and EDL 95 using 1977 to 1997 data, although each site often did not have annual tests performed. It should be noted that high lead results from the mid 1970s were often attributable, at least in part, to the use of leaded gasoline and the aerial fallout of lead following combustion. Leaded gasoline is of course no longer used. Similar technological/cultural changes have occurred (e.g., banning DDT) and will continue (e.g., new pesticides introduced, such as pyrethroids) to occur over time.

At the Bodega Head ASBS, which is usually considered one of the cleanest sites in California marine waters, results for seven constituents (cadmium, mercury, copper, selenium, oxychlordane, gamma chlordane and phenol) at times indicated elevated levels above the EDL 85. Of the 36 metals analyses performed, 16 results for cadmium and two results for copper, nickel, mercury and selenium were above the EDL 95 during the period 1986 to 1999. Of the 13 organic chemistry analyses performed, six results for oxychlordane and chlorpyrifos, two results for gamma chlordane, one result each for dacthal and DDT were above EDL 95 from 1986 to 1988.

At the Trinidad Head ASBS, results for ten constituents (aluminum, chromium, copper, mercury, manganese, nickel, selenium, oxychlordane, cis-chlordane and chlorpyrifos) at times indicated elevated levels above the EDL 85. Of the 23 analyses, eight results for aluminum, five results for chromium, four results for copper, one result for mercury, 14 results for manganese, and two results for selenium were above the EDL 95 for during the period 1977 to 1999. Of the 8 organic chemistry analyses performed, one result for gamma chlordane, six results for oxychlordane, and seven results for chlorpyrifos were above the EDL 95 from 1982 to 1999.

At the James Fitzgerald ASBS, results for eight constituents (aluminum, chromium, nickel, oxychlordane, p,p'DDE, PCB 1248, PCB 1254, and total DDT) at times indicated elevated levels above the EDL 85. Of the 8 metals analyses, three results for aluminum, one result for chromium and two results for nickel were above their respective EDL 95

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during 1977 to 1999. Of the 9 organic chemistry analyses, two results for oxychlorane, three results for chlorpyrifos, one result for PCB 1248, one result for p, p'DDE and one result for total DDT were above the EDL 95.

At Point Reyes ASBS, only results for two constituents, oxychlorane (one out of one test) and o,p'DDD (one out of five tests) indicated elevated levels above the EDL 95.

At Ano Nuevo ASBS, eight constituents (mercury, p,p'DDD, p,p'DDE, o,p'DDT, p,p'DDT, total DDT, PCB 1254, and dieldrin) at times indicated elevated levels for the EDL 85. Six out of six results for mercury were above EDL 95 from 1977 to 1982. Out of four organic analyses performed, four results for p,p'DDE, four results for total DDT, and three results for PCB 1254 were above the EDL 95.

At the Pacific Grove ASBS, 14 constituents (cadmium, copper, mercury, lead, zinc, trans-nonachlor, oxychlorane, chlorpyrifos, dactal, p, p'DDD, o, p'DDT, endosulfan, alpha heptachlor and pentachlorophenol) at times indicated elevated levels for the EDL 85. Of the 26 metals analyses, the highest frequency for exceeding the EDL 95 was for lead (nine results) and zinc (nine results).

At Santa Catalina Island (the general location for four ASBS), only four constituents (aluminum, manganese, lead and zinc) at times indicated elevated levels. Lead was the constituent with consistent elevated levels (ten out of ten tests) exceeded the EDL 85.

At the San Diego Scripps and La Jolla ASBS, only four constituents (silver, lead, zinc, and o,p'DDT) at times indicated elevated levels. Silver (six out of eight tests) and lead (five out of eight tests) most frequently exceeded the EDL 85.

At Corona Del Mar (Robert E. Badham ASBS), ten constituents (silver, copper, manganese, mercury, lead, zinc, dactal, p,p'DDT, PCB 1254, and p,p'DDD) at times indicated elevated levels. Silver (seven out of seven tests), lead (six out of seven tests), PCBs (five out of six tests) and p,p'DDT (six out of seven tests) most frequently exceeded the EDL 85.

At the Carmel Bay ASBS, results for seven constituents (cadmium, nickel, selenium, dactal, p,p'DDT, total endosulfan and heptachlor) at times indicated elevated levels above the EDL 85. Of these cadmium (16 out of 32 tests) most frequently exceeded the EDL 85.

*Ocean Water Contaminants and Sea Otter Mortality*

The sea otter (*Enhydra lutris*) is one of the first animals ever protected by federal law, beginning with the Fur Seal Act of 1912. The southern, or California, sea otter (*Enhydra lutris nereis*) is listed as "depleted" under the federal marine Mammal Protection Act and as "threatened" under the Endangered Species Act. The sea otter is the smallest marine mammal in North America, yet it has a significant influence on the nearshore ecosystem. Sea otters are found along rocky, sandy and mixed shores and prefer

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habitat with kelp. They generally remain close to shore where the water depth is 20 meters (65 feet) or less. Sea otters in California eat a variety of marine invertebrates including crabs, mussels, clams, abalones and sea stars. Sea otters influence the marine environment by reducing prey populations that feed on kelp (US. Fish and Wildlife Service, 1996). Sea otters are known to inhabit several ASBS on the central coast, including the Salmon Creek Coast, Julia Pfeiffer Burns, Point Lobos, Carmel Bay, Pacific Grove, Ano Nuevo, and possibly James V. Fitzgerald, and at San Nicolas Island in southern California.

Sea otters are very susceptible to marine pollutants, which may be directly toxic when ingested, or may alter their fur's insulating properties upon external contact (as in the case of petroleum hydrocarbons). They eat approximately 25% of their body weight per day, and their diet is mainly composed of shellfish and other invertebrates. Filter feeding shellfish may serve as an intermediate reservoir for some of the pathogens that infect sea otters. Sea otters may also concentrate chemical contaminants found in their prey.

There are several known causes of mortality in the southern sea otters. A 1992-1995 study of approximately 50 sea otters by the National Wildlife Health Center (NWHC) showed that various parasitic, fungal and bacterial diseases caused the death of approximately 38.5% of the sea otters examined.

A US Geological Survey (USGS) study of California sea otters during the spring of 1999 indicates that the population declined 1.14 percent during the year following the 1998 spring survey. This study shows a steady decrease from a high of 2,377 sea otters counted in 1995 to 2,114 in 1999. Disease, contaminants, starvation and other causes may be contributing to the sea otter decline; Disease is responsible for roughly 40 percent of the deaths, a rate that is relatively high when compared to disease-caused deaths in other wild predators (USGS, 1999). The most frequent infectious disease identified has been toxoplasmosis. *Toxoplasma gondii*, a protozoan disease spread by cat feces, causes inflammation of the brain. Other disease-causing agents have also been identified. The effects of chemical pollutants and undernutrition are also implicated (USGS, 2005). The sources of *T. gondii* are terrestrial and may be linked to waste water treatment plant discharges and/or storm water discharges.

*Ecological Impacts of Roadway Sediment Clearing Operations*

In the Central Coast Region (RWQCB 3), a cove in the Julia Pfeiffer Burns Underwater Park ASBS/SWQPA has been completely filled with sediment. This resulted from a landslide in 1983 onto Highway 1 and was possibly accelerated by associated Caltrans road clearance work.

Manipulated and natural landslides are common disturbances along this slide prone coastal area. Sediment deposition due to anthropogenic and natural discharges affect marine intertidal and subtidal communities by direct burial, scouring by coarse

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sediments, and deposition of fine sediments. Sediment deposition also may increase turbidity in marine waters. The McWay landslide, caused by heavy winter rains in 1982-1983, caused the closure of Highway 1 for almost two years. Roadway clearing operations removed over three million cubic meters of sediment and debris and into McWay Cove. This discharge completely filled McWay Cove. The waterfall on McWay Creek once flowed into a cove populated by diverse intertidal and subtidal marine life. Now it is flowing onto a sandy beach. Sediment erosion and downstream deposition into the ASBS appears to be a continuing concern (Oliver 1999).

Since 1986, the Benthic Lab at Moss Landing Marine Laboratory has investigated the movement of this sediment into the ocean and its resulting impacts on the nearshore marine communities. Surveys were performed to assess biological and physical conditions in the slide, affected areas, which include terrestrial, intertidal and subtidal zones. These assessments continue annually and biological data are essential in developing environmentally sound highway construction and maintenance strategies for Caltrans. In addition, Caltrans has a sediment management plan that it now uses to avoid impacts as new landslide challenges emerge.

*Recreational Boating and Marina Operations*

Copper antifouling boat paints are known to be a significant source of copper. These paints are designed to leach copper into the water, mostly as cuprous oxide, to reduce the fouling on the boats' bottoms with barnacles and algae. Copper is used as a biocide in antifouling paints because of its known toxicity to marine aquatic life. Even at relatively low concentration levels of a few parts per billion, copper is toxic to aquatic organisms. Copper is toxic to many species of aquatic life and within individual species life stages. The early life stages of fish, bivalves, and echinoderms are especially vulnerable to copper contamination. Copper tends to accumulate in sediment, threatening benthic life. Because of these adverse affects of copper, the use of copper-based antifouling paints is restricted or banned in parts of Europe (CRWQCB 2005).

Other metals are also known to be toxic to fish and other aquatic species. Metals in the water may attach to suspended particles and settle. Benthic organisms that lie in the sediment may ingest these metals and filter feeders such as mollusks may accumulate metals from the water. Sediments may be re-suspended and release metals back into the water. Chromated copper arsenate is often used as a wood preservative for dock/pier pilings (SCCWRP 2006).

Another potential source of copper from marina operations may be from the cleaning of the boat hulls. As hulls are cleaned or scraped, these materials are released into the environment.

In addition to copper, other boating activities such as maintenance, pressure washing of boats, the use of detergents and chlorine as cleaning agents, improper disposal of trash, discharges of sewage and other wastes, and fueling also serve as entry points for pollutants into the water.

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Several ASBS have pier and marina operations. The largest marine non-military operations are at ASBS No. 6, Trinidad Head, and ASBS 25, Northwest Santa Catalina Island. There is also a significant amount of marine activity associated with the Shelter Cove launch ramp. The U.S. Navy has significant marine operations at San Clemente and San Nicolas Island. The USC Wrigley Institute has a significant marine operation. The National park Service operated piers at Anacapa Island and Santa Barbara Island. State Parks operates launch ramps at Whaler's Cove in the Pt. Lobos ASBS. Other smaller marine operations are located at Paradise Cove in the Laguna Point to Latigo Point ASBS, Stillwater Cove at Pebble Beach in the Carmel Bay ASBS, and at Scripps Pier in the San Diego Scripps ASBS.

*Assessing Waste Discharge Influence on ASBS Marine Aquatic Life*

In the late 1970s and early 1980s a series of reconnaissance surveys, funded by the State Water Board, were conducted for most of the ASBS. The primary emphases of these reconnaissance surveys were biological surveys describing intertidal and subtidal marine life. Although primarily qualitative and biodiversity oriented, these studies provide an extremely valuable snapshot of the ASBS at that time. Ocean Unit staff has been uploading this information to an MS Access database for more efficient use. Staff estimates that the first phase of this work will be completed and made available on the Internet by the end of 2006.

An important question often asked is: "Does evidence exist for any harmful impacts from discharges on marine life in ASBS?" This question must be answered to proceed through the Ocean Plan exception process. Currently, except for the sediment impacts at Julia Pfeiffer Burns ASBS, there is only limited information on which staff can rely to answer this question. For both of the Initial Studies for the Exception/Special Protections for the Scripps Institution of Oceanography (2004) and the USC Wrigley Marine Science Center (2006), staff had to rely on a mix of qualitative and some short-term quantitative data. With this limited data staff could not absolutely determine impacts on marine life from the waste seawater or storm water discharges. Because of the lack of any absolute proof of impacts, staff recommended approval of the mitigated negative declaration/resolutions, since the available data indicated that beneficial uses would be protected under the strict mitigating conditions. The monitoring conditions in those two resolutions also required that consistent quantitative marine biotic studies be performed to assure that beneficial uses are protected over time. Further applicants for exceptions were all instructed to provide quantitative biological data from a location near the discharge and at a reference station so that the same process could be followed. Staff's intention is that future Special Protections would include a requirement for further quantitative survey to assure protection of marine aquatic life over time.

The Reconnaissance Survey Report for the Carmel Bay ASBS (SWRCB Water Quality Monitoring Report No. 79-10) issued in April 1979, provides an example of the type of assessment of the biological effects of the discharge of treated sewage effluent that was performed during the 1970s and early 1980s. That report summarized the results of six

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different monitoring studies and three literature reviews published from 1973-1978. Much of that information involved the impact of the discharge on marine life. Citing some of those studies (which were performed by Kinnetics Laboratories) the Reconnaissance Survey summarized information about a small (20m<sup>2</sup>) localized high impact area near the subtidal outfall diffuser ports. In 1976, that high impact area was described as being barren or covered with a "scum-like material", with the heaviest impacted area being "black." By 1977, this high impact area had experienced a "partial recovery." Generally, the Reconnaissance Survey Report found that the "District's discharge occurs in an area of high water movement; however five years of monitoring...has not produced conclusive information of any significant impact of the discharge on the ASBS." Therefore staff concludes that impacts are detectable, but that in the case of Carmel's outfall those impacts were relatively small and improved over time. Additional studies were performed between 1979 and 1986, and the EOA,Inc./CAWD final report points out there have been no significant effects documented as of 1986 in the biological community in the vicinity of the discharge. That statement is essentially correct. However, there have been no new benthic studies since 1986. Therefore, we are not able to determine the current health of the benthic community near the discharge.

Storm water runoff enters the ocean in the intertidal zone prior to dilution. If impacts occur to marine life, staff assumes that the greatest likelihood of impacts would be in the intertidal zone. There has been an ongoing effort by various researchers to monitor the intertidal zone throughout the State's coastline for purposes of identifying a baseline for spill impacts, to document species diversity, and to generally construct a time series of the status of intertidal life. Managers and scientists from federal, state and local government agencies, universities, and private and volunteer organizations formed the Multi-Agency Rocky Intertidal Network (MARINe) in 1997 to monitor important shoreline resources. Since then MARINe has successfully standardized protocols, carried out semi-annual monitoring surveys at nearly 100 rocky intertidal monitoring sites throughout California, half of which are located within Areas of Special Biological Significance. Data for many of these sites has been collected for 25 years. Such monitoring of the rocky intertidal zone provides a relatively a long-term context and reveals the dynamic nature of the community. The MARINe database has been designed and maintained at SCCWRP. Naturally occurring regional influences and the effects of climatic changes (e.g., El Nino events) are recognizable, and these studies enhance our understanding of the extent of temporal variation in natural systems. Furthermore, certain signals associated with anthropogenic stressors (trampling, poaching) are detectable. However, to date these studies have not necessarily been designed to determine the impacts of waste discharge on the community.

To identify impacts from runoff, surveys must be designed to specifically respond to that question. When assessing the influence of waste discharge on the rocky intertidal community, bioregional multivariate statistical analysis will be necessary to ascertain clear discriminating signals of anthropogenic runoff. Signals of natural background variance (such as temperature) would clearly emerge at both runoff and reference sites, and these natural background signals are expected to be different from those resulting

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from runoff. If future surveys are properly designed, signals from polluted runoff are also likely to be different than those associated with anthropogenic trampling, since some species are immune to trampling.

The State Water Board staff is also requesting advice from the MARINE researchers on aspects of the monitoring requirements in the initial draft of the Special Protections, with the intention of assuring that the final monitoring requirements for ASBS be scientifically valid and appropriate to the questions asked. These efforts, in collaboration with MARINE researchers, will assist with the State Water Board staff assessment of the status of the marine aquatic life beneficial use.

*Natural Water Quality Committee*

State Water Board Resolution 2004-0052, resolved 3.a., states "Natural water quality will be defined, based on a review of the monitoring data, by an advisory committee composed of State and Regional Board staff, a representative from UCSD/SIO, and two scientists selected by Regional Board staff from some academic organizations other than UCSD/SIO. At a minimum the advisory committee must meet annually and to advise the Regional Board whether or not natural water quality is being altered in the ASBS as a result of UCSD/SIO discharges. "

The committee has been established and will focus on Scripps' and other relevant La Jolla data to answer this main question over the permit cycle. The composition of the committee has been selected by the State and San Diego Regional Water Boards and includes Andrew Dickson (SIO), Steve Murray (CSU Fullerton), Burt Jones (USC), Jim Allen (SCCWRP), Ken Schiff (SCCWRP), Rich Gossett (CRG Labs), Pete Michaels (San Diego Regional Water Board), and Dominic Gregorio (Ocean Unit, State Water Board).

The Committee members are in agreement regarding the mission as proposed. The Committee also clearly recognizes the importance of their work in the context of the greater ASBS, Ocean Plan, and storm water issues. In response all agreed that their work should provide guidance for assessing impacts to water quality in any ASBS in the State. It must be emphasized that the Committee will not make regulatory decisions but will instead provide scientific advice to the Water Boards regarding natural water quality on the coast and in the ASBS, and the scientifically valid, observed impacts to water quality and marine aquatic life in ASBS.

Regarding the Committee's scientific questions, three areas of emphasis have been agreed on:

1. Are water quality objectives and permit limits being met?
2. What are impacts to marine species and communities?
3. What would ambient marine water quality be like without waste discharges, and how does effluent impact that water quality?

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This group's advice and recommendations on natural water quality will have a major impact on the future of ASBS storm water discharges, as well as for storm water in general and relevant water quality standards. The group will provide the Water Boards with an informed answer to the question: "What is natural water quality in the nearshore environment during storm events?" Their insights, observations, and recommendations will also likely affect future Ocean Plan amendments.

There have been two meetings prior to August 1, 2006. At the second meeting (April 2006) the committee heard several important results to date of the work being performed by SIO in complying with their permit and exception requirements. Scott Jenkins of SIO has modeled the dilution of the SIO discharges in the surf zone and nearshore waters. Model runs were developed for dry weather worst case (peak seawater discharge during stagnant ocean conditions), and for wet weather worst case (peak combined storm water & seawater discharges during storm seas). The model results show dilution exists for both waste seawater and storm water. Dry weather dilution rates range from  $10^2 - 10^6$  to 1 in ASBS everywhere seaward of the surf zone. The lowest dilution rates occur inside surf zone during stagnant dry weather. Wet weather dilution rates range from  $10^2 - 10^4$  to 1 in ASBS everywhere seaward of the surf zone. The minimum dilution inside the surf zone averaged 29:1 when the maximum discharge rates are perpetuated over the long term. The least dilution was 7:1.

SIO also presented the status and design of the bioaccumulation study, which will begin soon. With the use of local SIO pier mussels the results will be comparing to State Mussel Watch program historical data (85 and 95% EDLs).

The State Water Board staff is also requesting advice from the Committee on aspects of the monitoring requirements in the initial draft of the Special Protections, with the intention of ensuring that the final monitoring requirements for ASBS be scientifically valid and appropriate to the questions asked.

*Future Water Quality Monitoring and Assessment*

Based on the above information it is clear that there are known sources of pollution that drain into or have impacted ASBS. However, a more comprehensive monitoring program is necessary to fully determine the status and protection of beneficial uses in ASBS over time. State Water Board Ocean Unit staff presented an initial set of monitoring requirements in the June 2006 draft Special Protections document to address storm water and nonpoint source discharges. One important question is: Do storm water and nonpoint source discharges, with appropriate controls, alter natural water quality, or cause other impacts to marine aquatic life (e.g., altering community structure or resulting in pollutant bioaccumulation)? Staff's initial approach in answering this question is similar to the approach taken in the case of SIO and WMSC exception conditions, insofar as it is based on multiple lines of evidence including water chemistry, sediment chemistry, toxicity, bioaccumulation, and benthic community (intertidal) assessments. It is also staff's intention to encourage cooperative regional monitoring approaches and collaborations.



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In addition to working with the Natural Water Quality Committee and the MARINE researchers, Ocean Unit staff will also work with the State and Regional Water Board's Surface Water Ambient Monitoring Program (SWAMP) to develop a statewide ASBS monitoring program which focuses on reference conditions, both in the ASBS ocean waters and in coastal streams with minimal anthropogenic impacts draining to ASBS. Through assistance with the Natural Water Quality Committee, MARINE, and SWAMP Ocean Unit staff hopes to further define monitoring objectives, and linkages between those objectives and indicators.

**STATE WATER BOARD FUNDING PROGRAMS**

*Critical Coastal Areas Program*

California's Critical Coastal Areas (CCA) Program is an innovative statewide program designed to identify coastal areas where water quality is threatened or impacted by new or expanding development, and to accelerate the implementation of Management Measures (MMs) identified in California's Nonpoint Source Plan with the goal of water quality protection or restoration (California Coastal Commission 2006). The CCA Program is a non-regulatory planning tool intended to foster collaboration among local stakeholders and government agencies in order to better coordinate and direct resources to coastal watersheds in critical need of protection from polluted runoff. The Program is jointly administered by the State Water Board and the California Coastal Commission, in partnership with many state and federal agencies. The state has thus far identified one hundred areas of the coast as CCA's for prioritizing protection efforts through the work of this program.

There are 100 CCAs, and 34 of these are land areas and tributaries bordering ASBS. Five CCA's have been selected as pilot projects where state agency staff will work with local stakeholders to test the benefits of developing watershed-based plans and implementing appropriate MMs to protect coastal resources. Three of these pilot projects encompass ASBS.

The three Pilot CCAs selected for CCA Action Plan development and implementation in ASBS are:

- North Coast: Kelp Beds at Trinidad Head CCA (ASBS #6)
- San Francisco Bay Area: James V. Fitzgerald Marine Reserve CCA (ASBS #9)
- South Coast: Combination of Newport Beach Marine Life Refuge (ASBS #32), Irvine Coast Marine Life Refuge (ASBS #33), Heisler Park Ecological Reserve (ASBS #30), and Upper Newport Bay CCAs.

*Clean Beaches Initiative*

The State of California established the Clean Beaches Initiative (CBI) Grant Program in response to the poor water quality and dramatic number of postings and closures revealed by the newly mandated monitoring at California's beaches. The Budget Act of

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2001 appropriated \$32,298,000 from Proposition 13, (the *Costa-Machado Water Act of 2000*), to implement projects at 38 specific beaches. In 2002 an additional \$46 million from Proposition 40 and Proposition 50 were approved to fund the Clean Beaches program.

The major goal of the CBI Grant Program is to reduce health risks through improved water quality at California's beaches. CBI grant funds are being used to 1) improve, upgrade, or convert existing sewer collection or septic systems to reduce or eliminate sewage spills, 2) implement urban runoff pollution reduction and prevention programs, and 3) implement management practices to eliminate upstream sources of bacterial contamination for the restoration and protection of coastal water quality. Project proponents that receive CBI grant funds are required to submit a monitoring plan as part of their project, and prepare a final report that evaluates the project's effectiveness at reducing beach contamination.

Through the Clean Beaches Program, the Legislature stated its intent that administering agencies and recipients of bond funds begin to quantify the environmental impacts from public investments using indicators that characterize discharges or ambient concentrations of pollutants and, where applicable and quantifiable, effects on ecosystem health. While the CBI program is primarily aimed at protecting human health, controls to reduce pathogen loading may likely also reduce other pollutants that can impact marine life.

In Monterey County, two projects located at Pacific Grove ASBS received \$2 million in CBI funding, which paid for work such as dry weather flow diversion, a tidal circulation feasibility study, and pollutant source abatement. The source abatement and diversion program at Lover's Point in Pacific Grove (ASBS # 19) was initiated after a 70,000-gallon sewage spill into Monterey Bay National Marine Sanctuary on January 12, 2000.

The State Board has committed \$1.2 million of CBI Prop 40 funds for work in relation to ASBS #30 Heisler Park (in Laguna Beach) for dry weather flow diversions.

At James V. Fitzgerald ASBS (San Mateo County),

\$20,000 has been committed for the sewer collection system upgrade.

*Integrated Regional Water Management Program*

The Integrated Regional Water Management (IRWM) funded by Prop 50 Chapter 8, provides approximately \$148 million during the first funding cycle for IRWM Implementation. Implementation Grants fund projects that meet one or more of the program objectives of protection from drought, protecting and improving water quality, and improving local water security by reducing dependence on imported water. Implementation Grant proposals must be based on an IRWM Plan. IRWM Grants are divided into two groups, the Integrated Regional Water Management Planning Grants, and Integrated Coastal Water Management Planning Grants.

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Funding for the IRWM Program is administered jointly between the State Water Board, and the Department of Water Resources (DWR). For fiscal year 2005-06, approximately \$3.1 million in Integrated Coastal Water Management Planning grants were awarded to projects within 14 ASBS throughout the State.

*Consolidated Grants, Ocean Protection Projects*

The 2005-06 Consolidated Grants Program includes the Proposition 50 Coastal Non-point Source Pollution Control (CNPS) Program, which targets projects that restore and protect the water quality and environment of coastal waters, estuaries, bays, nearshore waters, and groundwater. At least \$10 million of the \$43.1 million Proposition 50 CNPS Program funds were reserved for ocean protection projects (OPP) that meet the mutual priorities of the State Water Board and Ocean Protection Council (OPC). Those priorities were 1) the development of Rapid Indicators for pathogen indicators at recreational beaches, and 2) addressing discharges into ASBS. The State Water Board proceeded with the OPPs ahead of the other programs included in the 2005-06 Consolidated Grants Program.

State Water Board staff reviewed the proposals for the OPP funding in collaboration with other state agencies, and presented the recommended Ocean Protection Project (OPP) funding list of five successful proposals to the OPC at its June 8, 2006 meeting. The OPC approved those five proposals and recommended the State Water Board adopt that list. The State Water Board adopted the funding list for all five proposals, totaling \$10,021,317, at the June 21, 2006 Board meeting. Three of those proposals address ASBS and two address Rapid Indicators. The ASBS proposals, totaling \$5,521,317, were:

- La Jolla Shores ASBS Dry Weather Flow and Pollution Control Program, addressing the La Jolla and San Diego-Scripps ASBS
- North Coast Stormwater Coalition's NPS Pollution Prevention Program, in part addressing the runoff at Shelter Cove into the King Range ASBS
- Monitoring and Mitigation to Address Fecal Pathogen Pollution along the California Coast, addressing runoff that may be impacting sea otters in several ASBS in the central coast.

It should be noted that several other proposals submitted to the consolidated grants program might also have potential benefits to ASBS. Some of these are currently competitively reviewed. Appendix D provides a summary of monetary and technical assistance provided by the State to local entities, to assist them in their efforts to protect beneficial uses in ASBS.

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**APPENDICES**

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**Appendix A – Summary of SCCWRP (2003) Survey**

**Type and Number Discharges**

Source Codes		Source Types					Total
		Outlets	Springs Seeps	Potential	Unknowns	Intakes	
Small storm drains	1012	-	-	-	-	-	1012
Municipal/Industrial storm drains	391	-	-	-	-	-	391
Non-point sources	224	-	-	2	-	-	226
Non-point seeps/springs	-	-	66	-	-	-	66
Point Sources (wastewater)	31	-	-	-	-	-	31
Gullies	-	520	-	-	-	-	520
Streams (perennial and ephemeral)	-	117	-	-	-	-	117
Outlets (uncontaminated springs/seeps)	-	-	116	-	-	-	116
No discharges	-	-	-	8	-	3	11
Unknown	-	-	-	-	8	-	8
<b>Totals:</b>	<b>1658</b>	<b>637</b>	<b>182</b>	<b>10</b>	<b>8</b>	<b>3</b>	<b>2498</b>

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**Appendix B - Status and Prioritization of Individual ASBS**

Note: The following descriptions of each ASBS include estimates of the length of the coastline and areas in acreage. These estimates are based on a 1:24,000 scale coastline GIS layer (NAD27) from the State Lands Commission (1994). The estimates include the Northern and Southern Channel Islands, Ano Nuevo Island, Bird Rock, and the larger Farallon Islands, but do not include the smaller rocks/islands.

*Jughandle Cove ASBS*

The Jughandle Cove ASBS in Mendocino County encompasses 1.5 miles of coastline and 203 acres of marine waters. This ASBS includes Jughandle Cove, at the mouth of Jughandle Creek, a perennial stream. This largely natural watershed includes Jug Handle State Reserve, managed by the California State Department of Parks and Recreation, and includes the Pygmy Forest Ecological Staircase trail. This is a popular location for recreation, education, and scientific study.

The watershed includes State Highway 1, which crosses over and may discharge to Jughandle Creek at a point approximately 100 meters upstream of the ASBS. Jughandle Creek may also be a source of sediment load (siltation) in the winter due to past logging operations. Homes in the area have septic systems and there is also a lumber mill that may contribute pollutants into the watershed. With the exception of the potential high runoff described above and non-point source runoff from the parking lot and associated access trail there are no other potential sources of pollutants known to drain directly into the ASBS.

State Board staff considers this ASBS low priority due to very limited direct pollutant sources. There is limited impervious surface area and only the single highway crossing adjacent to the ASBS.

*Del Mar Landing ASBS*

The Del Mar Landing ASBS has only 0.6 miles of coastline and 53 acres of marine waters. This ASBS overlaps MPAs in which commercial and some forms of recreational fishing are prohibited. The watershed area immediately adjacent to this ASBS is a part of Sea Ranch private community. There are several homes and a walking trail along the coastline. Native vegetation is employed in the landscape.

The watershed area includes State Highway 1, which is less than a half-mile from the coast. There are 8 natural gullies draining into or near the ASBS. Their ephemeral streams may carry pollutants from upstream sources. Homes in the area have septic systems that may contribute pollutants into the watershed. A golf course is located approximately a half mile north of the ASBS. There are four non-point source and storm

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water conveyances that drain directly into or near the ASBS. Two are under the control of Sea Ranch.

State Board staff currently considers this ASBS as medium priority, due to the transportation/road runoff sources and the potential for waste discharges from homes.

*Gerstle Cove ASBS*

Gerstle Cove ASBS has 0.6 miles of coastline and 10 acres of marine waters, including the Gerstle Cove Reserve, which is closed to recreational and some forms of commercial fishing. This ASBS also lies within Salt Point State Park, which occupies the watershed area adjacent to it. The cove hosts many divers and fisherman.

The watershed includes State Highway 1, which is less than a half-mile from the coast. Closer to the ASBS the State Park facilities include a public restroom and fish cleaning station (both apparently served by a septic tank) and campground. There are roads, multiple parking lots, and a visitor's center. There are eight discharges that carry storm water runoff into the ASBS. In addition, there are six naturally occurring gullies that may carry non-point source pollutants, and seven groundwater seeps along the coast. A large number of these drainages were from a highly used recreation area.

State Board staff currently considers this ASBS as low priority. There is limited impervious surface area and there are not any highway discharges directly adjacent to the ASBS.

*Bodega ASBS*

Bodega ASBS in Sonoma County is 1.6 miles long and includes 150 acres of marine waters. It encompasses a fairly rural part of the Bodega headland. This ASBS includes the Bodega Marine Lab. Regions to the north and south of this lab have some highly defined earthen channels. These are mostly comprised of sheer cliffs, which are dominated by sheet flow. Much of this ASBS falls into a managed marine life refuge and there are restoration projects onshore. There is limited access between Horseshoe Cove and the southern boundary. This is because much of this area is composed of many study areas from the Marine Lab.

The Bodega Marine Laboratory (BML) is the only significant source of direct discharge into this ASBS. BML submitted an original application for an exception, which was reviewed by staff and determined to be incomplete. Staff informed BML of the inadequacies of its first submittal and additional data has since been submitted. In the meantime it is staff's understanding that improvements in the laboratory drainages (e.g., storm water controls) have reduced the waste loading in the ASBS. The NPDES permit may not be renewed until an exception is granted.



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State Board staff currently considers this ASBS as medium priority. There is limited impervious surface area and the laboratory discharges are the only potential sources adjacent to the ASBS.

*Saunders Reef ASBS*

Saunders Reef ASBS has 1.6 miles of coastline and 730 acres of marine waters. It runs parallel to Highway 1 along a fairly rural part of Northern California. The southern end has houses inland of the ASBS and directly adjacent to the southern boundary point. These homes are served by septic tanks, and due to the soil conditions, drainage from these septic tanks may escape into this ASBS. There are also two parking turnouts within the boundaries of Saunders Reef.

State Board staff currently considers this ASBS as medium priority. While there is limited impervious surface area, there are transportation/road runoff sources and the potential exists for waste discharges from homes.

*Trinidad Head ASBS*

The Trinidad Head ASBS in Humboldt County is 1.8 miles long and has 297 acres of marine waters. The watershed is mixed rural and urban. Few houses line the northern coastline, but Trinidad becomes more populated near the headland, where the Humboldt State University Telonicher Marine Lab is located. There are residences and commercial structures in Trinidad that are currently being served by septic systems. Numerous surface seeps run from the coastal bluff across the beach into the ASBS.

The Telonicher Marine Lab has a discharge of waste seawater and storm water to the ASBS near the base of the pier. A storm water outfall that drains much of the City of Trinidad is also located there.

Trinidad also has seasonal marine facilities including a mooring field, a vessel haulout/launch facility and a pier composed of treated lumber. At the time of the SCCWRP survey, vessel hulls were cleaned by using chlorine bleach and allowing the runoff from that operation to drain into the ASBS. There was also a fish cleaning station on the pier that is a source of decomposing fish wastes, and there was an accumulation of discarded metal objects beneath near the base of the pier. In correspondence from the pier operator, Trinidad Rancheria, on March 21, 2006, the Rancheria committed to ending these practices, including the discharge of offal off the pier and the use of chlorine for cleaning boats and moorings. Recently (June 2006), the following observations were made by a Department of Fish and Game employee:(1) The fish cleaning station at the pier was in use without a trashcan or other receptacle in which the fisherman could place fish carcasses and waste, and; (2) At the end of the pier, there was a dumpster full of empty, smashed, 1 gallon Clorox bottles (Personal Communication Vicki Fey, California Department of Fish and Game, June 29, 2006).

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State Board staff considers this a high priority ASBS due to the diversity and large number of pollutant sources.

*Kings Range ASBS*

Kings Range National Conservation Area ASBS is 32.7 miles long with 25,055 acres of marine waters. There are areas of wilderness that include perennial and ephemeral streams and natural groundwater seeps. There is basically no development in northern portion except for a few sporadic cabins that have outhouse facilities and also some well-established campsites at the larger river mouths. Big Flat Creek is one of the largest river mouths in this area.

This area also includes the town of Shelter Cove, which is approximately 2 miles of developed coastline with houses and parking lots along the shore. Shelter Cove has a wastewater treatment plant that discharge under an old exception and an NPDES permit. The plant was recently upgraded.

At Shelter Cove there is also a fish cleaning station discharge and a boat launch that is very active in summer months. State Board staff considers the Shelter Cove portion of the ASBS high priority.

*Redwood National Park ASBS*

The Redwood National Park ASBS is 35.9 miles of rugged coastline and includes 62,643 acres of marine water. SCCWRP identified a total of 73 drainages, which included 41 discharges, 27 stream outlets and 5 springs/seeps, which were assumed to be uncontaminated. This ASBS is home to the Klamath River and several other perennial streams including, Cushing Creek and Redwood Creek. Most of the drainage into the coastal waters is runoff from rural and wilderness watersheds. Rugged cliffs and sparse primitive campgrounds dominate this region and much of the coastline is limited to foot traffic. In a portion of this are there is the potential for runoff from Highway 101. The section of the highway north of Requa is known for mass movement and land sliding.

Redwood Creek and the Klamath River flow into Redwood National Park ASBS. The Klamath River is 303(d) listed for nutrients and organic enrichment/low dissolved oxygen from both point source (including storm water) and nonpoint sources, and temperature from non-point sources. Redwood Creek is 303(d) listed for sedimentation/siltation from nonpoint sources.

The National Park Service operates a wastewater treatment plant at Requa. The Regional Water Board first adopted WDRs for this facility when serving the Klamath Air Force Station on February 8, 1968. The WDRs establish effluent limits for the treated wastewater discharge. WDRs were revised on August 4, 1971, November 29, 1983, and February 28, 1991. The latter three WDRs also establish effluent limits for the discharge as well as prohibit direct discharge of treated effluent into the Pacific Ocean.

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However State Water Board staff has not been provided any record that this prohibition has been inspected and enforced during worst case (storm runoff) conditions.

This wastewater facility currently receives and treats domestic wastewater from National and State Park employees. Treatment consists of an activated sludge package treatment plant with a design flow of 21,000 gpd. Flows have apparently been declining in recent years and currently are approximately 525 gpd. Treated and disinfected (chlorinated) effluent is discharged to land on the ocean side of the complex near the top of an ocean bluff approximately 800 feet above the ASBS. The effluent discharges onto land into a vegetated area. Effluent initially disperses into the ground in the thicket. There is no trail all the way down the hillside and no access to the surf zone, other than by boat.

As of the end of 2004 the facility ranked first on the list of the top 50 violators statewide for Category 2 violations. Many of the violations have been associated with residual chlorine. Monitoring reports for 2004 show that chlorine residual (using 0.1 mg/l as a significant figure) was exceeded a total of fourteen days with the highest concentration being 0.2 mg/l. Chlorine in the effluent at these low concentrations may dissipate or becomes bound up with organics in the soil mantle. To address this problem a de-chlorination Unit was installed in February 2005 to address previous exceedances in chlorine residual levels. The de-chlorination unit consists of an engineered retention tank with a nozzle for injecting calcium thiosulphate at a controlled rate based on discharge volume.

The National Park Service conducts monitoring of the wastewater treatment facility (WWTF) in accordance with the Monitoring and Reporting Program No. 91-23, specified in the WDRs. Effluent monitoring parameters include BOD, suspended solids, settleable solids, total coliform, chlorine residual, pH, and daily flow. Monitoring has not been performed for most COP constituents.

It is uncertain whether the effluent reaches the ocean during dry weather. However, it is possible that effluent (albeit diluted) will reach the ASBS during wet weather. Rainfall averages about 40 inches a month in this area during the winter, and it is not uncommon for a daily rainfall event to exceed two inches. State Water Board staff assumes the worst (i.e., the waste occasionally reaches the ocean) unless there is empirical evidence to the contrary.

The NPS has stated that it will be building a new maintenance facility near Crescent City with a planned construction date of 2007. The State Water Board has informed the NPS that the Requa discharge must cease by the end of 2007; however, staff is now aware that the NPS may be unable to accommodate until 2008. The National Park Service has stated that the Requa wastewater facility will be completely abandoned at that time.

The Crescent City wastewater treatment plant discharges secondary treated effluent at a distance of approximately two miles north of the ASBS boundary. This outfall

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discharges under an NPDES permit at about 1.9 million gallons per day, with a minor contribution from the Crescent City Seafood Facility (also NPDES permitted).

State Water Board staff considers this ASBS a medium priority, assuming that the Requa outfall will be abandoned according to schedule.

*James V. Fitzgerald ASBS*

James V. Fitzgerald ASBS in San Mateo County has 5.5 miles of coastline and includes 518 acres of marine waters. It was preserved for its unique underwater habitat and extensive tide pools. Its beaches are popular areas for recreation, and access is good to most stretches. The surrounding land encompasses an array of land uses such as residential, light industrial, and agricultural. One of the natural outlets into the James V. Fitzgerald ASBS is San Vicente Creek, which is also 303(d) listed due to high coliform bacteria counts from nonpoint sources. Many discharges are primarily from private residential properties along the bluffs. However, there are municipal (San Mateo County) and transportation (Caltrans) storm water discharges that enter the ASBS as well. There is also a storm water discharge from the Air Force facility that enters the ASBS near Pillar Point. This ASBS has been the site of large sewage spills in recent years.

A large public annual event at this ASBS is the Maverick's surf competition. In recent years there have been very large crowds at this event, and various impacts have included pollution and trampling in the intertidal zone.

State Water Board staff considers this ASBS a high priority due to the concentration of residences and other potential sources, the impaired condition of San Vicente Creek, and the recent history of sewage spills.

*Farallon Islands ASBS*

Farallon Islands ASBS is a small group of rock pinnacles located about 30 miles offshore from San Francisco. This group consists of five small islands, the largest of which is Southeast Farallon. The total coastline length for the combined islands is 7.5 miles and the ASBS includes 11,402 acres of marine waters. Southeast Farallon Island is the only inhabited island, which is occupied by scientific personnel housed at the US Fish and Wildlife Service field station. There is a lighthouse maintained by the US Coast Guard and tow houses on the island along with several small buildings for support facilities. The islands are a unique biological habitat for nesting seabirds and wintering marine mammals. Access to the public is restricted.

SCCWRP identified a total of 8 drainages and 6 discharges. There are also 2 springs/seeps, which were assumed uncontaminated. At Southeast Farallon Island a composting toilet was found discharging to land with potential for runoff during storms,

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and another toilet was found to be associated with a point source discharge of human waste and grey water directly into Sewage Gulch and the ASBS.

Recently the US Fish and Wildlife Service has verbally informed staff that it has ceased discharging sewage to the ASBS; sewage is now routed to a new on-site sewage treatment system for disposal to the ground. This is a true success story. The US Fish and Wildlife Service is in the process of officially notifying the State and Regional Water Boards in writing of the successful installation and operation of their on-site disposal to land, and their commitment to preventing any wastes from entering the ASBS from other potential island discharges.

Based on the abandonment of the sewage discharge to the ocean, staff now considers this ASBS low priority.

*Duxbury Reef ASBS*

This ASBS has 3.4 miles of coastline and is 86 acres in area in Marin County. There are many land uses adjacent to the ASBS. The northern half of the reserve is less populated than the rest, having only two permanent residences, consisting of a six-man Coast Guard Station and a cancer hospice. There are also a few trails leading to an expansive beach in this area, and the access road has very limited automobile traffic.

Fifty-two drainages were identified in the SCCWRP survey in this ASBS. Thirty-seven of these were outlets and springs/seeps. The remaining drainages included 10 identified discharges and 5 unknowns. These unknown drainages may have been supply lines for homes lost in previous landslides. The homes in this section of Bolinas are on septic systems. Alder Creek drains a watershed with rural residential, grazing and some agriculture. A parking lot for Agate Beach is served by a storm drain ditch that empties into the ASBS at the mouth of Alder Creek. On one occasion staff, in November 2005, have observed public camping at this location, and the public was also utilizing the storm drain from the parking area to wash clothes and dishes. On another occasion in June 2005 staff observed garden waste being dumped into this same ditch.

Staff considers this a high priority ASBS, due to the drainage from homes, roads, parking lot and other sources.

*Point Reyes Headlands ASBS*

Point Reyes Headlands ASBS in Marin County is 4.8 miles long and includes 1047 acres of marine waters. Thirteen natural earthen gullies have been found here, but the sheer walls result in sheet flow over most of the headland's cliffs. The SCCWRP 2003 survey identified seven distinct discharges at the lighthouse and the visitor center. A road follows the entire ASBS, but the slope of the headland is such that any road run-off flows away from the ASBS. Public access is limited to walkways where a lighthouse is located. Inland from the lighthouse and visitor's center are four small apartments, which are serviced by an enclosed septic system that discharges into the ground.

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Three dairy operations within the Point Reyes National Seashore, which drain to Drakes Bay, operate under the San Francisco Bay Regional Water Board's Dairy Waiver of Waste Discharge Requirements, Resolution R2-2003-0094. These historical dairies are a potential source of pollution to the ASBS. Drakes Bay does not directly drain to the ASBS but tidal outflow may reach the ASBS at times.

SCCRWP identified a total of seven discharge points were identified within the Point Reyes Headlands ASBS. These discharges include potential sources for pollutants such as the concrete stairs leading to the lighthouse, small PVC pipes (which convey rain from the stairway), a fire hydrant, and a wooden stairway to sea lion overlook platform.

Since the initial identification of these potential sources of pollution during the 2003 survey, National Park Service (NPS) has made some significant improvements in eliminating these sources. NPS has planned and budgeted for additional BMPs. One such modification is the concrete stairway to the lighthouse, which was completely reconstructed. This improvement project addressed several discharge points, and plans are in place to relocate and secure the fire hydrant.

At Sea Lion overlook, some of the wood fence material is split rail and portions are pressure treated. NPS has prioritized the replacement of the remaining pressure treated sections. Although the site is 400 feet above the ASBS water level, this would eliminate a potential source of waste discharge.

State Water Board staff considers the Point Reyes ASBS a medium to low priority. One concern is the potential for dairy grazing related wastes reaching the ASBS.

As part of the Prop 50 grant program recently (Spring 2006) awarded to the Tomales Bay Watershed Council, the NPS will conduct watershed assessments that include the four ASBS within the Point Reyes National Seashore. This work will culminate in the development of a Marin County Integrated Coastal Watershed Management Plan (ICWMP). These assessments are intended to characterize general water quality conditions and land uses within the watershed, with the ultimate focus being on the locations identified as discharges identified in the 2003 survey.

*Double Point ASBS*

This is a small ASBS of 0.7 miles and 89 acres of marine waters in Marin County. This area lies in a rural part of the Point Reyes National Seashore. The area surrounding Double Point is accessible only to hikers and has primitive trail camps to the north and east of this ASBS. Overflow from the naturally occurring Pelican Lake is the main drainage source into the Double Point area. This lake appears to have little or no access to hikers and is located in a rural, undeveloped watershed runoff. The entire Double Point area is a large natural landslide.

This is a low priority ASBS.

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*Bird Rock ASBS*

Bird Rock is a small ASBS being only 0.3 miles in length and 105 acres of marine waters. The majority of runoff is from general sheet flow and from tidal outflow from Tomales Bay. The drainage sources on the rock and on the mainland are heavily influenced by animal excrement from birds that inhabit the rock and also by the tule elk that live on Tomales Point.

This is a medium to low priority ASBS. The only concern relates to Bird Rock's proximity to Tomales Bay. Bird Rock ASBS is located approximately one half mile from the mouth of Tomales Bay, which is 303(d) listed for metals, nutrients, pathogens and sediment from nonpoint sources.

*Ano Nuevo ASBS*

This ASBS is located to the north of Santa Cruz and south of Half Moon Bay. Its coastline extends 4.9 miles and contains 13,560 acres of marine waters. Ano Nuevo Point and Island provides a unique habitat for wintering sea lions and elephant seals. Access to beaches is limited and most visitors to the park are confined to marked footpaths.

SCCWRP identified a total of 34 drainages, the most significant being from the rural watersheds of Ano Nuevo Creek to the south, and Cascade Creek to the north. Of the fourteen drainages, 17 were naturally occurring outlets, and three were springs/seeps. The majority of drainages were from runoff over the coastal cliffs.

One source of storm water runoff is Caltrans' Highway One. There are also direct non-point source discharges into the ASBS from agricultural fields. Some farming is conducted within the park boundaries, so agricultural discharges may influence the streams as well. The primary crops grown in this area artichokes, brussel sprouts, and flowers. The park personnel have mentioned occasional over spraying of pesticides.

Staff considers this ASBS high priority due to the agricultural discharges as well as highway and park runoff.

*Point Lobos ASBS*

The Point Lobos is a marine reserve and ASBS with 9.4 miles of rocky coastline to the south of Carmel in Monterey County. This ASBS contains 691 acres of marine waters. It is regularly visited by a large number of day hikers, and the Reserve has several small campgrounds and a small boat launch ramp.

Fifty-six drainages were identified in this area, 39 being outlets draining small watersheds and walking paths along the coastline, and the remainder being discharges.

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There is also a potential non-point source spring/seep. The most likely source of waste discharge or spills is the parking lot and launch ramp at Whaler's Cove, but even this location gets relatively limited vehicular use.

Land use to the north and south of the ASBS is primarily residential. To the south the residences and hotel were formerly serviced by two small wastewater treatment plants that discharged within a quarter mile of the ASBS. However, these plants were recently abandoned, thus eliminating the discharges near Pt. Lobos. All wastewater is now piped to the Carmel Area Wastewater District plant.

This ASBS is considered a medium priority. The presence of discharges from Carmel and the Carmel River are a primary concern.

*San Miguel, Santa Rosa, and Santa Cruz Islands ASBS*

San Miguel Island is approximately 26 miles from the mainland and is managed by the National Park Service (NPS). This island is unprotected from and directly exposed to all storms and turbulence that comes its way. There are no roads on the island and its few structures are located well beyond 100 meters of the coast. Neither these few structures nor the leach field located near the ranger station are considered likely sources of discharges in this area.

The Santa Rosa Island is the second largest of the Channel Islands and has approximately 46 miles of shoreline. It is a diverse island of grass-covered rolling hills, steep canyons, creeks, rocky intertidal areas and sandy beaches. This island has a few structures and hosts mainly campers and hikers. This ASBS has been found to have 41 outlets (gullies or streams). The Central Coast Regional Water Board has issued a Cleanup and Abatement Order (CAO) to the National Park Service. The CAO was issued in 1996 and requires the NPS to implement a road management plan (to reduce erosion and related sediment discharges). Significant progress has been made in improving grazing and road runoff, but additional work is necessary to protect water quality from sediment and bacteria. The CAO is still in place.

Santa Cruz Island is the largest of the Channel Islands and has approximately 77 miles of shoreline. The coastline here is very diverse, consisting of sheer cliffs and bluffs, beaches and grasslands. There are only a few structures on the island, and it hosts mainly campers and hikers. The inland valley, which is somewhat distant from the coast, has a few structures that house visiting scientists doing research on flora and fauna. The Nature Conservancy owns and manages the western 76 percent of the island; the eastern 24 percent is owned and managed by the National Park Service. Sheep ranching was historically practiced on this island and areas where vegetation was depleted are still visible. There have been 65 gullies or streams draining into the ASBS recorded here.

Together, the ASBS at these three islands in Santa Barbara County contain 274,461 acres of marine waters and covers 194.4 miles along the combined island coastlines.



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This ASBS is considered medium to low priority due to the minimal waste sources and potential sources on the islands. However, staff is watchful due to the nearby presence of offshore oil facilities and runoff from mainland streams, which sometimes reach the islands.

*Julia Pfeiffer Burns ASBS*

This ASBS is 3.7 miles in length with Partington Creek near the northern boundary and Anderson Creek near the southern boundary. It contains 1,743 acres of marine waters and is located in Monterey County to the south of the Big Sur Coast. Cliffs along this stretch of coastline are rugged and steep, greatly limiting access to the waterline. Only Partington Creek has a hiking trail leading to its mouth. Pfeiffer Park has a small campground and parking area near the scenic McWay Falls.

Twenty-five discharges and three outlets were identified by SCCWRP. Most drainage into coastal waters is runoff from rural and wilderness watersheds. There are however many road drainage discharges from Hwy 1, which parallels the coastline several hundred feet above the waterline. A large landslide associated with Hwy 1 and Caltrans road clearing operations has resulted in the deposition of massive amounts of sediment into the ASBS. This discharge, which occurred in the 1980's, completely filled McWay's Cove. A waterfall on McWay Creek once flowed into a cove, which was populated by diverse intertidal and subtidal marine life. Now it is flowing onto a sandy beach. Although the causative action is historical and likely irreversible in the short term, this is clearly the most severe impact from a waste discharge into an ASBS. Sediment erosion and downstream deposition into the ASBS appears to be a continuing concern.

Due to the ongoing impacts of previous road clearing operations and the potential for highway and campground discharges, this is a medium priority ASBS.

*Pacific Grove ASBS*

The Pacific Grove ASBS is 3.2 miles in length and has an area of 469 acres in Monterey County. SCCWRP identified this ASBS as having the third highest number of drainages (268). Because this ASBS covers the coastline of the City of Pacific Grove, many of the 268 drainages flow from the urban watershed and roads during rains. Seawalls with pipes used to drain the landscape and road runoff have been constructed along portions of this ASBS. The southern portion of the Monterey Bay coastline, including Pacific Grove, is 303(d) listed for metals based on historical mussel watch data. Pacific Grove has several municipal storm water outfalls, one of which receives contributions of runoff from the City of Monterey near the point of discharge. Pacific Grove has made significant improvement in its storm water system by installing dry weather diversions with funding from the State Water Board.

The Hopkins Marine Laboratory has several point sources of waste laboratory seawater that discharge directly into the ASBS. The Monterey Bay Aquarium is located

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immediately adjacent to the ASBS and Hopkins laboratory, and its discharge enters the ASBS as well. The Monterey Bay Aquarium discharges waste seawater and desalination brine through the same discharge, and the City of Monterey discharges storm water runoff below the Aquarium.

This is a high priority ASBS.

*Salmon Creek Coast ASBS*

This ASBS contains 1458 acres of marine waters, is 3.4 miles long, and includes two perennial creeks, Soda Spring Creek and Salmon Creek. Both of these creeks drain large wilderness watersheds. It is located to the south of Monterey on the Big Sur Coast and to the south of the Julia Pfeiffer Burns ASBS. There are many cliffs along this stretch of coastline, which are rugged and steep, greatly limiting access to the waterline.

A total of 44 drainages were identified by SCCWRP, consisting of 35 discharges, 8 natural streams or gullies, and probably 1 uncontaminated spring/seep. Most of the drainage into the coastal waters is runoff from rural and wilderness watersheds. However, there are many road drainage discharges from Highway 1 that parallel the coastline several hundred meters above the waterline. Some private homes are located adjacent to the ASBS.

This ASBS is low to medium priority.

*San Nicolas Island and Begg Rock ASBS*

This ASBS is 26.9 miles in length, and encompasses 63,658 acres of marine waters in Ventura County. This island is approximately 61 miles from the mainland. It is owned and managed by the U.S. Navy and not open to the public. SCCWRP identified a total of 47 drainages, including 12 discharges and 35 outlets. There are piers/barge landings, roads, structures, various military activities (including rocket-launching), and an airfield that contribute to discharges into the ASBS. Sewage is disposed in an on-site sewage system. The Navy has been operating under the general industrial storm water NPDES permit for runoff from industrial portions of the island.

Recently (January 2006) the Navy informed the State and Los Angeles Regional Water Boards that trihalomethane (THM) contamination has been discovered in their potable water system at San Nicolas Island. While this does not appear to be related to any impacts in the ASBS (sewage discharge is not allowed), this has necessitated temporary shutdown of the surface water and well water system. The desalination reverse osmosis (desal RO) facility is now the only source of potable water for the personnel on SNI. According to the Navy, water conservation measures are being employed, some projects have been put on hold, and operations have been reduced to essential personnel.

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The Navy initially requested a temporary increase in brine and filter backwash production for a five-month period that will enable replenishing of the island's potable water supply. The potable water supply is needed not only for consumption but also for fire suppression and base operations. Increasing the production at the desalination reverse osmosis plant will increase the brine and filter backwash discharge. The Navy is therefore seeking approval to increase the SNI brine and filter backwash discharge from 67,000 to 115,200 gallons per day (gpd) during the next five-month period. The seawater desalination system discharges under an exception and permit to the San Nicolas Island ASBS, with limitations, including flow limits (67,000 gpd). The exception was adopted by the State Board (Resolution 90-105) in 1990 and the most recent permit (NPDES No. CA0061794) was re-issued by the LA Regional Board in 2004. The desalination brine discharge has not been in compliance with the exception and permit for some time, extending back at least to the time of the SCCWRP survey. The disposal well fills with sediment and the discharge line is broken. Thus the discharge flows over the surface into the intertidal zone of the ASBS, which is also habitat for the threatened snowy plover.

One alternative means of providing potable water may be the barging of water from the mainland. This is not been a common practice at San Nicolas Island, being discontinued some years ago. Rough seas and the costs of barging water, plus the availability of shore-side produced water have made barge transfer the least preferred option for providing potable water on San Nicolas Island. There are numerous upgrades that would need to be designed, budgeted, and constructed in order for barging of water to occur. These include the following: 1) replace the sea line (pipeline) from mooring to shore. The old pipeline has deteriorated, and may be unsuitable for transferring potable water; 2) installing barge transfer tanks for temporary storage of water at the shore-side facility; and 3) installing pumps for transfer of water from the barge transfer tanks to intermediate storage tanks. Due to these considerations, the Navy is not supportive of this alternative.

The Navy has designed a new brine discharge line with a leach line for subsurface disposal into the beach sand. According to the Navy, the distance between the old sand disposal wells and the new leach line is about 400 feet. The Navy has requested permission to discharge via the new leach line. It is likely that this new leach line may be used to discharge an increased volume of desalination brine/backwash waste (i.e., above current levels), due to a planned increase in the garrison on the island.

Recent discussions with between the Regional Board, State Board and the Navy have resulted in the Navy requesting Non-Chapter 15 Waste Discharge Requirements (WDRs) instead of an NPDES permit. This may be an acceptable approach as long as the above ground portion of the system is above the mean high tide line and as long as the subsurface brine disposal plume will not alter natural water quality in the surface waters of the ASBS. This may then result in the revocation of the existing exception (Resolution 90-105) since it may not be needed for a strictly subsurface discharge with Non-Chapter 15 WDRs.

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The Navy is also in the process of applying for an exception to address their NPS/storm water discharges. The Navy recently requested the Regional Board, on December 6, 2005, for an extension of the deadline to submit data for that exception request. The original deadline was March 1, and the Navy asked to push this back to May 1, 2006. This data is necessary for the State Board staff to address the CEQA requirements of the exception process, and to make a determination regarding special conditions (which staff may recommend to the State Water Board) that would limit the Navy's point and nonpoint source discharges.

This is a high priority ASBS due to the variety of military discharges.

*Santa Barbara and Anacapa Islands ASBS*

Santa Barbara Island is surrounded by volcanic cliff walls and has only two facilities. These are a Ranger Station staffed by the National Park Service and a landing facility, both of which are listed as nonpoint sources. Near the Ranger Station there is a leach field and three portable toilets. Although it is doubtful that the leach field contributes any significant discharge, it is listed as a potential nonpoint source discharge. There are no roads and only a few small foot trails. The few visitors to this island are limited to camping and hiking, but the primary activities take place offshore and include fishing and diving.

Anacapa is the smallest of the Channel Islands and consists of three small islets. Ocean waves have eroded the perimeter of the island, creating steep sea cliffs and exposing the volcanic origins of air pockets, lava tubes, and sea caves. There are a few structures on the island, which include a museum, a visitor center, and a lighthouse. Activities on the island include hiking and camping. The boat landing facility for was classified as the island's only nonpoint source discharge.

This ASBS has a combined island coastline length of 30.8 miles and includes 34,861 acres of marine waters. Staff considers this ASBS medium to low priority due to the minimal waste sources and potential sources on the islands. However, staff is watchful due to the nearby presence of offshore oil facilities and runoff from mainland streams, which sometimes reach the islands.

*San Clemente Island ASBS*

This ASBS has 58.5 miles of island coastline, includes 49,162 acres of marine waters and is 49 miles from the mainland. It is occupied and managed by the U.S. Navy. There are piers, roads, structures, military activities (including the widespread use of ordinance), and an airfield. All of these facilities contribute to discharges in this ASBS. There are a total of 125 drainages, consisting of 23 discharges, 100 outlets, one potential source, and 1 unknown.

The Navy's sewage treatment plant has an outfall located in an excluded zone within the ASBS, under an exception granted by the State Water Board. This outfall has been

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in violation of its NPDES permit limits, due in part to exceedances for copper. The Navy is planning to abandon its shore discharge point in favor of an offshore discharge with a diffuser to improve dilution and effluent limits compliance.

A freshwater sink probably used in part for cleaning dive gear at the Naval Ordnance Test Station (NOTS) Pier discharges directly into the ASBS, and should be re-routed to land disposal or diversion to the sewage treatment facilities.

A large area in the southern part of the island is used for military operations including explosions of ordinance. This undoubtedly results in erosion and resulting sedimentation into the coastal portions of the ASBS. The Navy Seals training facility in another portion of the island experiences high use of explosives and small arms fire.

The Navy operates under the general industrial storm water NPDES permit for runoff from industrial portions of the island. The Navy is also in the process of applying for a new exception to increase the flows for treated wastewater discharge (to allow for increased garrison levels) and to address their NPS/storm water discharges. The Navy recently requested the Regional Board in December 2005, for an extension of the deadline to submit data for that exception request. The original deadline was January 1, 2006 and the Navy asked to push this back to March 2006. On March 31, 2006 the Navy made a partial submittal of data, and stated that further work would be performed during the spring of 2006, and that the information would be forwarded when completed. This data is necessary for the State Board staff to address the CEQA requirements of the exception process, and to make a determination regarding special conditions (which staff may recommend to the State Water Board) that would limit the Navy's point and nonpoint source discharges.

This is a high priority ASBS due to the variety of military discharges.

*Laguna Point to Latigo Point ASBS*

This large ASBS has a coastline of 24.0 miles and includes 11,842 acres of marine waters. SCCWRP identified the largest number of drainages here. According to the SCCWRP survey results there were 410 discharges, 31 streams ("outlets"), and 3 potential discharges. In 2004, staff working with the Santa Monica BayKeepers, re-surveyed and reviewed photos of drainages in portions of the Laguna Point to Latigo Point ASBS. Additional drainages were identified in the Los Angeles County portion of the ASBS, increasing the number of total drainages in the entire ASBS from 444 to 538.

The land area uses in this ASBS greatly vary. The Point Mugu Naval Base is adjacent to the northern western portion of the ASBS in Ventura County. Calleguas Creek (including its estuary, Mugu Lagoon), a 303(d) listed water body flows through the mouth of Mugu Lagoon into the west end of the ASBS. The U.S. Navy also discharges under the general industrial storm water NPDES permit into Mugu Lagoon.

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Just south of the Navy base in Ventura County are unpopulated beaches with a few camping areas. The majority of discharges are from pipes leading to the beach from Highway One, which parallels the majority of this ASBS.

The central and southern areas are more populated sections of Malibu, and a large number of discharges in these areas are from roads (including Highway 1) and residential and commercial land uses. The County of Los Angeles Public Works maintains 23 municipal storm drains in this ASBS.

One particular dry weather discharge in this portion of the ASBS has been observed and sampled by State Water Board staff, and appears to be composed of an intermittent prohibited gray water discharge from a home. This discharge has been referred to the Los Angeles Regional Water Board staff for enforcement.

Many of the beachfront homes are on septic systems. There are also some apartment complexes and condominiums being served by small secondary treatment systems. Effluent from the septic tanks and small secondary treatment plants are via leach fields or spray irrigation. Some of the leach fields are located on the beach.

Paradise Cove is a commercial resort for recreational beach activities and there is a pier located there as well. Ramirez Creek drains to the ASBS at Paradise Cove. A treatment system has been installed at the mouth of the creek to remove pollutants before draining to the ASBS.

Several beaches along this ASBS are 303(d) listed for beach closures and in some cases high coliform counts. Santa Monica Bay, within which much of this ASBS lies, is 303(d) listed for chlordane, DDT, debris, PAH, PCB, fish consumption advisory, and sediment toxicity. This is a high priority ASBS.

*The four Santa Catalina Island ASBS*

Northwest Santa Catalina Island is the largest of the four ASBS on Catalina, stretching 20.9 miles along the coast and includes 13,235 acres of marine waters on the west end of the island. SCCWRP identified the most drainages (58, including 38 discharges) for the island in this ASBS. This ASBS is the location of the community of Two Harbors. Drainages from Two Harbors consist mainly of small gullies and pipes that appear to be used mainly for storm water runoff. Two Harbors is served by a sewage treatment plant, the effluent from which is disposed of via a spray-field on a hillside. Two Harbors also has marine facilities and operations (a mooring field and pier facilities). Approximately 720 moorings are located here and it is the busiest port on the west end of the island. Services and facilities include a pier, automotive and marine fuel facilities. The rest of this area is used by youth camps and contains structures for camping, picnicking, and recreational use.

There are several other pier and marine facilities within the ASBS. Fourth of July Cove has approximately 200 anchorages and 42 moorings, with the yacht club structure and

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a pier. Cherry Cove has approximately 104 anchorages with a pier and camping facilities. Additional facilities for recreational and residential boaters within the ASBS are smaller moorings and anchorages dotted along the coast. These are located at Little Geiger Cove, Big Geiger Cove, Howland's Landing, Emerald Bay West, and Parson's Landing.

On the northeast corner of this ASBS, adjacent to Blue Cavern Cove, is the intake line for the Wrigley Marine Science Center (WMSC) laboratory. Roughly adjacent to this location is the land disposal site (leach field) for treated domestic wastewater from the Marine Science Center. While the disposal of the wastewater is to land, storm runoff could possibly enter the ASBS waters. The seawater return from the University of Southern California Wrigley Marine Science Center flows from the laboratory facilities and discharges into Big Fisherman Cove (part of the ASBS) adjacent to the facility's dock. This facility also discharges storm water and has a busy waterfront and marine operations. The State Board recently adopted Special Protections to protect this ASBS through an individual exception for WMSC. The Northwest Santa Catalina Island ASBS is considered high priority due to its large number of discharges and moorings.

Western Santa Catalina Island ASBS is relatively small, covering approximately 2.7 miles and includes 37 acres of marine waters. It ranges from the north end of Little Harbor to Ben Weston Point. This area is primarily used for recreation by islanders and boaters and has areas for camping, picnicking, hiking and surfing. A total of 8 drainages were documented by SCCWRP (3 discharges and 5 outlets). There is a road that runs along part of this ASBS, which may contribute to storm water runoff. Portions of the road are paved one to two times annually with oil slurry that may result in oily runoff during storms. The Western Santa Catalina Island ASBS is considered to be medium to low priority by staff.

Farnsworth Bank ASBS is an offshore location, which precludes it from having any direct land-based anthropogenic inputs. This area is popular for such activities as scuba diving and fishing. It may receive impacts (waste discharges and anchoring) from boats and people using it for diving or fishing activities. Farnsworth Bank ASBS is low priority from staff's perspective.

Southeast Santa Catalina Island ASBS covers approximately 2.9 miles, includes 2756 acres of marine waters, and ranges from Binnacle Rock to Jewish Point on the east end of the island. It had a total of 5 drainages, 2 discharges and 3 outlets. Its major source of anthropogenic inputs most likely would come from a large quarry that has both non-point and point source types of discharges.

Connolly-Pacific Company owns and operates the East End Quarry located at Two Pebbly Beach Road in Avalon. The East End Quarry has been operating on a 519-acre parcel of land leased from the Santa Catalina Island Company. Domestic wastewater from the quarry facilities, including a small office building and a machine shop, will be discharged to a septic system that consists of a 750-gallon capacity septic tank and a leach trench that is 3-feet wide by 4-feet deep. Board staff reviewed a Waste Discharge

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Requirements application for Los Angeles County, and determined that the proposed discharge meets the conditions specified in Order No. 01-031, "*General Waste Discharge Requirements for Small Commercial and Multifamily Residential Subsurface Subsurface Sewage Disposal Systems.*" The case was enrolled under Order No. 01-031 on December 6, 2002 (Los Angeles Regional Water Board 2003).

The surface topography in the quarry area has been altered in such a way that inputs from storm water (including sheet flow) runoff, as well as local aerial deposition, may occur. It is also possible that dredging may occur at the barge-loading site. Connolly-Pacific Company is currently operating under the statewide General Industrial Storm Water NPDES Permit. Southeast Santa Catalina Island ASBS is high priority due to the presence of the quarry and the relative proximity to Avalon.

*La Jolla ASBS*

This ASBS is approximately 1.7 miles in length and contains 453 acres of marine waters. SCCWRP identified 195 drainages including 184 discharges, 9 outlets and 2 potential sources. The majority of identified discharges into this ASBS, adjacent to the San Diego-Scripps ASBS, were also from pipes and/or holes (possibly weep holes) coming through seawalls, draining bluffs and landscape areas. A large section of this ASBS included a tide pool area that receives discharges from pipes on the bluffs and gullies. There were also several municipal storm drains. The City of San Diego's consultant, Dexter Wilson Engineering Inc. (May 12, 2005) apparently identified 17 municipal storm drains, some (possibly six) of which were not included in the SCCWRP 2003 inventory.

The largest storm outfall has dual 72-inch pipes at the foot of Avenida de la Playa, which is located at the southern end of Kellogg Park. This storm drain often has flows, which contain high levels of indicator bacteria, and the ocean receiving water sometimes has elevated bacteria levels at those times. However, the drain does not flow year-round. A diversion structure (to the sewage plant) is located near the end of Avenida de la Playa, about two blocks from the beach. At the beach is an outfall that is closed or screened seasonally. During the dry season, the City installs steel plates over the drain to trap urban runoff and cleans the drain as needed. During the wet season, the City installs screens over the outlet to capture trash and allow storm runoff to discharge to the beach. The storm drain is cleaned bi-monthly or as needed during the wet season. The diversion structure was built with a mix of municipal (about \$756,000) and approximately \$330,000 in federal funds.

The shorelines of this ASBS are 303(d) listed because they do not meet water quality standards for bacterial indicators. This is a high priority ASBS.



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*Heisler Park ASBS*

This small ASBS covers just 0.5 miles and contains 32 acres of marine waters. SCCWRP identified 15 drainages, consisting of 14 discharges and 1 outlet. Discharges into the Heisler Park ASBS are typically from walkway and street sources. Most of the pipes in the bluff can be tracked back to a drain either along the walkway at the top of the bluff or on the street. There are two pipes that had significant flow during wet weather (during the SCCWRP survey) and appear to be linked to drains in the streets. There was only one obvious outlet, but there were indications of sheet flow over the bluffs during wet weather.

The shoreline at Heisler Park Ecological Reserve ASBS/SWQPA is 303(d) listed because it does not meet water quality standards for bacterial indicators. CBI funding has been used at some drains in Laguna Beach to divert dry weather runoff and partially treat storm flows prior to discharge. Because of its urban character this is a high priority ASBS.

*San Diego-Scripps ASBS*

This ASBS covers approximately 0.6 miles of shoreline and contains 88 acres of marine waters. SCCWRP identified 92 discharges. An additional earthen drain was subsequently identified by staff located at the NOAA Southwest Fisheries Science Center. All 93 of the discharges are associated with the UCSD Scripps Institution of Oceanography (SIO). Many of these discharges are relatively small storm drains and sea wall weep holes. However the most notable flowing discharges were from the area near and underneath the SIO pier, including wastewater point sources consisting of return seawater discharges from the UCSD Scripps research facilities and the Birch Aquarium. A pier facility at SIO is a nonpoint source of pollution. The wastewater discharges from Scripps in some places are co-mingled with storm water runoff. It should be noted that there is run-on from the City of San Diego and adjacent residential properties that contribute to storm flows. All of these discharges are now covered under an individual exception and NPDES permit.

Although significant progress has been made as a result of State and Regional Water Board action, and cooperation from SIO, this is still a high priority ASBS. The shorelines of this ASBS are 303(d) listed because they do not meet water quality standards for bacterial indicators.

*Robert E. Badham ASBS*

This ASBS covers 0.7 miles and contains 220 acres of marine waters immediately south of the mouth of Newport Bay. SCCWRP identified 21 drainages, of which 18 were discharges and 3 natural outlets. Upstream sources of storm water are difficult to track at Newport Beach because of the private property on top of the bluffs. The primary drainage sources are pipes and stairways that appear to lead from this development. Regarding the natural outlets, there are two perennial flows that empty onto the beach,

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the largest of which is Buck Gully. Buck Gully Creek is 303(d) listed because it does not meet standards for fecal or total coliform bacteria. This is a high priority ASBS.

*Irvine Coast ASBS*

This ASBS covers approximately 3.4 miles and contains 941 acres of marine waters. SCCWRP identified 16 discharges and 16 natural outlets. Different portions of this ASBS are in the Santa Ana and San Diego Regions. The source of inputs to the Irvine Coast ASBS is largely from the newly developed urban watershed, and includes Pacific Coast Highway as the main transportation artery. There are also inputs from other roads, parking lots, and walkways within the Crystal Cove State Park.

The ASBS may be divided into three areas. The first area, which is nearest Newport Beach and Pelican Point, has dry and wet weather flow from the Pelican Hill Golf Course (Irvine Company) and the homeowners at Pelican Point (Pelican Point Community Association). There is also a nearly constant dry weather flow from a seep draining from the coastal bluff, and wet weather discharge locations as well. The Irvine Company has so far declined to request an exception, but has submitted information relative to its discharge. Staff is still reviewing that information.

In the central portion of the ASBS, Los Trancos Creek drains an area with new residential development into Crystal Cove. Los Trancos Creek has been 303(d) listed because it does not meet fecal coliform bacteria standards. The historic beach homes at Crystal Cove have been renovated by the State Park and all septic systems have been removed. Sewage is now sent to an off-site sewage plant outside of the ASBS. Some of the highway runoff near Crystal Cove is treated in vegetative swales. The storm runoff from the new residential development drains to a detention basin. Dry weather flows in Los Trancos Creek and Muddy Creek are diverted to a sewage collection system.

In the southern portion of the ASBS near the City of Laguna Beach, the upper watershed of El Morro Creek is largely undeveloped natural habitat, but near its mouth it passes through a trailer park with an on-site septic system, and then past a highway crossing and into the ASBS. Immediately down coast of the mouth is another array of beach trailers. The El Morro trailer park was issued WDRs (Order No R9-2003-0228) for its subsurface sewage treatment system located near El Morro Creek. The monitoring results have shown exceedances for total nitrogen, methylene blue active substances (MBAS) and certain mineral constituents. The El Morro trailer park was closed in 2006 and residents have been vacated. The sewage disposal system is being retired. The State Park is also working to eventually remove these trailers and their impacts, and has been issued a Clean Water Act Section 401 Water Quality Certification and Waiver of WDRs from the Regional Board for that project.

This is a high priority ASBS.

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*Carmel Bay ASBS*

The Carmel Bay ASBS has 6.7 miles in coastline length and 1584 acres of marine waters. The ASBS is adjacent to the City of Carmel and Pebble Beach Golf Course, and is contiguous with the Point Lobos ASBS. The Carmel River drains into the ASBS.

SCCWRP identified this ASBS as having the second largest number of discharges. A total of 348 discharges, 9 outlets, 10 potential non-point source springs/seeps, and 2 unknowns were identified. Sources of the 348 discharges include road runoff, landscaping from the Pebble Beach golf course, private homes, and drainage from the developed watershed. Approximately 40 percent of the storm water from the City of Carmel drains directly into the Carmel River.

It should be noted that results from the SCCWRP survey indicate that dry weather flow in ASBS statewide is not that common. However, Pebble Beach golf course had the most occurrences of dry weather flows for the day of the survey relative to other areas. Much of the irrigation water for Pebble Beach is reclaimed water from the Carmel Area Wastewater District treatment plant.

The Carmel Area Wastewater District (CAWD) discharges treated wastewater into the Carmel Bay State Water Quality Protection Area (SWQPA), previously known as Carmel Bay Area of Special Biological Significance (ASBS), under the authority of an Exception issued by the State Board (Resolution No. 84-78). Resolution No. 84-78 required the Carmel Sanitary District to develop a comprehensive study to evaluate the effects of the discharge on both the Carmel Bay ASBS and the Point Lobos ASBS. That study was to be implemented by 1987 and was to be repeated every ten years. A great deal of monitoring effort was performed since 1984. However, a comprehensive report, originally due in 1987 and therefore 16 years late, was never issued until now.

The Central Coast Regional Board adopted the most recent Waste Discharge Requirements for this discharge on March 22, 2002. The permit includes a provision for a comprehensive study on the effect of the CAWD discharge on water quality in Carmel Bay. On October 15, 2003, EOA, Inc. submitted a final report to the CAWD titled "Evaluation of the Effects of Carmel Area Wastewater District Discharge on Carmel Bay." A summary review of that EOA/CAWD report is attached in Appendix E.

The CAWD has been working on tertiary treatment of its water to discharge into the Carmel River rather than directly into the ASBS. The Regional Board is supportive of this approach, as it will increase flows in the lower river at critical times of the year.

State Water Board staff considers this a high priority ASBS.

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**Appendix C - Beach Postings at ASBS**

**Los Angeles County:**

All Beaches: 49 posted, 0 closed  
Leo Carrillo State Beach: 61 posted, 0 closed  
Nicholas Canyon County Beach: 10 posted, 0 closed  
Paradise Cove: 251 posted, 0 closed  
Zuma beach: 5 posted, 0 closed  
Total Posted: 376, Total Closed: 0

**Monterey County:**

11<sup>th</sup> and Oceanview: 0 posted, 9 closed  
13<sup>th</sup> and Oceanview: 0 posted, 3 closed  
14<sup>th</sup> and Oceanview: 0 posted, 7 closed  
7<sup>th</sup> and Oceanview: 0 posted, 8 closed  
Coral and Oceanview3: 0 posted, 2 closed  
Fountain and Oceanview: 0 posted, 4 closed  
Lover's Point: 23 posted, 10 closed  
Stillwater Cove: 76 posted, 9 closed  
Total Posted: 99, Total Closed: 52

**Orange County:**

Crystal Cove State Park: 42 posted, 6 closed  
Laguna Beach: 232 posted, 35 closed  
Total Posted: 274, Total Closed: 41

**San Diego County:**

Coastal sites: 69 posted, 0 closed  
La Jolla Shores Beach: 64 posted, 12 closed  
Total Posted: 133, Total Closed: 12

**San Mateo County:**

Fitzgerald Marine: 503 posted, 0 closed  
Montara State Park: 3 posted, 9 closed  
Pillar Point: 281 posted, 7 closed  
Total Posted: 787, Total Closed: 16

**Sonoma County:**

Salmon Creek State Beach 4 posted, 29 closed  
Total Posted: 4, Total Closed: 29

**Ventura County:**

Point Mugu Beach: 51 posted, 0 closed

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Sycamore Cove Beach: 16 posted, 0 closed

Thornhill Broome Beach: 9 posted, 0 closed

Total Posted: 76, Total Closed: 0

California ASBS Total: 1,749 posted, 150 Closed

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**Appendix D - State Assistance to support ASBS**

Recipient	ASBS	Type of Assistance	State agency providing assistance
City of Trinidad	#6 Trinidad Head	Critical Coastal Area Pilot Project	California Coastal Commission
City of Trinidad	#6 Trinidad Head	Integrated Coastal Watershed Management Planning Grant Prop 50, \$500,000 awarded on Nov. 2005	State Water Board
Mattole Restoration Council	#7 King Range	Integrated Coastal Watershed Management Planning Grant Prop 50, \$246,772 awarded on Nov. 2005	State Water Board
Redwood Community Action Agency	#7 King Range	Ocean Protection Project Consolidated Grants, \$378,083 awarded June 2006	State Water Board
Mendocino County Water Agency	#1 Jughandle Cove	Integrated Coastal Watershed Management Planning Grant Prop 50, \$196,000 awarded Jan. 2006	Department of Water Resources
Tomales Bay Watershed Council, Marin County	#11 Duxbury Reef #12 Point Reyes Headlands #13 Double Point #14 Bird Rock	Integrated Coastal Watershed Management Planning Grant Prop 50, \$459,900 awarded	State Water Board

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		on Nov. 2005	
San Mateo County	#9 James V. Fitzgerald	Critical Coastal Area Pilot Project	California Coastal Commission
City of Watsonville	#15 Ano Nuevo Point and Island #19 Pacific Grove #34 Carmel Bay #16 Point Lobos Ecological Reserve	Ocean Protection Project Consolidated Grants, \$1,543,234 awarded June 2006	State Water Board
Monterey Peninsula Water Management District	#16 Point Lobos #19 Pacific Grove #34 Carmel Bay	Integrated Coastal Watershed Management Planning Grant Prop 50, \$496,957 awarded on Jan. 2006	Department of Water Resources
City of Pacific Grove	#19 Pacific Grove	Clean Beaches, \$500,000 awarded on April 2002, \$1,500,000 awarded on August 2004	State Water Board
Cities of Newport Beach and Laguna Beach	#30 Heisler Park #32 Robert Badham #33 Irvine Coast	Critical Coastal Area Pilot Project	California Coastal Commission
City of Newport Beach	#30 Heisler Park #32 Robert Badham #33 Irvine Coast	Integrated Coastal Watershed Management Planning Grant Prop 50, \$397,500 awarded on Nov. 2005	State Water Board
City of Laguna Beach	#30 Heisler Park	Clean Beaches, \$1,200,000 awarded on Nov. 2003	State Water Board

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UC Scripps Institution of Oceanography, City of San Diego	#29 La Jolla #31 San Diego- Scripps	Integrated Coastal Watershed Management Planning Grant Prop 50, \$499,874 awarded on Nov. 2005	State Water Board
The Regents of the University of California	#29 La Jolla #31 San Diego- Scripps	Ocean Protection Project Consolidated Grants, \$3,600,000 awarded June 2006	State Water Board



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**Appendix E – Summary of the CAWD Evaluation of Effects on Carmel Bay**

The following is a State Water Board staff summary of the findings of “Evaluation of the Effects of Carmel Area Wastewater District Discharge on Carmel Bay” prepared by EOA, Inc. for the Carmel Area Wastewater District (CAWD) on October 15, 2003. Based on the limitations of the data presented in EOA’s report, it appears that at this time there are no major measurable impacts to natural water quality in the Carmel Bay State Water Quality Protection Area (SWQPA) that can be absolutely attributed to the CAWD discharge. However there were some instances when pollutants were discharged, exceedances occurred, or alterations of natural water quality were noted within the Carmel Bay SWQPA.

During the period 1995-1997, CAWD’s effluent was in compliance with limitations for all conventional pollutants. In 1998, there were 19 exceedances for suspended solids in the effluent. Since 1999, the effluent was reported to be below effluent limitations for all conventional pollutants.

During the period 1990-2002, 942 out of 998 analytical results for organic pollutants were non-detects. Of the 56 constituents that were above detection levels, 33 were halomethanes.

In 1987, cyanide (200 µg/L) exceeded the six-month median effluent limit (120 µg/L). There were no other exceedances for cyanide in the effluent during the period 1986-2002.

Ammonia N was detected in the effluent during the period 1991-2002, but there were no exceedances of the six-month median effluent limit (73.2 mg/L).

Relative to the control station results, during the wet season ammonia was significantly elevated in the receiving water (at a depth of 0.5 m) within 25 m from the discharge. This is outside of the zone of initial dilution (ZID) of 15 meters from the discharge. A complicating factor is the fact that the discharge and the sampling stations are all in the immediate vicinity of the Carmel River mouth.

Over 4300 measurements were made for total coliform bacteria in the effluent during the period 1990-2001. The median levels for each year during that period were below 100 MPN/100ml. None of the measurements exceeded the maximum effluent limitation of 10,000 MPN/100ml.

During the dry season, receiving water quality (temperature, pH, ammonia N, total coliform, fecal coliform, and enterococcus) within 100 m of the discharge was not substantially different from that of the control stations.

During the wet season, total coliform bacteria in the receiving water appears to be slightly elevated (at a depth of 0.5 m) within 25 m from the discharge relative to the

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control station results. However, based on a non-parametric Mann-Whitney test, the difference is not statistically significant.

Shoreline monitoring data were often below the Ocean Plan bacterial objectives. When exceedances did occur, they were observed during wet weather. Those exceedances may not be a result strictly of the CAWD discharge. The shoreline stations were located in proximity to Carmel and the Carmel River mouth, which are other potential sources of contamination.

During the period 1986-2002, the following metals in the effluent were analyzed once annually: arsenic, cadmium, chromium, copper, lead, mercury, nickel, silver, and zinc. Of these, only the 1988 result for copper (180 µg/L) exceeded the six-month median effluent limit (120 µg/L).

With regard to Mussel Watch data, initially the report's authors mistakenly referred to manganese as magnesium. This was later corrected.

Mussel tissue (Mussel Watch) monitoring results for silver, aluminum, chromium, and manganese at some stations up to 300 m from the discharge are elevated relative to the control stations. No effluent data was presented regarding aluminum and manganese concentrations in the effluent. Silver was found at elevated levels in mussel tissue only prior to 1990 and has not been detected in the effluent since 1996. Chromium was detected in the effluent in three out of seven samples between 1996 and 2002, which is approximately the same period in which a majority of the elevated chromium levels in mussel tissue were observed. Again, a complicating factor is that the sampling stations near the discharge are also near the Carmel River mouth.

The report does not provide a complete evaluation of the effects of the discharge on benthic biota in the Carmel Bay SWQPA. The report only briefly summarized the benthic ecology studies completed up to 1986, which did not indicate any major impact on the benthic community to that point in time. In this sense, the report does not completely satisfy the requirements of Resolution No. 84-78, since a comprehensive review of the "effects of the discharge on the ASBS" should include a more current status of the benthic ecology.